Revised Ordinance Governing

MBBS Degree Course and Curriculum of

Phase I Subjects – RS3

SRI SIDDHARTHA
ACADEMY OF HIGHER EDUCATION

(Deemed to be University, declared u/s 3 of the UGC Act, 1956)

Agalakote, B.H. Road, Tumkur – 572107, Karnataka, India

SRI SIDDHARTHA ACADEMY OF HIGHER EDUCATION

("Deemed to be University u/s 3 of the UGC Act, 1956")
Accredited 'A' Grade by NAAC
Agalakote, B.H.Road, Tumkur – 572 107.KARNATAKA, INDIA.

No. SSAHE/ACA-S&C/02/CBME/MBBS Pre-Clinical/2019 Date: 23/12/2019

NOTIFICATION

Sub: Revised Ordinance pertaining to Regulations and Curriculum of MBBS Phase-I as per CBME Guidelines for RS-3 Batch.

Ref: 1). Proceedings of BOS Para-Clinical UG held on 28/05/2019
2). Proceedings of the Academic Council meeting held on 30/07/2019
3). Proceedings of 19th BOM meeting held on 21/12/2019

In exercise of the powers vested under section 6 of 6.4 of MoA / Rules of SSAHE, the Revised Ordinance pertaining to Regulations and Curriculum of MBBS Phase-I as per CBME guidelines for RS-3 batch is notified herewith as per Annexure.

By Order,

REGISTRAR

To,
Dean / Principal, Sri Siddhartha Medical College & Hospital,

Copy to
1) Office of the Chancellor, SSAHE, for kind information,
2) PA to Vice-Chancellor / PA to Registrar / Controller of Examinations / Finance Officer, SSAHE
3) All Officers of the Academy Examination Branch / Academic Section
4) Guard File / Office copy.

SECTION I

Introduction to CBME based curriculum

The Medical Council of India has revised the undergraduate medical education curriculum so that the Indian Medical Graduate is able to recognize "health for all" as a national goal and should be able to fulfill his/her societal obligations. The revised curriculum has attempted to enunciate the competencies the student must be imparted and should have learnt, with clearly defined teaching-learning strategies and effective methods of assessment. Communicating effectively and sympathetically with patients and their relatives has been visualized as a core area of the revised curriculum. These and other goals identified in the curriculum are to be implemented in all medical colleges under the ambit of Medical Council of India from August 2019 and to smoothen this process Guidelines have been prepared for its effective implementation. In response to the need for a seamless introduction of the curriculum into the Undergraduate system, all medical colleges need to upgrade the teaching-learning skills of their faculty. Earlier experience with implementation of curricular changes suggests that a carefully managed, sustainable approach is necessary to ensure that every college has access to the new skills and knowledge enunciated in the new curriculum. Faculty training and development thus assumes a key role in the effective implementation and sustenance of the envisaged curricular reforms.

Curriculum Committees along with Medical Education Units/ Departments of Medical Colleges would help the colleges to implement the new UG curriculum including the AETCOM (Attitude, Ethics & Communication) program. Each college should develop the framework for the Foundation Course. The Foundation course which will be of 1-month duration after admission, aims to orient the students to national health scenarios, medical ethics, health economics, learning skills & communication, Basic Life Support, computer learning, sociology & demographics, biohazard safety, environmental issues and community orientation. Foundation course may also include 1) Orientation program 2) language and computer skills 3) communication skills and 4) time management skills and 5) Professional development program highlighting ethical and humanities issues. Each College should select elements of Foundation course as per local needs and develop faculty expertise from initial years. However, experts and other teachers may be invited as per need. It is emphasized that interactive case scenarios, movies, videos, and small group discussions may be used for each concept along with the principles of reflective learning.

Four of the many new key areas recommended in the Vision 2015, were identified for implementation across the entire duration of the course at Phase I. The areas identified were such that they would be helpful to initiate the process of curricular reforms from first year of the undergraduate course. These areas are Foundation course, Early Clinical Exposure, Integrated teaching & Learning & Skill development & training.

a. **Foundation Course:** This is a one month to orient medical learners to MBBS program and provide them with requisite knowledge, communication (including electronic), technical and language skills.

b. **Early clinical exposure:** The clinical training would start in the first year, focusing on communication, basic clinical skills and professionalism. There would be sufficient clinical exposure at the primary care level and this would be integrated with the learning of basic and laboratory sciences. Introduction of case scenarios for classroom discussion/case-based learning would be emphasized. It will be done as a coordinated effort by the pre-clinical, para-clinical and clinical faculty.

c. **Integrated teaching and learning:** The innovative new curriculum have been structured to facilitate horizontal and vertical integration between and among disciplines, bridge the gaps between theory & practice, between hospital-based medicine and community medicine. Basic and laboratory sciences (integrated with their clinical relevance) would be maximum in the first year and will progressively decrease in the second and third year of the training when clinical exposure and learning would be dominant.

d. **Skill development and learning** (throughout curriculum): A mandatory & desirable comprehensive list of skills has been planned and would be recommended for the Indian Medical Graduate. Certification of skills would be necessary before licensure.

e. **Electives**: The aim of adding electives is to allow flexible learning options in the curriculum and may offer a variety of options including clinical electives, laboratory postings or community exposure in areas that students are not normally exposed as a part of regular curriculum. This will also provide opportunity for students to do a project, enhance self-directed learning, critical thinking and research abilities. Examples: Bio-Informatics, Tissue Culture, Tissue Engineering/Processing, Computer and Computer applications, Immunology, Genetics, Human Nutrition, Sports Medicine, Laboratory Sciences, Research Methodology, Ethics, Accident and Emergencies (A&E), Community Projects, HIV Medicine, Pharmacokinetics/ Pharmacodynamics/ Pharmacoeconomics, Assisted Reproductive Technology, Ethics & Medical Education.

PREAMBLE

The undergraduate medical curriculum of the medical council of India is created to ensure that the medical doctor who emerges from the MBBS training program is capable of assisting the nation to achieve its goal of health for all. In addition, it aspires to ensure that the "graduate" meets or exceeds global bench-mark in knowledge, attitude, skills and communication. This intent is at the core of the Graduate Medical Regulations, 2019.

The Graduate Medical Regulations, 2019 represents the first major revision to the medical curriculum since 1997 and hence incorporates changes in science and thought over two decades. A significant advance is the development of global competencies and subject-wise outcomes that define the roles of the "Indian Medical Graduate". Learning and assessment strategies have been outlined that will allow the learner to achieve these competencies/outcomes. Effective appropriate and empathetic communication, skill acquisition, student-doctor method of learning, aligned and integrated learning and assessment are features that have been given additional emphasis in the revised curriculum.

The revised curriculum is to be implemented by all medical colleges under the ambit of Medical Council of India from August 2019. The roll out will be progressive over the duration of the MBBS course.

This document represents a compilation of the resource material that was used in the Curricular Implementation Support Program (CISP) and has attempted to provide a stepwise and comprehensive approach to implement the curriculum. It details the philosophy and the steps required in a simple and richly illustrated manner. Teaching slide decks, faculty guides and online resource material supplement this document. The document is to be used in conjunction with the Competency document, AETCOM module and the GMR document.

This draft syllabus has been created from the list of competencies mentioned in the Competency Based Curriculum (CBC) developed by the Medical Council of India for the First MBBS Batch of 2019-20.

The content to be covered under each topic has been mentioned as bulleted points. For each topic, competency numbers have been mentioned as per the competency list mentioned above. The content that is related to non-core competencies (these competencies need not be assessed in the summative examination) have been marked by an asterisk (*).

Guidelines have been suggested for the various teaching and learning (TL) methods along with the time allotted for them in the curriculum. Relevant information has also been provided about the recent additions in the CBC, namely integration, early clinical exposure (ECE), self-directed learning (SDL), the AETCOM (attitude ethics and communication skills) modules and electives. Regardless of the TL methods that are used, it is expected that they follow adult learning principles. The regulations related to the internal examination and university examination have been mentioned along with detailed suggestions for the conduct of the theory, practical and viva-voce

examinations. The document ends with a list of learning resources that both the students and teachers can utilize.

INTEGRATION

Integration is a learning experience that allows the learner to perceive relationships from blocks of knowledge and develop a unified view of its basis and its application. It is recommended that the principles of integration be applied to such an extent that the curriculum retains the strengths of subject based education and assessment, while also providing experiences that will allow learners to integrate concepts. Integration must be horizontal (i.e. across disciplines in a given phase of the course) and vertical (across different phases of the course). As far as possible, it is desirable that teaching/learning occurs in each phase through study of organ systems or disease blocks in order to align the learning process. Clinical cases must be used to integrate and link learning across disciplines.

Alignment implies the teaching of subject material that occurs under a particular organ system / disease concept from the same phase in the same time frame i.e., temporally. It is recommended that alignment be the major method to be followed, allowing similar topics in different subjects to be learnt separately but during the same time frame.

Integration implies that concepts in a topic / organ system that are similar, overlapping or redundant are merged into a single teaching session in which subject based demarcations are removed. For the purpose of this document, topics from other phases that are brought into a particular phase for the purpose of reinforcement or introduction will also be considered as integrated topics. A linker is a session that allows the learner to link the concepts presented in an aligned topic. In a small proportion (not to exceed 20% of the total curriculum) an attempt can be made to share topics or correlate topics by using an integration or linker session. The integration session most preferred will be a case-based discussion in an appropriate format ensuring that elements in the same phase (horizontal) and from other phases are addressed.

Care must be taken to ensure that achievement of phase-based objectives is given primacy - the integrative elements from other phases are used only to provide adequate recall and understand the clinical application of concepts. It must be emphasized that integration does not necessarily require multiple teachers in each class. Experts from each phase and subject may be involved in the lesson planning but not it in its delivery unless deemed necessary. As much as possible, the necessary correlates from other phases must also be introduced while discussing a topic in a given subject. Topics that cannot be aligned and integrated must be provided adequate time in the curriculum throughout the year. Assessment will continue to be subject based. However, efforts must be made to ensure that phase appropriate correlates are tested to determine if the learner has internalized and integrated the concept and its application.

In summary:

Horizontal integration can be facilitated by the following methods.

- Alignment of timetables of the three first year subjects wherever possible
- Consciously connecting what is learned in one subject with the other subjects during teaching and learning activities
- Joint sessions by all the three departments which may be in the form of lectures, case-based learning or seminars

Vertical integration can be facilitated by the following methods

- Discussing relevant clinical case scenarios during teaching and learning sessions
- Guest lectures by clinicians or para-clinical faculty
- Hospital visits to see relevant patient presentations, radiological imaging and operative procedures.

EARLY CLINICAL EXPOSURE

Objectives: The objectives of early clinical exposure of the first-year medical learners are to enable the learner to:

a. Recognize the relevance of basic sciences in diagnosis, patient care and treatment
b. Provide a context that will enhance basic science learning
c. Relate to experience of patients as a motivation to learn
d. Recognize attitude, ethics and professionalism as integral to the doctor-patient relationship
e. Understand the socio-cultural context of disease through the study of humanities

Elements

a. Basic science correlation: i.e. apply and correlate principles of basic sciences as they relate to the care of the patient (this will be part of integrated modules).
b. Clinical skills: to include basic skills in interviewing patients, doctor-patient communication, ethics and professionalism, critical thinking and analysis and self-learning (this training will be imparted in the time allotted for early clinical exposure).
c. Humanities: To introduce learners to a broader understanding of the socio-economic framework and cultural context within which health is delivered through the study of humanities and social sciences.

Planning of activities & its distribution:

ECE has to be done in practically each of the sessions of basic sciences, preferably for first 10-15 minutes as we do not want it to happen in isolation but want it as an integral part of the basic science curriculum. Total allotted hours in first year (as per GMR, 2019) is 90 hours which has to be equally divided among the three preclinical subjects. Therefore, the time available for each subject is 30 hours, which can be further divided as follows:

a. Basic sciences correlation - 18 hours - 3-hour session per month for 6 months which can take place with charts, graphics, videos, reports, field visits etc. in classrooms / hospital labs.
b. Clinical Skills - 12 hours - one 3-hour session per month for four months per department. Students accompanied by preclinical faculty in small groups equipped with observation guides are introduced to specified cases being demonstrated by clinicians. Each 3-hour session of clinical skills will have:
    i. Introduction & instruction: 30 minutes
    ii. Hospital visit: 1 hour 30 minutes
    iii. Summary & conclusion: 30 minutes d. Reflection: 30 minutes
c. Humanities - will be merged with AETCOM (no additional time)

Some methods that may be utilized for ECE are as follows:

- Clinical case scenarios during lectures and dissections
- Guest lectures delivered by clinicians
- Videos of clinical presentations and procedures
- Performance of simple clinical procedures on cadavers or simulators
- Hospital / laboratory visits to see carefully selected patients and relevant procedure
- Demonstrations on peers after taking their consent

SELF-DIRECTED LEARNING

Self-Directed Learning (SDL) is defined as the "preparedness of a student to engage in learning activities defined by himself rather than a teacher". The Graduate Medical Education 2019 document brought out by the MCI lists life-long learning as one of the roles of the Indian Medical Graduate (IMG). One of the methods suggested achieving this is SDL. Seven key components of SDL have been described. These include the identification of learning needs, formulation of learning objectives, utilization of appropriate learning resources, employing suitable learning strategies, commitment to a learning contract, evaluating learning outcomes and the teacher as a facilitator. Dedicated time for SDL is provided for each subject in the first phase.

AETCOM MODULE:

The overall goal of undergraduate medical education program as envisaged in the revised Graduate Medical Education Regulations - 2019 is to create an "Indian Medical Graduate" (IMG) possessing requisite knowledge, skills, attitudes, values and responsiveness, so that she or he may function appropriately and effectively as a physician of first contact of the community while being globally relevant. In order to fulfill this goal, the IMG must be able to function appropriately, ethically and effectively in her/his roles as clinician, leader and member of the health care team and system, communicator, lifelong learner and as a professional. In order to effectively fulfill the above-mentioned roles, the IMG must obtain a set of competencies at the time of graduation. In order to ensure that training is in alignment with the goals and

competencies, Medical Council of India has proposed new teaching learning approaches including a structured longitudinal programmeon attitude, ethics and communication

Five AETCOM modules will be taught in first phase and following departments will be responsible for implementation and assessment of these modules

- **MODULE 1.1 AND MODULE 1.5 ANATOMY**
- **MODULE 1.2 AND MODULE 1.3 PHYSIOLOGY**
- **MODULE 1.4 BIOCHEMISTRY**

GUIDELINES: Reflection writing to be recorded in practical record/log book in each subject

ELECTIVES

An elective can be defined as a brief course made available to the learner during his/her undergraduate study period, where she/he can choose from the available options depending upon their interest and career preferences. Introduction of electives in undergraduate medical curriculum is an important step for providing flexible choices in student's areas of interest, direct individual experience and this will help in developing self- directed learning skills. The range of electives that can be offered to the students will depend upon the local logistics and resources available for the medical institutions (within or nearby). These can be in a wide range that can include electives from educational, community and research-project related, directly or indirectly with health care, super- specialty clinical electives and specific laboratory electives.

Method:

- Two months are allotted for elective rotations after completion of the exam at end of the third MBBS Part I examination and before commencement of third MBBS Part II.
- It is compulsory for learners to do an elective. The protected time for electives should not be used to make up for missed clinical postings, shortage of attendance or any other purpose.
- The learner shall rotate through two elective blocks of 04 weeks each.
- Block 1 shall be done in a pre-selected preclinical or para-clinical or other basic sciences laboratory OR under a faculty researcher in an ongoing research project. During the electives regular clinical postings shall continue.
- Block 2 shall be done in a clinical department (including specialties, super-specialties, ICUs, blood bank and casualty) from a list of electives developed and available in the institution OR as a supervised learning experience at a rural or urban community clinic.
- Institutions will determine the number and nature of electives beforehand, names of the supervisors, and the number of learners in each elective based on the local logistics, available resources and faculty.
- Each institution will develop its own mechanism for allocation of electives.
- It is preferable that electives are made available to the learners in the beginning of the academic year.
- The learner must submit a learning logbook based on both blocks of the elective.

- 75% attendance in the electives and submission of logbook maintained during elective is mandatory for eligibility to appear in the final MBBS examination.
- Students will be assessed in between and at the end of each elective posting.
- Feedback, comments and /or grades about the student's performance by the faculty mentor can be documented with the help of a checklist where both professional and academic attributes can be included.
- The performance of the students in the electives will also contribute towards internal marks.
- Student's feedback about the elective also needs to be documented in a structured format. This will help in gathering student's perceptions about various aspects of elective posting and help in program evaluation.
- Institutions may use part of this time for strengthening basic skill certification. The list of electives offered by the institution must be displayed for students.
- Each elective should have well defined objectives, expected outcomes, expectations from the students, their assessment mechanism and faculty guide or mentors.
- A faculty mentor should guide the student, monitor their learning activities and assess the students' performance with regular feedback.
- Examples of general electives include bioinformatics, tissue engineering / processing, computer and computer applications, genetics, human nutrition, laboratory sciences, research methodology, ethics and medical education.

SECTION II

REGULATIONS GOVERNING MBBS DEGREE COURSE
[Eligibility for Admission, Duration, Attendance and Scheme of Examination]

1. ELIGIBILITY

As per guidelines of Medical Council of India

2. DURATION OF THE COURSE

<table>
<tr><td>Jan</td><td>Feb</td><td>Mar</td><td>Apr</td><td>May</td><td>Jun</td><td>Jul</td><td>Aug</td><td>Sep</td><td>Oct</td><td>Nov</td><td>Dec</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>Foundation course</td><td colspan="4">I MBBS</td></tr>
<tr><td colspan="8">I MBBS</td><td>Phase I exam</td><td colspan="3">II MBBS</td></tr>
<tr><td colspan="8">II MBBS</td><td>Phase II exam</td><td colspan="3">III MBBS PART 1</td></tr>
<tr><td colspan="9">III MBBS PART 1</td><td>Phase III part 1 exam</td><td colspan="2">Electives and skills</td></tr>
<tr><td colspan="12">III MBBS PART 2</td></tr>
<tr><td colspan="2">Phase III part 2 exam</td><td></td><td colspan="9">Internship</td></tr>
<tr><td colspan="3">Internship</td><td colspan="9"></td></tr>
</table>

DISTRIBUTION OF SUBJECTS BY PROFESSIONAL PHASE

Phase and Year of MBBS Training	Subjects and new teaching elements	Duration	University examination
First professional MBBS	• Foundation course (1month) • Human Anatomy, Physiology& Biochemistry • Introduction of Community Medicine, Humanities • Early Clinical Exposure • Attitude. Ethics and Communication Module (AETCOM)	1+13 months	I Professional
Second professional MBBS	• Pathology, Microbiology, Pharmacology, Forensic Medicine And Toxicology • Introduction to clinical subjects including community Medicine • Clinical postings • AETCOM	12 months	II Professional
Third professional MBBS-part I	• General Medicine ,General Surgery, OBG, Paediatrics, Orthopaedics, Dermatology, Pyschiatry, Otorhinolaryngology, Ophthalmology, Community Medicine, Forensic Medicine and Toxicology, Respiratory Medicine, Radiodiagnosis & Radiotherapy, Anaesthesiology • Clinical Subjects /postings • AETCOM	12 months	III Professional-part I
Electives	• Electives ,skills and assessment	2 months	
Third professional MBBS-part II	• General Medicine ,Paediatrics, General Surgery, Orthopaedics, Obstetrics and Gynaecology, including Family welfare and allied specialties • Clinical Postings /subjects • AETCOM	13 months	III Professional-part II

FOUNDATION COURSE

Subjects/contents	Total Teaching hours
Orientation[1]	30
Skills Module[2]	35
Field visit to Community Health Centre	8
Professional Development including ethics	40
Sports and Extracurricular Activities	22
Enhancement of language/computer skills[3]	40
Total teaching hours	175

[1.] **Orientation course will be completed as single block in the first week and will contain elements outlined in 9.1. (**(vide Medical Council of India Notification on Graduate Medical Education (Amendment) Regulations 2019, published in the Gazette of India Part III, Section 4, Extraordinary issued on 4th November 2019**)**

[2.] **Skills modules will contain elements outlined in 9.1.**

[3.] **Based on perceived need of learners, one may choose language enhancement (English or local spoken or both) and computer skills. This should be provided longitudinally through the duration of the Foundation Course.**

Note:

- **Teaching of Foundation Course will be organized by pre-clinical departments**
- **The Foundation Course will have compulsory 75% attendance. This will be certified by the Dean of the college**

3. ATTENDANCE

Every candidate should have **attendance not less than 75% of the total classes conducted in theory which includes didactic lectures, early clinical exposure and self-directed learning and not less than 80% of the total classes conducted in practical which includes small group teaching, tutorials, integrated learning and practical sessions** in each calendar year calculated from the date of commencement of the term to the last working day as notified by the University in each of the subjects prescribed to be eligible to appear for the university examination. **75% attendance in Professional Development Programme (AETCOM Module) is required for**

eligibility to appear for final examination in each professional year (vide Medical Council of India Notification on Graduate Medical Education (Amendment) Regulations 2019, published in the Gazette of India Part III, Section 4, Extraordinary issued on 4th November 2019)

The Principal should notify at the College the attendance details at the end of each term without fail under intimation to this University.

A candidate lacking in the prescribed attendance and progress in any subject(s) in theory or practical should not be permitted to appear for the examination in that subject(s).

4. TEACHING HOURS

Subjects	Lecture hours	Small group teaching/tutorials/integrated teaching/practical (hours)	Self-directed learning (SDL)	Total (hours)
Human anatomy	220	415	40	675
Physiology	160	310	25	495
Biochemistry	80	150	20	250
Early clinical exposure*	90	-	0	90
Community Medicine	20	27	5	52
Attitude, Ethics & Communication module (AETCOM)**	-	26	8	34
Sports and extracurricular activities	-	-	-	60
Formative assessment and term examinations	-	-	-	80
Total	-	-	-	1736

*Early clinical exposure hours to be divided equally in all three subjects
**AETCOM module shall be a longitudinal programme

SCHEME OF EXAMINATION

5. **INTERNAL ASSESSMENT:**

General guidelines

- Regular periodic examinations shall be conducted throughout the course. There shall be **minimum three internal assessment examinations** in each preclinical subject. In addition, there shall be **one Internal Assessment in Community Medicine in Phase I MBBS**.
- The **third internal examination** should be conducted on the lines of the university examination.
- There shall be one short essay on ECE in each internal assessment in each subject.
- There should be **at least one short question from AETCOM** in each subject in any of the internal assessment.
- Questions on ECE and AETCOM in Internal Assessments must be assessed by the faculty of the respective pre-clinical departments (Anatomy/Physiology/Biochemistry)
- An **average of the marks scored in the three internal assessment examinations** will be considered as the final internal assessment marks.
- Learners **must secure not less than 40 % marks in theory and practical separately and not less than 50% marks of the total marks (combined in theory and practical)** assigned for internal assessment in a particular subject in order to be eligible for appearing at the final University examination of that subject.
- A candidate who has not secured requisite aggregate in the internal assessment may be subjected to remedial measures by the institution. If he/she successfully completes the remediation measures, he/she is eligible to appear for University Examination. Remedial measures shall be completed before submitting the internal assessment marks online to the university.
- **Internal assessment marks will reflect under separate head in the marks card of the university examination. The internal assessment marks (theory/practical) will not be added to the marks secured (theory/practical) in the university examination for consideration of pass criteria.**
- **The results of IA should be displayed on the notice board within a 1-2 week of the test.**
- Learners must have completed the required certifiable competencies for that phase of training and completed the logbook appropriate for that phase of training to be eligible for appearing at the final university examination of that subject.

6. UNIVERSITY EXAMINATION

Examination schedule

<table>
<tr><th>Jan</th><th>Feb</th><th>Mar</th><th>Apr</th><th>May</th><th>Jun</th><th>Jul</th><th>Aug</th><th>Sep</th><th>Oct</th><th>Nov</th><th>Dec</th></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>Foundation course</td><td colspan="4">I MBBS</td></tr>
<tr><td colspan="8">I MBBS</td><td>Phase I exam</td><td colspan="3">II MBBS</td></tr>
<tr><td colspan="8">II MBBS</td><td>Phase II exam</td><td colspan="3">III MBBS PART 1</td></tr>
<tr><td colspan="9">III MBBS PART 1</td><td>Phase III part 1 exam</td><td colspan="2">Electives and skills</td></tr>
<tr><td colspan="12">III MBBS PART 2</td></tr>
<tr><td colspan="2">Phase III part 2 exam</td><td></td><td colspan="9">Internship</td></tr>
<tr><td colspan="3">Internship</td><td colspan="9"></td></tr>
</table>

General guidelines

- University examinations are to be designed with a view to ascertain whether the candidate has acquired the necessary knowledge, minimal level of skills, ethical and professional values with clear concepts of the fundamentals which are necessary for him/her to function effectively and appropriately as a physician of first contact. Assessment shall be carried out on an objective basis to the extent possible.

- Nature of questions will include different types such as structured essays (Long Answer Questions - LAQ), Short Essays and Short Answers Questions (SAQ). Marks for each part should be indicated separately.

- The learner **must secure at least 40% marks in each of the two papers with minimum 50% of marks in aggregate (both papers together) to pass.**

- Practical/clinical examinations will be conducted in the laboratories. The objective will be to assess proficiency and skills to conduct experiments, clinical examination, interpret data and form logical conclusion, wherever applicable.

- Viva/oral examination should assess candidate's skill in analysis and interpretation of common investigative data, X-rays, identification of specimens, ECG, etc. [wherever applicable] and attitudinal, ethical and professional values.

- **There shall be one main examination in an academic year and a supplementary to be held not later than 90 days after the declaration of the results of the phase I university examination.**

- **A learner shall not be entitled to graduate after 10 years of his/her joining of the first part of the MBBS course.**

Phase 1 university examination

- The first Professional examination shall be held at the end of first Professional training (1+12 months), in the subjects of Human Anatomy, Physiology and Biochemistry.
- A maximum number of four permissible attempts would be available to clear the first Professional University examination, whereby the first Professional course will have to be cleared within 4 years of admission to the said course. Partial attendance at any University examination shall be counted as an availed attempt.

Phase I

Table: Examination components, Subjects and Distribution of Marks

THEORY	ANATOMY	PHYSIOLOGY	BIOCHEMISTRY
Written Paper			
No. of Papers & Maximum Marks for each paper.	**2×100=200**	**2×100=200**	**2×100=200**
Total theory	**200**	**200**	**200**
PRACTICAL			
1. Practical exam	**80**	**80**	**80**
2. Viva-voce	**20**	**20**	**20**
Total practical	**100**	**100**	**100**
Internal assessment*			
Internal Assessment (Theory)	**40**	**40**	**40**
Internal assessment (Practical)	**40**	**40**	**40**

*** Internal assessment marks will reflect under separate head in the marks card of the university examination.**

Table: Type, number of questions and distribution of marks for written paper

TYPES OF QUESTION	NUMBER OF QUESTIONS	MARKS FOR EACH QUESTION
Multiple Choice Questions	**20**	1
Long essay	**2**	10
Short essay	**6**	5
Short answers	**10**	3

7. SUBMISSION OF LABORATORY RECORD

a. At the time of Practical Examination each candidate shall submit to the Examiners his/her laboratory record duly certified by the Head of the Department as a bonafide record of the work done by the candidate.

8. ELIGIBILITY FOR EXAMINATION

The following criteria to be met by the students to be eligible for the university exams:

a. Shall have undergone satisfactorily the approved course of study in the subject/subjects for the prescribed duration.
b. Shall have attended not less than 75% of the total classes conducted in theory and not less than 80% of the total classes conducted in practical separately to become eligible to appear for examination in that subject/subjects.
c. Minimum of 40% marks to be obtained **separately** in theory and practical to appear for University exam. At least 50% marks of the total marks **combined** in theory and practical assigned for internal assessment is to be obtained in a particular subject. (average of 3 internal assessments theory and practical separately)
d. Learners must have completed the required certifiable competencies for that phase of training and completed the logbook appropriate for that phase of training to be eligible for appearing at the final university examination of that subject.

9. CRITERIA FOR PASS

For declaration of pass in any subject in the University examination, a candidate shall pass both in Theory and Practical examination components separately as stipulated below:

- The Theory component consists of marks obtained in University Written papers only. For a pass in theory, a candidate must secure at least 40% marks in each of the two papers with minimum 50% of marks in aggregate (both papers together).
- For a pass in practical examination, a candidate shall secure not less than 50% marks in aggregate, i.e., marks obtained in university practical examination and viva voce added together.
- **Internal assessment marks will reflect as a separate head of passing at the university examination.**
- A candidate not securing 50% marks in aggregate in Theory or Practical examination + viva in a subject shall be declared to have failed in that subject and is required to appear for both Theory and Practical again in the subsequent examination in that subject.

10. DECLARATION OF CLASS

a. A candidate having appeared in all the subjects in the same examination and passed that examination in the first attempt and secures 75% of marks or more of **grand total marks (university examination + internal assessment)** prescribed will be declared to have passed the examination with distinction.

b. A candidate having appeared in all the subjects in the same examination and passed that examination in the first attempt and secures 65% of marks or more but less than 75% of **grand total marks (university examination + internal assessment)** prescribed will be declared to have passed the examination in First Class.

c. A candidate having appeared in all the subjects in the same examination and passed that examination in the first attempt and secures 50% of marks or more but less than 65% of **grand total marks (university examination + internal assessment)** prescribed will be declared to have passed the examination in Pass Class.

d. A candidate passing a university examination in more than one attempt shall be placed in Pass class irrespective of the percentage of marks secured by him/her in the examination.

Note: Please note fraction of marks will not be rounded off for clauses (a), (b) and (c)

SECTION III
COURSE CONTENTS

ANATOMY

PREAMBLE

The journey into the fascinating field of medicine begins by trying to understand the **structure** of the **human body.** The subject of **anatomy** deals with the study of the human body from the cellular to the macroscopic level. The marvellous and complex design of the human body will be studied in the context of the competencies that a basic medical doctor needs to achieve by the end of the MBBS course. Thus, the emphasis will be on **clinical, functional** and **applied anatomy** that can be utilized by a clinician, rather than on factual details that may not have relevance to clinical practice.

This draft syllabus has been created from the list of **competencies** mentioned in the **Competency Based Curriculum (CBC)** developed by the **Medical Council of India** for the First MBBS Batch of 2019-20. The subject has been divided into the following broad areas:

A. General anatomy
B. General histology
C. Genetics
D. General embryology
E. Upper limb
F. Thorax
G. Abdomen
H. Pelvis
I. Lower limb
J. Head and neck
K. Neuroanatomy
L. Ethics in anatomy

In each of these broad areas, topics have been specified. The content to be covered under each topic has been mentioned as bulleted points. For each topic, competency numbers have been mentioned as per the competency list mentioned above. The content that is related to non-core competencies **(these competencies need not be assessed in the summative examination) have been marked by an asterisk (*).**

Goals and departmental objectives for the undergraduate (MBBS) Curriculum in Anatomy

Goal

The broad goal of the anatomy curriculum is to provide a comprehensive, scientific knowledge of the structure and development of the human body in order to understand the anatomical basis of disease presentations and patient management.

Objectives

A. Knowledge

At the end of the course student should be able to:

a. Explain the gross structure, normal disposition and integrated functions of organ systems in order to understand the anatomical basis of common disease presentations and clinical procedures.
b. Describe the microscopic structure of various organs and correlate their structure with functions, in order to understand their altered state in various disease processes.
c. Describe the basic principles behind the sequential development of organs systems as a prerequisite to explaining the developmental basis of common variations and congenital anomalies.
d. Describe the normal structure and functions of chromosomes and genes so as to understand the genetic basis of common genetic abnormalities.

B. **Skills**

At the end of the course the student should be able to:

a. Demonstrate the surface marking of clinically important structures in the cadaver and correlate it with living anatomy.
b. Locate and identify tissues and cells under the light microscope.
c. Identify important structures visualized by imaging techniques, specifically radiographs, computerized tomography (CT) scans, MRI and ultrasonography.
d. Demonstrate the various movements at the important joints in the human body.
e. Accurately palpate the pulsations of arteries at the most appropriate sites.

C. Attitude and communication skills

At the end of the course the student should be able to:

a. Show due respect in handling human body parts and cadavers during dissection.
b. Communicate effectively with peers and teachers in small group teaching-learning activities.
c. Demonstrate the ability to work effectively with peers in a team.
d. Demonstrate professional attributes of punctuality, accountability and respect for teachers and peers.
e. Appreciate the issues of equity and social accountability while undergoing early clinical exposure.

CURRICULUM

A. GENERAL ANATOMY

Topic: Anatomical terminology (AN1.1)

- Normal anatomical position
- Planes of the body
- Terms used for relations and comparison
- Terms used for movements of the body

Topic: General features of bones and Joints (AN1.2, AN2.1 to AN2.6)

- Composition of bone and bone marrow
- Parts, blood and nerve supply of a long bone
- Laws of ossification*
- Special features of a sesamoid bone*
- Types of cartilage with its structure and distribution in body
- Joints with subtypes and examples
- Nerve supply of joints and Hilton's law

Topic: General features of Muscle (AN3.1 to AN3.3)

- Classification of muscle tissue according to structure and action
- Parts of skeletal muscle
- Differences between tendons and aponeuroses with examples
- Shunt and spurt muscles*

Topic: General features of skin and fascia (AN4.1 to AN4.5)

- Types of skin and dermatomes in body*
- Structure and function of skin
- Superficial fascia along with fat distribution in body
- Modifications of deep fascia with its functions
- Principles of skin incisions*

Topic: General features of the cardiovascular system (AN5.1 to AN5.8)

- Differences between blood vascular and lymphatic system
- Differences between pulmonary and systemic circulation
- General differences between arteries and veins
- Functional differences between elastic, muscular arteries and arterioles
- Concept of portal system with examples
- Concept of anastomoses and collateral circulation with significance of end-arteries
- Functions of meta-arterioles, precapillary sphincters, arterio-venous anastomoses*
- Definition of thrombosis, infarction and aneurysm*

Topic: General Features of lymphatic system (AN6.1 to AN6.3)

- Components and functions of the lymphatic system*

- Structure of lymph capillaries and mechanism of lymph circulation*
- Concept of lymphoedema and spread of tumors via lymphatics and venous system*

Topic: Introduction to the nervous system (AN7.1 to AN7.8)

- General plan of nervous system with components of central, peripheral and autonomic nervous systems
- Components of nervous tissue and their functions
- Parts of a neuron
- Classification of neurons based on structure and function
- Structure of a typical spinal nerve
- Principles of sensory and motor innervation of muscles*
- Concept of loss of innervation of a muscle with its applied anatomy
- Type of synapses*
- Differences between sympathetic and spinal ganglia*

B. GENERAL HISTOLOGY

Topic: Epithelium (AN65.1 to AN65.2)

- Identification of epithelium under the microscope
- Correlation of structure and function of epithelia
- Ultrastructure of epithelium*

Topic: Connective tissue histology (AN66.1 to AN66.2)

- Types of connective tissue with functional correlation
- Ultrastructure of connective tissue*

Topic: Muscle histology (AN67.1 to AN67.3)

- Classification of muscle
- Structure-function correlation of muscle
- Ultrastructure of muscle tissue*

Topic: Nervous tissue histology (AN68.1 to AN68.3)

- Description and identification of unipolar and multipolar neurons, ganglia, peripheral nerve
- Structure-function correlation of neuron
- Ultrastructure of nervous tissue*

Topic: Blood vessels – histology (AN69.1 to AN69.3)

- Identification of elastic and muscular blood vessels, capillaries under the microscope
- Types and structure-function correlation of blood vessels
- Ultrastructure of blood vessels*

Topic: Glands and Lymphoid tissue (AN70.1 to AN70.2)

- Identification of exocrine glands under the microscope

- Differentiation between serous, mucous and mixed acini
- Identification of lymphoid tissue under the microscope
- Microanatomy of lymph node, spleen, thymus, tonsil and correlation of structure with function

Topic: Bone and Cartilage (AN71.1 to AN71.2)

- Identification of bone under the microscope
- Types and structure-function correlation of bone
- Identification of cartilage under the microscope
- Types and structure function correlation of cartilage

Topic: Integumentary System (AN72.1)

- Identification of skin and its appendages under the microscope
- Correlation of structure and function

C. GENETICS

Topic: Chromosomes (AN73.1 to AN73.3)

- Structure of chromosomes with classification
- Technique of karyotyping with its applications
- Lyon's hypothesis

Topic: Patterns of Inheritance (AN74.1 to AN74.4)

- Various modes of inheritance with examples
- Pedigree charts for the various types of inheritance
- Examples of diseases of each mode of inheritance
- Multifactorial inheritance with examples
- Genetic basis and clinical features of achondroplasia, cystic fibrosis, vitamin D resistant rickets, haemophilia, Duchenne's muscular dystrophy and sickle cell anaemia*

Topic: Principle of Genetics, Chromosomal Aberrations and Clinical Genetics (AN75.1 to AN75.5)

- Structural and numerical chromosomal aberrations
- Mosaics and chimeras with examples
- Genetic basis and clinical features of Prader Willi syndrome, Edward syndrome and Patau syndrome*
- Genetic basis of variation: polymorphism and mutation
- Principles of genetic counselling

D. GENERAL EMBRYOLOGY

Topic: Introduction to embryology (AN76.1 TO AN76.2)

- Stages of human life

- Terms - phylogeny, ontogeny, trimester, viability

Topic: Gametogenesis and fertilization (AN77.1 to AN77.6)

- Uterine changes occurring during the menstrual cycle
- Synchrony between the ovarian and menstrual cycles
- Spermatogenesis and oogenesis
- Stages and consequences of fertilization
- Anatomical principles underlying contraception
- Teratogenic influences; fertility and sterility, surrogate motherhood, social significance of "sex-ratio"*

Topic: Second week of development (AN78.1 to AN78.5)

- Cleavage and formation of blastocyst
- Development of trophoblast
- Process of implantation and common abnormal sites of implantation
- Formation of extra-embryonic mesoderm and coelom, bilaminar disc and prochordal plate
- Abortion, decidual reaction, pregnancy tests

Topic: 3rd to 8th week of development (AN79.1 to AN79.6)

- Formation and fate of the primitive streak
- Formation and fate of notochord
- Process of neurulation
- Development of somites and intra-embryonic coelom
- Embryological basis of congenital malformations, nucleus pulposus, sacrococcygeal teratomas, neural tube defects
- Diagnosis of pregnancy in first trimester*
- Role of teratogens, alpha-fetoprotein*

Topic: Fetal membranes (AN80.1 to AN80.7)

- Formation, functions and fate of chorion, amnion, yolk sac, allantois and decidua
- Formation and structure of umbilical cord
- Formation of placenta, its physiological functions, foeto-maternal circulation and placental barrier
- Embryological basis of twinning in monozygotic and dizygotic twins
- Role of placental hormones in uterine growth and parturition
- Embryological basis of estimation of fetal age*
- Types of umbilical cord attachments*

Topic: Prenatal Diagnosis (AN81.1 to AN81.3)

- Methods of prenatal diagnosis
- Indications, process and disadvantages of amniocentesis
- Indications, process and disadvantages of chorion villus biopsy

E. UPPER LIMB

Topic: Features of individual bones (Upper Limb) (AN8.1 to AN8.6)

- Clavicle, scapula, humerus, radius, ulna - side determination, anatomical position and important features
- Joints formed by the given bone
- Peculiarities of clavicle
- Muscle group attachments on above bones
- Identification and naming of bones in articulated hand
- Parts of metacarpals and phalanges
- Peculiarities of pisiform
- Scaphoid fracture and basis of avascular necrosis*

Topic: Pectoral region (AN9.1 to AN 9.3)

- Pectoralis major, pectoralis minor - attachment, nerve supply and action
- Breast - location, extent, deep relations, structure, age changes, blood supply, lymphatic drainage, microanatomy and applied anatomy
- Development of breast*

Topic: Axilla, Shoulder and Scapular region (AN 10.1 to AN10.13)

- Axilla - boundaries and contents
- Axillary artery and tributaries of vein - origin, extent, course, parts, relations and branches
- Brachial plexus - formation, branches, relations, area of supply of branches, course and relations of terminal branches
- Axillary lymph nodes - anatomical groups and areas of drainage
- Variations in formation of brachial plexus
- Erb's palsy and Klumpke's paralysis - anatomical basis and clinical features*
- Enlarged axillary lymph nodes – anatomical basis*
- Latissmus dorsi and trapezius- location, attachment, nerve supply and actions
- Arterial anastomosis around the scapula*
- Boundaries of triangle of auscultation*
- Deltoid and rotator cuff muscles
- Serratus anterior - attachment and actions
- Shoulder joint - type, articular surfaces, capsule, synovial membrane, ligaments, relations, movements, muscles involved, blood supply, nerve supply and applied anatomy
- Anatomical basis of injury to axillary nerve during intramuscular injections*

Topic: Arm and Cubital fossa (AN11.1 to AN11.6)

- Muscle groups of upper arm
- Biceps and triceps brachii
- Important nerves and vessels in arm - origin, course, relations, branches (or tributaries), termination
- Venepuncture of cubital veins - anatomical basis

- Saturday night paralysis - anatomical basis
- Cubital fossa - boundaries and contents
- Anastomosis around elbow joint*

Topic: Forearm and hand (AN12.1 to AN12.15)

- Ventral forearm - muscle groups with attachments, nerve supply and actions
- Nerves and vessels of forearm - origin, course, relations, branches (or tributaries), termination
- Flexor retinaculum - identification and attachments
- Anatomical basis of carpal tunnel syndrome
- Small muscles of hand
- Movements of thumb and muscles involved
- Blood vessels and nerves in hand - course and branches
- Anatomical basis of claw hand
- Fibrous flexor sheaths, ulnar bursa, radial bursa and digital synovial sheaths
- Infection of fascial spaces of palm*
- Dorsal forearm - muscle groups, attachments, nerve supply and actions
- Origin, course, relations, branches (or tributaries), termination of important nerves and vessels of back of forearm
- Wrist drop - anatomical basis
- Compartments deep to extensor retinaculum
- Extensor expansion – identification and formation

Topic: General Features, joints, radiographs and surface marking (AN13.1 to AN13.8)

- Fascia of upper limb and compartments
- Veins of upper limb
- Lymphatic drainage of upper limb
- Dermatomes of upper limb*
- Elbow joint, proximal and distal radio-ulnar joints, wrist joint and first carpometacarpal joint - type, articular surfaces, capsule, synovial membrane, ligaments, relations, movements, blood and nerve supply
- Sternoclavicular joint, acromioclavicular joint, carpometacarpal joints and metacarpophalangeal joints*
- Bones and joints of upper limb seen in anteroposterior and lateral view radiographs of shoulder region, arm, elbow, forearm and hand
- Bony landmarks of upper limb - jugular notch, sternal angle, acromial angle, spine of the scapula, vertebral level of the medial end, inferior angle of the scapula
- Surface projection of cephalic and basilic vein
- Palpation of brachial artery and radial artery
- Testing of muscles: trapezius, pectoralis major, serratus anterior, latissimus dorsi, deltoid, biceps brachii, brachioradialis
- Development of upper limb*

F. THORAX

Topic: Thoracic cage (AN21.1 to AN21.11)

- Salient features of sternum, typical rib, 1st rib and typical thoracic vertebra
- Features of 2nd, 11th and 12th ribs*
- Features of 1st, 11th and 12th thoracic vertebrae*
- Boundaries of thoracic inlet, cavity and outlet
- Extent, attachments, direction of fibres, nerve supply and actions of intercostal muscles
- Course, relations and branches of a typical intercostal nerve
- Origin, course and branches / tributaries of anterior, posterior intercostal vessels and internal thoracic vessels
- Origin, course, relations and branches of atypical intercostal nerve, superior intercostal artery and subcostal artery*
- Type, articular surfaces and movements of manubriosternal, costovertebral, costotransverse and xiphisternal joints
- Mechanics and types of respiration
- Costochondral and interchondral joints*
- Boundaries and contents of the superior, anterior, middle and posterior mediastinum

Topic: Heart and Pericardium (AN22.1 to AN22.7)

- Pericardium - subdivisions, sinuses, blood supply and nerve supply
- External and internal features of each chamber of the heart
- Origin, course and branches of coronary arteries
- Anatomical basis of ischaemic heart disease
- Formation, course, tributaries and termination of coronary sinus
- Fibrous skeleton of heart
- Position and arterial supply of the conducting system of heart

Topic: Mediastinum (AN23.1 to AN23.7)

- Oesophagus - external appearance, relations, blood supply, nerve supply, lymphatic drainage and applied anatomy
- Thoracic duct - extent, relations, tributaries and applied anatomy
- Origin, course, relations, tributaries and termination of superior venacava, azygos, hemiazygos and accessory hemiazygos veins
- Branches and relations of arch of aorta and descending thoracic aorta
- Location and extent of thoracic sympathetic chain
- Description of splanchnic nerves*
- Right lymphatic duct – extent, relations and applied anatomy

Topic: Lungs and Trachea (AN24.1 to AN24.6, AN25.1 to AN25.6)

- Pleura – extent, recesses with their applied anatomy, blood supply, lymphatic drainage and nerve supply
- Lungs – side determination, external features including root and clinical correlates

- Description of bronchopulmonary segments
- Phrenic nerve - formation and distribution
- Blood supply, lymphatic drainage and nerve supply of lungs
- Extent, length, relations, blood supply, lymphatic drainage and nerve supply of trachea*

Topic: Radiological anatomy of thorax (AN25.7 and AN25.8)

- Identification of structures seen on a plain x-ray chest (PA view)
- Identification of and description in brief of a barium swallow*

Topic: Surface marking of thorax (AN25.9)

- Demonstrate surface marking of lines of pleural reflection, lung borders and fissures, trachea, heart borders, apex beat and surface projection of valves of heart

Topic: Histology of thorax (AN25.1)

- Identification, drawing and labelling of a slide of trachea and lung

Topic: Embryology of thorax (AN25.2 to AN25.6)

- Development of pleura, lung and heart
- Fetal circulation and changes occurring at birth
- Embryological basis of: 1) atrial septal defect, 2) ventricular septal defect, 3) Fallot's tetralogy and 4) tracheo-oesophageal fistula
- Developmental basis of common cardiac congenital anomalies, transposition of great vessels, dextrocardia, patent ductus arteriosus and coarctation of aorta
- Development of aortic arch arteries, superior vena cava, inferior vena cava and coronary sinus*

G. ABDOMEN AND PELVIS

Topic: Anterior abdominal wall (AN44.1 to AN44.7)

- Planes (transpyloric, transtubercular, subcostal, lateral vertical), regions and quadrants of abdomen
- Anterior abdominal wall – fascia, blood vessels and nerves
- Rectus sheath – formation, contents, linea alba and linea semilunaris
- Inguinal canal - extent, boundaries, contents of inguinal canal, Hesselbach's triangle
- Anatomical basis of inguinal hernia
- Attachments of muscles of anterior abdominal wall
- Common abdominal incisions*
- Umbilicus - position, dermatome and applied aspects*

Topic: Posterior abdominal wall (AN45.1 to AN45.3)

- Thoracolumbar fascia
- Lumbar plexus – root value, formation and branches
- Other nerve plexuses of posterior abdominal wall*

- Major subgroups of back muscles, nerve supply and action*

Topic: Male external genitalia (AN46.1 to AN46.5)

- Testes - coverings, internal structure, side determination, blood supply, nerve supply and lymphatic drainage
- Descent of testis with its applied anatomy
- Parts of epididymis
- Penis - parts, components, blood supply and lymphatic drainage
- Anatomical basis of varicocoele*
- Anatomical basis of phimosis and circumcision*
- Spermatic cord and its contents

Topic: Abdominal cavity (AN47.1 to AN47.14)

- Greater and lesser sac - boundaries and recesses
- Naming and identification of peritoneal folds and pouches
- Anatomical basis of ascites, peritonitis and subphrenic abscess*
- Spleen - anatomical position, external features, peritoneal and visceral relations, blood supply, nerve supply, lymphatic drainage and applied aspects
- Anatomical basis of splenic notch, accessory spleens and Kehr's sign*
- Coeliac trunk- origin, course, important relations and branches
- Abdominal part of oesophagus - anatomical position, blood supply, nerve supply, lymphatic drainage and applied aspects
- Stomach - anatomical position, external features, peritoneal and visceral relations, blood supply, nerve supply, lymphatic drainage and applied anatomy
- Anatomical basis of lymphatic spread in carcinoma stomach and different types of vagotomy*
- Mesentery – extent, borders, contents, relations and applied aspects
- Small Intestine - parts, macroscopic difference between jejunum and ileum, nerve supply and lymphatic drainage
- Superior mesenteric artery - origin, course, termination, important relations and branches
- Large intestine - features, extent, peritoneal and other relations
- Caecum - anatomical position, external and internal features, important peritoneal and other relations, blood supply, nerve supply, lymphatic drainage and applied aspects
- Vermiform appendix - anatomical position, external and internal features, important peritoneal and other relations, blood supply, nerve supply, lymphatic drainage and applied aspects
- Inferior mesenteric artery - origin, course, important relations and branches
- Duodenum - anatomical position, external and internal features, important peritoneal and other relations, blood supply, nerve supply, lymphatic drainage and applied aspects
- Pancreas - anatomical position, external and internal features, important peritoneal and other relations, blood supply, nerve supply, lymphatic drainage and applied aspects

- Liver and extrahepatic biliary apparatus - anatomical position, external features, important peritoneal relations and visceral relations, blood supply, nerve supply, lymphatic drainage and applied aspects
- Clinical importance of Calot's triangle*
- Anatomical basis of site of needle puncture in liver biopsy, referred pain in cholecystitis and obstructive jaundice*
- Portal vein – formation, course, relations, tributaries and sites of porta-systemic anastomoses
- Anatomical basis of haematemesis and caput medusae in portal hypertension
- Kidneys - anatomical position, side determination, coverings, external features, important visceral relations, blood supply, nerve supply, lymphatic drainage and applied anatomy
- Anatomical basis of radiating pain of kidney to groin*
- Ureter – extent, parts, course, relations, constrictions, blood supply, nerve supply, lymphatic drainage and applied aspects
- Suprarenal gland - anatomical position, coverings, external features, important visceral and other relations, blood supply, nerve supply, lymphatic drainage and applied aspects
- Thoraco-abdominal diaphragm – attachments, major and minor openings, nerve supply and actions
- Thoraco-abdominal diaphragm - abnormal openings and diaphragmatic hernia*
- Abdominal aorta - origin, course, important relations and branches
- Inferior vena cava - formation, course, relations and tributaries

Topic: Pelvic wall and viscera (AN48.1 to AN48.8)

- Muscles of pelvic diaphragm
- Position, features, important peritoneal and other relations, blood supply, nerve supply, lymphatic drainage and clinical aspects of important male and female pelvic viscera
- Origin, course, important relations and branches of internal iliac artery
- Branches of sacral plexus
- Anatomical basis of suprapubic cystostomy, urinary obstruction in benign prostatic hypertrophy, retroverted uterus, prolapse uterus, internal and external haemorrhoids, anal fistula, vasectomy, tubal pregnancy and tubal ligation*
- Neurological basis of automatic bladder*
- Lobes involved in benign prostatic hypertrophy and prostate cancer*
- Structures palpable during vaginal and rectal examination*

Topic: Perineum (AN49.1 to AN49.5)

- Boundaries and contents of superficial and deep perineal pouch
- Perineal body - identification and description
- Perineal membrane in male and female
- Ischiorectal fossa - boundaries, contents and applied anatomy
- Anatomical basis of perineal tear, episiotomy, perianal abscess and anal fissure*

Topic: Vertebral column (AN50.1 to AN50.4)

- Curvatures of the vertebral column
- Type, articular ends, ligaments and movements of intervertebral joints, sacroiliac joints and pubic symphysis
- Site, direction of the needle and structures pierced during lumbar puncture
- Anatomical basis of scoliosis, lordosis, prolapsed disc, spondylolisthesis and spina bifida*

Topic: Sectional Anatomy of Abdomen and Pelvis (AN51.1, AN51.2)

- Cross-sections at T8, T10 and L1 (transpyloric plane) levels
- Midsagittal section of male and female pelvis

Topic: Histology and embryology (AN52.1 to AN52.8)

- Microstructure of oesophagus, cardiooesophageal junction*, fundus of stomach, pylorus of stomach
- Microstructure of duodenum, jejunum, ileum
- Microstructure of colon, appendix
- Microstructure of liver, gallbladder, pancreas
- Microstructure of kidney, ureter, suprarenal gland
- Microstructure of testis, epididymis, vas deferens, penis, prostate gland
- Microstructure of ovary, uterus, uterine tube, cervix*, placenta, umbilical cord, corpus luteum*
- Development of anterior abdominal wall*
- Development and congenital anomalies of diaphragm
- Development and congenital anomalies of foregut
- Development and congenital anomalies of midgut
- Development and congenital anomalies of hindgut
- Development of urinary system
- Development of male reproductive system
- Development of female reproductive system

Topic: Osteology (AN53.1 to AN53.4)

- Lumbar vertebrae - anatomical position, salient features, articulations and attachments of muscle groups
- Sacrum and coccyx - anatomical position, salient features, articulations and attachments of muscle groups
- Bony pelvis - anatomical position, boundaries of pelvic inlet, pelvic cavity and pelvic outlet,
- True and false pelvis with sex differences
- Clinical importance - sacralization of lumbar vertebra, lumbarization of 1st sacral vertebra, types of bony pelvis*

Topic: Radiological anatomy (AN 54.1 to AN54.3)

- Features of plain X ray abdomen
- Contrast X ray - barium swallow, barium meal, barium enema
- Cholecystography
- Intravenous pyelography
- Hysterosalpingography
- ERCP*
- CT abdomen*
- MRI abdomen and pelvis*
- Abdominal arteriography*

Topic: Surface marking (AN 55.1 and AN55.2)

- Regions and planes of abdomen
- Superficial inguinal ring
- Deep inguinal ring
- McBurney's point
- Renal angle
- Murphy's point
- Surface projections of - stomach, liver, fundus of gall bladder, spleen, duodenum, pancreas, ileocaecal junction, kidneys and root of mesentery, abdominal aorta and inferior vena cava

H. LOWER LIMB

Topic: Features of individual bones (lower limb) (AN 14.1 – 14.4)

- Hip bone, femur, patella, tibia, fibula - side determination, anatomical position and important features
- Joints formed by the given bone
- Muscle group attachments on above bones
- Importance of ossification of lower end of femur and upper end of tibia
- Identification and naming of bones in articulated foot with individual muscle attachments*

Topic: Front & Medial Side of Thigh (AN15.1 to AN15.6)

- Origin, course, relations, branches (or tributaries), termination of important nerves and vessels of anterior thigh
- Major muscles with their attachment, nerve supply and actions
- Femoral triangle - boundaries and contents
- Anatomical basis of psoas abscess & femoral hernia*
- Adductor canal – boundaries and contents

Topic: Gluteal region & Back of thigh (AN16.1 to AN16.6)

- Origin, course, relations, branches (or tributaries), termination of important nerves and vessels of gluteal region
- Major muscles with their attachment, nerve supply and actions
- Anatomical basis of sciatic nerve injury during gluteal intramuscular injections
- Anatomical basis of Trendelenburg sign
- Hamstring group of muscles with their attachment, nerve supply and actions
- Origin, course, relations, branches (or tributaries), termination of important nerves and vessels on the back of thigh
- Popliteal fossa - boundaries, roof, floor, contents and relations

Topic: Hip joint (AN17.1 to AN17.3)

- Type, articular surfaces, capsule, synovial membrane, ligaments, relations, movements and muscles involved, blood and nerve supply, bursae around the hip joint
- Anatomical basis of complications of fracture neck of femur*
- Dislocation of hip joint and surgical hip replacement*

Topic: Knee joint, Antero-lateral compartment of leg & Dorsum of foot (AN18.1 to AN18.7)

- Major muscles of anterolateral compartment of leg with their attachment, nerve supply and actions
- Origin, course, relations, branches (or tributaries), termination of important nerves and vessels of anterolateral compartment of leg
- Anatomical basis of foot drop
- Type, articular surfaces, capsule, synovial membrane, ligaments, relations, movements and muscles involved, blood and nerve supply, bursae around the knee joint
- Anatomical basis of locking and unlocking of the knee joint
- Anatomical basis of knee joint injuries*
- Anatomical basis of osteoarthritis*

Topic: Back of leg & Sole (AN19.1 to AN19.7)

- Major muscles of back of leg with their attachment, nerve supply and actions
- Origin, course, relations, branches (or tributaries), termination of important nerves and vessels of back of leg
- Concept of "peripheral heart"
- Sole - layers, muscles, vessels and nerves
- Anatomical basis of rupture of calcaneal tendon*
- Factors maintaining arches of the foot and their importance
- Anatomical basis of flat foot and club foot*
- Anatomical basis of metatarsalgia and plantar fasciitis*

Topic: General features, joints, radiographs & surface marking (AN 20.1 – 20.10)

- Tibiofibular and ankle joints - type, articular surfaces, capsule, synovial membrane, ligaments, relations, movements and muscles involved, blood and nerve supply

- Subtalar and transverse tarsal joints*
- Fascia lata, venous drainage, lymphatic drainage, retinacula and dermatomes of lower limb
- Anatomical basis of enlarged inguinal lymph nodes*
- Anatomical basis of varicose veins and deep vein thrombosis
- Bones and joints of lower limb seen in anteroposterior and lateral view radiographs of various regions of lower limb
- Important bony landmarks of lower limb - vertebral level of highest point on iliac crest, anterior and posterior superior iliac spines, iliac tuberosity, pubic tubercle, ischial tuberosity, adductor tubercle, tibial tuberosity, head of fibula, medial and lateral malleoli, condyles of femur and tibia, sustentaculum tali, tuberosity of fifth metatarsal and tuberosity of the navicular
- Palpation of arterial pulses in a simulated environment - femoral, popliteal, anterior tibial, posterior tibial and dorsalis pedis
- Surface marking - mid inguinal point, saphenous opening, great and small saphenous veins, femoral nerve, sciatic, tibial, common peroneal and deep peroneal nerve
- Basic concept of development of lower limb*

I. HEAD AND NECK

Topic: Skull osteology (AN26.1 to AN26.7)

- Anatomical position of skull
- Identification and naming of individual skull bones
- Features of norma frontalis, verticalis, occipitalis, lateralis and basalis
- Cranial cavity - subdivisions, foramina and structures passing through them
- Morphological features of mandible
- Features of typical and atypical cervical vertebrae (atlas and axis)
- Concept of membranous ossification*
- Features of the 7th cervical vertebra*

Topic: Scalp (AN27.1 and AN27.2)

- Scalp - layers, blood supply, nerve supply and surgical importance
- Emissary veins and their role in spread of infection from extracranial route to intracranial venous sinuses

Topic: Face and parotid region (AN28.1 to AN28.10)

- Muscles of facial expression and their nerve supply
- Sensory innervation of face
- Origin / formation, course, branches / tributaries of facial vessels
- Branches of facial nerve with distribution
- Cervical lymph nodes and lymphatic drainage of head, face and neck
- Superficial muscles of face, their nerve supply and actions

- Anatomical basis of facial nerve palsy
- Surgical importance of deep facial vein
- Parotid gland - parts, borders, surfaces, contents, relations, nerve supply, course of its duct and surgical importance
- Anatomical basis of Frey's syndrome*

Topic: Posterior triangle of neck (AN29.1 to AN29.4)

- Sternocleidomastoid - attachments, nerve supply, relations and actions
- Anatomical basis of Erb's and Klumpke's palsy
- Anatomical basis of wry neck*
- Attachments of inferior belly of omohyoid, scalenus anterior, scalenus medius and levator scapulae*

Topic: Cranial cavity (AN30.1 to AN30.5)

- Cranial fossae and related structures
- Major foramina with structures passing through them
- Identification and description of dural folds and dural venous sinuses
- Clinical importance of dural venous sinuses
- Effect of pituitary tumours on visual pathway*

Topic: Orbit (AN31.1 to AN31.5)

- Extraocular muscles – demonstration and description
- Nerves and vessels in the orbit - demonstration and description
- Anatomical basis of Horner's syndrome*
- Components of lacrimal apparatus
- Anatomical basis of oculomotor, trochlear and abducent nerve palsies along with strabismus

Topic: Anterior triangle of neck (AN32.1 and AN32.2)

- Boundaries and subdivisions of anterior triangle
- Boundaries and contents of muscular, carotid, digastric and submental triangles

Topic: Temporal and infratemporal region (AN33.1 to AN33.5)

- Temporal and infratemporal fossae - extent, boundaries and contents
- Muscles of mastication - attachments, direction of fibres, nerve supply and actions
- Temporomandibular joint - articulating surface, type and movements
- Clinical significance of pterygoid venous plexus
- Features of dislocation of temporomandibular joint*

Topic: Submandibular region (AN34.1 and AN34.2)

- Submandibular salivary gland - morphology, relations and nerve supply including submandibular ganglion
- Anatomical basis of formation of submandibular stones*

Topic: Deep structures in the neck (AN35.1 to AN35.10)

- Deep cervical fascia - parts, extent, attachments and modifications
- Thyroid gland - location, parts, borders, surfaces, relations and blood supply
- Subclavian artery - origin, parts, course and branches
- Internal jugular and brachiocephalic veins - formation, course, relations, tributaries and termination
- Cervical lymph nodes - extent, drainage and applied anatomy
- Cervical sympathetic chain - extent, formation, relation and branches
- IX, X, XI and XII cranial nerves - course and branches in the neck
- Anatomical basic of clinical features of thyroid swellings*
- Anatomical basis of clinical features of compression of subclavian artery and lower trunk of brachial plexus by cervical rib*
- Fascial spaces of neck*

Topic: Mouth, pharynx and palate (AN36.1 to AN36.5)

- Palatine tonsil - morphology, relations, blood supply and applied anatomy
- Composition of soft palate
- Waldeyer's lymphatic ring - components and functions
- Pyriform fossa - boundaries and clinical significance*
- Anatomical basis of tonsillitis, tonsillectomy, adenoids and peri-tonsillar abscess*
- Clinical significance of Killian's dehiscence*

Topic: Cavity of nose (AN37.1 to AN37.3)

- Nasal septum and lateral wall of nose – features, blood supply and nerve supply
- Paranasal sinuses - location and functional anatomy
- Anatomical basis of sinusitis and maxillary sinus tumours*

Topic: Larynx (AN38.1 to AN38.3)

- Larynx - morphology, structure of the walls, nerve supply, blood supply and actions of intrinsic and extrinsic muscles
- Anatomical aspects of laryngitis*
- Anatomical basis of recurrent laryngeal nerve injury*

Topic: Tongue (AN39.1 and AN39.2)

- Tongue - morphology, nerve supply, embryological basis of nerve supply, blood supply, lymphatic drainage and actions of extrinsic and intrinsic muscles
- Anatomical basis of hypoglossal nerve palsy*

Topic: Organs of hearing and equilibrium (AN40.1 to AN40.5)

- External ear - parts, blood supply and nerve supply
- Middle ear and auditory tube - boundaries, contents, relations and functional anatomy
- Features of internal ear*
- Anatomical basis of otitis externa and otitis media*

- Anatomical basis of myringotomy*

Topic: Eyeball (AN41.1 to AN41.3)

- Eyeball - parts and layers
- Anatomical aspects of cataract, glaucoma and central retinal artery occlusion*
- Intraocular muscles - position, nerve supply and actions*

Topic: Back region (AN42.1 to AN42.3)

- Contents of the vertebral canal
- Suboccipital triangle - boundaries and contents
- Semispinalis capitis and splenius capitis - position, direction of fibres, relations, nerve supply and actions*

Topic: Head and neck joints, histology, development, radiography and surface marking (AN43.1 to AN43.9)

- Atlantooccipital joint and atlantoaxial joint - movements with muscles producing them
- Microanatomy of pituitary gland, thyroid gland, parathyroid gland, tongue, salivary glands, tonsil, epiglottis, cornea and retina
- Microanatomy of olfactory epithelium, eyelid, lip, sclero-corneal junction, optic nerve, cochlea, organ of Corti and pineal gland*
- Development and developmental basis of congenital anomalies of face, palate, tongue, branchial apparatus, pituitary gland, thyroid gland and eye
- Testing of muscles of facial expression, extraocular muscles and muscles of mastication,
- Palpation of arteries - carotid, facial and superficial temporal arteries
- Location of - hyoid bone, thyroid cartilage and cricoid cartilage with their vertebral levels
- Surface marking - thyroid gland, parotid gland and duct, pterion, common carotid artery, internal jugular vein, subclavian vein, external jugular vein, facial artery in the face and accessory nerve
- Identify the anatomical structures in 1) Plain X-ray skull – AP and lateral view; 2) Plain X-ray cervical spine - AP and lateral view; 3) Plain X-ray of paranasal sinuses
- Carotid and vertebral angiograms - anatomical route and anatomical structures*

J. NEUROANATOMY

Topic: Meninges and CSF (AN56.1 and AN56.2)

- Meninges - layers with their extent and modifications
- Circulation of CSF with its applied anatomy

Topic: Spinal cord (AN57.1 to AN57.5)

- Spinal cord - external features, extent in child and adult with its clinical implications
- Transverse section of spinal cord at mid-cervical and mid-thoracic level

- Ascending and descending tracts at mid thoracic level of spinal cord
- Anatomical basis of syringomyelia*

Topic: Medulla oblongata (AN58.1 to AN58.4)

- Medulla oblongata - external features
- Transverse section of medulla oblongata at the level of 1) pyramidal decussation; 2) sensory decussation; 3) inferior olivary nucleus
- Cranial nerve nuclei in medulla oblongata with their functional components
- Anatomical basis and effects of medial and lateral medullary syndrome*

Topic: Pons (AN59.1 to AN59.3)

- Pons - external features
- Transverse section of pons at the upper and lower level
- Cranial nerve nuclei in pons with their functional components

Topic: Cerebellum (AN60.1 to AN60.3)

- Cerebellum - external and internal features
- Connections of cerebellar cortex and intracerebellar nuclei
- Anatomical basis of cerebellar dysfunction*

Topic: Midbrain (AN61.1 to AN61.3)

- Midbrain - external and internal features
- Internal features of midbrain at the level of superior and inferior colliculus
- Anatomical basis and effects of Benedikt's and Weber's syndrome*

Topic: Cranial nerve nuclei and cerebral hemispheres (AN62.1 to AN62.6)

- Cranial nerve nuclei with their functional components
- Cerebral hemispheres – poles, surfaces, sulci, gyri and functional areas
- White matter of cerebrum
- Basal ganglia and limbic lobe - parts and major connections
- Dorsal thalamus, hypothalamus, epithalamus, metathalamus and subthalamus - boundaries, parts, gross relations, major nuclei and connections
- Circle of Willis - formation, branches and major areas of distribution

Topic: Ventricular system (AN63.1 and AN63.2)

- Lateral, 3rd and 4th and ventricles - parts, boundaries and features
- Anatomical basis of congenital hydrocephalus*

Topic: Histology and Embryology (AN64.1 to AN64.3)

- Microanatomical features of spinal cord, cerebellum and cerebrum
- Development of neural tube, spinal cord, medulla oblongata, pons, midbrain, cerebral hemispheres and cerebellum
- Various types of open neural tube defects with their embryological basis*

K. ETHICS IN ANATOMY – AN82.1

- Demonstrate respect and follow the correct procedure when handling cadavers and other biologic tissue.

Summary of time allotted, teaching and learning methods and student assessment

TIME ALLOTTED

Curricular component	Time allotted in hours
Lectures	220
Small group teaching / tutorials / integrated learning /practical	415
Self-directed learning	40
Early clinical exposure (basic science correlation and clinical skills)	30 (18 +12)
Total	**705**
AETCOM module 1.1 and 1.5	12 (8+4)

To be noted:

- The number of hours mentioned above are **rough guidelines** that can be modified to suit the specific requirements of a medical college.
- It is recommended that **didactic teaching** be restricted to **less than one third of the total time** allotted for that discipline.
- **Greater emphasis** is to be laid on hands-on training, symposia, seminars, small group discussions, **problem-oriented** and problem-based discussions and **self-directed learning.**
- **Students** must be encouraged to take **active part in** and **shared responsibility** for their **learning.**

Suggested guidelines for the teaching and learning methods

Lectures

- All lectures to have **well defined specific learning objectives** which are linked to the relevant competencies. Learning objectives should be observable and assessable. Bloom's taxonomy can be used as a reference in choosing verbs for defining the learning objectives.
- The focus should be on the **must-know component** of the topic.
- As anatomy is a largely visually based subject appropriate pictures and videos can be utilized.
- The anatomical basis of **clinical conditions** pertaining to the topic to be addressed.

- **Interactivity** needs to be built into the lecture by asking open ended questions, quizzes, incomplete handouts, creation of models, solving problems or a flipped classroom approach, to name a few methods.

Other methods

- **Team based learning** can be used in place of didactic lectures.
- **Case based learning** can be used for tutorials.
- **Seminars** and **assignments** will encourage active learning by the students.

Dissection

- All dissections to have **specific learning objectives** which are linked to the relevant competencies and are clinically relevant.
- The focus should be on **identifying** and how to identify important structures of the region being dissected.
- Students should be encouraged to **perform the dissections** using relevant resources like a good dissection manual and dissection videos, with faculty as facilitators.
- The dissection can be accompanied by relevant surface anatomy exercises, demonstration of suitable radiological images and analysis of joint movements.
- The students should be encouraged to observe the dissection of cadavers in neighboring tables so that they appreciate common anatomical variations.
- Each dissection can be accompanied by suitable **clinical case scenarios** which can be discussed at the end of the dissection to bring out its clinical relevance.
- Each dissection session is a good opportunity to reiterate the concepts of respect for the cadaver and **professionalism.**

Histology practical

- All histology sessions to have **specific learning objectives** which are linked to the relevant competencies and are clinically relevant.
- The focus should be **identifying** and how to identify important structures in the sections being viewed.
- Students should be encouraged to independently identify the salient features of the section with faculty as facilitators.
- Each session can be accompanied by suitable **clinical case scenarios** which can be discussed at the end of the session to bring out its clinical relevance.
- Each session is a good opportunity to reiterate the concept of **professionalism.**

Osteology

- All sessions to have **specific learning objectives** which are linked to the relevant competencies and are clinically relevant.
- The focus should be **identifying** important structures of the bone being studied, the joints formed by the bone and analysis of movements occurring at these joints.
- Students should be encouraged to independently identify the salient features of the bone being studied with faculty as facilitators.

- The session can be accompanied by the demonstration of suitable **radiological images.**
- Each session can be accompanied by suitable **clinical case scenarios** which can be discussed at the end of the session to bring out its clinical relevance.
- Each session is a good opportunity to reiterate the concept of **professionalism.**

INTEGRATION [Kindly refer section II for general guidelines on integration]

Suggested areas for integration

- **Physiology**
  - Structure and functions of a neuron and neuroglia
  - Nerve growth factor and other growth factors/cytokines
  - Different types of muscle fibres and their structure
  - Muscular dystrophy and myopathies
  - Structure and functions of digestive system
  - Functional anatomy of heart including chambers, heart sounds, pacemaker tissue and conducting system
  - Abnormal ECG, arrhythmias, heart block and myocardial infarction
  - Sex determination, sex differentiation and their abnormities, psychiatric and practical implications of sex determination
  - Organization of nervous system
  - Functions and properties of synapses, reflexes and receptors
  - Somatic sensations and sensory tracts
  - Motor tracts, mechanism of maintenance of tone, control of body movements, posture and equilibrium and vestibular apparatus
  - Structure and functions of reticular activating system and autonomic nervous system (ANS),
  - Spinal cord, its functions, lesions and sensory disturbances
  - Functions of cerebral cortex, basal ganglia, thalamus, hypothalamus, cerebellum and limbic system and their abnormalities
  - Correct clinical examination of the nervous system: higher functions, sensory system, motor system, reflexes, cranial nerves in a normal volunteer or simulated environment

- **Biochemistry**
  - Functions of the kidney, liver, thyroid and adrenal glands
  - Tests that are commonly done in clinical practice to assess the functions of kidney, liver, thyroid and adrenal glands
  - Abnormalities of kidney, liver, thyroid and adrenal glands

- **Pathology**
    - Etiology, pathogenesis, pathology, laboratory findings, distinguishing features progression and complications of acute and chronic pyelonephritis and reflux nephropathy
    - Types, etiology, pathogenesis, pathology and hormonal dependency of benign and malignant breast disease
    - Etiology, pathogenesis, pathology and iodine dependency of thyroid swellings
    - Etiology, pathogenesis, manifestations, laboratory and morphologic features of adrenal neoplasms
    - Etiology, pathogenesis, manifestations, radiologic and morphologic features and complications of osteomyelitis

- **Forensic Medicine**
    - Signs of intrauterine death, signs of live birth, viability of foetus, age determination of foetus, ossification centres, hydrostatic test, sudden infant death syndrome and Munchausen's syndrome by proxy
    - Corpus delicti, establishment of identity of living persons including race, sex, religion, complexion, stature, age determination using morphology, teeth eruption, decay, bite marks, bone ossification centres, medico-legal aspects of age

- **Anesthesiology**
    - Anatomy of the airway and its implications for general anaesthesia
    - Correlative anatomy of the brachial plexus, subarachnoid and epidural spaces
    - Principles and steps/ techniques involved in peripheral nerve blocks
    - Anatomical correlates and physiologic principles of pain
- **ENT**
    - Anatomy and physiology of ear, nose, throat, head & neck

- **Ophthalmology**
    - Aetiology, clinical presentations and diagnostic features of common conditions of the lid and adnexa including hordeolum externum / internum, blepharitis, preseptal cellulitis, dacryocystitis, hemangioma, dermoid, ptosis, entropion, lid lag, lagopthalmos
    - Types and causes of corneal ulceration
    - Surgical anatomy and the metabolism of the lens
    - Aetiology, pathology, clinical features and management of vascular occlusions of the retina

- **Dentistry**
    - Parts of the tooth and supporting structures

- **General medicine**
    - Distinguish between community acquired pneumonia, nosocomial pneumonia and aspiration pneumonia
    - Demonstrate in a mannequin the correct technique for performing breast exam, rectal examination, cervical examination and Pap smear
    - Classification, presenting features, precipitating and relieving factors of various kinds of headache
    - Functional and the vascular anatomy of the brain
    - Functional anatomy of the locomotor system of the brain

- **Obstetrics and gynaecology**
    - Development and anatomy of the female reproductive tract, relationship to other pelvic organs, applied anatomy as related to obstetrics and gynaecology
    - Basic embryology of fetus, factors influencing fetal growth and development, anatomy and physiology of placenta and teratogenesis
    - Diameters and types of maternal pelvis

- **General surgery**
    - Etiology and classification of cleft lip and palate
    - Principles of reconstruction of cleft lip and palate
    - Applied anatomy and physiology of the thyroid gland
    - Applied anatomy of the parathyroid gland
    - Applied anatomy of the adrenal glands
    - Clinical features, principles of investigation, prognosis and management of pancreatitis
    - Applied anatomy and appropriate investigations for breast disease
    - Clinical features, investigations and principles of management of congenital anomalies of the genitourinary system
    - Applied anatomy and physiology of the esophagus
    - Applied anatomy and physiology of the stomach
    - Applied anatomy of the liver
    - Clinical features, investigations and principles of management of liver abscess, hydatid disease, injuries and tumors of the liver
    - Applied anatomy of the spleen
    - Clinical features, investigations, principles of management of splenic injuries and post-splenectomy sepsis prophylaxis
    - Applied anatomy of the biliary system
    - Clinical features, investigations and principles of management of diseases of the biliary system
    - Applied anatomy of the small and large intestines
    - Applied anatomy including congenital anomalies of the rectum and anal canal
    - Applied anatomy, clinical features, investigations and principles of management of undescended testis

- Applied anatomy, clinical features, investigations and principles of management of epidydimo-orchitis
- Applied anatomy, clinical features, investigations and principles of management of varicocele
- Applied anatomy, clinical features, investigations and principles of management of hydrocele

- **Orthopaedics**
  - Mechanism of Injury, clinical features, investigations and management of fracture of clavicle
  - Mechanism of Injury, clinical features, investigations and management of fractures of proximal humerus
  - Mechanism of Injury, clinical features, investigations and management of supracondylar fracture of humerus
  - Mechanism of injury, clinical features, investigations and principles of management of fracture of shaft of humerus and intercondylar fracture of humerus with emphasis on possible neurovascular deficits
  - Aetiopathogenesis, clinical features, mechanism of injury, investigations and principles of management of fractures of both bones of the forearm and Galeazzi and Monteggia injury
  - Aetiopathogenesis, mechanism of injury, clinical features, investigations and principles of management of fractures of distal radius
  - Aetiopathogenesis, mechanism of injury, clinical features, investigations and principles of management of pelvic injuries with emphasis on hemodynamic instability
  - Aetiopathogenesis, mechanism of injury, clinical features, investigations and principles of management of spine injuries with emphasis on mobilization of the patient
  - Mechanism of injury, clinical features, investigations and principle of management of acetabular fractures
  - Aetiopathogenesis, mechanism of injury, clinical features, investigations and principles of management of fractures of proximal femur
  - Aetiopathogenesis, mechanism of injury, clinical features, investigations and principles of management of fractures of (a) patella; (b) distal femur; (c) proximal tibia with special focus on neurovascular injury and compartment syndrome
  - Aetiopathogenesis, clinical features, Investigation and principles of management of fracture shaft of femur in all age groups and the recognition and management of fat embolism as a complication
  - Aetiopathogenesis, clinical features, Investigation and principles of management of fractures of (a) both bones leg (b) calcaneus (c) small bones of foot
  - Aetiopathogenesis, clinical features, Investigation and principles of management of ankle fractures

- Investigations to diagnose complications of fractures like malunion, non-union, infection and compartmental syndrome
- Mechanism of injury, clinical features, investigations and principles of management of open fractures with focus on secondary infection prevention and management
- Aetiopathogenesis, clinical features, Investigations and principles of management of peripheral nerve injuries in diseases like foot drop, wrist drop, claw hand, palsies of radial, ulnar, median, lateral popliteal and sciatic nerves
- Clinical features, investigations and principles of management of congenital and acquired malformations and deformities of (a) spine - scoliosis and spinal bifida; (b) hip - congenital dislocation; (c) neck – torticollis; (d) foot - congenital talipes equino varus

- **Physical medicine and rehabilitation**
  - Causes of disability in patients with a cerebrovascular accident
  - Clinical features, types, evaluation, diagnosis and management of cerebral palsy

- **Paediatrics**
  - Genetic basis, risk factors, complications, prenatal diagnosis, management and genetic counselling in Down's Syndrome

EARLY CLINICAL EXPOSURE [Kindly refer section II for general guidelines]

SUGGESTED TOPICS AND DEPARTMENTS FOR ECE

General embryology and genetics

- Abnormal implantation - Obstetrics and Gynaecology
- The role of antenatal ultrasound examination - Radiology / Obstetrics and Gynaecology
- The role of teratogens in the causation of congenital anomalies - Pharmacology / Neonatology / Paediatrics
- Foetal diagnosis - Obstetrics and Gynaecology
- Genetic basis of common congenital malformations - Neonatology / Paediatric surgery
- Role of genetics in chronic non-communicable diseases – hypertension, diabetes mellitus, depression and schizophrenia - Medicine / Psychiatry
- Molecular diagnostic techniques - Clinical pathology / Genetics / Haematology / Medical oncology

Upper limb

- Nerve injuries of the median, ulnar and median nerves at different levels – Orthopaedics / Neurology
- Peripheral pulsations and their clinical importance – General surgery / Vascular surgery
- Concept of common fractures and dislocations – Orthopaedics

- Concept of growing end of the upper limb bones and their medicolegal importance – Orthopaedics / Forensic medicine
- Surgical approaches for orthopaedic surgery – Orthopaedics
- Testing muscles for tone, power, range of movement and reflexes – Physiology / Medicine / Neurology
- Basic concepts of skin and muscle flaps and their use in plastic surgery - Plastic surgery

Thorax

- The surgical importance of the mediastinum – General surgery / Chest medicine / Cardio-thoracic surgery
- Ischaemic heart disease - Medicine / Cardiology / Cardiothoracic surgery / Physiology
- Congenital anomalies of the heart - Neonatology / Paediatric surgery
- Common radiological abnormalities on chest X rays - Radiology / General medicine
- Pleural effusion, pneumothorax, pleural tapping – General medicine / Chest medicine
- Tracheo-oesophageal fistula / role of surfactant in neonatal breathing - Neonatology / Paediatric surgery / Physiology

Abdomen and pelvis

- Anatomy of abdominal incisions, hydrocoele and inguinal hernia – General surgery
- Cross sectional Anatomy - X- Ray, CT, MRI, Ultrasound – Radiology
- Surgical anatomy of GI tract, liver and EHBA - Physiology / Biochemistry / General surgery / Radiology / Medical gastroenterology
- Surgical anatomy of the urogenital System - Physiology / Biochemistry / General surgery / Radiology / Urology / Nephrology
- Surgical anatomy of the pelvis - Physiology / Obstetrics and Gynaecology
- Applied anatomy of the lumbar spine - Orthopaedics

Lower limb

- Femoral hernia and its anatomical correlates – General surgery
- Nerve injuries and resultant gait abnormalities – Orthopaedics / General medicine / Neurology / Physiology
- Varicose veins and deep vein thrombosis – General surgery
- Elephantiasis – General surgery / Microbiology
- Peripheral pulsations and their clinical importance – General surgery / Vascular surgery
- Common fractures of the lower limb with a focus on fractures of the neck of the femur – Orthopaedics
- Common clinical conditions affecting the joints of the limbs with a focus on the knee joint - Orthopaedics

Head and neck

- Surgical anatomy of the thyroid gland – General surgery / Pathology
- Surgical anatomy of the salivary glands – General surgery / Pathology

- Lymphatic drainage of the head and neck and its applied importance – General surgery / ENT / Pathology
- Endoscopic anatomy of the paranasal air sinuses – ENT
- Surgical anatomy of the middle ear and mastoid cavity – ENT
- Surgical anatomy of the palatine and pharyngeal tonsils – ENT
- Anatomical basis of common eye diseases - Ophthalmology / Physiology
- Column concept for fractures – Orthopaedics

Neuroanatomy

- The blood supply of brain / cerebro-vascular accident – General medicine / Neurology
- Extradural, subdural and subarachnoid haemorrhage – Neurosurgery
- Brain tumours - Neurology / Neurosurgery
- Congenital anomalies of the brain - Neonatology / Paediatrics
- Ascending / descending tracts – Physiology / Neurology
- CSF and its clinical importance - Physiology / Neurology
- Parkinson's disease – Physiology / Neurology

AETCOM (Attitude Ethics and Communication Skills)

Module 1.1

Background

It is important for new entrants to get a holistic view of their profession, its ups and downs, its responsibilities and its privileges. It is important to start this discussion early in their careers when their minds are still fresh with the thrill of joining medical school. Such a discussion will help them remember the big picture through the program and remind them why they have chosen to be doctors.

Competencies addressed

1. Enumerate and describe professional qualities and roles of a physician
2. Describe and discuss the commitment to lifelong learning as an important part of physician growth
3. Describe and discuss the role of a physician in health care system
4. Identify and discuss physician's role and responsibility to society and the community that she/ he serves

Hours: 8 (6 hours + 2 hours self-directed learning)

i. Exploratory session- 1 hour
ii. Facilitated panel discussion – 2 hours
iii. Self-directed learning - 2 hours
iv. Introductory visit to the hospital – 2 hours
v. Discussion and closure of case - 1 hour

Contents of the session

1. An exploratory session with the students to find out (a) why they chose to become doctors, (b) what do they think are the privileges and the responsibilities of the profession, (c) what do they expect from society and what do they think society expects from them, and (d) what will they have to do and give up in order to meet their own and society's expectations. This is preferably done in a small group discussion.
2. A facilitated panel discussion involving doctors who are at different stages of their careers (senior, midlevel, young) during which these doctors share their experiences and also answer questions from the students.
3. Self-directed learning where students write a report from reflections based on sessions 1 & 2 and on other reading materials, TV series, movies etc. that they have chosen from the lay press about doctors' experiences.
4. Introductory visit to the hospital / community medical centres
5. A closure session with students to share their reflections based on 1, 2, 3 and 4 that includes their plans for the next 5 years in order to fulfill their professional and personal roles as doctors.
6. A coat ceremony in the Foundation Course may be considered. A white coat ceremony is held in many institutions, as a symbolic transition of the medical student prior to their first day of exposure to clinical teaching, in order to emphasize the importance of their new role as budding doctors.

Assessment

1. Formative: not required

2. Summative: not required

Resources

1. Whitcomb ME. What does it mean to be a physician? Acad Med.2007; 82: 917-8.
2. Eisenberg C. It is still a privilege to be a doctor? N Engl J Med 1986; 314:1113-1114.
3. Ofri D. Neuron overload and the juggling doctor. The Lancet 2010; 376: 1820 – 21. Module 1.5

Module 1.5

Background

Medical students enter college and their first encounter is with the cadaver, the memories of which last for a lifetime. Respect for the cadaver as a teacher translates later into respect for human beings as teachers and a lifelong respect for learning. Throughout the world, the emphasis on "humanizing" the cadaver as the first patient or first teacher has gained momentum.

Competency addressed

Demonstrate respect and follows the correct procedure when handling cadavers and other biologic tissues

Hours: 4 (2+2) hours

i. Opening session- 2 hours
ii. Closing session - 2 hours

Contents of session

1. An initial **introductory session** (large or small group) should be held on the importance of biologic tissues and cadavers in their learning. The discussion should focus on the fact that some of these cadavers were unclaimed, but also that many of them are were donated by families. It must be emphasized that respect for donor families, cadavers and tissues is important. The session should also include safe and clean handling and disposal of biologic tissues (2 hours).
2. A session at the **end of the phase** is a small group or large group discussion with reflective presentations by students on how the cadaver helped them to learn, their experience with dissection etc. These sessions should allow the students to display their creativity and may include prose, poetry, sketches etc. An example of such a project is found in the link below (2 hours).

Assessment

1. **Formative:** The student may be assessed based on their active participation in the sessions. The respect and the manner in which students handle biologic tissues throughout the phase may be part of the overall formative assessment of the student.
2. **Summative:** may not be required.

Resource: http://medicine.yale.edu/education/donation/reflections/ (An example of the project is found here).

SELF-DIRECTED LEARNING [Kindly refer section II for general guidelines]

Forty hours of dedicated time for SDL is provided for anatomy in the first phase.

Suggested guidelines for student assessment

Internal assessment [Kindly refer section II for general guidelines]

TABLE SHOWING SCHEME FOR CALCULATION OF INTERNAL EXAMINATION MARKS

Theory (maximum marks)		**Practical (maximum marks)**	
Theory papers	30 marks*	Gross anatomy, histology (25 marks) viva-voce (5 marks)	30 marks**
Professionalism	5 marks	Histology record	5 marks
Part completion tests	5 marks	Level of participation in early clinical exposure	5 marks
TOTAL	**40 marks**	**TOTAL**	**40 marks**

Please note:

- *Prior to submission to the University, the marks for each of the three internal examination theory assessments must be calculated out of 30 marks, regardless of the maximum marks.
- **Prior to submission to the University, the marks for each of the three internal examination practical assessments must be calculated out of 30 marks, regardless of the maximum marks.
- Only the final marks out of 40 needs to be submitted to the University, separately for theory and practical for each internal assessment.

- Internal assessment should be based on competencies and skills.
- Professionalism (punctuality, respect for teachers and the cadaver, communication with peers, timely completion and submission of record books and level of preparedness for classes) must be assessed and form a component of the marks given for internal assessment as shown in the table above.
- A suggested format for assessing professionalism is shown in ANNEXURE 1.
- A proportion of marks from part completion tests must be added to the internal assessment marks as shown in the table above.
- Histology records must be assessed and contribute to the internal assessment marks as shown in the table above.
- Level of participation in early clinical exposure must be assessed and contribute to the practical component as shown in the table above.
- A suggested format for assessing participation in ECE is shown in ANNEXURE 2
- The scheme for calculation of the internal examination marks is given the table above.
- A clear record of all components that add to the internal assessment marks needs to be maintained by the institution and retained by them for at least 5 years after completion of the examination. Institutions may be asked to provide these details by the University as and when required.
- The internal and formative assessments provide ideal opportunities for students and teachers to identify learning gaps. Teachers should provide high quality feedback to each student to enable them to bridge these learning gaps.
- A suggested format for providing feedback is shown in ANNEXURE 3.

UNIVERSITY EXAMINATIONS

TABLE SHOWING SCHEME FOR CALCULATION OF UNIVERSITY EXAMINATION MARKS

Theory (maximum marks)		**Practical (maximum marks)**	
Paper 1	100 marks	**Gross anatomy**	
		i. Spotters (10X2)	20 marks
		ii. Window discussion 1 (above diaphragm)	15 marks
		iii. Window discussion 2 (below diaphragm)	15 marks
		Total	**50 marks**
Paper 2	100 marks	**Histology**	
		i. Spotters (10X1)	10 marks
		ii. Slide discussion 1 (general histology)	10 marks
		iii. Slide discussion 2 (systemic histology)	10 marks
		Total	**30 marks**
TOTAL	**200 marks**	**Viva-voce**	
		i. Osteology	05 marks
		ii. Surface marking	05 marks
		iii. Radiological anatomy	05 marks
		iv. Embryology	05 marks
		Total	**20 marks**
		TOTAL	**100 marks**

- University examinations are to be designed with a view to ascertain whether the candidate has acquired the **necessary knowledge, minimal level of skills, ethical** and **professional values** with **clear concepts** of the fundamentals which are necessary for him/her to function effectively and appropriately as a physician of first contact. Assessment shall be carried out on an **objective basis** to the extent possible.
- Nature of questions will include different types such as structured essays, modified essays (case based), short essays and short answers questions.
- The objective will be to assess proficiency and skills to identify key structures (on cadavers, dry bones, histology slides and genetics charts, radiographs and embryology models), demonstrate surface marking and movements at joints, with functional and clinical correlations.
- **Viva/oral examination** should assess the student's ability to explain key concepts with functional and clinical correlates related to osteology, embryology, surface marking and radiological anatomy.
- **The marks obtained in the viva examination will be added to the practical marks.**
- In subjects that have two papers, the learner **must secure at least 40% marks in each of the papers with minimum 50% of marks in aggregate (both papers together) to pass.**
- The student **must secure a minimum of 50% of marks in aggregate in the viva and practical examination** (both combined) to pass.
- There shall be **one main examination** in an academic year and **a supplementary** to be held **not later than 90 days** after the declaration of the results of the main examination.

Theory

Preparation of question papers

- All the question papers to follow the suggested **blueprint (ANNEXURE 4).**
- The marks allotted to a particular topic are to be strictly adhered to.
- **A minimum of 35% marks shall be allocated to assess the higher order thinking skills of the student.**
- All the different types of structures given in the blueprint (eg. arteries, veins, nerves etc) are to be compulsorily covered in each question paper.
- Systemic histology and systemic embryology are **NOT TO BE COVERED** in paper 1.
- The question paper layout give below must be strictly adhered to **(ANNEXURE 5).** Both paper 1 and paper 2 have **TWO POSSIBLE LAYOUTS**, either of which may be followed based on the paper setters' preference.
- Please note that only **core competencie**s (list provided in the MCI document) are to be assessed in the university examinations.
- All questions to contain **appropriate verbs** as shown in the example **(ANNEXURE 6).**
- **One short essay question (5 marks)** and **one short answer question (3 marks)** to be of the **modified variety** containing a clinical case scenario or requiring an **explanation of a concept** or the **drawing** of a diagram **(ANNEXURE 7)**. This question can be **from any component** (general anatomy, histology, embryology, genetics, gross anatomy and neuroanatomy) of the curriculum.
- The questions related to **general** and **systemic histology** must be of a **higher level** than simply drawing and describing a histology slide, as this will anyway be covered in the practical component.

Practical

Gross anatomy

- There will be **10 spotters each of two marks** and **two window discussions for 15 marks each**.
- The spotters should be from the **following regions:**
  - Neuroanatomy – 1
  - Head and neck – 2
  - Thorax – 2
  - Upper limb – 1
  - Abdomen – 2
  - Lower limb – 1
  - Pelvis – 1
- There will be a **subdivision** of the spotters as follows:
  - Artery - 1
  - Vein – 1
  - Nerve – 1
  - Muscle – 1

- Connective tissue structure - 1
- Bone – 1
- Organ – 1
- Cross section - 1
- Picture based clinical cases (eg. Erb's palsy, foot drop etc.) - 2

- The **window discussions** will be one from the above diaphragm structures and one from the below diaphragm structures. It is advised that musculo-skeletal **window discussions** be combined with organs. A combination of two musculo-skeletal structures or two organs is to be avoided.
- For the **window discussions**, the students should first be asked to identify key structures, questioned further on these structures and then asked about important clinical applications.
- The **marking scheme** for **window discussions** could be as follows:
  - Identifies key structures – maximum 6 marks
  - Answers questions related to these structures – maximum 6 marks
  - Clinical applications – maximum 3 marks

Histology

- There will be **10 spotters each of one mark** and **two slide discussions for 10 marks each**.
- Of the **10 spotters**, **four** must be from **general histology**, **five** from **systemic histology** and **one genetics chart**.
- The suggested **list** of **histology slides** is shown in **ANNEXURE 8.**
- For the **slide discussion**, **one slide** must be from **general histology** and **one** from **systemic histology**.
- For the **slide discussion**, the students should first be asked to identify and draw the slide with suitable justification, demonstrate key structures in a section, questioned further on these structures and then asked about important clinical/functional applications.
- If the student does not identify the slide correctly at first, he or she should be given another chance.
- The **marking scheme** for each slide for the slide discussion could be as follows:
  - Draws and identifies the slide correctly with justification – maximum 3 marks
  - Demonstrates key structures – maximum 3 marks
  - Answers questions related to these structures – maximum 3 marks
  - Clinical/functional applications – maximum 1 mark
- The **histology record books** duly signed by the Head of the Department must be submitted during the examination and verified by the external examiner.

Viva voce

- The **four viva-voce stations** will be **radiological anatomy, embryology, osteology and surface marking,** each carrying **05 marks**.
- Though the questions may be different for each student, **the pattern of questioning must be similar**. This could be ensured by utilizing previously prepared **viva cards**.
- In addition to plain and contrast X-rays, cross sectional anatomy (either gross or relevant CT and MRI images) may be assessed in the **radiological anatomy station**.

- Students must be assessed using **relevant embryology models and charts** in the **embryology station**.
- In the **osteology station**, questions related to bone **articulations with movements** are to be included.
- For **surface marking**, the students must perform surface marking and subsequently state the clinical importance of the surface marking. These structures must be restricted to those mentioned in the curriculum. Five marks are allotted for surface marking (maximum of 4 marks for the surface marking plus 1 mark for the clinical importance). This should be conducted in the form of an OSPE (either on a cadaver or volunteer) with a standard checklist to be prepared on the day of the examination by the examiners.
- For the other viva topics students should first be asked to identify basic structures, questioned further on these structures and then asked about important clinical applications.
- The **marking scheme** could be as follows:
    - Identifies the structures (the side and anatomical position if applicable) – maximum 2 marks
    - Answers questions related to these structures – maximum 2 marks
    - Clinical applications – maximum 1 mark
- A **list of suggested topics** for radiological anatomy, surface marking, cross-sectional anatomy and muscle testing is shown in **ANNEXURE 9**.

ANNEXURE 1

Suggested format for assessing professionalism

Quarter	Overall attendance (5)	Timely submission of record books (5)	Takes the trouble to complete the record book well (5)	Behaves respectfully with peers and teachers (5)	Total (20)	Date	Signature of student	Signature of mentor
1st								
2nd								
3rd								

Guidelines for scoring (to be shown to the student and discussed with them)

Attendance – 95-100% - 5; 90-94% - 4; 85-89% - 3; 80-84% - 2;

Timely submission of records – Always submits the record on time – 5; Often submits the record on time – 4; Sometimes submits the record on time – 3; Rarely submits the record on time – 2;

Takes the trouble to complete the record well – Diagrams are neatly drawn with complete labelling – 5; Diagrams are of above average quality with nearly complete labelling – 4; Diagrams are of average quality with partial labelling- 3; Diagrams are of below average quality with inadequate labelling – 2;

Behaves respectfully with peers and teachers – Always speaks politely and demonstrates the appropriate body language with peers and teachers – 5; Often speaks politely and demonstrates the appropriate body language with peers and teachers – 4; Sometimes speaks politely and demonstrates the appropriate body language with peers and teachers – 3; Rarely speaks politely and demonstrates the appropriate body language with peers and teachers – 2;

ANNEXURE 2

Suggested format for assessing participation in ECE sessions

Name:……

Date:……

ECE session…….

1 = strongly agree. 2 = agree. 3 = no preference. 4 = disagree. 5 = strongly disagree.						
Critical appraisal		**1**	**2**	**3**	**4**	**5**
1	Clarifies, defines and analyses the problem from the scenario / interaction with patient					
2	Identifies learning objectives					
3	Demonstrates initiative and curiosity					
Utilization of learning resources						
4	Utilizes relevant resource materials effectively					
5	Applies knowledge to new situations to solve problems and to reach decisions					
Group work						
6	Organized and prepared for small group sessions					
7	Shares thoughts and opinions with peers actively					
Attitudes and Communication Skills						
8	The oral expression is clear enough to be understood					
9	Provides and accepts constructive feedback					
10	Contributes to group harmony (listens to conflicting opinions and tolerates shortcomings of others)					

Comment:
To describe the strengths and suggested areas for improvement of the reviewed student and to assist him/her to be a more effective learner.

ANNEXURE 3

Suggested format for monitoring academic performance and providing feedback

Sl. No.	Marks obtained		Feedback provided		Date	Signature of student	Signature of mentor
			Positive	Could be improved			
1.	Test 1						
2.	1st Internal Examination						
	Theory						
	Practical						
3.	Overall 1st quarter marks						
4.	Test 2						
5.	2nd Internal Examination						
	Theory						
	Practical						
6.	Overall 2nd quarter marks						
7.	Test 3						
8.	3rd Internal Examination						
	Theory						
	Practical						
9.	Overall 3rd quarter marks						

ANNEXURE 4

Blueprint for the anatomy theory examinations

Paper 1

TOPIC	Arteries	Veins	Nerves	Muscles	Space	Bones	Joints	Connective tissue	Organs	Others	Marks
General anatomy											6
General histology											5
General embryology											8
Upper limb											18
Thorax (including diaphragm)											21
Head and neck											29
Neuroanatomy											13
TOTAL											100

Paper 2

	Arteries	Veins	Nerves	Muscles	Space	Bones	Joints	Connective tissue	Organs	Others	Marks
Systemic histology											11
Systemic embryology											11
Genetics											8
Lower limb											18
Abdomen											31
Pelvis											21
TOTAL											100

ANNEXURE 5

Question paper layouts for theory examinations

PAPER 1

Version 1

Long Essay: **2X 10 = 20**

1	Upper limb
2	Head and neck

Short Essays: **5x 6 =30**

3	Upper limb
4	Thorax including diaphragm
5	Head and neck
6	Neuroanatomy
7	General embryology
8	General histology

Short Answers: **3X10 = 30**

9	Upper limb
10	Thorax including diaphragm
11	Thorax including diaphragm
12	Head and neck
13	Head and neck
14	Head and neck
15	Neuroanatomy
16	General anatomy
17	General anatomy
18	General embryology

ANNEXURE 5

Question paper layouts for theory examinations

PAPER 1

Version 2

Long Essay: **2X 10 = 20**

1	Thorax including diaphragm
2	Head and neck

Short Essays: **5x 6 = 30**

3	Upper limb
4	Thorax including diaphragm
5	Head and neck
6	Neuroanatomy
7	General embryology
8	General histology

Short Answers: **3X10 = 30**

9	Upper limb
10	Thorax including diaphragm
11	Thorax including diaphragm
12	Head and neck
13	Head and neck
14	Head and neck
15	Neuroanatomy
16	General anatomy
17	General anatomy
18	General embryology

ANNEXURE 5

Question paper layouts for theory examinations

PAPER 2

Version 1

Long Essay: **2 X 10 = 20**

1	Lower limb
2	Abdomen

Short Essays: **5 X 6 = 30**

3	Lower limb
4	Abdomen
5	Pelvis
6	Genetics
7	Systemic histology
8	Systemic embryology

Short Answers: **3 X 10 = 30**

9	Lower limb
10	Abdomen
11	Abdomen
12	Pelvis
13	Pelvis
14	Genetics
15	Systemic histology
16	Systemic histology
17	Systemic embryology
18	Systemic embryology

ANNEXURE 5

Question paper layouts for theory examinations

PAPER 2

Version 2

Long Essay: **2X 10 = 20**

1	Lower limb
2	Pelvis

Short Essays: **5 X 6 =30**

3	Lower limb
4	Abdomen
5	Pelvis
6	Genetics
7	Systemic histology
8	Systemic embryology

Short Answers: **3 X 10 = 30**

9	Lower limb
10	Abdomen
11	Abdomen
12	Pelvis
13	Pelvis
14	Genetics
15	Systemic histology
16	Systemic histology
17	Systemic embryology
18	Systemic embryology

ANNEXURE 8

List of histology slides

General histology	Systemic histology	
1. Epithelial tissue	1. Breast	38. Eyelid*
2. Connective tissue	2. Lung	39. Eyeball*
3. Serous salivary gland	3. Trachea	40. Cornea
4. Mucous salivary gland	4. Oesophagus	41. Optic nerve*
5. Mixed salivary gland	5. Stomach fundus	42. Retina
6. Hyaline cartilage	6. Stomach pylorus	43. Sclero-corneal junction*
7. White fibrocartilage	7. Duodenum	44. Cochlea*
8. Elastic cartilage	8. Jejunum	45. Organ of Corti*
9. TS of compact bone	9. Ileum	46. Spinal cord
10. LS of compact bone	10. Large intestine	47. Cerebellum
11. TS of skeletal muscle	11. Appendix	48. Cerebrum
12. LS of Skeletal muscle	12. Liver	
13. Cardiac muscle	13. Gall bladder	
14. Large artery	14. Pancreas	
15. Large vein	15. Kidney	
16. Medium sized artery	16. Ureter	
17. Medium sized vein	17. Urinary bladder	
18. Lymph node	18. Testis	
19. Thymus	19. Epididymis	
20. Palatine Tonsil	20. Vas deferens	
21. Spleen	21. Prostate	
22. Peripheral nerve TS	22. Penis	
23. Peripheral nerve LS	23. Ovary	
24. Sensory ganglia	24. Fallopian tube	
25. Autonomic ganglia	25. Uterus	
26. Thick skin	26. Cervix	
27. Thin skin	27. Placenta	
	28. Umbilical cord	
	29. Lip*	
	30. Tongue	
	31. Epiglottis	
	32. Olfactory epithelium*	
	33. Pituitary gland	
	34. Thyroid	
	35. Parathyroid gland	
	36. Adrenal gland	
	37. Pineal gland*	

* **Please note** that the slides marked with an asterisk are **non-core competencies.**

ANNEXURE 9

List of surface marking / muscle testing / radiological anatomy / cross sections

UPPER LIMB					
Arteries (palpation)	**Veins**	**Nerves**	**Connective tissue/other**	**Testing of muscles**	**Radiological anatomy**
1. Axillary artery	1. Basilic vein	1. Axillary Nerve	1. Flexor retinaculum	1. Trapezius	AP and lateral view of radiographs of
2. Brachial Artery	2. Cephalic vein	2. Radial Nerve		2. Pectoralis major	1. Shoulder region
3. Radial Artery	3. Median cubital vein	3. Ulnar Nerve		3. Serratus anterior	2. Arm
4. Ulnar artery		4. Median Nerve		4. Latissimus dorsi	3. Elbow
5. Superficial palmar arch				5. Deltoid	4. Forearm
6. Deep palmar arch				6. Biceps brachii	5. Hand
				7. Brachioradialis	
LOWER LIMB					
1. Femoral artery	1. Great saphenous vein	1. Femoral nerve	1. Saphenous opening	1. Gluteus maximus	AP and lateral view of radiographs of
2. Popliteal artery	2. Small saphenous vein	2. Sciatic nerve	2. Mid-inguinal point	2. Gluteus medius and minimus	1. Hip
3. Posterior tibial artery		3. Common peroneal nerve		3. Hamstring muscles	2. Knee
4. Dorsalis pedis		4. Deep peroneal nerve		4. Quadriceps femoris	3. Ankle
				5. Dorsiflexors of ankle	4. Foot
				6. Plantar flexors of ankle	
				7. Muscles causing inversion and eversion	

ANNEXURE 9

List of surface marking / muscle testing / radiological anatomy / cross sections

<table>
<tr><th colspan="6">THORAX</th></tr>
<tr><td colspan="4">1. Lines of pleural reflections
2. Lung borders and fissures
3. Trachea
4. Heart borders
5. Apex beat
6. Surface projections of valves of heart</td><td colspan="2">1. Plain X ray chest PA view</td></tr>
<tr><th colspan="6">HEAD AND NECK</th></tr>
<tr><th>Arteries</th><th>Veins</th><th>Nerve</th><th>Gland /other</th><th>On simulation</th><th>Radiological anatomy</th></tr>
<tr><td>1. Common carotid artery</td><td>1. Internal jugular vein</td><td>1. Accessory nerve</td><td>1. Thyroid gland</td><td>1. Testing of muscles of facial expression</td><td>1. Plain X-ray skull - AP and lateral view</td></tr>
<tr><td>2. Facial artery in the face</td><td>2. Subclavian vein</td><td></td><td>2. Parotid gland and duct</td><td>2. Extraocular muscles</td><td>2. Plain X-ray cervical spine - AP and lateral view</td></tr>
<tr><td></td><td>3. External jugular vein</td><td></td><td>3. Pterion</td><td>3. Muscles of mastication</td><td>3. Plain X-ray paranasal sinuses</td></tr>
<tr><td></td><td></td><td></td><td></td><td>4. Palpation of carotid arteries</td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td>5. Facial artery</td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td>6. Superficial temporal artery</td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td>7. Location of internal and external jugular vein</td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td>8. Location of hyoid bone, thyroid cartilage, cricoid cartilage with their vertebral level</td><td></td></tr>
</table>

ANNEXURE 9

List of surface marking / muscle testing / radiological anatomy / cross sections

ABDOMEN & PELVIS			
Surface marking of	**Surface projection of**	**Sectional Anatomy**	**Radiological anatomy**
1. Regions and planes of abdomen	1. Stomach	1. Cross section at the level of T8, T10, L1 (transpyloric plane)	1. Plain x ray of abdomen
2. Superficial inguinal ring	2. Liver	2. Mid sagittal section of male and female pelvis	2. X ray barium swallow
3. Deep inguinal ring	3. Fundus of gall bladder		3. Barium meal
4. McBurney's point	4. Spleen		4. Barium enema
5. Renal angle	5. Duodenum		5. Cholecystography
6. Murphy's point	6. Pancreas		6. Intravenous pyelography
	7. Ileo-caecal junction		7. Hysterosalpingography
	8. Kidneys		
	9. Root of mesentery		

LIST OF RECOMMENDED BOOKS

General anatomy

- Handbook of General Anatomy, BD Chaurasia / General Anatomy, Vishram Singh

Histology

- diFiore's Atlas of Human Histology with Functional Correlation, Victor P Eroschenko / Wheater's Functional Histology: A Text and Colour Atlas
- Textbook of Human Histology with colour Atlas, Inderbir Singh / Textbook of Histology and Practical Guide, Gunasegaran / Histology: Text and Atlas, Brijesh Kumar

Embryology

- Textbook of Human Embryology, Inderbir Singh / Langman's's textbook of Medical Embryology, TW Sadler

Human genetics

- Human Genetics, SD Gangane / Medical Genetics, GP Pal / Emery's Elements of Human Genetics, Peter Turnpenny and Sian Ellard

Gross anatomy including neuroanatomy

- Cunningham's Manual of Practical Anatomy Volumes I,II and III
- BD Chaurasia's / Dutta's / Vishram Singh's Textbook of Anatomy – all volumes
- Grant's atlas / McMinn's atlas / Netter's atlas
- Clinically Oriented Anatomy, K L Moore / Clinical Anatomy by Regions, Richard Snell / Clinical Anatomy (A Problem Solving Approach) (2 volumes), Neeta Kulkarni
- Gray's Anatomy for Students, South Asia Edition
- Clinical Neuroanatomy, Richard Snell / Textbook of Neuroanatomy, IB Singh / Textbook of Clinical Neuroanatomy, Vishram Singh

Surface and radiological anatomy

- Surface and radiological anatomy, A Halim / Surface and radiological anatomy, Ashwini Appaji and Roopa Kulkarni

Others

- Stedman's Medical Dictionary
- Gray's Anatomy - The Anatomical Basis of Clinical Practice

Please note: It is suggested that students use the latest editions of the above books.

PHYSIOLOGY

Goal:

The broad goal of the teaching of undergraduate students in Physiology aims at providing the student comprehensive knowledge of the normal functions of the organ systems of the body to facilitate an understanding of the physiological basis of health and disease.

Objectives

a. Knowledge:

At the end of the course the student will be able to:

1. Explain the normal functioning of all the organ systems and their interactions for well-coordinated total body function;
2. Assess the relative contribution of each organ system to the maintenance of the milieu interior;
3. Elucidate the physiological aspects of normal growth and development;
4. Describe the physiological response and adaptations to environmental stresses;
5. List the physiological principles underlying pathogenesis and treatment of disease

b**. Skills**

At the end of the course the student will be able to:

1. conduct experiments designed for study of physiological phenomena;
2. interpret experimental/investigative data;
3. Conduct and interpret clinical examination in normal healthy subject;
4. distinguish between normal abnormal data derived as a result of tests, which he/she has performed and observed in the laboratory.

c. Attitude and communication skills:

At the end of the course the student will be able to:

1. show due respect to persons who volunteer to be examined for the purpose of learning clinical examination.
2. communicate effectively with peers, teachers and volunteer in clinical examination
3. demonstrate the ability of teamwork

d. Integration:

At the end of the integrated teaching the student should acquire an integrated knowledge of organ structure and function and the regulatory mechanisms.

List of systems included in Physiology:

- General Physiology
- Hematology
- Nerve-Muscle Physiology
- Gastro-Intestinal Physiology
- Cardiovascular physiology

- Respiratory physiology
- Renal Physiology
- Endocrine Physiology
- Reproductive Physiology
- Neurophysiology (Central Nervous System and Special Senses)
- Integrated Physiology

Physiology Syllabus

THEORY

General Physiology (PY 1.1-1.9) (8 hrs)

Structure and functions of a mammalian cell**;** Homeostasis, Intercellular communication**;** Apoptosis; Transport mechanisms across cell membranes; Fluid compartments of the body; pH & Buffer systems in the body; Evaluation of functions of the cells and products in clinical care and research.

Hematology: (PY 2.1 - 2.13) (16 hrs)

Components of blood: formation, regulation and functions; plasma proteins – origin, types, variations and functions; Hemoglobin- synthesis, variants, functions and its breakdown & Jaundice; Blood indices; Anemia and its classification; Hemostasis: mechanism, regulation & disorders Anticoagulants; Blood groups, blood banking and transfusion; Immunity: types, mechanism & regulation; ESR; Lymph-composition, circulation and functions

Nerve & Muscle Physiology: (PY 3.1 - 3.18) (10hrs)

Neuron and neuroglia: structures, types, functions; Resting membrane potential; Action potential in nerve, skeletal & smooth muscle; Nerve fibres: classification, functions & properties; nerve injuries, degeneration and regeneration in peripheral nerve; Neuromuscular junction: structure, transmission of impulses, neuro-muscular blocking agents, Myasthenia gravis; Muscle fibres: structure, types & functions; Muscle contraction; molecular basis (skeletal, smooth), Isotonic Vs. Isometric, Energy sources and metabolism, gradation of muscle activity; muscle dystrophy, Myopathies; Strength-duration curve

Gastrointestinal Physiology: (PY 4.1 - 4.10) (10hrs)

Functional anatomy and broad functions of digestive system, enteric nervous system; GI Secretions- composition, mechanism of secretion, functions, and regulation of saliva, gastric, pancreatic, intestinal juices and bile secretion; GI movements- types, regulation, functions, reflexes; role of dietary fibres; Digestion and absorption of nutrients; GI hormones- source, regulation, functions; Gut-brain axis; structure and functions of liver and gall bladder; gastric function tests, pancreatic exocrine function tests & liver function tests, Pathophysiology - Achalasia cardia, peptic ulcer, gastro oesophageal reflux disease, vomiting, diarrhoea, constipation, Adynamic ileus, Hirschsprung's disease.

Cardiovascular Physiology: (PY 5.1 - 5.16) (25hrs)

Functional anatomy of heart; Pacemaker tissue and conducting system-generation, conduction of cardiac impulse; Properties of cardiac muscle; Cardiac cycle; ECG- recording, normal ECG, uses, cardiac axis, Abnormal ECG in common arrhythmias, changes with hypertrophy & MI; Haemodynamics; Heart rate- factors affecting, regulation; Cardiac output- factors, regulation, measurement; Blood pressure- components, determinants, factors, regulation and applied aspect, Regional circulation- autoregulation, microcirculation, lymphatic circulation, coronary, cerebral, capillary, skin, fetal, pulmonary and splanchnic circulation; Pathophysiology- shock, syncope, heart failure & coronary artery disease

Respiratory Physiology: (PY 6.1-6.10) (12hrs)

Functional anatomy of respiratory tract, dead space; Mechanics of respiration; Pressure volume changes during ventilation; Lung volume and capacities; Alveolar surface tension; Compliance; Airway resistance; alveolar ventilation, V/P ratio; Diffusion capacity of lungs; Transport of respiratory gases- Oxygen and Carbon dioxide; Neural and chemical regulation of respiration; Physiology of high altitude and deep sea diving; Principles of artificial respiration, oxygen therapy; Patho-physiology of dyspnoea, hypoxia, cyanosis, asphyxia, drowning, periodic breathing; Lung function tests & its clinical significance

Renal Physiology: (PY 7.1 - 7.9) (10hrs)

Structure and functions of kidney & juxta glomerular apparatus, role of renin-angiotensin system ; Renal blood flow; Mechanism of urine formation, concentration and diluting mechanism; Concept and significance of 'clearance' tests; Renal regulation of fluid and electrolytes & acid-base balance; Structure and innervation of urinary bladder, physiology of micturition, cystometry, and its abnormalities; Artificial kidney(dialysis) and renal transplantation; Renal Function Tests

Endocrine Physiology: (PY 8.1 - 8.6) (16 hrs)

Mechanism of action of steroid, protein and amine hormones; Synthesis, secretion, transport, physiological actions, regulation and effect of altered (hypo and hyper) secretion of pituitary gland, thyroid gland, parathyroid gland, adrenal gland, pancreas and hypothalamus; Physiology of bone and calcium metabolism; Physiology of growth; Physiology of Thymus & Pineal Gland; Hormone function tests ; Obesity & metabolic syndrome; Stress response

Reproductive Physiology: (PY 9.1 - 9.12) (10hrs)

Sex determination; sex differentiation and their abnormalities; Puberty: onset, progression, stages; early and delayed puberty; Male reproductive system: functions of

testis, spermatogenesis and its regulation, Cryptorchidism ; Female reproductive system: functions of ovary and its control, menstrual cycle: Hormonal, uterine and ovarian changes; Tests for ovulation; Physiological effects of sex hormones; Contraceptive methods for male and female; Effects of removal of gonads on physiological functions; Physiology of pregnancy, fetoplacental unit, pregnancy tests, parturition & lactation; Semen analysis; Causes and principles of management of infertility; Hormonal changes and their effects during perimenopause and menopause; Psychological and psychiatric disturbances associated with reproductive physiology.

Neurophysiology: (PY 10.1 - 10.20) (37 hrs)

Organization of nervous system; Sensory system: types, functions and properties of synapse, receptors, reflex; Somatic sensations & sensory tracts; Physiology of pain; Motor system: organization, motor tracts, mechanism of maintenance of tone, control of voluntary movements ; Posture and equilibrium & vestibular apparatus; Reticular activating system, Autonomic nervous system ; Spinal cord: functional organization and lesions ; Formation, circulation and function of CSF; Blood brain barrier; Neurotransmitters.

Organization, connections and functions of cerebral cortex, basal ganglia, thalamus, hypothalamus, cerebellum and limbic system and their abnormalities; Higher mental functions ; Physiology of sleep, memory, learning and speech and their disorders; EEG.

Special senses- Smell and taste sensation and their abnormalities; Functional anatomy of ear and auditory pathways & physiology of hearing, Deafness, hearing tests; Functional anatomy of eye, Image formation, Visual pathway and its lesions, Physiology of vision including acuity of vision, colour vision, field of vision, refractive errors, physiology of pupil; light reflex, accommodation reflex, dark and light adaptation; Auditory & visual evoked potentials

Integrated Physiology: (PY 11.1 - 11.14) (6 hrs)

Temperature regulation: mechanism, adaptation to altered temperature (heat and cold environment), mechanism of fever, cold injuries and heat stroke; Exercise- cardio-respiratory and metabolic adjustments during exercise (isotonic and isometric), exercise in heat and cold, physical training effects; Physiological consequences of sedentary lifestyle; Brain death; Physiology of Infancy*; Physiology of aging-free radicals and antioxidants*; Physiology of meditation*.

(* 'Non-core' competencies as per "Competency based Undergraduate Curriculum for the Indian Medical Graduate 2018: Medical Council of India").

PRACTICAL

The following list of practical is minimum and essential. Additional exercises can be included as and when feasible and required. All the practicals have been categorized as '**Procedures to be performed'** and '**Demonstrations'.** The procedures are to be performed by the students during practical classes to acquire skills. These would be included in the practical during University examination. Those categorized as 'Demonstrations' are to be shown to students during practical

classes. Questions based on these would be given in the form of data, charts, graphs, problems and case histories for interpretation by students during university examination.

I.<u>Procedures to be performed by the students:</u>

a. **Haematology:**

1. RBC count
2. WBC Count
3. Differential Leucocyte Count
4. Estimation of haemoglobin
5. Blood grouping
6. Bleeding time
7. Clotting time
8. Calculate RBC indices - MCV, MCH, MCHC.

b. **Procedures to be performed on human subjects:**

1. Mosso's ergography.
2. Recording of Blood Pressure, pulse rate at rest and effect of posture.
3. Effect of mild and moderate exercise on blood pressure, pulse rate and respiratory rate using Harvard step test.
4. Record and interpret Lead II ECG. Given a normal ECG, determine cardiac axis.
5. Spirometry – Lung volumes and capacities, MVV, Timed vital capacity.
6. Peak Expiratory Flow Rate
7. Demonstrate Basic Life Support in a simulated environment
8. Visual field by Perimetry

c. **Clinical Examination:**

1. Components of history taking and general physical examination
2. Examination of radial pulse
3. Examination of Cardiovascular system
4. Examination of Respiratory system
5. Examination of abdomen
6. Examination of Higher mental functions
7. Examination of Sensory system
8. Examination of Motor system including reflexes.
9. Examination of Cranial Nerves

II. <u>Demonstrations:</u>

I.Haematology:

1. Erythrocyte sedimentation rate
2. Haematocrit
3. Reticulocyte count
4. Platelet count
5. Osmotic fragility

2. Record Arterial pulse tracing using finger plethysmography*
3. Stethography
4. Tests of cardiovascular autonomic functions*

(* 'Non-core' competencies as per "Competency based Undergraduate Curriculum for the Indian Medical Graduate 2018: Medical Council of India")

III. Interpretation- charts: clinical case histories, graphs, charts, problems

(Suggested topics for preparation of these are given under **ANNEXURE I**. However, many more could be developed which is under discretion of each institution)

Chart also includes - Interpret growth chart*, Interpret anthropometric assessment of infants*: (*these two charts are 'Non-core' competencies as per "Competency based Undergraduate Curriculum for the Indian Medical Graduate 2018: Medical Council of India")

IV. Computer assisted learning:

(i) **Amphibian nerve - muscle experiments and interpretation of graphs**

List of graphs on nerve-muscle experiments:

- Simple muscle twitch
- Effect of various strengths of stimuli on Simple muscle twitch
- Effect of changes in temperature on Simple muscle twitch
- Effect of two successive stimuli on muscle contraction
- Effect of multiple successive stimuli (treppe, clonus, tetanus)
- Study of fatigue in skeletal muscle
- Velocity of nerve conduction
- Effect of load on muscle
- Measurement of isometric contractions using nerve muscle preparation

(ii) **Amphibian cardiac experiments and interpretation of graphs**

List of graphs on cardiac experiments:

- Normal cardiogram
- Effect of temperature on frog heart
- Effect of Stannius ligatures
- Properties of cardiac muscle – all or none law, staircase effect, refractory period in a beating heart (extrasystole and compensatory pause), refractory period in a quiescent heart
- Effect of vagus on frog's heart
- Action of drugs on vagus (nicotine and atropine)
- Perfusion of isolated heart and effect of ions (NaCl, KCl, $CaCl_2$)
- Perfusion of isolated heart and effect of drugs (adrenaline, acetyl choline, atropine followed by Ach)

SKILL CERTIFICATION:

The list of certifiable skills is given below. The general instructions, blank template, samples of certification checklist suggested for skill certification are provided as **ANNEXURE - IIa, IIb, IIc, IId.**

List and number of sessions for skill certification as prescribed by MCI:

	Topics	Number required to certify as per MCI
PY5.12	Record blood pressure & pulse at rest and in different grades of exercise and postures in a volunteer or simulated environment	1each x 3
PY6.9	Demonstrate the correct clinical examination of the respiratory system in a normal volunteer or simulated environment	1
PY 10.11	Demonstrate the correct clinical examination of the nervous system: Higher functions, sensory system, motor system, reflexes, cranial nerves in a normal volunteer or simulated environment	1 each (total 5)
PY 10.20	Demonstrate (i) Testing of visual acuity, colour and field of vision and (ii) hearing (iii) Testing for smell and (iv) taste sensation in volunteer / simulated environment	1 each (total 4)

SUGGESTED AREAS FOR INTEGRATION:

As per the "Competency based Undergraduate Curriculum for the Indian Medical Graduate 2018: Medical Council of India"

EARLY CLINICAL EXPOSURE:

- **Clinical visits: 12 hours** (Suggested format for assessing participation in ECE sessions is provided as **ANNEXURE III which could be a part of the practical record book**)

  Suggested hospital visits: (can include more than the below suggestions)

  Anemia, Jaundice, Visit to blood bank, Computerized lung function tests, acid peptic disease, endoscopy procedure, dialysis unit, hemiplegia, etc.
- **Basic science correlations: 18 hours**

  Discussion based on case vignettes, graphs, clinical videos, patient in classroom setting, etc linked to various systems in physiology.

SELF-DIRECTED LEARNING:

Twenty-five hours of dedicated time for self-directed learning is provided for physiology.

AETCOM MODULES TO BE COVERED UNDER PHYSIOLOGY:

AETCOM module number (as per MCI document) *	**Topic**
1.2	**What does it mean to be a patient?**
1.3	**The doctor-patient relationship**

*** https://www.mciindia.org/CMS/wp-content/uploads/2019/01/AETCOM_book.pdf**

Suggested format for reflective writing for the above AETCOM modules is given in ANNEXURE IV. This could be a part of the practical record book.

LOG BOOK:

Suggested Template of logbook is attached as annexure. The minimum elements that needs to be included are mentioned in the template provided **for log book.**

TEACHING HOURS AND METHODS:

Curricular component	**Time allotted in hours**
Lectures	160
Small group teaching / tutorials / integrated learning /practical	310
Self-directed learning	25
Early clinical exposure (basic science correlation and clinical skills)	30 (18 +12)
Total	**525**
AETCOM module 1.2 and 1.3 ()	15 (8+7)

Note: It is recommended that **didactic teaching** be restricted to **less than one third of the total time** allotted for that discipline.

SCHEME OF EXAMINATION:

INTERNAL ASSESSMENT:

Scheme for calculation of Internal Assessment marks:

Theory (maximum marks)	**Marks**	**Practicals**	**Marks**
Theory written paper	30*	Practical exam (25 marks) and viva- voce (5 marks)	30**
Formative assessment		Formative assessment	
(Part completion tests/ (system-wise reviews)	10	Early clinical exposure + Skill certification	7
		Practical record	3
Total	**40**		**40**

Please note:

- *Prior to submission to the University, the marks for each of the three internal examination theory assessments must be calculated out of 30 marks, regardless of the maximum marks.
- **Prior to submission to the University, the marks for each of the three internal examination practical assessments must be calculated out of 30 marks, regardless of the maximum marks.
- Only the final marks out of 40 needs to be submitted to the University, separately for theory and practical for each internal assessment.

Guidelines: For general guidelines on Internal Assessment refer section II

UNIVERSITY EXAMINATION

SCHEME FOR MARKS DISTRIBUTION FOR UNIVERSITY EXAM:

Theory		Practical	
Paper I	100	Practical exam (Practical I to IV)	80
Paper II	100	Viva voce	20
Total	**200**	**Total**	**100**
Internal assessment	40	Internal assessment	40

A. **THEORY: 200 Marks**

There shall be two theory papers of 100 marks each and duration of each paper will be of 3 hours.

Type of questions	Number of questions	Marks for each question	Total Marks
Multiple Choice Questions	20	1	20
Long essay	2	10	20
Short essay	6	5	30
Short answers	10	3	30
		Total Marks	100

Blue print for theory question papers:

Paper 1 (Max 100 marks)

Systems	Marks Allocated
General Physiology	05
Hematology	20
Cardiovascular Physiology	25
Respiratory Physiology	20
Gastrointestinal Physiology	15
Renal Physiology	15

Paper 2 (Max 100 marks)

Systems	Marks Allocated
Nerve and muscle Physiology	12
Endocrine physiology	20
Reproductive physiology	15
Central nervous system	35
Special senses	10
Integrated Physiology	08

Note:

- **All the questions should be structured compulsorily. One short essay (5 marks) to be preferably a case vignette in each paper.**
- **The systems assigned to the different papers are generally evaluated under those sections. However, a strict division of the subject may not be possible and some overlapping of systems is inevitable. Students should be prepared to answer overlapping systems.**
- **Example of the structured questions and case vignettes are given in the example question papers in ANNEXURE Va, Vb. This is only a sample paper. The systems under each section of the paper (long essay, short essay and short answer) and the system from which the case vignette may be prepared can vary. However, marks allotted to the various systems as given in the above tables must be adhered to (with a variation of distribution of 1-2 marks between systems).**
- **A minimum of 35% marks shall be allocated to assess the higher order thinking skills of the student.**

B. **PRACTICAL: 80 Marks**

There shall be four practical sessions, each carrying 20 marks. The distribution of content and marks for the practical would be as follows:

Practical session	Allotted topics	Marks allotted
Practical – I	Clinical examination – I (CNS – sensory / motor/ reflexes / cranial nerve)	15
	Chart: Clinical case histories	5
	Total	**20**
Practical – II	Clinical examination-II (CVS / RS)	15
	Clinical examination (general physical examination / abdomen examination)	5
	Total	**20**
Practical – III	Human experiments • Mosso's ergography • Effect of posture / exercise on BP and Pulse rate • Effect on BP and pulse rate during exercise using the Harvard step test • Record and interpret Lead II ECG • Spirometry and PEFR • Perimetry • Demonstrate BLS	15
	Chart: Amphibian charts (nerve muscle / cardiac)	5
	Total	**20**
Practical – IV	Hematology • RBC count • WBC count • Making a peripheral smear + DLC on the provided stained slide • BT + blood group • CT + blood group • Hb + blood group	15
	Chart: calculations / problem solving (note: there should not be duplication of charts between practical – I and IV for a given student)	5
	Total	**20**
	Grand total	**80**

Note: the 'allotted topics' for practical exam under different sections (I to IV) mentioned above needs to be strictly adhered to. The experiments kept under clinical examination should allow for an assessment of the marks allotted (and not be a very small component of the experiment for eg. "elicit a knee jerk" is not a complete experiment).

Viva-Voce Examination: 20 Marks

The viva-voce examination shall carry 20 marks and all examiners will conduct the examination. Viva should focus on application and interpretation. **Charts and graphs** should be prepared on all systems which could be divided amongst 4 examiners (system-wise) and could be used in viva. (viva marks to be added to practical and not theory).

ANNEXURE – I

List of suggested topics for the preparation of charts, clinical cases, graphs, clinical problems

(Note: many other topics from the syllabus can be considered and charts developed which is left to the discretion of individual institution)

i. General Physiology – Blood volume, feedback mechanisms flowchart
ii. Nerve muscle physiology – Myesthenia gravis, picture chart of neuromuscular junction
iii. Hematology – clinical cases of anemia, blood indices, peripheral smear, jaundice (prehepatic, post hepatic and hepatocellular),
iv. Cardiovascular system – problems on cardiac output, cardiac index, ejection fraction, clinical cases on hypertension, shock, heart failure; interpretation of ECG and calculation of heart rate from ECG,
v. Respiratory system – spirogram with calculation of lung volumes and capacities, dyspnoeic index, respiratory reserve, charts with FEV1/FVC in obstructive and restrictive conditions
vi. Renal system – Clearance tests, cystometrogram
vii. Gastrointestinal system- clinical cases on peptic ulcer, OGTT, Gastrooesophageal reflux disease
viii. Endocrine system – clinical case histories / pictorial charts for various endocrine disorders
ix. Reproductive system - spinnbarkeit pattern pictorial chart, Fern pattern chart, clinical case history of infertility, hormonal changes during menstrual cycle graph,
x. Central nervous system - pictorial chart of properties of synapses, reflex arc, clinical cases on any of the 12 cranial nerves, Brown Sequard syndrome, cerebellar dysfunction, sensory ataxia, Parkinson's disease, UMN lesion, LMN lesion.
xi. Special senses – visual acuity, perimetry, hearing loss, audiogram
xii. Basal metabolic rate
xiii. Integrated Physiology: Chart also includes - Interpret growth chart*, Interpret anthropometric assessment of infants*: (*these two charts are 'Non-core' competencies as per "Competency based Undergraduate Curriculum for the Indian Medical Graduate 2018: Medical Council of India")
xiv. Others

ANNEXURE- IIa

SUGGESTED FORMAT FOR CERTIFICATION OF SKILLS IN PHYSIOLOGY
GENERAL INSTRUCTIONS

General information:

1. There are 13 skills that need to be certified in Physiology
2. These skills will be tested in normal, healthy volunteers or simulated environment
3. The focus will be on whether students perform the procedures correctly
4. Since these are skills that need to be recertified at the end of clinical training, this certification is a **"First level Certification"**

Role of the certifier:

1. Observe the student perform the skill without any prompting or interference
2. At the end of the assessment ask the specific questions that need to be asked (based on the skill checklist)
3. Grade the student (A, B, C, D – see below)
4. Give feedback to the student on the errors, if any, at the end of the skill assessment.
5. Fill in the Certification Sheet

Assessment

Professional conduct and communication:

1. Is the student adequately groomed
2. Does the student introduce him/herself, greet the subject and obtain consent?
3. Does the student use the hand sanitizer?
4. Does the student give clear instructions to the subject?
5. Does the student thank the subject?
6. Does the student use the hand sanitizer at the end of the session?

Skill specific assessment:

1. Has the student conducted the given assessment completely?
2. Has the student conducted the given assessment correctly?
   (for the above two points please refer to the checklist for the specific skill)
3. How do you rate the student for this session?

Grade	Explanation of Grade	Action to be taken
A	Student has performed the assessment **without any error**	Can be certified for skill
B	Student has performed the assessment **with minor errors** that need to be rectified	Re-assessment for parts that have been performed incorrectly
C	Student has performed the assessment **with major errors**	Re-assessment of whole skill
D	Student has **not been able to perform** the assessment	Re-assessment of whole skill

(Note: columns for 'number of attempts' can be added in the template attached below)

ANNEXURE – IIb

CERTIFICATION SHEET – Blank Template:

Name of Student:

Subject:

Skill:

Competency Number:

Grading of Student (please circle the appropriate letter – A, B, C, D)

A	Student has performed the assessment without any error
B	Student has performed the assessment with minor errors that need to be rectified
C	Student has performed the assessment with major errors
D	Student has not been able to perform the assessment

SKILL CHECKLIST
Satisfactory (√), unsatisfactory (X)

	Attempt I Date:	**Attempt II Date:**	**Attempt 'n' …….. Date:**
Professional conduct and communication			
Steps • • .... • ...			
Grade			
Name and Signature of the assessor			
I have received detailed feedback on my performance including my grade, the errors that I have committed and actions to be taken. (student's signature)			

Certifiers name and signature with date of certification:

Signature of the student:

ANNEXURE – IIc

Sample Skill certification checklist: Examination of reflexes

Name of Student:

Subject:

Skill:

Competency Number:

Grading of Student (please circle the appropriate letter – A, B, C, D)

A	Student has performed the assessment without any error
B	Student has performed the assessment with minor errors that need to be rectified
C	Student has performed the assessment with major errors
D	Student has not been able to perform the assessment

(Note: columns for 'number of attempts' can be added in the template attached below)
SKILL CHECKLIST (Examination of Reflexes)
Satisfactory (√), unsatisfactory (X)

	Attempt I Date:	**Attempt II Date:**	**Attempt 'n'…… Date:**
Professional conduct and communication			
Step Superficial reflexes: • Explains procedure to subject for each of the following: Plantar reflex: • Asks the subject to lie down with foot wear removed • With the help of a blunt object stroke the sole, from heel along the lateral border of foot and medially along the metatarso-phalangeal joint. • Reports the finding (flexor response/Babinski's sign) • Mentions the level of integration on asking (L5, S1) Abdominal reflex:			

• Asks the subject to lie down with foot wear removed • With the help of a key, strokes parallel to costal margin. Both below and above naval region • Observes and reports the contraction of abdominal muscles • Mentions the level of integration on asking (T8 to T12) Deep reflexes: Biceps jerk: • Places subject's forearm in semi-flexed position supported by his/her forearm in relaxed state. • Places thumb on the tendon of biceps in cubital fossa. • With the help of knee hammer taps on the thumb. • Observes and reports (the contraction of biceps and flexion of forearm) • Mentions the level of integration on asking (C5, C6) Triceps jerk: • Supports the forearm of subject on his/her arm at right angles. • Taps the tendon of triceps just above olecranon. • OR • Asks the subject to place his hand on opposite shoulder and taps triceps tendon. • Observes and reports. (the contraction of triceps and extension of forearm) • Mentions the level of integration on asking (C6, C7) Supinator jerk: • The subject's forearm is held in semi-prone position and asks to rest his hand on the student's hand. • Taps the styloid process of the radius. • Observes and reports (contraction of supinator flexion of elbow and eversion of wrist) • Mentions the level of integration on asking (C5, C6) Knee jerk: (ask to demonstrate either sitting or supine position) Sitting position: • Asks the subject to sit on chair with legs relaxed and not touching the ground / legs crossed. Knee of the examining lower limb is exposed. With knee hammer, taps on the patellar tendon just above tibial tuberosity			

Lying down position: • Asks the subject to liedown supine • Positions the limb at 60⁰angle from bed • The student passes the hand underneath the testing limb, rests the hand on the opposite limb and the limb to be tested is slightly raised • The tendon is tapped • Observes and reports (contraction of quadriceps and extension of knee) • Mentions level of integration (L2, L3, L4) Ankle jerk: (ask to demonstrate either sitting or supine position) Standing position: • Asks the subject to place the limb to be examined on the stool with knee flexed at right angles to thigh • Dorsiflexes the ankle • Taps the tendoachillis with knee hammer Lying down position: • Makes the subject lie down. Positions the leg slightly flexed at the knee and foot slightly dorsiflexed. • Holds the big toe gently and taps tendoachillis • Observes and reports (contraction of gastrocnemius muscle with plantar flexion) Mentions level of integration (S1, S2)			
Grade			
Name and Signature of the assessor			
I have received detailed feedback on my performance including my grade, the errors that I have committed and actions to be taken. (student's signature)			

Certifiers name and signature with date of certification:

Signature of the student:

ANNEXURE IId

Sample Skill certification checklist: Measurement of Blood pressure at rest

Name of Student:

Subject:

Skill:

Competency Number:

Grading of Student (please circle the appropriate letter – A, B, C, D)

A	Student has performed the assessment without any error
B	Student has performed the assessment with minor errors that need to be rectified
C	Student has performed the assessment with major errors
D	Student has not been able to perform the assessment

(Note: columns for 'number of attempts' can be added in the template attached below)

SKILL CHECKLIST (measurement of Blood Pressure)

	Attempt I Date:	**Attempt II Date:**	**Attempt 'n'…… Date:**
Professional conduct and communication			
Steps: ·Positions subject (sitting-with their feet on floor, legs uncrossed and their back supported/ supine-lying down) and rests for 5min approx · Exposes the subjects arm at least 5 inches above the elbow: Sleeve can be rolled up but must be able to fit a finger under it or remove constrictive clothing. · Squeezes all air out of cuff before applying to subject · Arm is supported, at heart level, palm of hand turned up · Place cuff snugly on bare arm.			

·The centre of the bladder is positioned over the line of the artery. ·The lower edge of the bladder is 2-3 cm above the elbow crease ·The palpatory systolic pressure is measured by palpating for the radial artery, closing the valve, and pumping up the cuff. (Deflates cuff slowly and notes the point of reappearance of pulse) · The student reports the Palpatory Systolic Pressure ·Releases the air from the cuff and waits 30 seconds. -Elevates the pressure 20-30mm Hg above the palpatory systolic pressure. · Uses stethoscope properly (direction of ear pieces). Checks the stethoscope amplification for sound. · Position the diaphragm of the stethoscope over the brachial artery. · Deflates slowly at about 2mmHg/ second ·Releases the remaining air in the cuff after recording BP by opening the valve completely and removing the cuff. · If the student needs to recheck, completely deflates, waits 1-2 minutes and then reinflates. ·Documents: pt. position, arm used, cuff size, blood pressure Measurement			
Grade			
Name and signature of the assessor			
I have received detailed feedback on my performance including my grade, the errors that I have committed and actions to be taken.			

Certifiers name and signature with date of certification:
Signature of the student:

ANNEXURE III

(Note: questions could be added/modified to this document which is at the discretion of individual institution. This appendix could be a part of practical record/logbook of Physiology)

SUGGESTED FORMAT FOR ASSESSING PARTICIPATION IN EARLY CLINICAL EXPOSURE SESSIONS

Session number: **Date:**

Roll No:

Department visited:

Objectives

1.

2.

3.

1. Briefly describe what you learnt from this session/ clinical visit in relation to the objectives. (in 100-150 words)

2. Apart from the above learning, what did you observe that influenced (Positive/negative) you? (in 100-150 words)

Remarks of teacher: Satisfactory / Not satisfactory

Name and Signature of Teacher with date:

ANNEXURE IV

(Note: questions could be added/modified to this document which is at the discretion of individual institution. This appendix could be a part of practical record/logbook of Physiology)

SUGGESTED FORMAT FOR AETCOM SESSIONS

Name of the Facilitator: Date:

AETCOM module Number: Session number:

AETCOM Topic:

Competencies / Objectives:

1.

2.

3.

1. Briefly describe what you learnt from this AETCOM session in relation to the objectives. (in 100-150 words)

2. Apart from the above learning, what did you observe that influenced (Positive/negative) you during this session? (in 100-150 words)

Remarks by Facilitator:

Signature of Facilitator:

SUGGESTED TEXT BOOKS

Note: A single text book may not cover the entire curriculum. Referring to more than one book is recommended.

TEXT BOOKS (latest editions)

1. Guyton and Hall. Text of Medical Physiology. South Asian edition. Mario Vaz, Anura Kurpad, Tony Raj.
2. Ganong's Review of Medical Physiology.
3. Vander's Human Physiology.
4. Principles of Medical Physiology. Sabyasachi Sircar
5. Text book of Medical Physiology. Indu Khurana
6. Text book of Medical Physiology. D Venkatesh, H H Sudhakar
7. Text book of medical physiology. G K Pal.
8. Essentials of Medical Physiology. ABS Mahapatra
9. Berne and Levy Physiology. BM Koeppen, BA Stanton
10. Human Physiology. Lauralee Sherwood.

Reference books for practical

1. McLeod's Clinical Examination
2. Hutchison's Clinical Methods.
3. Text book of practical physiology. GK Pal and Pravati Pal
4. A textbook of Practical Physiology. CL Ghai

BIOCHEMISTRY

GOAL

The broad goal is to teach Biochemistry to undergraduate students to make them understand the scientific basis of the life processes at the molecular level and to orient them towards the application of the knowledge acquired in solving clinical problems.

OBJECTIVES

A. KNOWLEDGE

At the end of the course, the student should be able to:

1. Describe the molecular and functional organization of a cell and its subcellular components;
2. Delineate structure, function and inter-relationships of biomolecules and consequences of deviation from normal;
3. Summarize the fundamental aspects of enzymology and clinical application wherein regulation of enzymatic activity is altered;
4. Describe digestion and assimilation of nutrients and consequences of malnutrition;
5. Integrate the various aspects of metabolism and their regulatory pathways;
6. Explain the biochemical basis of inherited disorders with their associated sequelae;
7. Describe mechanisms involved in maintenance of body fluid and pH homeostasis;
8. Outline the molecular mechanisms of gene expression and regulation, the principles of genetic engineering and their application in medicine;
9. Summarize the molecular concepts of body defence and their application in medicine;
10. Outline the biochemical basis of environmental health hazards, biochemical basis of cancer and carcinogenesis;
11. Familiarize with the principles of various conventional and specialized laboratory investigations and instrumentation analysis and interpretation of a given data;
12. Suggest laboratory investigations to support theoretical concepts and clinical diagnosis.

B. SKILLS:

At the end of the course, the student should be able to:

1. Make use of conventional techniques/instruments to perform biochemical analysis relevant to clinical screening and diagnosis;
2. Analyze and interpret investigative data;
3. Demonstrate the skills of solving scientific and clinical problems and decision making;

C. INTEGRATION

The knowledge acquired in Biochemistry should help the students to integrate molecular events with structure and function of the human body in health and disease.

COURSE CONTENT AND TEACHING HOURS

A. TEACHING HOURS

Curricular component	Time allotted in hours
Lectures	80
Small group teaching / tutorials / integrated learning /practical	150
Self-directed learning	20
Early clinical exposure (basic science correlation and clinical skills)	30 (18 +12)
Total	**280**
AETCOM module 1.4	7

B. Course content

(i) Theory Topics

Syllabus

Teaching hours – 160 hours

Sl Topic (Competency No) No.

1. Relevance of Biochemistry in Medicine Core: 1 hr (Orientation lecture)

Importance of Biochemistry in health and disease -
Examples of normal biochemical process
- Examples of biochemical derangements involved in disease development
- Examples of application of laboratory medicine in screening, diagnosis and prognosis of diseases

2 **Cell and organelles, Cell membrane, Transport across cell membranes** (BI1.1) 2 hrs

Core:

Prerequisite: Concept of prokaryotic and eukaryotic cell

Cell organelles – Structure, Biochemical functions, Marker enzymes
Cell Membrane - Fluid mosaic model, composition, Fluidity of membrane
Transport across cell membranes with examples

- Passive transport – Diffusion and facilitated transport (ion channels)
- Active transport – Primary and Secondary
- Endocytosis and Exocytosis

Aquaporins
ABC family of transporters

Non core:

Cytoskeleton –
Structure and functions of microtubules, actin filaments, intermediate filaments
Intercellular communication
Separation of cell organelles

3 **Enzymes** (BI2.1, BI2.3, BI2.4, BI2.5, BI2.6, BI2.7) 9 hrs

Core:

Enzymes- Definition, General properties, IUBMB Classification.
Coenzymes and Cofactors
Mechanism of Enzyme action - Concept of activation energy, transition state, binding energy, active site; Substrate binding to active site - Koshlands Induced fit theory
Factors affecting enzyme activity
Effect of substrate concentration - Michaelis -Menton theory, Km value, Vmax and its significance (derivation not required)
Enzyme specificity
Enzyme inhibition - Competitive and Non-competitive inhibition with examples of clinical importance
Suicide inhibition
Enzymes as toxins – Eg. Snake venom phospholipase
Enzyme regulation by- Short term (Covalent modification, Zymogen activation,

Allosteric regulation, Feedback regulation) and long term regulation (Induction and repression)
Clinical Enzymology – Concept of plasma functional and non-functional enzymes
Diagnostic Importance of enzymes – LDH, CK, AST, ALT, ALP, GGT, Amylase, Lipase, G6PD, Cholinesterase, ACP, 5'nucleotidase
Isoenzymes – Definition, Diagnostic Importance of isoenzymes with examples.
Enzymes as Therapeutic agents
Enzymes used in diagnostic assays
Ribozymes
Non core:
Mechanisms of enzyme catalysis (List)

4 **Chemistry of Carbohydrates (BI3.1)** 3 hrs

Core:
Definition, Biomedical importance
Classification with examples
Monosaccharide derivatives – Uronic acids, aminosugars, Glycosides, Sorbitol, Mannitol and their Clinical significance.
Disaccharides, oligosaccharides -composition, importance
Polysaccharides –Homopolysaccharides – Composition and Importance of starch, glycogen, Dextran, Cellulose and Inulin.
Heteropolysaccharides – Mucopolysaccharides (Composition and function)
Concept of glycation and glycosylation
Importance of Glycoproteins
Non core:
Sialic acid – importance
Blood group substances

5 **Carbohydrate metabolism (BI3.2, BI3.3, BI3.4,BI3.5, BI3.6, BI3.7, BI3.9)** 14hrs

Core:
Digestion and absorption
Mechanism of absorption
Lactose intolerance
Glucose transporters
Insulin dependent and Insulin independent uptake of glucose by tissues
PATHWAYS – Significance, Site, reactions, key steps, energetics, regulation, inhibitors and associated disorders of -

- Glycolysis, Rapaport Leubering cycle and its significance
- Citric acid cycle, Amphibolic role, Anaplerotic reactions
- Gluconeogenesis, Cori's cycle
- Glycogenesis, Glycogenolysis, Glycogen storage disorders

Significance of HMP shunt pathway and uronic acid pathway
Glucose-6-Phosphate dehydrogenase deficiency

Galactosemia, Essential Fructosuria, Hereditary fructose intolerance Regulation of blood glucose levels in well fed condition and fasting/starvation

Non core:

Galactose and Fructose metabolism

Details of Pyruvate dehydrogenase (PDH) reaction

Essential pentosuria

6 **Chemistry of lipids (BI4.1, BI11.24)** 3 hrs

Core:

Definition, Modified Bloor's classification with examples.

Biomedical importance of lipids

Fatty acids - Definition, examples and importance of Essential fatty acids, Mono and Polyunsaturated fatty acids, n3 and n6 fatty acids, Trans-fatty acids.

Triacylglycerol – composition and importance

Phospholipids - Types, functions with clinical importance

Respiratory distress syndrome

Glycolipids – Types and importance

Cholesterol - structure and biological importance

Lipoproteins - Types and functions

Amphipathic lipids - Definition, examples and importance, Liposomes

Non core:

Fatty acids – nomenclature and different types of classification

Synthesis of lung surfactant

7. **Lipid metabolism (BI4.2, BI4.3, BI4.4, BI4.6)** 12 hrs

Core:

Digestion and Absorption

Steatorrhea

Biosynthesis and breakdown of triacylglycerol

PATHWAYS – Significance, Site, reactions, key steps, energetics, regulation, and associated disorders of -

- Beta oxidation
- Ketogenesis, ketolysis
- Cholesterol biosynthesis upto mevalonate.

Other types of Oxidation of fatty acids and associated disorders

Lipoprotein metabolism Structure, Composition, Types, Functions, metabolism of Chylomicrons, VLDL, LDL, HDL

Formation and functions of bile acids and bile salts

Fatty liver and lipotropic factors

Hyperlipoproteinemias

Biochemical basis of use of hypolipidemic drugs

Prostaglandins – types and biomedical importance

Non core:

Fatty acid synthase multienzyme complex
Outline of Fatty acid biosynthesis
Lipid Storage Disorders

8 **Chemistry of amino acids and Proteins (BI5.1, BI5.2)** 3 hrs

Core:

Prerequisite: Amino acids – Classification based on side chain properties, nutritional requirement

Classification of Amino acids based on metabolic fate
Standard and non-standard amino acids
Biologically important peptides
Proteins – Definition, Classification based on chemical nature and solubility, functions, nutritional value
Structural organisation of proteins (primary, secondary, super secondary structures/ motifs, domains, tertiary and quaternary structures)
Bonds stabilizing protein structure
Structure function relationship of proteins - haemoglobin, myoglobin, collagen and Insulin
Denaturation - definition, causes, properties of a denatured protein, significance.

Non core:

Isoelectric pH
Non-protein amino acids, Non-alpha amino acids, D-amino acids

9 **Protein and amino acid metabolism (BI5.3, BI5.4, BI5.5, BI11.17)** 13 hrs

Core:

Digestion and absorption and associated disorders
Amino acid pool
General reactions – Transamination, Transmethylation, Transdeamination, Deamination - Oxidative and nonoxidative and their significance.
Biogenic amines
Sources and fate of ammonia **-** Trapping, Transport and Disposal of ammonia, ammonia toxicity
Urea cycle and its disorders

Amino acid metabolism

Glycine – specialised products and their importance
Phenylalanine, Tyrosine – metabolic pathway, synthesis of catecholamines. Pheochromocytoma
Other specialised products formed from tyrosine and their importance
Tryptophan- synthesis of serotonin and melatonin and their importance
Carcinoid syndrome
Sulphur containing amino acids – functions of cysteine, methionine synthesis of SAM, SAH, Homocysteine
Formation of Nitric oxide and its importance

Inborn errors of metabolism – enzyme defects, clinical features, laboratory diagnosis and biochemical basis of management of – PKU, Tyrosinosis, Alkaptonuria, Albinism, Homocystinuria, Maple syrup urine disease (MSUD)
Important functions/products from histidine, serine, Aspartate, Asparagine, glutamate, glutamine, serine, branched chain amino acids
Polyamines - Examples and importance

Non core:

Techniques to separate and identify amino acids.

10 **Plasma proteins (BI5.2)** 3 hrs

Core:

Functions and clinical significance of plasma proteins - Albumin, α, β and γ globulins.
Acute phase reactants - Positive and Negative (clinical significance)
Biological Reference range of serum total protein, albumin, total globulin, C reactive protein
Multiple Myeloma

Non core:

Separation and identification of plasma proteins by electrophoresis and precipitation reactions

11 **Metabolism and homeostasis (BI6.1, BI3.8, BI4.5, BI4.7, BI3.10, BI11.17)** 6 hrs

Core:

Metabolic processes taking place in specific organs in the body in fed, fasting and exercise states.
Metabolic changes during starvation
Adipose tissue – Hormones secreted from adipose tissue (adipokines – leptin, adiponectin) their functions and role in hunger and satiety.
Diabetes mellitus – types, metabolic changes, complications.
Guidelines for diagnosis of Diabetes mellitus
Artificial sweeteners- list, use, metabolic effects(briefly) and concerns (to be discussed with in context of their use in Diabetes Mellitus).
Lipid profile, Dyslipidemia
Atherosclerosis – definition, role of lipids in atherogenesis (LDL, Oxidised LDL, Lp(a), Small dense LDL, HDL)
Lab tests in Myocardial infarction

Non core:

Advanced Glycation End (AGEs) products

12 **Biological Oxidation (BI6.6)** 3 hrs

Core:

Prerequisite: Bioenergetics – Laws of thermodynamics, Free energy, Exergonic and endergonic reactions, Chemical Coupling Redox pair, Redox potential.
High Energy Compounds – Definition, Classification, biological significance.
Transport of reducing equivalents across mitochondria

Electron Transport Chain – Organization, components, flow of electrons.
Oxidative Phosphorylation – Sites, mechanism (Chemiosmotic theory).
Binding change mechanism of ATP synthesis by ATP synthase.
Inhibitors of Electron Transport Chain and oxidative phosphorylation. Uncouplers and their significance.
Brown adipose tissue metabolism.

Non core:

ATP-ADP cycle.
Structure and organization of ATP synthase complex.
Mitochondrial myopathies

13 **Heme metabolism (BI6.11, BI6.12, BI5.2, BI11.17)** 7 hrs

Core:

Heme –Outline of Synthesis, porphyrias
Degradation of Heme, Bilirubin metabolism – synthesis, transport, conjugation, excretion
Jaundice – definition, types, causes, lab diagnosis
Congenital hyperbilirubinemias
Hemoglobin – Adult, fetal and embryonic types
Abnormal hemoglobins– carboxy, sulph, metHb.
Hemoglobinopathies – molecular defects, pathophysiological changes in thalassemias and sickle cell anemia

Non core:

p50 of hemoglobins

14. **Extracellular matrix (BI9.1, BI9.2)** 4 hrs

Core:

Composition of ECM – Proteins (Composition and functions of Collagen, elastin, fibrillin, fibronectin, laminin) and Proteoglycans.
Involvement of ECM components in health and disease**.** Eg.
Osteogenesis Imperfecta, Ehler-Danlos syndrome etc

Non core:

Bone tissue– Concept of Bone turnover, factors affecting bone turnover, Peak bone mass, List of markers of bone formation and bone resorption.

15. **Vitamins (BI6.5)** 12 hrs

Core:

Prerequisite: Definition, difference between water and fat soluble vitamins
RDA, Sources, Metabolism, Biochemical functions, Deficiency manifestations, Hypervitaminoses of Fat soluble vitamins (A,D,E,K), Water soluble vitamins - Vitamin C, Folic acid, Vitamin B12, Thiamine, riboflavin, Niacin, Pyridoxine, Biotin, Pantothenic acid
Antivitamins

Non core:

Vitamers

Lipoic acid

16 **Minerals (BI6.9, BI6.10)** 8 hrs

Core:

Major elements and trace elements

Sources, RDA, absorption and transport, Homeostasis, Functions, Biological reference range, disorders associated with – Calcium, phosphorus, Iron

Functions and disorders associated with - Copper, Zinc, Selenium, Fluoride, Iodine, Magnesium, Molybdenum.

17 **Chemistry of Nucleic acids (BI7.1)** 2 hrs

Core:

Prerequisite: Nitrogenous bases: Purines and Pyrimidines (Major, Minor, Free Bases); Nucleosides and Nucleotides – Structure, examples, Importance

Nucleoside derivatives: NMP, NDP, NTP cAMP, SAM, PAPS, UDP sugars etc

Synthetic Nucleotide Analogues and their application

Structure and function of DNA (B-DNA)

Structural organization of DNA to form chromatin (Primary and Secondary)

Types of RNA (hnRNA, mRNA, rRNA, tRNA, snRNA) with structure and functions

microRNA (miRNA) and small interfering RNA (siRNA) and their applications in medicine

Non core:

Different types of DNA

18 **Nucleotide metabolism (BI6.2, BI6.3, BI6.4)** 4 hrs

Core:

Prerequisite: Sources of atoms of Purine and pyrimidine ring

Salvage pathways of Purine and pyrimidine synthesis

Catabolism of Purines, Uric acid and its importance

Etiology, manifestations and biochemical basis of clinical manifestations of – Gout, LeschNyhan syndrome,

Non core:

SCID, Oroticaciduria

Diagnostic importance of Adenosine deaminase

19 **Molecular Biology (BI7.1, BI7.2, BI7.3, BI9.3)** 11 hrs

Core:

Concept of Genomics, proteomics and metabolomics

DNA Metabolism

Cell cycle

DNA replication - prokaryotic and eukaryotic replication, requirements, process, inhibitors

Telomere, Telomerase and its importance

DNA repair mechanisms

Diseases associated with DNA repair – Eg. Xeroderma Pigmentosum
Mutations, causes, types of mutation, Consequences with examples

RNA Metabolism

Transcription process
Transcriptional units, promoter regions, RNA polymerases in prokaryotes and eukaryotes
Differences between prokaryotic and Eukaryotic transcription
Inhibitors of transcription process
Post transcriptional modifications of all types of RNA

Protein Biosynthesis

Genetic Code and its characteristics
Requirements and activation of amino acids
Translation in Eukaryotes
Inhibitors of Translation
Post translational modifications

Regulation of Gene expression

Gene, introns, exons, cistron
Regulation of gene expression in prokaryotes with illustration of Lac Operon
Regulation of gene expression in eukaryotes – Role of enhancers, repressors, DNA regulatory elements, gene amplification, gene rearrangement, RNA processing, RNA editing, mRNA stability.

Non core:

Role of transcriptional activators and coregulators
Protein folding – Role of Chaperones and Heat shock proteins, Alzheimers disease, Prion diseases
Protein targeting and sorting with associated disorders Eg, I cell disease
Protein motifs in DNA regulatory proteins
Chromatin remodeling in regulation
Epigenetics

20. **Molecular biology techniques and Gene therapy (BI7.4)** 4 hrs

Core:

Recombinant DNA technology, DNA cloning - process and application
PCR technique and its application
Blotting techniques
Concept, types and application of gene therapy.
DNA Polymorphism, SNP, VNTR, RFLP
DNA genomic and cDNA libraries
DNA Probes
DNA Microarrays
Overview of Human Genome Project HGP

21 **Biochemistry of Cancer (BI10.1, BI10.2)** 5 hrs

Core:

Cell cycle, regulation, abnormal cell growth, programmed cell death (apoptosis)
Cell signaling (action of hormones and growth factors) – Cell surface receptors - G protein coupled signaling, catalytic receptor signaling, steroid receptor signaling.
Mutagens and carcinogens: Definitions, examples and their actions in carcinogenesis
Protooncogenes and their activation, oncogenes, tumour suppressor genes and their role in development of cancer
Oncogenic viruses (HPV and cervical cancer)
Growth factors and their receptors
Tumour markers and their importance in diagnosis and prognosis of cancer
Biochemical basis of cancer therapy – alkylating agents, antimetabolites, topoisomerase inhibitors, antibiotics, hormones, receptor blockers, radiotherapy etc
Monoclonal antibodies and their application

Non core:

Hybridoma technology
Estrogen and progesterone receptors and their clinical importance in breast cancer

22 **Immunology (BI10.3, BI10.4, BI10.5)** 1 hr

Core:

Cellular and humoral components of immune system
Immunoglobulins – Classes, structure function relationship
Innate and adaptive immune responses, self/non-self-recognition
Role of T-helper cells in immune responses
Ig class switching
Concept of Immune tolerance and Autoimmunity
Antigens and concepts in vaccine development – types of vaccines, immunological basis of vaccine development, recombinant DNA technology in vaccine development.

Non core: Hypersensitivity reactions
Concept of graft rejection
Phases of vaccine development.

23. **Nutrition and dietetics (BI8.1, BI8.2, BI8.3, BI8.4, BI8.5, BI11.17, BI11.23, BI11.24)** 7 hrs

Core:

Energy content of food items
BMR – Definition, Normal values, Factors affecting and biomedical importance
SDA – Definition and significance (Thermogenic effect of food)
Nitrogen balance
Balanced diet – definition, composition
Dietary fibers – definition, examples, importance
Glycemic index – definition, calculation, importance
Nutritional importance of Carbohydrates, Lipids, Proteins, Vitamins and minerals, commonly used food items including fruits and vegetables.
Nutritional indices
Calculation of calorie requirement

Dietary advice for optimal health in childhood and adults, special conditions like diabetes mellitus , coronary artery disease, pregnancy.
Types, causes and effects of Protein energy malnutrition
Obesity – Definition, BMI, types, causes, role of GI peptides and adipokines in obesity, associated health risks (eg., metabolic syndrome)

24 **Organ function tests (BI6.13, BI6.14, BI6.15, BI11.17)** 11 hrs

Core:

Functions of Liver, Kidney, Thyroid and adrenals.
Liver Function Tests: Tests based on Synthetic, Excretory, and Role of enzymes in hepatic dysfunction
Renal Function tests – Tests to assess glomerular and tubular functions
Mechanism of action of Group I and Group II hormones
Thyroid function tests
Adrenal function tests

Non core:

Lab tests for evaluation of Infertility.

25 **Acid base balance (BI6.7, BI6.8, BI11.17)** 4 hrs

Core:

Prerequisite: Concept of Acids, Bases and buffers, HH Equation and its application
Regulation of pH of blood by buffers, respiratory and renal mechanisms
Anion gap and its significance
Acidosis and alkalosis (metabolic and respiratory) – causes, compensatory mechanisms and lab findings

26 **Water and electrolyte balance (BI6.7)** 3 hrs

Core:

Distribution of water and electrolytes in ICF and ECF
Osmolality of ECF
Regulation of water and electrolyte balance
Disorders of electrolyte imbalance – causes and clinical features of Hyperkalemia, Hypokalemia, Hypernatremia, Hyponatremia
Dehydration

27 **Free Radicals and Antioxidants (BI7.6, BI7.7)** 3 hrs

Core:

Free radicals, Reactive oxygen species (ROS), Reactive nitrogen species (RNS)
Damaging effects of ROS on biomolecules, lipid peroxidation
Anti-oxidant defence system of our body – enzymes, vitamins, metabolites as antioxidants
Role of oxidative stress in atherosclerosis, diabetes mellitus and cancer

Non core:

Fenton and Haber Weiss reactions

28 **Xenobiotics and Detoxification (BI7.5)** 1 hr

Core:

Xenobiotics and disease caused. Biotransformation

Phase –I reactions

Oxidation

Hydroxylation

Cytochrome P450

Phase-II reactions

Conjugation reactions-Glucuronic acid, Glutathione, Glycine

Non core:

Other detoxification reactions reduction, hydrolysis, Acetylation, Methylation and reduction

29 **Clinical chemistry (BI11.16)** 2 hrs

Core:

Basic concepts of clinical chemistry laboratory

Automation - advantages

Quality control concepts (Internal and external quality control, precision, accuracy)

Specimen collection and Common Preanalytical errors

Biological reference intervals

Critical alerts

Ethics in Laboratory Medicine

Note:

1. Students are expected to familiarize by themselves the contents mentioned as prerequisite (in italics)

SUGGESTED DISTRIBUTION OF THEORY TEACHING HOURS						
Sl No	**Topic**	**Suggested TL methods (hours)**				
		Lecture (80)	**SGT (40)**	**CBL (40)**	**Total (160)**	**Integration (20) Shared extra hours**
1	Relevance of Biochemistry in Medicine			1 Orientation lecture		
2	Cell and organelles, Cell membrane, Transport across cell membranes	2	-	-	**2**	2
3	Enzymes	5	2	2	**9**	-
4	Chemistry of Carbohydrates	3	-	-	**3**	-
5	Carbohydrate metabolism	8	2	4	**14**	-
6	Chemistry of lipids	3	-	-	**3**	-
7	Lipid metabolism	8	2	2	**12**	-
8	Chemistry of amino acids and Proteins	3	-	-	**3**	-
9	Protein and amino acid metabolism	7	2	4	**13**	-
10	Plasma proteins	1	-	2	**3**	1
11	Metabolism and homeostasis	2	4	-	**6**	2
12	Biological Oxidation	3	-	-	**3**	-
13	Heme metabolism	3	-	4	**7**	2
14	Extracellular matrix	2	2	-	**4**	-
15	Vitamins	2	4	6	**12**	-
16	Minerals	2	4	2	**8**	2
17	Chemistry of Nucleic acids	2	-	-	**2**	-
18	Nucleotide metabolism	2	-	2	**4**	-
19	Molecular Biology	7	4	-	**11**	-
20	Molecular biology Techniques and Gene therapy	2	2	-	**4**	1
21	Biochemistry of Cancer	3	-	2	**5**	2
22	Immunology	1	-	-	**1**	2
23	Nutrition and dietetics	3	2	2	**7**	2
24	Organ function tests	1	4	6	**11**	2
25	Acid base balance	2	-	2	**4**	1
26	Water and electrolyte balance	1	2	-	**3**	1
27	Free Radicals and Antioxidants	1	2	-	**3**	-
28	Xenobiotics and Detoxification	1	-	-	**1**	-
29	Clinical chemistry	-	2	-	**2**	-

Note: The above table containing teaching hours assigned to different topics under large and small group teaching may be used as a guide by the Institutes.

i. Assessment methods for Theory (Formative and Summative):

- **Written (Structured Long essay Questions/Short essay questions /short answer questions/ clinical vignette based questions)**
- **Viva Voce**

Case based learning Sessions with lab data interpretation - 20 X2=40 hrs

Sl. No	Topic	Suggested Cases for discussion	No. of sessions (2 hrs each)	Domain / Level	Assessment Tool
1	Diagnostic enzymology BI2.7, BI11.17	Myocardial infarction Acute pancreatitis	1	K/KH	Case chart discussion /OSPE
2	Carbohydrate metabolism BI3.8, BI3.10, BI11.17	Diabetes Mellitus GTT charts/GST Galactosemia Von Gierke disease	2	K/KH	Case chart discussion /OSPE
3	Lipid metabolism BI3.10, BI4.7, BI11.17	Dyslipidemia Ketoacidosis Familial hypercholesterolemia	1	K/KH	Case chart discussion /OSPE
4	Protein metabolism Inborn errors of metabolism BI5.5, BI11.17	PKU Alkaptonuria Homocystinuria MSUD Albinism	2	K/KH	Case chart discussion /OSPE
5	Plasma proteins BI5.5, BI11.16, BI11.17	Multiple myeloma	1	K/KH	Case chart discussion /OSPE
6	Nucleotide metabolism BI6.4, BI11.17	Gout	1	K/KH	Case chart discussion /OSPE

7	Liver Function tests and Hemoglobinopathies BI6.2, BI6.14, BI11.17	Hemolytic Jaundice Hepatic jaundice Obstructive jaundice Neonatal jaundice Alcoholic cirrhosis Non alcoholic steatohepatitis Sickle cell anaemia Thalassemia	2	K/KH	Case chart discussion /OSPE
8	Renal function tests BI6.14, BI11.17	Normal renal function Renal failure Nephrotic syndrome Acute glomerulonephritis	2	K/KH	Case chart discussion /OSPE
9	Thyroid function tests BI6.14, BI11.17	Hypothyroidism Hyperthyroidism	1	K/KH	Case chart discussion /OSPE
10	Vitamin deficiency disorders BI6.5	Vitamin A deficiency Rickets/Osteomalacia Scurvy Beri Beri Pellagra Megaloblastic anemia	3	K/KH	Case chart discussion /OSPE
11	Minerals BI6.10	Iron deficiency anaemia Tetany Wilson's disease Goitre Fluorosis	1	K/KH	Case chart discussion /OSPE
12	Nutritional disorders BI8.2	Kwashiorkor Marasmus Metabolic syndrome	1	K/KH	Case chart discussion /OSPE
13	Cancer BI10.2	Prostate carcinoma Breast carcinoma	1	K/KH	Case chart discussion /OSPE
14	Disturbances in acid-base balance BI6.8, BI11.17	Metabolic acidosis Metabolic alkalosis Respiratory acidosis Respiratory alkalosis	1	K/KH	Case chart discussion /OSPE

ii. PRACTICAL: 35X2 = 70 hours

Part 1: Qualitative Experiments – 9X2=18hrs
Part 2: Quantitative Experiments – 14X2=28hrs
Part 3: Demonstration Experiments – 12X2=24hrs

Sl. No	Type of Experiment	Suggested Teaching learning method - Practical tests to be performed	No. of practical classes	Domain/ Level	Assessment method
Part 1: Qualitative Experiments - 9 Classes					
1	Analysis of Normal constituents of urine BI11.3, BI11.4	DOAP sessions – Examine Physical properties, Inorganic constituents (Calcium, Phosphorus and Ammonia) and Organic constituents (Urobilinogen, Urea, Uric acid and Creatinine)	3	S/P	Qualitative analysis
2	Analysis of Pathological Constituents of Urine BI11.4, BI11.20	DOAP sessions - Physical examination, chemical tests for Glucose, Ketone Bodies, Blood, Proteins, Bile salts and Bile Pigments Demonstration by using Dip sticks	4	S/P	Qualitative analysis
3	Urine screening tests for Inborn errors of metabolism BI11.5, BI5.5	Newborn screening tests- Interpretation of laboratory reports	1	K/KH	OSPE/ Viva
4	Calculate the energy content of food items 11.23	Small group discussion – Calculate	1	K/KH	OSPE/ Viva

Part 2: Quantitative Experiments - 14 Classes					
1	Estimation of plasma glucose by Enzymatic method and Glucometer as point of care testing BI11.21, BI3.10	DOAP sessions - Perform and Interpret	2	S/P	Quantitative analysis/ OSPE/Case chart interpretation
2	Estimation of serum and urine creatinine by Jaffe's method, Creatinine clearance BI11.7, BI11.21	DOAP sessions - Perform and Interpret	2	S/P	Quantitative analysis/ OSPE/Case chart interpretation
3	Estimation of blood urea by end point method BI11.21	DOAP sessions - Perform and Interpret	2	S/P	Quantitative analysis/ OSPE/Case chart interpretation
4	Estimation of Total Protein and Albumin in serum by Biuret and BCG method, A:G ratio BI11.8, BI11.21	DOAP sessions - Perform and Interpret	2	S/P	Quantitative analysis/ OSPE/Case chart interpretation
5	Estimation of Total cholesterol and High density lipoprotein(HDL) cholesterol BI11.9	Practical - Perform and Interpret	1	S/P	Quantitative analysis/ OSPE/Case chart interpretation

6	Estimation of Triacylglycerols BI11.10	Practical - Perform and Interpret	1	S/P	Quantitative analysis/ OSPE/Case chart interpretation
7	Estimation of Calcium and Phosphorous BI11.11	Practical - Perform and Interpret	1	S/P	Quantitative analysis/ OSPE/Case chart interpretation
8	Estimation of Serum Bilirubin BI11.12	Practical - Perform and Interpret	1	S/P	Quantitative analysis/ OSPE/Case chart interpretation
9	Estimation of AST, ALT activity BI11.13	Practical - Perform and Interpret	1	S/P	Quantitative analysis/ OSPE/Case chart interpretation
10	Estimation of ALP activity BI11.14	Practical - Perform and Interpret	1	S/P	Quantitative analysis/ OSPE/Case chart interpretation
Part 3: Demonstrations -12 Classes					
1	Lab safety and Biomedical waste disposal, Commonly used lab equipment, glassware and reagents BI11.1	Small group discussion, lab visit	1	K/KH	Viva
2	Preparation of buffers and estimation of pH using pH meter BI11.2, 11.16, 11.19	Demonstration - Observe	1	K/KH	Viva
3	Colorimetry, Spectrophotometry BI11.6, BI11.18,	Demonstration - Observe	1	K/KH	Viva
4	Clinical chemistry autoanalyser and quality control (Internal and External quality control, Precision, Accuracy, QC rules), Biological reference intervals BI11.16, BI11.19	Demonstration - Observe and interpret	1	K/KH	OSPE/ Viva

5	Specimen collection and preanalytical errors in clinical Biochemistry lab	Collection centre and lab visit	1	K/KH	Viva
6	Serum protein electrophoresis, types and applications BI11.16, BI11.19	Demonstration - Observe and interpret	1	K/KH	OSPE/ Viva
7	Paper chromatography/TLC of amino acids/sugars, types and applications BI11.5, BI5.5, BI11.16, BI11.19	Demonstration - Observe and Interpret	1	K/KH	OSPE/ Viva
8	Analysis of CSF BI11.15	Small group discussion - Interpret	1	K/KH	OSPE/ Viva
9	Estimation of serum electrolytes by ISE BI11.16, BI11.19	Demonstration - Observe and Interpret	1	K/KH	OSPE/ Viva
10	Blood gas analysis using ABG analyser BI11.16, BI11.19	Demonstration- Observe and Interpret	1	K/KH	OSPE/ Viva
11	Principle, procedure and applications of ELISA, protein extraction, Blotting techniques, PAGE BI11.16, BI11.19	Demonstration- Observe	1	K/KH	Viva
12	Principle, procedure and applications of PCR, DNA isolation BI11.16, BI11.19	Demonstration- Observe	1	K/KH	Viva

CERTIFICATION OF SKILL ACQUISITION:

To be certified using checklists
Suggested Checklist format for Certification of Skills (refer logbook)

Sl No	Competency to be certified with Competency number	No. required to
1	Perform urine analysis to estimate and determine normal constituents (BI11.4)	1
2	Perform urine analysis to estimate and determine abnormal constituents (BI11.4)	1
3	Identify abnormal constituents in urine, interpret the findings and correlate these with pathological states (BI11.20)	1
4	Demonstrate estimation of glucose in serum (BI11.21)	1
5	Demonstrate the estimation of serum Creatinine and Creatinine clearance (BI11.7, BI11.21)	1
6	Demonstrate estimation of urea in serum (BI11.21)	1
7	Demonstrate estimation of serum protein, albumin and A:G ratio (BI11.7, BI11.21)	1

Note: In Theory, Practicals and Certification of Skill sections, topics with corresponding competency numbers as mentioned in Volume 1 of Competency based Undergraduate Curriculum for Indian Medical graduate (2018), prescribed by Medical Council of India , have been mentioned.

iii. SUGGESTED AREAS FOR INTEGRATION:
As per the "Competency based Undergraduate Curriculum for the Indian Medical Graduate 2018: Medical Council of India"

iv. EARLY CLINCAL EXPOSURE (ECE): Needs to be entered in Log book
CLINICAL SKILLS - 12 hours Suggested cases for hospital visit

- Anemia
- Jaundice
- Renal failure
- Diabetes Mellitus

BASIC SCIENCE CORRELATION - 18 hours Suggested topics -

- Biochemical basis of myocardial infarction (dyslipidemia, atherosclerosis, diagnostic tests)
- Biochemical basis of acute complications of diabetes mellitus
- Biochemical alterations in diarrhea (acid base and electrolyte and ORS management
- Biochemical basis of Metabolic syndrome
- Critical alerts in Biochemistry lab test results.

- Evidence based laboratory medicine

v. SELF DIRECTED LEARNING (SDL):

Suggested topics for log book entry in the form of concept mapping

- RBC membrane composition and Biochemical basis of Hereditary spherocytosis
- Respiratory distress syndrome
- Advanced glycation end products and complications of Diabetes Mellitus
- Hormonal basis of osteoporosis
- Cardiovascular risk assessment score
- Biochemical basis of Alzheimer disease

AETCOM MODULES TO BE COVERED UNDER BIOCHEMISTRY:

AETCOM module number (as per MCI document)	**Topic**
1.4	**The foundations of communication - 1**

Suggested format for reflective writing for the above AETCOM modules is given in ANNEXURE III. This could be a part of the practical record book.

SCHEME OF EXAMINATION

INTERNAL ASSESSMENT

[Kindly refer section II for general guidelines**]**

Scheme for calculation of Internal assessment marks:

Theory (maximum marks)	Marks	Practicals	Marks
Theory written paper	30*	Practical exam (25 marks) and viva-voce (5 marks)	30**
Formative assessment		Formative assessment	
MCQs/unit test/seminars/assignments/ Case based learning tests	10	Early clinical exposure + Skill certification	5
		Practical record	5
Total	40		40

Please note:

*Prior to submission to the University, the marks for each of the three internal examination theory assessments must be calculated out of 30 marks, regardless of the maximum marks.

**Prior to submission to the University, the marks for each of the three internal examination practical assessments must be calculated out of 30 marks, regardless of the maximum marks.

Only the final marks out of 40 needs to be submitted to the University, separately for theory and practical for each internal assessment.

UNIVERSITY EXAMINATIONS

[Kindly refer section II for general guidelines]

TABLE SHOWING SCHEME FOR CALCULATION OF UNIVERSITY EXAMINATION MARKS

Theory (maximum marks)		Practical (maximum marks)	
Paper 1	100	Practical exam (Practical Exercise 1 to 4)	80
Paper 2	100	Viva-voce	20
TOTAL	200	TOTAL	100

A. THEORY: 200 Marks

There shall be two theory papers of 100 marks each and duration of each paper shall be 3 hours. The pattern of questions in each paper shall be as mentioned below

Type of Question	Number of Questions	Maximum Marks for each question	Total
Multiple Choice Questions	20	1	**20**
Structured Long essay questions (SLEQ) [Includes one case vignette-based question (CVBQ)]	2	10	**20**
Short ESSAY questions (SEQ) [includes two case vignette-based questions (CVBQ)]	06	05	**30**
Short answer questions (SAQ)	10	03	**30**
Total marks			**100**

Note:

1. A suggested format for blueprint of question paper is shown in Annexure I
2. Please refer Annexure II for suggested model question paper

B. PRACTICAL:

Practical exercises – 80 marks

1. **Exercise 1: OSPE - 20 Marks**
2. **Exercise 2: Qualitative analysis of Normal or Pathological constituents of Urine - 20 Marks**
3. **Exercise 3: Quantitative estimation and interpretation - 20 Marks**
4. **Exercise 4: Case studies - 20 Marks**

Exercise 1: OSPE (20 Marks)

No. of Stations: 4 (1 performance station, 3 response stations)
Marks for Each Station: 5
Time for each station: Max 5 min

Exercise 2: Qualitative analysis of Normal or Pathological constituents of Urine (20 Marks)

Selection, principle and performance of tests :10 marks
Interpretation and Discussion :10 marks
Note: Alphabetically arranged test procedures shall be given.

Exercise 3: Quantitative estimation and interpretation (20 Marks)

Principle:5 Marks
Performance, Calculation and Results: 5 Marks
Interpretation and Discussion:10 Marks

Note : **Procedure sheets shall be given.**

Exercise 4: Case studies (20marks)

Total No. of case reports: 2
1 Major Case study for 12 marks and 1 Minor Case study for 8 marks
Suggested Major Case studies: Organ function tests/Diabetes mellitus/Acid base disorders/Myocardial infarction/ Dyslipidemia/PEM
Note : Questions for Quantitative experiments may preferably be case based scenarios.

C. Viva voce : 20 marks

The viva-voce examination shall carry 20 marks and all examiners will conduct the examination. Viva should focus on application and interpretation. (viva marks to be added to practical and not theory)

Distribution of topics for Paper 1 and Paper 2 for University examination Topic wise weightage

Sl No	Paper 1 Topics	Weightage Up to (in marks)
1	Cell, cellular organelles and membrane transport	5
2	Extra cellular matrix	3
3	Enzymes	13
4	Carbohydrate Chemistry	5
5	Carbohydrate Metabolism	13
6	Lipid Chemistry	5
7	Lipid Metabolism	13
8	Metabolism and homeostasis	8
9	Biological Oxidation	5
10	Vitamins	13
11	Minerals	13
12	Nutrition	10
13	Acid Base Balance	13
14	Water and Electrolyte Balance	6

Sl No	Paper 2 Topics	Weightage Upto (in marks)
1	Protein Chemistry	6
2	Plasma proteins	5
3	Immunology	5
4	Protein and amino acid Metabolism	13
5	Nucleic acid Chemistry	6
6	Nucleotide metabolism	10
7	Molecular Biology	13
8	Molecular Biology Techniques	13
9	Biochemistry of Cancer	10
10	Heme Metabolism	13
11	Organ function tests	13
12	Free radicals and Antioxidants	6
13	Xenobiotics and Detoxification	3
14	Clinical Chemistry	5

Note:

- Weightage of marks assigned to topics may add to more than 100
- Structured Long essay question should be from the topics with weightage of MORE THAN 10 marks. However, a part of structured long essay may be from other topics adhering to the weightage of marks allotted for that topic.
- **The topics to different paper are generally evaluated under those sections. However, a strict division of the subject may not be possible and some overlapping of topics is inevitable. Students should be prepared to answer overlapping topics.**

ANNEXURE I

BLUE PRINT FOR QUESTION PAPER
(to be filled by the question paper setter)

- Total marks under each type of question from each topic needs to be entered by QP Setter.

BIOCHEMISTRY PAPER 1

A	B	C	D	E	G	H	I	
Sl No	**Topic**	**Total max as per guideline**	**SLEQ 10 marks (including one CVBQ of 10 marks)**	**SEQ 5 marks each (including two CVBQ of 5 marks)**	**SAQ 3 marks each**	**Total marks from each topic (total of columns from D to G)**	**Higher order thinking skills questions (including CVBQs)**	
							Question number	**Marks**
1	Cell, cellular organelles and membrane transport	5						
2	Extra cellular matrix	3						
3	Enzymes	13						
4	Carbohydrate Chemistry	5						
5	Carbohydrate Metabolism	13						
6	Lipid Chemistry	5						
7	Lipid Metabolism	13						
8	Metabolism and homeostasis	8						
9	Biological Oxidation	5						
10	Vitamins	13						
11	Minerals	13						
12	Nutrition	10						
13	Acid Base Balance	13						
14	Water and Electrolyte Balance	6						

SLEQ- Structured Long Essay Question; SEQ- Short Essay Question; SAQ- Short Answer Question ;
CVBQ- Case Vignette Based Question MCQ's - Multiple Choice Questions

Marks allocated to questions that assess higher order thinking skills (%) =

BIOCHEMISTRY PAPER 2

A	B	C	D	E	G	H	I	
Sl No	Topic	Total max as per guideline	SLEQ 10 marks (including one CVBQ of 10 marks)	SEQ 5 marks each (including two CVBQ of 5 marks)	SAQ 3 marks each	Total marks from each topic (total of columns from D to G)	Higher order thinking skills questions (including CVBQs)	
							Question number	Marks
1	Protein Chemistry	6						
2	Plasma proteins	5						
3	Immunology	5						
4	Protein and amino acid Metabolism	13						
5	Nucleic acid Chemistry	6						
6	Nucleotide Metabolism	10						
7	Molecular Biology	13						
8	Molecular Biology Techniques	13						
9	Biochemistry of Cancer	10						
10	Heme Metabolism	13						
11	Organ function tests	13						
12	Free radicals and Antioxidants	6						
13	Xenobiotics and Detoxification	3						
14	Clinical Chemistry	5						

SLEQ- Structured Long Essay Question; SEQ- Short Essay Question; SAQ- Short Answer Question; CVBQ- Case Vignette Based Question **MCQ's - Multiple Choice Questions**

Marks allocated to questions that assess higher order thinking skills (%) =

Note:

1. Question paper may be framed using "Blue print "table as guideline
2. A minimum of 35% marks in each paper shall be allocated to questions that assess the higher order thinking skills of the student. This includes Case Vignette based questions.
3. Column 'I' has been provided for calculating percentage of marks allotted for questions assessing higher order thinking skills.

ANNEXURE III

(Note: questions could be added/modified to this document which is at the discretion of individual institution. This appendix could be a part of practical record/logbook of Biochemistry)

SUGGESTED FORMAT FOR AETCOM SESSIONS

Name of the Facilitator: Date:

AETCOM module Number: Session number:

AETCOM Topic:

Competencies / Objectives:

1.

2.

3.

1. Briefly describe what you learnt from this AETCOM session in relation to the objectives. (in 100-150 words)

2. Apart from the above learning, what did you observe that influenced (Positive/negative) you during this session? (in 100-150 words)

Remarks by Facilitator:

Signature of Facilitator:

5. RECOMMENDED BOOKS

TEXT BOOKS: (Recent editions)

1. DM Vasudevan. Textbook of Biochemistry for Medical students
2. Lippincotts' Illustrated reviews – Biochemistry
3. S.K.Gupta. Biochemistry for MBBS
4. Pankaja Naik. Biochemistry
5. Dinesh Puri. Textbook of Medical Biochemistry
6. Namrata Chhabra. Case oriented approach towards Biochemistry
7. Divya shanti D'sza, Sowbhagyalakhsmi. An easy guide to Practical Biochemistry.

REFERENCE BOOKS: (Recent editions)

1. Harpers' Illustrated Biochemistry
2. Marshall and Bangert. Clinical Chemistry
3. Baynes and Dominiczak. Medical Biochemistry
4. Bhagavan and Ha. Essentials of Medical Biochemistry with clinical cases
5. Stryer. Biochemistry
6. James Watson. Molecular biology of gene

SRI SIDDHARTHA
ACADEMY OF HIGHER EDUCATION

(Deemed to be University, declared u/s 3 of the UGC Act, 1956)

MBBS PHASE I

LOG BOOK FORMAT

FOR PRE-CLINICAL SUBJECTS

Name of the Candidate :

Name of the College :

University Register Number :

Academic Year :

INDEX

SL NO	CONTENT	PAGE NO
1.	BONAFIDE CERTIFICATE	
2.	PROFORMA OF THE STUDENT	
3.	GUIDELINES FOR LOG BOOK: General information	
4.	ANATOMY: a. Professionalism b. Early clinical exposure c. Academic performance d. Seminars e. Practical completion certificate	
5.	PHYSIOLOGY: a. Professionalism b. Academic performance c. Seminars d. Skills certification e. Early clinical exposure f. AETCOM g. Self-directed learning h. Practical completion certificate	
6.	BIOCHEMISTRY a. Academic performance b. Professionalism c. Seminars d. Early clinical exposure e. Self-directed learning f. Certification of skills g. Practical completion certificate	
7.	CONFERENCE/CME/WORKSHOP ATTENDED	
8.	SCIENTIFIC PROJECT PRESENTATIONS/REPORTS/ OUTREACH ACTIVITIES	
9.	ACHIEVEMENTS/ AWARDS /ANY OTHER ACTIVITIES	
10.	EXTRACURRICULAR ACTIVITIES	

BONAFIDE CERTIFICATE

This is to certify that this log book is the bonafide record of Mr./Ms…….....whose particulars along is given above. His/ Her log of competencies acquired, are as noted in the entries in this log book as per the Competency Based Undergraduate Medical Education Curriculum, Graduate Medical Regulation 2018, during the period …….. to……..

Signature with date

Head, Department of Anatomy :

Head, Department of Physiology :

Head, Department of Biochemistry :

Principal/Dean :

BASIC PROFORMA OF THE STUDENT

Photo

PARTICULARS OF THE STUDENT:

Name of the student :

Date of Birth :

Father's name :

Mother's name :

Address :

Contact no :

Email id :

Signature: .....

SUGGESTED GUIDELINES FOR LOG BOOK:
GENERAL INFORMATION:

1. The log book is a record of the academic / non-academic activities of the student.
2. Each medical student is responsible for maintaining their logbook.
3. Entries in the log book will be in accordance with activities done in the pre-clinical departments.
4. Some sections of the logbook are subject specific and have to be scrutinized by the head of the concerned department
5. It is the responsibility of the student to enter their activity in respective pages and get them duly signed by the supervising faculty.
6. The log book shall be kept as record work of the candidate for that department /specialty and be submitted to department as a Bonafide record of the candidate before appearing for the university examination.

NOTE: The contents in the log book are suggested guidelines. The institutions can make necessary changes as per the needs.

ANATOMY

Suggested format for assessing professionalism

Quarter	Overall attendance (5)	Timely submission of record books (5)	Takes the trouble to complete the record book well (5)	Behaves respectfully with peers and teachers (5)	Total (20)	Date	Signature of student	Signature of mentor
1st								
2nd								
3rd								

Guidelines for scoring (to be shown to the student and discussed with them)

Attendance – 95-100% - 5; 90-94% - 4; 85-89% - 3; 80-84% - 2

Timely submission of records – Always submits the record on time – 5; Often submits the record on time – 4; Sometimes submits the record on time – 3; Rarely submits the record on time – 2

Takes the trouble to complete the record well – Diagrams are neatly drawn with complete labelling – 5; Diagrams are of above average quality with nearly complete labelling – 4; Diagrams are of average quality with partial labelling- 3; Diagrams are of below average quality with inadequate labelling – 2

Behaves respectfully with peers and teachers – Always speaks politely and demonstrates the appropriate body language with peers and teachers – 5; Often speaks politely and demonstrates the appropriate body language with peers and teachers – 4; Sometimes speaks politely and demonstrates the appropriate body language with peers and teachers – 3; Rarely speaks politely and demonstrates the appropriate body language with peers and teachers – 2;

Suggested format for assessing participation in ECE sessions

Name:……

Date:……

ECE session……

1 = strongly agree. 2 = agree. 3 = no preference. 4 = disagree. 5 = strongly disagree.						
Critical appraisal		**1**	**2**	**3**	**4**	**5**
1	Clarifies, defines and analyses the problem from the scenario / interaction with patient					
2	Identifies learning objectives					
3	Demonstrates initiative and curiosity					
Utilization of learning resources						
4	Utilises relevant resource materials effectively					
5	Applies knowledge to new situations to solve problems and to reach decisions					
Group work						
6	Organised and prepared for small group sessions					
7	Shares thoughts and opinions with peers actively					
Attitudes and Communication Skills						
8	The oral expression is clear enough to be understood					
9	Provides and accepts constructive feedback					
10	Contributes to group harmony (listens to conflicting opinions and tolerates shortcomings of others)					

Comment:
To describe the strengths and suggested areas for improvement of the reviewed student and to assist him/her to be a more effective learner.

Suggested format for monitoring academic performance and providing feedback

Sl. No.	Marks obtained		Feedback provided		Date	Signature of student	Signature of mentor
			Positive	Could be improved			
1.	Test 1						
2.	1st Internal Examination						
	Theory						
	Practical						
3.	Overall 1st quarter marks						
4.	Test 2						
5.	2nd Internal Examination						
	Theory						
	Practical						
6.	Overall 2nd quarter marks						
7.	Test 3						
8.	3rd Internal Examination						
	Theory						
	Practical						
9.	Overall 3rd quarter marks						

Suggested format for monitoring performance in student seminars

SEMINARS

Sl no	Date	Topic	Level of participation [attended/presented]	Remarks if any	Signature of faculty/mentor
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					

Practical completion certificate

This is to certify that the prescribed Anatomy practicals for the I MBBS have been performed by the student satisfactorily

Date Signature of Faculty/Mentor

PHYSIOLOGY

Suggested format for assessing professionalism

Quarter	Overall attendance (5)	Timely submission of record books (5)	Takes the trouble to complete the record book well (5)	Behaves respectfully with peers and teachers (5)	Total (20)	Date	Signature of student	Signature of mentor
1st								
2nd								
3rd								

Guidelines for scoring (to be shown to the student and discussed with them)

Attendance – 95-100% - 5; 90-94% - 4; 85-89% - 3; 80-84% - 2

Timely submission of records – Always submits the record on time – 5; Often submits the record on time – 4; Sometimes submits the record on time – 3; Rarely submits the record on time – 2

Takes the trouble to complete the record well – Diagrams are neatly drawn with complete labelling – 5; Diagrams are of above average quality with nearly complete labelling – 4; Diagrams are of average quality with partial labelling- 3; Diagrams are of below average quality with inadequate labelling – 2

Behaves respectfully with peers and teachers – Always speaks politely and demonstrates the appropriate body language with peers and teachers – 5; Often speaks politely and demonstrates the appropriate body language with peers and teachers – 4; Sometimes speaks politely and demonstrates the appropriate body language with peers and teachers – 3; Rarely speaks politely and demonstrates the appropriate body language with peers and teachers – 2;

Suggested format for monitoring academic performance and providing feedback – Internal assessments and formative assessments

Assessment	Marks	Feedback of faculty/mentor		Date	Signature of student	Signature of mentor
		Positive points	Points that could be improved			
I Internal assessment						
Theory paper **Practical + viva**						
Formative assessment part I						
Theory: (System reviews) **Practical:** • **Practical record completion** • **Early clinical exposure** • **Skill certification**						
II Internal assessment						
Theory paper **Practicals + viva**						
Formative assessment part II						
Theory: (System reviews) **Practicals:** • **Practical record completion** • **Early clinical exposure** • **Skill certification**						

Third Internal assessment						
Theory paper **Practicals + viva**						
Formative assessment part III						
Theory: (System reviews) **Practicals:** • **Practical record completion** • **Early clinical exposure** • **Skill certification**						

Suggested format for monitoring performance in student seminars

SEMINARS

Sl no	Date	Topic	Level of participation [attended/presented]	Remarks if any	Signature of faculty/mentor

Suggested format for Certification of skills

(Note: the skill checklists are to be used as a guide for evaluation could be a part of the practical record book and a documentation of the same could be kept in the department. The following is for logbook entry of confirming the completion of skill certifications)

Sl No	Date	Skill	Date of certification	Signature of Observer
1		Record blood pressure & pulse at rest		
2		Effect of posture on blood pressure and pulse rate (supine to standing posture)		
3		Effect of different grades of exercise on blood pressure and pulse rate		
4		Demonstrate the correct clinical examination of the respiratory system		
5		Demonstrate the correct clinical examination of the Higher mental functions		
6		Demonstrate the correct clinical examination of sensory system		
7		Demonstrate the correct clinical examination of motor system		
8		Demonstrate the correct clinical examination of reflexes		
9		Demonstrate the correct clinical examination of cranial nerves		
10		Demonstrate clinical examination of Testing of visual acuity, colour and field of vision		
11		Demonstrate the correct clinical examination of hearing		
12		Demonstrate the correct clinical examination of Testing for smell		
13		Demonstrate the correct clinical examination of taste sensation		

Suggested format for Early clinical exposures and related activities

Sl No	Date of visit	Title of the visit	Signature of the mentor

Suggested format for AETCOM

Date	Topic	Signature of the mentor

Suggested format documentation and feedback for self-directed learning

Sl no	Date	Topic	Feedback	Signature of faculty/mentor

Practical completion certificate

This is to certify that the prescribed physiology practicals for the I MBBS have been performed by the student satisfactorily

Date Signature of Faculty/Mentor

BIOCHEMISTRY

a. Suggested format for monitoring academic performance and providing feedback

Sl. No.	Marks obtained		Feedback provided		Date	Signature of student	Signature of mentor
			Positive	Could be improved			
1.	Test 1						
2.	1st Internal Examination						
	Theory						
	Practical						
3.	Overall 1st quarter marks						
4.	Test 2						
5.	2nd Internal Examination						
	Theory						
	Practical						
6.	Overall 2nd quarter marks						
7.	Test 3						
8.	3rd Internal Examination						
	Theory						
	Practical						
9.	Overall 3rd quarter marks						

b. Suggested format for assessing professionalism

Quarter	Overall attendance (5)	Timely submission of record books (5)	Takes the trouble to complete the record book well (5)	Behaves respectfully with peers and teachers (5)	Total (20)	Date	Signature of student	Signature of mentor
1st								
2nd								
3rd								

Guidelines for scoring (to be shown to the student and discussed with them)

Attendance – 95-100% - 5; 90-94% - 4; 85-89% - 3; 80-84% - 2

Timely submission of records – Always submits the record on time – 5; Often submits the record on time – 4; Sometimes submits the record on time – 3; Rarely submits the record on time – 2

Takes the trouble to complete the record well – Excellent: Presentation of content above expectations – 5; Good: Presentation of content meets expectations – 3; Needs Improvement: Presentation of content below expectations -1.
Content: Includes Tables, Charts, Diagrams, Calculations etc.

Behaves respectfully with peers and teachers – Always speaks politely and demonstrates the appropriate body language with peers and teachers – 5; Often speaks politely and demonstrates the appropriate body language with peers and teachers – 4; Sometimes speaks politely and demonstrates the appropriate body language with peers and teachers – 3; Rarely speaks politely and demonstrates the appropriate body language with peers and teachers – 2;

Suggested format for student seminars participation

SEMINARS

Sl no	Date	Topic	Level of participation [attended/presented]	Remarks if any	Signature of faculty/mentor
1.					
2.					
3.					
4.					
5.					

c. Suggested format for participation in EARLY CLINICAL EXPOSURE

Name of the Facilitator:

ECE session No: **Area/Specialty visited:**

Clinical Skills (Concepts learnt during ECE sessions):

Objectives

1.

2.

3.

1. Briefly describe what you learnt from this clinical visit in relation to the objectives. (in 100-150 words)

2. Apart from the above learning, what did you observe that influenced (Positive/negative) you? (in 100-150 words)

Signature of Facilitator

**Scoring pattern can be decided by individual colleges*

d. Suggested format for SELF DIRECTED LEARNING Topics

(Minimum one entry per term)

Name of the Facilitator:

SDL Topic:

SUMMARY OF CONCEPTS LEARNT (Concept map):

Signature of Facilitator

**Scoring pattern can be decided by individual colleges*

e. CERTIFICATION OF SKILL ACQUISITION IN BIOCHEMISTRY

SL. NO	COMPETENCY NO	TOPIC	CERTIFICATION DATE	SIGNATURE OF FACULTY
1.	BI11.4	Perform urine analysis to estimate and determine normal and abnormal Constituents		
2.	BI11.20	Identify abnormal constituents in urine, interpret the findings and correlate these with pathological states.		
3.	BI11.21	Demonstrate estimation of glucose		
4.	BI11.21	Demonstrate estimation of urea		
5.	BI11.7/ BI11.21	Demonstrate estimation of serum creatinine and creatinine clearance		
6.	BI11.8/BI11.21	Demonstrate estimation of serum total proteins, albumin & A:G ratio		

Certification of Competencies - Skill Acquisition

Suggested format for checklist

General Guidelines

(All checklists for skill certification need not be essentially a part of log book. They should be used as a guide for evaluation)

Sl No	Assessment criteria	Date of each evaluation*		
	Overall performance (A/B/C)			
	Name of Evaluator			
	Signature of evaluator			

Competency Description:

*Number columns as per requirement

Each criteria may be assessed by different tools (OSPE/Practical/viva) using appropriate scoring pattern.

Marking of each assessment criteria √ **if student meets the expectation for each criteria**
X if student does not meet the expectation for each criteria

Overall Performance in these assessments can be graded as below:

- **Meets expectations (ME)**
  A: Student is able to perform all the test and report the test results with appropriate interpretations independently and can be certified
- **Does not meet expectations (DME)** -
  Student needs further training to perform and report the test results with appropriate interpretations independently and a re evaluation to certify the same.
  B: > than 50% of criteria meets expectation, reevaluation needed only for criteria which have not met the expectation.
  C: < than 50% of criteria meets expectation, reevaluation needed for the entire competency

Feedback to students: After each assessment, the respective faculty to give the feedback to students regards the areas for improvement/reassessment

Checklist 1:
Description of competency: Perform urine analysis to estimate and determine normal constituents (BI 11.4)

Sl No	Assessment criteria	Date of evaluation		
1	Student is able to list all physical characteristics of normal urine			
2	Student is able to perform the physical examination of urine sample for Volume, appearance, colour, odour, pH and specific gravity			
3	Student is able to interpret the results of all the above physical examination of urine sample			
4	Student is able to list common organic constituents (Urea, Uric acid, Creatinine, Urobilinogen) of normal urine and the tests to be performed			
5	Student is able to explain the principles of all organic tests performed for normal constituents of urine			
6	Student is able to perform relevant tests for organic constituents of urine according to the procedure given			
7	Student is able to interpret the results of all the tests for organic constituents of normal urine along with normal levels in urine			
8	Student is able to list common inorganic constituents (Calcium, Phosphate, Ammonia) of normal urine and the tests to be performed			
9	Student is able to explain the principles of all organic tests performed for normal constituents of urine			
10	Student is able to perform relevant tests for inorganic constituents of urine according to the procedure given			
11	Student is able to interpret the results of all the tests performed for inorganic constituents of normal urine along with normal levels in urine			
12	Student is able to interpret the physiological and pathological variations in organic and inorganic constituents of urine			
	Overall performance (A/B/C)			
	Appropriate feedback given to student (yes/No)			
	Name of Evaluator			
	Signature of evaluator			
	Signature of student			

It is hereby certified that the student is competent to perform the above mentioned skill

Date of certification:

Name and Signature of Evaluator:

Checklist 2

Description of competency: Perform urine analysis to determine Abnormal constituents, interpret the findings and correlate with pathological states (BI 11.4 and BI 11.20)

Sl No	Assessment criteria	Date of evaluation		
1	Student is able to list the common abnormal constituents of urine (reducing substance, ketone bodies, proteins, blood, bile salts, bile pigments)			
2	Student is able to perform the physical examination of abnormal urine sample for Volume, appearance, colour, odour, pH and specific gravity			
3	Student is able to interpret the results of all the above physical examination of urine sample in different pathological conditions			
4	Student is able to list the relevant chemical tests to be performed to detect abnormal constituents of urine			
5	Student is able to explain the principles of all the chemical tests correctly			
6	Student is able to perform all the chemical tests correctly according to the procedure given			
7	Student is able to interpret the observations of all the tests as positive or negative correctly			
8	Student is able to explain the biochemical basis of combination of positive findings on physical examination and chemical analysis of given abnormal urine sample			
9	Student is able to interpret and associate various abnormal physical findings with different pathological conditions			
10	Student is able to interpret and associate various abnormal constituents with different pathological conditions			
	Overall performance (A/B/C)			
	Appropriate feedback given to student (yes/No)			
	Name of Evaluator			
	Signature of evaluator			
	Signature of student			

It is hereby certified that the student is competent to perform the above-mentioned skill

Date of certification:

Name and Signature of Evaluator:

Checklist 3

Description of competency: Demonstrate estimation of Glucose in serum (BI 11.21)

Sl No	Assessment criteria	Date of evaluation		
1	Student is able to explain the Principle of the given method of estimation of Glucose			
2	Student is able to mention other methods for estimation with advantages and disadvantages			
3	Student is able to perform the estimation of Serum glucose in given sample according to the given procedure correctly			
4	Student is able to calculate the concentration of the given analyte using the appropriate formula.			
5	Student is able to write the report of the given test requested correctly with appropriate units and reference intervals			
6	Student is able to mention the preanalytical errors that could affect the test result			
7	Student is able to mention the right collection tube and right time for collecting fasting and post prandial samples			
8	Student is able to interpret the report of the given sample according to current standard guidelines using biological reference intervals of fasting, postprandial and random glucose.			
9	Student is able to relate the findings of estimation performed with clinical condition appropriately			
10	Student is able to extrapolate the results of serum glucose in different clinical conditions appropriately			
	Overall performance (A/B/C)			
	Appropriate feedback given to student (yes/No)			
	Name of Evaluator			
	Signature of evaluator			
	Signature of student			

It is hereby certified that the student is competent to perform the above-mentioned skill

Date of certification:

Name and Signature of Evaluator:

Checklist 4

Description of competency: Demonstrate estimation of serum creatinine and creatinine clearance (BI 11.7, BI 11.21)

Sl No	Assessment criteria	Date of evaluation		
1	Student is able to explain the Principle of the given method of estimation of Serum Creatinine			
2	Student is able to mention other methods for estimation with advantages and disadvantages			
3	Student is able to perform the estimation of Serum Creatinine in given sample according to the given procedure correctly			
4	Student is able to calculate the concentration of the given analyte using the appropriate formula.			
5	Student is able to write the report of the given test requested correctly with appropriate units, reference intervals and interpret the result correctly.			
6	Student is able to mention the non-Creatinine interferences that could affect the test result			
7	Student is able to calculate Creatinine clearance using appropriate formula correctly and interpret the results			
8	Student is able to mention the indications for Creatinine clearance and its advantages.			
9	Student is able to calculate estimated Creatinine clearance using different formulae, different urine Creatinine ratios with their advantages.			
10	Student is able to explain the biochemical basis of altered levels of Creatinine in serum and urine in different pathological conditions			
	Overall performance (A/B/C)			
	Appropriate feedback given to student (yes/No)			
	Name of Evaluator			
	Signature of evaluator			
	Signature of student			

It is hereby certified that the student is competent to perform the above-mentioned skill

Date of certification:

Name and Signature of Evaluator:

Checklist 5

Description of competency: Demonstrate estimation of urea in serum (BI 11.21)

Sl No	Assessment criteria	Date of evaluation		
1	Student is able to explain the Principle of the given method of estimation of Serum Urea			
2	Student is able to mention other methods for estimation with advantages and disadvantages			
3	Student is able to perform the estimation of Serum Urea in given sample according to the given procedure correctly			
4	Student is able to calculate the concentration of the given analyte using the appropriate formula.			
5	Student is able to write the report of the given test requested correctly with appropriate units and reference intervals			
6	Student is able to mention the preanalytical errors/ interferences that could affect the test result			
7	Student is able to calculate Blood urea nitrogen and explain its importance			
8	Student is able to enumerate various pre renal, renal and post renal causes for Uremia			
9	Student is able to relate the findings of estimation performed with clinical condition appropriately			
10	Student is able to extrapolate the results of serum urea in different clinical conditions appropriately			
	Overall performance (A/B/C)			
	Appropriate feedback given to student (yes/No)			
	Name of Evaluator			
	Signature of evaluator			
	Signature of student			

It is hereby certified that the student is competent to perform the above mentioned skill

Date of certification:

Name and Signature of Evaluator:

Checklist 6

Description of competency: Demonstrate estimation of serum protein , albumin and A:G ratio(BI 11.8, BI 11.21)

Sl No	Assessment criteria	Date of evaluation		
1	Student is able to explain the Principle of the given method of estimation of Serum Total Protein and Serum Albumin			
2	Student is able to perform the estimation of Serum Total Protein and Serum Albumin in given sample according to the given procedure correctly			
3	Student is able to calculate the concentration of the given analyte using the appropriate formula.			
4	Student is able to calculate Total globulin level and A:G ratio correctly			
5	Student is able to write the report of the given test requested correctly with appropriate units and reference intervals			
6	Student is able to enumerate and explain the causes for Hypoproteinemia/ Hypoalbuminemia correctly			
7	Student is able to enumerate and explain the causes of Hyperproteinemia correctly			
8	Student is able to enumerate and explain the causes of reversed A:G ratio correctly			
9	Student is able to relate the findings of estimation performed with clinical condition appropriately			
10	Student is able to extrapolate the results of serum total protein and serum albumin in different clinical conditions appropriately			
	Overall performance (A/B/C)			
	Appropriate feedback given to student (yes/No)			
	Name of Evaluator			
	Signature of evaluator			
	Signature of student			

It is hereby certified that the student is competent to perform the above mentioned skill

Date of certification:

Name and Signature of Evaluator:

Practical completion certificate

This is to certify that the prescribed Biochemistry practicals for the I MBBS have been performed by the student satisfactorily

Date Signature of Faculty/Mentor

Other academic/non-academic activities

CONFERENCE/CME/WORKSHOP ATTENDED

SL NO	DATE	PARTICULARS	REMARKS IF ANY	SIGNATURE OF STAFF

SCIENTIFIC PROJECT PRESENTATIONS/REPORTS/ OUTREACH ACTIVITIES

SL NO	DATE	PARTICULARS	SIGNATURE OF STAFF

ACHIEVEMENTS/ AWARDS /ANY OTHER ACTIVITIES

SL NO	DATE	PARTICULARS	SIGNATURE OF FACULTY

EXTRACURRICULAR ACTIVITIES

SL NO	DATE	PARTICULARS	SIGNATURE OF FACULTY

Handbook of competencies and specific learning objectives

Competency Based Undergraduate Curriculum for the Indian Medical Graduate

MBBS PHASE I

SRI SIDDHARTHA ACADEMY OF HIGHER EDUCATION

(Deemed to be University, declared u/s 3 of the UGC Act, 1956)

SRI SIDDHARTHA
ACADEMY OF HIGHER EDUCATION

(Deemed to be University, declared u/s 3 of the UGC Act, 1956)

MBBS PHASE I

HUMAN ANATOMY

Handbook of competencies and specific learning objectives

COMPETENCY BASED UNDERGRADUATE CURRICULUM FOR THE INDIAN MEDICAL GRADUATE

PREFACE

A competency refers to the *"observable knowledge, skills or attitudes defined in terms of behaviours needed for successful job performance"*. The Medical Council of India (MCI) has listed four hundred and nine competencies under eighty-two topics in the competency-based curriculum (CBC) for the subject of Anatomy for the Phase I MBBS students. In order for these competencies to be achieved, specific learning objectives (SLOs') need to be framed for individual teaching-learning (TL) sessions and for assessment. This handbook lists the competencies and SLOs' for the entire course and provides guidelines about the TL and assessment methods along with the time requirements. The handbook follows the template of the CBC document and mentions the code number, learning domain/s addressed, level of competency required based on Miller's pyramid and whether or not the competency is core or non-core. It is hoped that this document will be useful for faculty to design TL activities and develop assessment strategies to ensure that the students achieve the learning outcomes envisaged in the CBC document.

INDEX

SL No.	TOPICS	Page No.
1.	General anatomy	1 - 12
2.	General histology	13 - 24
3.	Genetics	25 - 29
4.	General embryology	30 - 40
5.	Upper limb	41 - 57
6.	Thorax	58 - 72
7.	Abdomen and pelvis	73 - 120
8.	Lower limb	121 - 136
9.	Head and neck	137 - 159
10.	Neuroanatomy	160 - 170
11.	Ethics in anatomy	171

Understanding the competencies table

A	B	C	D	E	F	G	H	I	J
No.	Competencies	Domain	K/KH/SH/P	Core	Suggested Teaching Learning Method	Suggested Assessment method	No. required to certify (P)	Vertical Integration	Horizontal Integration
Physiology									
Summary Name of Topic: General Physiology Number of Competencies: (08)									
PY1.1	Describe the structure and functions of a	K	KH	Y	Lectures, Small group discussion	Written/Viva			Biochemistry
IM15.4	Elict *document* and present a medical history that helps delineate the	S	SH	Y	Bed Side clinic, DOAP	Skill assessment		Community Medicine	

Unique number of the competency. First two alphabets represent the subject (see list); number following alphabet reflects topic number, following period is a running number.

Description of competency

Identifies the domain or domains addressed
K - Knowledge
S - Skill
A - Attitude
C - Communication

Identifies the level of competency required based on the Miller's pyramid
K - Knows
KH - Knows How
S - Skill
SH - Show How
P - Perform independently

Identifies if the competency is core or desirable.
Y indicates Core; N-non-core

Identifies the suggested learning method.
DOAP - Demonstrate (by Student) Observe, Assist Perform)

Identifies the suggested assessment method
Skill assessment - Clinics, Skills lab, Practicals etc.

no of times a skill needs to be done independently to be certified for independent performance; Rarely used in UG

Subject (s) in other phases with which the competency can be vertically integrated to increase relevance or improve basic understanding

Subject (s) in the same phase with which the competency can be horizontally integrated or aligned to allow a more wholesome understanding

***Numbers given are for illustrative purposes only and should not be compared with the same in curriculum documents**

**From the CBC document*

Deriving learning objectives from competencies

K	Knows	A knowledge attribute – Usually enumerates or describes
KH	Knows how	A higher level of knowledge – is able to discuss or analyse
S	Shows	A skill attribute: is able to identify or demonstrate the steps
SH	Shows how	A skill attribute: is able to interpret / demonstrate a complex procedure requiring thought, knowledge and behaviour
P	Performs (under supervision or independently)	Mastery for the level of competence - When done independently under supervision a pre-specified number of times - certification or capacity to perform independently results

Competency: An **observable** ability of a health professional, **integrating multiple component**s such as knowledge, skills, values and attitudes.

PA42.3*	**Identify the etiology of meningitis based on given CSF parameters**	K/S	SH	Y

PA42.1*	At the end of the session the **phase II student** must be able to enumerate the most common causes of meningitis correctly
PA42.2*	At the end of the session the **phase II student** must be able to enumerate the components of CSF analysis correctly
PA42.3*	At the end of the session the **phase II student** must be able to **describe** the CSF features for a given etiology of meningitis **accurately**
PA42.4*	At the end of the session the **phase II student** must be able to identify the aetiology of meningitis correctly from a **given set of CSF parameters**

Audience - who will do the behavior

Behavior - What should the learner be able to do?

Condition - Under what conditions should the learner be able to do it?

Degree – How well must it be done

Objective: Statement of what a learner should be able to do at the end of a specific learning experience
***Numbers given are for illustrative purposes only and should not be compared with the same in curriculum documents**

**From the CBC document*

Deriving learning methods from competencies

Competency: An **observable** ability of a health professional, **integrating multiple components** such as knowledge, skills, values and attitudes.

PA42.3*	**Identify** the etiology of meningitis based on given CSF parameters	K/S	SH	Y

Objective: Statement of what a learner should be able to do at the end of a specific learning experience

PA42.1*	At the end of the session the **Phase II student** must be able to enumerate the most common causes of meningitis **correctly**	Lecture or small group discussion
PA42.2*	At the end of the session the **Phase II student** must be able to enumerate the components of a CSF analysis correctly	Related objectives can be combined into one teaching session
PA42.3*	At the end of the session the **Phase II student** must be able to **describe** the CSF features for a given etiologic of meningitis **accurately**	
PA42.4*	At the end of the session the **Phase II student** must the able to identify the aetiology of meningitis correctly from a **given set of CSF parameters**	small group discussion, practical session

*Numbers given are for illustrative purposes only and should not be compared with the same in curriculum documents

**From the CBC document*

Deriving assessment methods from competencies

Competency: An observable ability of a health professional, **integrating multiple components** such as knowledge, skills, values and attitudes.

PA42.3*	**Identify** the etiology of meningitis based on given CSF parameters	K/S	SH	Y

Objective: Statement of what a learner should be able to do at the end of a specific learning experience

PA42.1*	At the end of the session the Phase II student must be able to enumerate the most common causes of meningitis correctly	Short note or part of structured essay: Enumerate 5 causes of meningitis based on their prevalence in India
PA42.2*	At the end of the session the **Phase II student** must be able to enumerate the components of a CSF analysis correctly	Short note or part of structured essay: Enumerate the components tested in a CSF analysis
PA42.3*	At the end of the session the **Phase II student** must be able to **describe** the CSF features for a given aetiology of meningitis **accurately**	Short note or part of structured essay: Describe the CSF findings that are characteristic of tuberculous meningitis
PA42.4*	At the end of the session the **Phase II student** must the able to identify the aetiology of meningitis correctly from a **given set of CSF parameters**	Short note / part of the structured essay/ Skill station/ Viva voce Review the CSF findings in the following patient and identify (write or vocalise) the most likely etiology

*** Numbers given are for illustrative purposes only and should not be compared with numbers in the curriculum document**

**From the CBC document*

Deriving assessment methods from competencies

Competency: An observable ability of a health professional, integrating multiple components such as knowledge, skills, values and attitudes.

MI2.4*	List the common microbial agents causing anemia. Describe the morphology, mode of infection and discuss the pathogenesis, clinical course, diagnosis and prevention and treatment of the common microbial agents causing Anemia.	K	KH	Y	Didactic Small group discussion	Written/ Viva voce	Medicine	Pathology

Objective: Statement of what a learner should be able to do at the end of a specific learning experience

MI2.1*	Enumerate the common microbial agents causing anaemia
MI2.2*	Describe the morphology of agent (1,2 etc)
MI2.3*	Describe the mode of infection of agent in humans
MI2.4*	Discuss the pathogenesis of anemia caused by agent
MI2.5*	Describe the clinical course of infection by agent
MI2.6*	Enumerate the diagnostic tests to identify the aetiology of agent as a cause of anemia
MI2.7*	Discuss the methods to prevent infection by agent
MI2.8*	Describe the treatment of infection by agent

Integrate concept - not necessarily teachers
Plan session with teachers of both subjects -teachers from both subjects usually not needed. Ensure redundancy and duplication by reviewing both subjects

Horizontally aligned and integrated with pathology

Vertically integrated with General Medicine

Integrate concept - not necessarily teachers Plan session with teachers from both phases. Make a decision on how much of the information needs to be brought down to this phase to make it relevant. Consider how a competency can ascend over phases: for eg. - can be at a KH -(know how) in phase II but becomes SH in phase III. For vertical integration with clinical subjects, use of a case to link the concept (a well written paper, case is sufficient). Using teachers from both phases is rarely required

**From the CBC document*

Explanation of terms used in this manual

Lecture	Any instructional large group method including traditional lecture and interactive lecture
Small group discussion	Any instructional method involving small groups of students in an appropriate learning context
DOAP (Demonstration-Observation - Assistance - Performance)	A practical session that allows the student to observe a demonstration, assist the performer, perform in a simulated environment, perform under supervision or perform independently
Skill assessment	A session that assesses the skill of the student including those in the practical laboratory, skills lab, skills station that uses mannequins/ paper case/simulated patients/real patients as the context demands
Core	A competency that is necessary in order to complete the requirements of the subject (traditional must know)
Non-Core	A competency that is optional in order to complete the requirements of the subject (traditional nice (good) to know/ desirable to know)

**From the CBC document*

Please note: The term DOAP is not used in this document. Instead the phrase *"dissection with small group discussion"* has been used.

Domains of learning

K	Knowledge
S	Skill
A	Attitude
C	Communication

Levels of competency

K	Knows	A knowledge attribute - Usually enumerates or describes
KH	Knows how	A higher level of knowledge - is able to discuss or analyze
S	Shows	A skill attribute: is able to identify or demonstrate the steps
SH	Shows how	A skill attribute: is able to interpret/ demonstrate a complex procedure requiring thought, knowledge and behavior
P	Performs (under supervision or independently)	Mastery for the level of competence - When done independently under supervision a pre-specified number of times - certification or capacity to perform independently results

**From the CBC document*

GENERAL ANATOMY

Topic: Anatomical terminology
Number of competencies: 1
Number of procedures for certification: Nil
Total number of hours required: 2 [1 hour (theory) and 1 hour (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
AN1.1	Demonstrate normal anatomical position, various planes, relation, comparison, laterality & movement in our body	K/S	SH	Y	**Theory**	**Practical**
					1	1

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Describe the anatomical position of the body and its importance
b. Demonstrate the anatomical position of the body
c. Define the anatomical planes
d. Define the anatomical terms related to the following with examples:
   - direction
   - relation
   - comparison
   - laterality
   - movement
e. Demonstrate the types of movements possible at synovial joints

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
• Lecture	• Small group discussion	• Short answer	• Viva-voce • OSPE

GENERAL ANATOMY

Topic: General features of bones and joints
Number of competencies: 6
Number of procedures for certification: Nil
Total number of hours required: 1 [1 hour (theory)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN1.2	Describe composition of bone and bone marrow	K	KH	Y	1	-
AN2.1	Describe parts, blood and nerve supply of a long bone	K	KH	Y		
AN2.2	Enumerate laws of ossification	K	KH	N		
AN2.3	Enumerate special features of a sesamoid bone	K	KH	N		
AN2.4	Describe various types of cartilage with its structure & distribution in body	K	KH	Y		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Describe the general features of a bone
b. Describe the composition of bone and bone marrow
c. Name the sites where red bone marrow is present in adults
d. Classify the bones of the body according to their shape
e. Name the parts of a developing/growing long bone with a neat labelled diagram
f. Classify bones according to their structure
g. Explain the difference between compact and cancellous bones
h. Describe the arterial supply of long bone with a neat labelled diagram
i. Describe the nerve supply of a long bone
j. Define ossification and explain the primary and secondary ossification centers
k. Explain the difference between intramembranous and endochondral ossification with neat labelled diagram
l. Enumerate laws of ossification, including direction of nutrient foramen and the growing end of the bone
m. Describe the different types of epiphysis with suitable examples
n. Enumerate special features of a sesamoid bone and its functions with examples
o. Describe types of cartilage with its structure & distribution in body with examples

GENERAL ANATOMY

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
• Lecture • Small group discussion	-	• Short answer • Short essay	• Viva-voce • OSPE

GENERAL ANATOMY

Topic: General features of bones and joints
Number of competencies: 6
Number of procedures for certification: Nil
Total number of hours required: 1 [1 hour (theory)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN2.5	Describe various joints with subtypes and examples	K	KH	Y	1	-
AN2.6	Explain the concept of nerve supply of joints & Hilton's law	K	KH	Y		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Define a joint
b. Classify joints according to structure and function with suitable examples
c. Describe the types of fibrous joints with examples
d. Define a synovial joint and describe the salient features of a typical synovial joint with diagram
e. Explain the difference between atypical, complex and compound joints with examples
f. Classify the types of synovial joints with examples
g. Explain the factors maintaining the stability of the joints
h. Compare and contrast the primary and secondary cartilaginous joints
i. Describe the nerve supply of a joint
j. Explain the concept of Hilton's law with examples
k. Describe the types of movements that occur in the synovial joints

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
• Lecture • Small group discussion	-	• Long essay • Short answer	• Spotter • Viva-voce • OSPE

Topic: General features of muscular system
Number of competencies: 3
Number of procedures for certification: Nil
Total number of hours required: 1 [1 hour (theory)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN3.1	Classify muscle tissue according to structure & action	K	KH	Y	1	-
AN3.2	Enumerate the parts of skeletal muscle and differentiate between tendons and aponeurosis with examples	K	KH	Y		
AN3.3	Explain Shunt and spurt muscles	K	KH	Y		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Define a muscle and describe the characteristics of muscles
b. Classify muscles according to structure with suitable examples
c. Classify muscles according to their action and describe agonists, antagonists, synergists, fixators with suitable examples
d. Enumerate the parts of a skeletal muscle
e. Define terms origin and insertion of a skeletal muscle
f. Explain the difference between tendons, aponeuroses and ligaments with suitable examples
g. Explain Shunt and spurt muscles

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
• Lecture • Small group discussion	-	• Short answer • Short essay • Case based short essay	• Spotter • Viva-voce • OSPE

GENERAL ANATOMY

Topic: General features skin and fascia
Number of competencies: 5
Number of procedures for certification: Nil
Total number of hours required: 1 [1 hour (theory)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
AN4.1	Describe different types of skin & dermatomes in body	K	KH	N	**Theory**	**Practical**
AN4.2	Describe structure & function of skin with its appendages	K	KH	Y	1	-
AN4.3	Describe superficial fascia along with fat distribution in body	K	KH	Y		
AN4.4	Describe modifications of deep fascia with its functions	K	KH	Y		
AN4.5	Explain principles of skin incisions	K	KH	Y		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Name the different types of skin with examples
b. Describe the structure and function of skin with neat labelled diagram
c. Describe the difference between thin and thick skin
d. Name the appendages of skin
e. Describe briefly the sweat gland, sebaceous gland, hair & nail
f. Define a dermatome and explain its clinical importance
g. Describe the arrangements of dermatomes in the body
h. Define superficial fascia and name the contents of superficial fascia
i. Describe regional variations in fat distribution and the functions of superficial fascia
j. Define the deep fascia and describe modifications of deep fascia with its functions
k. Define the Langer's line and explain the principles of skin incisions based on Langer's lines

TEACHING AND LEARNING METHODS	ASSESSMENT METHODS

GENERAL ANATOMY

Theory	Practical	Theory	Practical / Viva-voce
• Lecture • Small group discussion	-	• Short answer • Short essay	• Viva-voce • Spotter

GENERAL ANATOMY

Topic: General features of the cardiovascular system
Number of competencies: 8
Number of procedures for certification: Nil
Total number of hours required: 1 [1 hour (theory)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN5.1	Differentiate between blood vascular and lymphatic system	K	KH	N	1	-
AN5.2	Differentiate between pulmonary and systemic circulation	K	KH	Y		
AN5.3	List general differences between arteries & veins	K	KH	Y		
AN5.4	Explain functional difference between elastic, muscular arteries and arterioles	K	KH	Y		
AN5.5	Describe portal system giving examples	K	KH	Y		
AN5.6	Describe the concept of anastomoses and collateral circulation with significance of end-arteries	K	KH	Y		
AN5.7	Explain function of meta-arterioles, precapillary sphincters, arterio-venous anastomoses	K	KH	N		
AN5.8A	Define thrombosis, infarction & aneurysm	K	KH	N		
SPECIFIC LEARNING OBJECTIVES (SLOs')						

GENERAL ANATOMY

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Describe the types and functions of blood vessels
b. Describe the layers of blood vessel
c. Compare and contrast the structure and functions of arteries and veins
d. Explain the functional difference between elastic, muscular arteries and arterioles
e. Compare and contrast the blood vascular system and lymphatic system
f. Compare and contrast the pulmonary and systemic circulations
a. Define microvasculature with types of capillaries and their functional significance
b. Describe the portal circulation with examples
c. Define anastomoses and describe the different types of anastomosis with functions giving suitable examples
d. Explain the concept of collateral circulation
e. Describe the end-arteries with suitable examples
f. Explain briefly the functions of meta arterioles, precapillary sphincter and arteriovenous anastomosis
g. Define thrombosis, infarction & aneurysm

TEACHING AND LEARNING METHODS		**ASSESSMENT METHODS**	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
• Lecture • Small group discussion	-	• Short answer	• Viva-voce

GENERAL ANATOMY

Topic: General features of lymphatic system
Number of competencies: 3
Number of procedures for certification: Nil
Total number of hours required: 1 [1 hour (theory)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN6.1	List the components and functions of the lymphatic system	K	KH	N	1	-
AN6.2	Describe structure of lymph capillaries & mechanism of lymph circulation	K	KH	N		
AN6.3	Explain the concept of lymphoedema and spread of tumors via lymphatics and venous system	K	KH	N		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. List the components of lymphatic system and describe the functions of lymphatic system
b. Explain the concept of primary and secondary lymphatic organs
c. Describe the structure of lymph capillaries and explain the difference between lymph capillaries and blood capillaries
d. Explain the mechanism of lymph flow from its formation to its absorption into the venous system
e. Define lymphedema
f. Explain the anatomical basis of lymphedema and the spread of tumors via lymphatics and venous system

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
• Lecture • Small group discussion	-	• Short answer	• Viva-voce • OSPE

GENERAL ANATOMY

Topic: Introduction to the nervous system
Number of competencies: 8
Number of procedures for certification: Nil
Total number of hours required: 1 [1 hour (theory)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN7.1	Describe general plan of nervous system with components of central, peripheral & autonomic nervous systems	K	KH	Y	1	-
AN7.2	List components of nervous tissue and their functions	K	KH	Y		
AN7.3	Describe parts of a neuron and classify them based on number of neurites, size & function	K	KH	Y		
AN7.4	Describe structure of a typical spinal nerve	K	KH	Y		
AN7.5	Describe principles of sensory and motor innervation of muscles	K	KH	N		
AN7.6	Describe concept of loss of innervation of a muscle with its applied anatomy	K	KH	Y		
AN7.7	Describe various type of synapse	K	KH	N		
AN7.8	Describe differences between sympathetic and spinal ganglia	K	KH	N		
SPECIFIC LEARNING OBJECTIVES (SLOs')						

GENERAL ANATOMY

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Describe the general plan of nervous system with its components
b. Describe the structural and functional classification of the nervous system
c. List components of nervous tissue and their functions
d. Describe the parts of a neuron with neat labelled diagram
e. Classify the neurons based on number of neurites, size, and function with suitable examples
f. Describe the structure of a typical spinal nerve with neat labelled diagram
g. Describe principles of sensory and motor innervation of muscles
h. Describe concept of loss of innervation of a muscle
i. Define a synapse and describe type of synapse
j. Define ganglia and describe the difference between sympathetic and spinal ganglia

TEACHING AND LEARNING METHODS		**ASSESSMENT METHODS**	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
• Lecture • Small group discussion	-	• Short answer	• Viva-voce • OSPE

GENERAL HISTOLOGY

Topic: Epithelium histology
Number of competencies: 2
Number of procedures for certification: 1
Total number of hours required: 3 [1 hour (theory) and 2 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN65.1	Identify epithelium under the microscope & describe the various types that correlate to its function	K/S	P	Y	1	2
AN65.2	Describe the ultrastructure of epithelium*	K	KH	N		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Classify epithelial tissue based on the shape of cells, number of layers and surface modifications with suitable examples
b. Identify, differentiate and draw the microstructure of the different types of epithelia
- Simple squamous epithelium
- Simple cuboidal epithelium
- Simple columnar epithelium
- Stratified squamous non-keratinized epithelium
- Stratified squamous keratinized epithelium
- Stratified cuboidal epithelium
- Stratified columnar epithelium
- Pseudo-stratified ciliated columnar epithelium
- Transitional epithelium

c. Correlate the characteristics of particular epithelia to their function and their essential features including junctions, apical modifications, and polarity
d. Describe the ultrastructure of epithelium

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
• Lecture	• Small group discussion	• Short answer	• Spotter • Slide discussion

GENERAL HISTOLOGY

Topic: Connective tissue histology
Number of competencies: 2
Number of procedures for certification: Nil
Total number of hours required: 3 [1 hour (theory) and 2 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
AN66.1	Describe & identify various types of connective tissue with functional correlation	K/S	SH	Y	**Theory**	**Practical**
					1	2
AN66.2	Describe the ultrastructure of connective tissue*	K	KH	N		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Describe the components of connective tissue
b. Classify connective tissue based on the density of fibre content and characteristics with suitable examples
c. Identify, describe and draw the microstructure of the different types of connective tissue with suitable examples
d. Correlate the structure and functions of different types of connective tissue
e. Describe the ultrastructure of connective tissue

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
• Lecture	• Small group discussion	• Short answer	• Spotter • Slide discussion

GENERAL HISTOLOGY

Topic: Muscle histology
Number of competencies: 3
Number of procedures for certification: Nil
Total number of hours required: 3 [1 hour (theory) and 2 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN67.1	Describe & identify various types of muscle under the microscope	K/S	SH	Y	1	2
AN67.2	Classify muscle and describe the structure-function correlation of the same	K	KH	Y		
AN67.3	Describe the ultrastructure of muscular tissue*	K	KH	N		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Classify muscle tissue based on its microscopic features and functions with suitable examples
b. Correlate the structure and function of the different types of muscle tissue
c. Compare and contrast the microstructure of the three types of muscle tissue
d. Identify, and draw the microstructure of the following slides: TS of skeletal muscle, LS of skeletal muscle (HP), Cardiac muscle
e. Demonstrate and describe the following structures: Epimysium, Fascicles, Perimysium, Muscle fibres, Endomysium, Nuclei of muscle fibres in the slide of TS of skeletal muscle (LP)
f. Demonstrate and describe the following structures: Epimysium Fascicles, Perimysium, Muscle fibers, Endomysium, Nuclei of muscle fibres , Cross striations in the slide of LS of skeletal muscle (HP)
g. Demonstrate and describe the following structures: Muscle fibres, Nuclei of muscle fibres, Cross striations, Intercalated discs in the slide of Cardiac muscle in the slide of cardiac muscle
h. Compare and contrast the ultrastructure of the three different types of muscle tissue

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
• Lecture	• Small group discussion	• Short answer	• Spotter • Slide discussion

GENERAL HISTOLOGY

Topic: Nervous tissue histology
Number of competencies: 3
Number of procedures for certification: Nil
Total number of hours required: 3 [1 hour (theory) and 2 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN68.1	Describe & Identify multipolar & unipolar neuron, ganglia, peripheral nerve	K/S	SH	Y	1	2
AN68.2	Describe the structure-function correlation of neuron	K	KH	Y		
AN68.3	Describe the ultrastructure of nervous tissue*	K	KH	N		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Classify neurons based on their structure and functions with suitable examples
b. Identify and draw the microstructure of the transverse and longitudinal section of a peripheral nerve, spinal ganglion and autonomic ganglion
c. Demonstrate and describe the following structures: Epineurium with epineural blood vessels, Interfascicular connective tissue, Perineurium, Nerve fascicles, Endoneurium with neurilemma, Myelin sheath, Axon, Schwann cell nuclei in the slide of peripheral nerve (TS**)**
d. Demonstrate and describe the following structures: Epineurium with epineurial blood vessels, Perineurium Endoneurium with neurilemma, Myelin sheath, Axon, Schwan cell and fibroblast nuclei in the slide of peripheral nerve (LS)
e. Demonstrate and describe the following structures**:** Capsule, Epineurium, Clusters of unipolar cell bodies with nucleus and nucleolus, Nuclei of satellite cells, LS of nerve fibre in the slide of sensory ganglion
f. Demonstrate and describe the following structures: Multipolar neuron with process, Eccentric nucleus, Unmyelinated nerve fibres, Satellite cells in the slide of autonomic ganglia
a. Compare and contrast the microscopic features of spinal and autonomic ganglia
b. Describe the ultrastructure of nervous tissue

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**

GENERAL HISTOLOGY

• Lecture	• Small group discussion	• Short answer	• Spotter • Slide discussion

GENERAL HISTOLOGY

Topic: Blood Vessels
Number of competencies: 3
Number of procedures for certification: Nil
Total number of hours required: 3 [1 hour (theory) and 2 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
AN69.1	Identify elastic & muscular blood vessels, capillaries under the microscope	K/S	SH	Y	**Theory**	**Practical**
					1	2
AN69.2	Describe the various types and structure-function correlation of blood vessel	K	KH	Y		
AN69.3	Describe the ultrastructure of blood vessel	K	KH	N		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Classify blood vessels based on their structure and functions with suitable examples
b. Identify and draw the microstructure of cross sections of a large artery, medium sized artery, medium sized vein and a large vein and capillaries
c. Correlate the structure and function of the different types of blood vessels
d. Demonstrate and describe the following structures: tunica intima-endothelium, subendothelium tunica media-elastic fibres, smooth muscle nuclei tunica adventitia- vasa vasorum in the slide of large artery/ elastic artery
e. Demonstrate and describe the following structures: tunica intima - endothelium, subendothelium, tunica media - smooth muscle nuclei, connective tissue, tunica adventitia - longitudinal sections of smooth muscle fibres, vasa vasorum in the slide of large vein
f. Demonstrate and describe the following structures: tunica intima - endothelium, subendothelium, internal elastic lamina, tunica media -external elastic lamina, tunica adventitia - vasa vasorum
g. Describe and demonstrate the following structures: tunica intima - endothelium, subendothelium, tunica media - smooth muscle nuclei, collagen fibres, tunica adventitia - vasa vasorum in the slide of medium sized vein
h. Compare and contrast the microscopic features of the different types of blood vessels
i. Describe the ultrastructure of the different types of blood vessels

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**

GENERAL HISTOLOGY

• Lecture	• Small group discussion	• Short answer	• Spotter • Slide discussion

GENERAL HISTOLOGY

Topic: Glands & Lymphoid tissue
Number of competencies: 2
Number of procedures for certification: Nil
Total number of hours required: 6 [2 hours (theory) and 4 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN70.1	Identify exocrine gland under the microscope & distinguish between serous, mucous and mixed acini	K/S	SH	Y	1	2

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Classify exocrine glands based on their structure and secretions with suitable examples
b. Identify and draw the microstructure of serous, mucous and mixed glands
c. Correlate the structure and function of the different types of exocrine glands
d. Compare and contrast the microscopic features of serous, mucous and mixed glands
e. Demonstrate and describe the following structures Stroma, Parenchyma, Capsule, Septa, Lobules, Mucous acini, Intralobular ducts Interlobular ducts in the slide of the mucous salivary gland
f. Demonstrate and describe the following structures: Stroma Parenchyma, Capsule, Septa, Lobules, Serous acini, Intralobular ducts, Interlobular ducts in the slide of serous salivary gland
g. Demonstrate and describe the following structures: Stroma, Parenchyma, Capsule Septa, Lobules, Mucous acini, Serous acini, Mucous acini with serous demilunes, Intralobular ducts, Interlobular ducts in the slide of the mixed salivary gland

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
• Lecture	• Small group discussion	• Short answer	• Spotter • Slide discussion

GENERAL HISTOLOGY

Topic: Glands & Lymphoid tissue continued

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
AN70.2	Identify the lymphoid tissue under the microscope & describe microanatomy of lymph node, spleen, thymus, tonsil and correlate the structure with function	K/S	SH	Y	**Theory**	**Practical**
					1	2

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Classify lymphatic tissue based on its origin and degree of capsulation with suitable examples
b. Correlate the structure and function of the different types of lymphatic tissue
c. Compare and contrast the microstructure of the different types of lymphatic tissue
d. Identify and draw the microstructure of the lymph node, thymus, spleen and palatine tonsil
e. Demonstrate and describe the following structures: Capsule, Cortex, Medulla, Trabeculae, Sub-capsular sinus, Lymphatic nodules, Germinal centres, Paracortex, Trabecular sinuses, Medullary sinuses, Medullary cords in the slide of the lymph node
f. Demonstrate and describe the following structures: Capsule, Cortex, Medulla, Trabeculae, Lobules, Hassal's corpuscles in the slide of thymus
g. Demonstrate and describe the following structures: Capsule, Red pulp, White pulp, Trabeculae, Central artery in the slide of the spleen
h. Demonstrate and describe the following structures: Hemi-capsule, Crypts, Stratified squamous non-keratinized epithelium, Lymphatic nodules in the slide of the palatine tonsil

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
• Lecture	• Small group discussion	• Short answer	• Spotter • Slide discussion

GENERAL HISTOLOGY

Topic: Bone & Cartilage
Number of competencies: 2
Number of procedures for certification: Nil
Total number of hours required: 3 [1 hour (theory) and 2 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
AN71.1	Identify bone under the microscope; classify various types and describe the structure-function correlation of the same	K/S	SH	Y	**Theory**	**Practical**
					1	2
AN71.2	Identify cartilage under the microscope & describe various types and structure- function correlation of the same	K/S	SH	Y		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Classify the bone tissue based on its structure with suitable examples
b. Identify and draw the microstructure of compact (LS and TS) and spongy bone
c. Correlate the structure and function of the different types of bone
d. Compare and contrast the microscopic features of cartilage and bone
e. Compare and contrast the microscopic features of compact and spongy bone
f. Demonstrate and describe the following structures: Periosteum, Outer circumferential lamellae, Concentric lamellae, Interstitial lamellae, Haversian canals, Lacunae with canaliculi, Haversian systems, Volkmann's canals, Inner circumferential lamellae, Endosteum in the slide of TS of compact bone
g. Demonstrate and describe the following structures: Periosteum, Parallel lamellae, Haversian canals, Lacunae with canaliculi, Volkmann's canals in the slide of the LS of compact bone
h. Classify cartilages based on their structure with suitable examples
i. Identify and draw the light microscopic features of hyaline, elastic and white fibrous cartilage
j. Correlate the structure and function of the different types of cartilage
k. Compare and contrast the microscopic features of hyaline, elastic and white fibrous cartilage
l. Demonstrate and describe the following structures: Perichondrium, Chondroblasts, Chondrocytes, Lacunae, Cell nests, Glassy, basophilic matrix, Territorial matrix, Inter-territorial matrix in the slide of the hyaline cartilage

m. Demonstrate and describe the following structures: Perichondrium, Chondroblasts, Chondrocytes, Lacunae, Matrix with elastic fibres in the slide of the elastic cartilage
n. Demonstrate and describe the following structures: Bundles of collagen fibres, Chondrocytes arranged in rows, Lacunae, Fibroblast nuclei in the slide of the white fibrocartilage

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
• Lecture	• Small group discussion	• Short answer	• Spotter • Slide discussion

GENERAL HISTOLOGY

Topic: Integumentary System
Number of competencies: 1
Number of procedures for certification: Nil
Total number of hours required: 3 [1 hour (theory) and 2 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
AN72.1	Identify the skin and its appendages under the microscope and correlate the structure with function	K/S	SH	Y	**Theory**	**Practical**
					1	2

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Classify skin based on the structure of the epidermis with suitable examples
b. Identify and draw the microstructure of thick and thin skin
c. Correlate the structure with function of thick and thin skin
d. Compare and contrast the microscopic features of thick and thin skin
e. Demonstrate and describe the following structures: Epidermis – 5 layers stratified squamous keratinized epithelium -Stratum Basale, Stratum spinosum, Stratum granulosum, Stratum lucidum, Stratum corneum Dermis - Papillary layer, Dermal papillae, Reticular layer, Sweat glands in the slide of the thick skin
f. Demonstrate and describe the following structures: epidermis - 4 layers Stratum Basale, Stratum spinosum, Stratum granulosum, Stratum corneum dermis Papillary layer, dermal papillae, ducts of sweat glands, Reticular layer, cut section of hair follicle, Arrector pili muscle, Sebaceous glands, sweat glands, Blood vessels in the slide of the thin skin

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
• Lecture	• Small group discussion	• Short answer	• Spotter • Slide discussion

GENETICS

Topic: Chromosomes
Number of competencies: 3
Number of procedures for certification: Nil
Total number of hours required: 1 [1 hour (theory)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN73.1	Describe the structure of chromosomes with classification	K	KH	Y	1 hour	-
AN73.2	Describe technique of karyotyping with its applications	K	KH	Y		
AN73.3	Describe the Lyon's hypothesis	K	KH	Y		

SPECIFIC LEARNING OBJECTIVES (SLOs)

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Describe the structure of chromosomes
b. Classify the chromosomes based on the length of their arms and the position of the centromere
c. Describe the technique of karyotyping and its applications
d. Differentiate between normal (male and female) and abnormal karyotypes
e. Apply Lyon hypothesis to explain the formation and clinical significance of Barr bodies

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical**
• Lecture	-	• Short Essay • Short answer	-

GENETICS

Topic: Patterns of inheritance
Number of competencies: 4
Number of procedures for certification: Nil
Total number of hours required: 3 [1 hour (theory) and 2 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN74.1	Describe the various modes of inheritance with examples	K	KH	Y	1 hour	2 hours
AN74.2	Draw pedigree charts for the various types of inheritance & give examples of diseases of each mode of inheritance	K	KH	Y		
AN74.3	Describe multifactorial inheritance with examples	K	KH	Y		
AN74.4	Describe the genetic basis & clinical features of Achondroplasia, Cystic Fibrosis, Vitamin D resistant rickets, Haemophilia, Duchenne muscular dystrophy & Sickle cell anaemia	K	KH	Y		

SPECIFIC LEARNING OBJECTIVES (SLOs)

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Classify the various patterns of inheritance with examples
b. Explain the characteristics of the different types of single gene disorders
c. Interpret different pedigree symbols
d. Interpret and draw pedigree charts for the various types of single gene disorders
e. Explain the concept of multifactorial inheritance with examples
f. Interpret the different pattern of inheritance
g. Describe the genetic basis & clinical features of Achondroplasia, Cystic Fibrosis, Vitamin D resistant rickets, Haemophilia, Duchenne muscular dystrophy & Sickle cell anaemia

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical**
• Lecture	• Small group teaching • Visit to the Genetic lab	• Short Essay • Short answer	• Spotter • Viva-voce

GENETICS

Topic: Principles of genetics, Chromosomal Aberrations & Clinical genetics
Number of competencies: 5
Number of procedures for certification: Nil
Total number of hours required: 4 [2 hour (theory) and 2 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
AN75.1	Describe the structural and numerical chromosomal aberrations	K	KH	Y	**Theory**	**Practical**
					2 hour	2 hours
AN75.2	Explain the terms mosaics and chimeras with example*	K	KH	N		
AN75.3	Describe the genetic basis & clinical features of Prader Willi syndrome, Edward syndrome & Patau syndrome*	K	KH	N		
AN75.4	Describe genetic basis of variation: polymorphism and mutation	K	KH	Y		
AN75.5	Describe the principles of genetic counselling	K	KH	Y		

SPECIFIC LEARNING OBJECTIVES (SLOs)

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Describe the different types of structural chromosomal aberrations with suitable examples
b. Describe the autosomal aberrations with suitable examples
c. Describe the sex chromosomal aberrations with suitable examples
d. Explain the genetic basis of numerical and structural chromosomal aberrations
e. Describe the karyotype and salient clinical features of Down syndrome, Turner syndrome and Klinefelter syndrome
f. Differentiate between true and pseudohermaphroditism
g. Define mosaics and chimeras
h. Describe the genetic basis and salient clinical features of Prader Willi syndrome, Edward syndrome and Patau syndrome
i. Define mutation and describe the different types mutation
j. Define polymorphism with examples
k. Describe the principles of genetic counseling

TEACHING AND LEARNING METHODS	ASSESSMENT METHODS

GENETICS

Theory	Practical	Theory	Practical
• Lecture	• Small group teaching • Visit to the Genetic lab	• Short Essay • Short answer	• Spotter • Viva-voce

GENETICS

Topic: Prenatal Diagnosis
Number of competencies: 3
Number of procedures for certification: Nil
Total number of hours required: 1 [1 hour (theory)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN81.1	Describe various methods of prenatal diagnosis	K	KH	Y	1 hour	-
AN81.2	Describe indications, process and disadvantages of amniocentesis	K	KH	Y		
AN81.3	Describe indications, process and disadvantages of chorion villus biopsy	K	KH	Y		

SPECIFIC LEARNING OBJECTIVES (SLOs)

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Describe the various methods of prenatal diagnosis,
b. Describe the common indications for prenatal diagnosis
c. Describe a few of the common ethical issues involved in prenatal diagnosis
d. Describe indications, process and disadvantages of amniocentesis
e. Describe indications, process and disadvantages of chorion villus biopsy
f. Compare and contrast amniocentesis and chorionic villus biopsy for prenatal diagnosis

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical**
• Lecture	-	• Short Essay • Short answer	-

[**Please Note:** The topic prenatal diagnosis could be taught either as part of General embryology or Genetics]

GENERAL EMBRYOLOGY

TOPIC: Introduction to embryology and gametogenesis
Number of competencies: 2 + 3
Number of procedures for certification: Nil
Total number of hours required: 2 [2 hours (theory)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN76.1	Describe the stages of human life	K	KH	Y	2 hours	-
AN76.2	Explain the terms- phylogeny, ontogeny, trimester, Viability	K	KH	Y		
AN77.1	Describe the uterine changes occurring during the menstrual cycle	K	KH	Y		
AN77.2	Describe the synchrony between the ovarian and menstrual cycles	K	KH	Y		
AN77.3	Describe spermatogenesis and oogenesis along with diagrams	K	KH	Y		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Explain the developmental periods / stages of human life
b. Explain growth and differentiation
c. Explain the terms - phylogeny, ontogeny, trimester, viability
d. Describe the menstrual cycle with reference to phases and changes occurring in the endometrium
e. Describe the relation between ovarian cycle and menstrual cycle
f. Describe spermatogenesis with reference to spermatocytosis, meiosis and spermiogenesis with diagrams
g. Describe oogenesis and the ovarian cycle with diagrams
h. Compare and contrast between spermatogenesis and oogenesis
i. Describe the structure of male and female gametes with neat labelled diagram
j. Describe in brief abnormalities in the formation of gametes

TEACHING AND LEARNING METHODS	ASSESSMENT METHODS

GENERAL EMBRYOLOGY

Theory	Practical	Theory	Practical / Viva-voce
• Lecture	• Small group teaching • Self-directed learning (Model demonstration)	• Short answer • Short essay • Case based short essay	• Viva-voce

TOPIC: Fertilization (First week of development)
Number of competencies: 3 + 3
Number of procedures for certification: Nil
Total number of hours required: 2 [2 hours (theory)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
AN77.4	Describe the stages and consequences of fertilization	K	KH	Y	**Theory**	**Practical**
AN77.5	Enumerate and describe the anatomical principles underlying contraception	K	KH	Y	2 hours	-
AN77.6	Describe teratogenic influences; fertility and sterility, surrogate motherhood, social significance of "sex-ratio" *	K	KH	N		
AN78.1	Describe cleavage and formation of blastocyst	K	KH	Y		
AN78.2	Describe the development of trophoblast	K	KH	Y		
AN78.3	Describe the process of implantation and common abnormal sites of implantation	K	KH	Y		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Describe the process of fertilization with special reference to the site, phases and results
b. Describe the process of cleavage of the zygote to form the morula
c. Describe the stages in the transformation of the zygote into the blastocyst
d. Describe the development of the trophoblast
e. Describe the process of implantation in pregnancy with special reference to the site, type and mechanism
f. Enumerate the types of contraception's and describe the anatomical principles underlying contraception
g. Enumerate the abnormal sites of implantation
h. Explain the embryological basis of ectopic pregnancy
i. Define teratogens and explain the characteristics of teratogen
j. Explain the influence of teratogens on fertility and sterility with suitable examples
k. Explain the surrogate motherhood

l. Define the sex ratio and explain the social significance of gender imbalance			
TEACHING AND LEARNING METHODS		**ASSESSMENT METHODS**	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
• Lecture • Video assisted Lecture • Team based learning	• Small group teaching • Self-directed learning (Model demonstration)	• Short essay • Modified short essay • Short answer • Case based short essay	• Spotter • Viva-voce • OSPE

TOPIC: Second week of development
Number of competencies: 3
Number of procedures for certification: Nil
Total number of hours required: 1 [1 hour (theory)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN78.2	Describe the development of trophoblast	K	KH	Y	1 hour	-
AN78.4	Describe the formation of extra-embryonic mesoderm and coelom, bilaminar disc and prochordal plate	K	KH	Y		
AN78.5	Describe in brief abortion; decidual reaction, pregnancy test	K	KH	Y		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Describe the formation and functions of the Cytotrophoblast and syncytiotrophoblast
b. Describe in brief the Utero-placental circulation
c. Describe the changes in the embryoblast
d. Describe the development of embryonic bilaminar germ disc
e. Define the prochordal plate and explain its importance
f. Describe the development and functions of the amnion
g. Describe in brief amniotic fluid formation, functions and embryological basis for oligohydramnios, polyhydramnios
h. Describe the stages of development and fate of primary yolk sac, secondary yolk sac
i. Describe the development of the extraembryonic coelom
j. Describe the formation and fate of the chorion
k. Define abortion
l. Define the decidua and explain the decidual reaction, parts and fate of the decidua
m. Explain the embryological basis of pregnancy test

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
• Lecture • Video assisted Lecture		• Short essay • Modified short essay	• Spotter • Viva-voce

• Team based learning		• Short answer • Case based short essay	• OSPE

GENERAL EMBRYOLOGY

TOPIC: 3rd and 4th week of development
Number of competencies: 3 + 3
Number of procedures for certification: Nil
Total number of hours required: 2 [2 hours (theory)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
AN79.1	Describe the formation & fate of the primitive streak	K	KH	Y	**Theory**	**Practical**
AN79.2	Describe formation & fate of notochord	K	KH	Y	2 hours	-
AN79.3	Describe the process of neurulation					
AN79.4	Describe the development of somites and intraembryonic coelom	K	KH	Y		
AN79.5	Explain embryological basis of congenital malformations, nucleus pulposus, sacrococcygeal teratomas, neural tube defects*	K	KH	N		
AN79.6	Describe the diagnosis of pregnancy in first trimester and role of teratogens, alpha-fetoprotein*	K	KH	N		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Define and describe the process of gastrulation
b. Describe the formation, importance & fate of the primitive streak in the formation of the three germ layers
c. Explain the embryological basis for the development of sacrococcygeal teratomas
d. Describe the trilaminar germ disc of the developing embryo
e. Enumerate the derivatives of the ectodermal germ layer
f. Define Neurulation and describe the stages and results of neurulation
g. Describe the formation and derivatives of Neural crest
h. Enumerate the derivatives of the mesodermal germ layer
i. Describe the formation, subdivisions and derivatives of paraxial mesoderm
j. Describe the formation and derivatives of intermediate mesoderm
k. Describe the formation, subdivisions, derivatives of lateral plate mesoderm

l. Explain the formation of blood and blood vessels
m. Enumerate the derivatives of the endodermal germ layer
n. Describe the folding of the embryo and its role in the formation of the gut tube and umbilical cord
o. Explain the development of the chorionic villi
p. Describe the diagnosis of pregnancy in first trimester
q. Explain the embryological basis of maternal serum alfa protein screening test
r. Explain the embryological basis for triple & quadruple test for birth defects

TEACHING AND LEARNING METHODS		**ASSESSMENT METHODS**	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
• Lecture • Video assisted teaching • Team based learning	-	• Short essay • Short answer • Modified short essay • Case based short essay	• Spotters • Viva-voce

TOPIC: Fetal membranes
Number of competencies: 7
Number of procedures for certification: Nil
Total number of hours required: 1 [1 hour (theory)]

NUMBER		DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Time required in hours	
					Theory	**Practical**
AN80.1	Describe formation, functions & fate of-chorion: amnion; yolk sac; allantois & decidua	K	KH	Y	1 hour	-
AN80.2	Describe formation & structure of umbilical cord	K	KH	Y		
AN80.3	Describe formation of placenta, its physiological functions, foeto-maternal circulation & placental barrier	K	KH	Y		
AN80.4	Describe embryological basis of twinning in monozygotic & dizygotic twins	K	KH	Y		
AN80.5	Describe role of placental hormones in uterine growth & parturition	K	KH	Y		
AN80.6	Explain embryological basis of estimation of fetal age*	K	KH	N		
AN80.7	Describe various types of umbilical cord attachments*	K	KH	N		
SPECIFIC LEARNING OBJECTIVES (SLO's)						

GENERAL EMBRYOLOGY

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Name the fetal membranes
b. Describe the formation, functions and fate of the Chorion
c. Describe the formation, functions of the amnion
d. Describe the formation and fate of the Yolk sac
e. Describe the allantois and its derivatives
f. Describe formation, contents, structure and functions of the umbilical cord
g. Describe various types of umbilical cord attachments
h. Describe formation of the placenta
i. Correlate the structure and functions of the placenta
j. Describe the foeto-maternal circulation & placental barrier in detail
k. Briefly describe the anomalies of placenta
l. Describe role of placental hormones in uterine growth & parturition
m. Explain the mutual relation of amniotic cavity, extraembryonic coelom and uterine cavity
n. Describe embryological basis of twinning in monozygotic & dizygotic twins
o. Define foetal period and describe the monthly changes of developing fetus briefly
p. Explain embryological basis of estimation of fetal age

TEACHING AND LEARNING		**ASSESSMENT METHODS**	
Teaching methods		**Assessment methods**	
Theory	**Practical**	**Theory**	**Practical**
• Lecture • Team based lecture • Video assisted learning	-	• Short essay • Short answer • Modified short essay • Case based short essay	• Spotters • Viva-voce

TOPIC: Prenatal diagnosis
Number of competencies: 3
Number of procedures for certification: Nil
Total number of hours required: 1 [1 hour (theory)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN81.1	Describe various methods of prenatal diagnosis	K	KH	Y	1 hour	-
AN81.2	Describe indications, process and disadvantages of amniocentesis	K	KH	Y		
AN81.3	Describe indications, process and disadvantages of chorion villus biopsy	K	KH	Y		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Describe the various methods of prenatal diagnosis
b. Describe the common indications for prenatal diagnosis
c. Describe a few of the common ethical issues involved in prenatal diagnosis
d. Describe indications, process and disadvantages of amniocentesis
e. Describe indications, process and disadvantages of chorion villus biopsy
f. Compare and contrast amniocentesis and chorionic villus biopsy for prenatal diagnosis

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
• Lecture • Team based lecture • Video assisted lectures	-	• Short essay • Short answer • Case based short essay	• Spotters • Viva-voce

[**Please Note**: The topic prenatal diagnosis could be taught either as part of General embryology or Genetics]

<u>Embryology Model class could be considered as an independent practical class of 2 hours duration.</u>

UPPER LIMB

Topic: Features of individual bones
Number of competencies: 6
Number of procedures for certification: Nil
Total number of hours required: 6 [6 hours (theory)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN8.1	Identify the given bone, its side, important features and keep it in anatomical position	K/S	SH	Y	5	-
AN8.2	Identify and describe joints formed by the given bone	K/S	SH	Y		
AN8.3	Enumerate peculiarities of clavicle	K	KH	Y		
AN8.4	Demonstrate important muscle attachment on the given bone	K/S	SH	Y		

SPECIFIC LEARNING OBJECTIVES (SLOs')

Bones – 1. Clavicle; 2. Scapula; 3. Humerus; 4. Ulna; 5. Radius

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Identify the bone and determine its side
b. Hold the bone in anatomical position
c. Describe the type to which the bone belongs
d. Identify the main parts and their features
e. Identify the parts of the bone in direct contact with important neurovascular structures
f. Demonstrate the attachments of functional groups of muscles
g. Describe and demonstrate the articulating surfaces and joints formed by the bone
h. Describe the peculiarities of the clavicle

TEACHING AND LEARNING METHODS		**ASSESSMENT METHODS**	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
	• Dissection with small group discussion	• Short essay • Short answer	• Spotters • Viva-voce

UPPER LIMB

Topic: Features of individual bones continued

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN8.5	Identify and name the various bones in the articulated hand, Specify the parts of the metacarpals and phalanges and enumerate the peculiarities of pisiform	K/S	SH	Y	1	-
AN8.6	Describe scaphoid fracture and explain the anatomical basis of avascular necrosis*	K	KH	N		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Identify and name all the bones of the articulated hand
b. Identify the tubercle of scaphoid, crest of trapezium and hook of hamate
c. Identify the parts of the metacarpals and phalanges
d. Describe the peculiarities of pisiform
e. Identify and name the joints formed between the carpals, metacarpals and phalanges
f. Describe scaphoid fracture and explain the anatomical basis of avascular necrosis

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
-	• Dissection with small group discussion	• Short answer	• Spotters • Viva-voce

UPPER LIMB

Topic: Pectoral region
Number of competencies: 3
Number of procedures for certification: Nil
Total number of hours required: 5 [1 hour (theory) and 4 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN9.1	Describe attachment, nerve supply & action of pectoralis major and pectoralis minor	K	KH	Y	1	4
AN9.2	Describe the location, extent, deep relations, structure, age changes, blood supply, lymphatic drainage, microanatomy and applied anatomy of breast	K	KH	Y		
AN9.3	Describe development of breast*	K	KH	N		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Describe and demonstrate the location, attachments, nerve supply and actions of the pectoralis major
b. Describe and demonstrate the location, attachments, nerve supply and actions of the pectoralis minor
c. Describe the gross anatomy (location, extent, gross structure, deep relations, blood supply, lymphatic drainage) of the breast
d. Describe the type of gland, microscopic structure and age changes of the breast
e. Describe the development and common congenital anomalies of the breast
f. Explain the anatomical basis for
   - incisions made to drain breast abscesses
   - the clinical signs seen in breast cancer

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
• Lecture	• Dissection with small group discussion	• Long essay • Short essay • Short answer	• Spotters • Window discussion • Viva-voce

UPPER LIMB

Topic: Axilla, Shoulder and Scapular region
Number of competencies: 13
Number of procedures for certification: Nil
Total number of hours required: 13 [3 hours (theory) and 10 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
AN10.1	Identify & describe boundaries and contents of axilla	K/S	SH	Y	**Theory**	**Practical**
AN10.2	Identify, describe and demonstrate the origin, extent, course, parts, relations and branches of axillary artery & tributaries of vein	K/S	SH	Y	2	4
AN10.3	Describe, identify and demonstrate formation, branches, relations, area of supply of branches, course and relations of terminal branches of brachial plexus	K/S	SH	Y		
AN10.4	Describe the anatomical groups of axillary lymph nodes and specify their areas of drainage	K	KH	Y		
AN10.5	Explain variations in formation of brachial plexus	K	KH	Y		
AN10.6	Explain the anatomical basis of clinical features of Erb's palsy and Klumpke's paralysis*	K	KH	N		
AN10.7	Explain anatomical basis of enlarged axillary lymph nodes*	K	KH	N		
SPECIFIC LEARNING OBJECTIVES (SLOs')						

UPPER LIMB

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Describe and demonstrate the boundaries and contents of the axilla
b. Describe and demonstrate the origin, extent, course, parts, relations and branches of the axillary artery
c. Describe and demonstrate the formation, extent, course, relations and tributaries of axillary vein
d. Describe and demonstrate the formation of the brachial plexus
e. Describe the common variations in the formation of the brachial plexus
f. Name the infraclavicular branches of the brachial plexus
g. Describe and demonstrate the course, relations and branches of the median, radial, axillary, ulnar and musculocutaneous nerves in the axilla
h. Describe the anatomical groups of axillary lymph nodes and specify their areas of drainage
i. Explain the anatomical basis of the clinical features of Erb's and Klumpke's paralysis
j. Explain the anatomical basis of axillary lymphadenopathy

TEACHING AND LEARNING METHODS		**ASSESSMENT METHODS**	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
• Lecture	• Dissection with small group discussion	• Long essay • Short essay • Short answer	• Spotters • Window discussion • Viva-voce

UPPER LIMB

Topic: Axilla, Shoulder and Scapular region continued

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN10.8	Describe, identify and demonstrate the position, attachment, nerve supply and actions of trapezius and latissimus dorsi	K/S	SH	Y	-	4
AN10.9	Describe the arterial anastomosis around the scapula and mention the boundaries of triangle of auscultation*	K	KH	N		
AN10.11	Describe & demonstrate attachment of serratus anterior with its action	K/S	SH	Y		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Describe and demonstrate the layers of the muscles of the back
b. Describe and demonstrate the position, attachments, nerve supply and actions of the trapezius, latissimus dorsi and serratus anterior
c. Explain the anatomical basis of clinical manifestations of injury to the spinal accessory nerve and the long thoracic nerve
d. Explain the movements of the scapula and the muscles causing these movements
e. Describe and demonstrate the boundaries and contents of the triangle of auscultation
f. Describe the arterial anastomosis around the scapula and its clinical significance

TEACHING AND LEARNING METHODS		**ASSESSMENT METHODS**	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
-	• Dissection with small group discussion	• Short essay • Short answer	• Spotters • Viva-voce

Topic: Axilla, Shoulder and Scapular region continued

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
AN10.10	Describe and identify the deltoid and rotator cuff muscles	K/S	SH	Y	**Theory**	**Practical**
AN10.12	Describe and demonstrate shoulder joint for– type, articular surfaces, capsule, synovial membrane, ligaments, relations, movements, muscles involved, blood supply, nerve supply and applied anatomy	K/S	SH	Y	1	2
AN10.13	Explain anatomical basis of Injury to axillary nerve during intramuscular injections*	K	KH	N		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Describe and demonstrate the position, attachments, nerve supply and actions of the deltoid
b. Describe and identify the rotator cuff muscles
c. Describe and demonstrate the spaces around the scapula and the structures passing through them
d. Describe and demonstrate the type, articulating surfaces, capsule, ligaments, important relations, movements and muscles causing them, and nerve supply of the shoulder joint.
e. Explain the anatomical basis of dislocation of the shoulder joint
f. Explain the anatomical basis of the clinical manifestations due to injury to the axillary nerve during intramuscular injections

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
• Lecture	• Dissection with small group discussion	• Long essay • Short essay • Short answer	• Spotters • Window discussion • Viva-voce

UPPER LIMB

Topic: Arm and cubital fossa
Number of competencies: 6
Number of procedures for certification: Nil
Total number of hours required: 6 [6 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN11.1	Describe and demonstrate muscle groups of upper arm with emphasis on biceps and triceps brachii	K/S	SH	Y	-	4
AN11.2	Identify & describe origin, course, relations, branches (or tributaries), termination of important nerves and vessels in arm	K/S	SH	Y		
AN11.4	Describe the anatomical basis of Saturday night paralysis	K	KH	Y		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Describe and demonstrate the muscles of the flexor compartment of the arm with emphasis on the biceps brachii
b. Describe and demonstrate the muscles of the extensor compartment of the arm with emphasis on the triceps brachii
c. Describe and demonstrate the origin, course, relations, branches, distribution and termination of the musculocutaneous nerve
d. Describe and demonstrate the origin, course, relations, branches, distribution and termination of the brachial artery
e. Describe the anatomical basis of Saturday night paralysis

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
-	• Dissection with small group discussion	• Long essay • Short essay • Short answer	• Spotters • Window discussion • Viva-voce

Topic: Arm and cubital fossa continued

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
AN11.5	Identify & describe boundaries and contents of cubital fossa	K/S	SH	Y	**Theory**	**Practical**
					-	2
AN11.3	Describe the anatomical basis of venipuncture of cubital veins	K	KH	Y		
AN11.6	Describe the anastomosis around the elbow joint*	K	KH	N		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Describe and demonstrate the boundaries of the cubital fossa
b. Describe and demonstrate the important contents (median neve, brachial artery, radial artery, ulnar artery and tendon of biceps) of the cubital fossa and their relations
c. Describe the anatomical basis of venipuncture of the median cubital vein
d. Describe the arterial anastomosis around the elbow joint and its functional importance

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
-	• Dissection with small group discussion	• Short essay • Short answer	• Spotters • Window discussion • Viva-voce

UPPER LIMB

Topic: Forearm and hand
Number of competencies: 15
Number of procedures for certification: Nil
Total number of hours required: 10 [2 hours (theory) and 8 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN12.1	Describe and demonstrate important muscle groups of ventral forearm with attachments, nerve supply and actions	K/S	SH	Y	1	4
AN12.2	Identify & describe origin, course, relations, branches (or tributaries), termination of important nerves and vessels of forearm	K/S	SH	Y		
AN12.3	Identify & describe flexor retinaculum with its attachments*	K/S	SH	N		
AN12.4	Explain anatomical basis of carpal tunnel syndrome	K	KH	Y		
AN12.5	Identify & describe small muscles of hand. Also describe movements of thumb and muscles involved	K/S	SH	Y		
AN12.6	Describe & demonstrate movements of thumb and muscles involved	K/S	SH	Y		
AN12.7	Identify & describe course and branches of important blood vessels and nerves in hand	K/S	SH	Y		
AN12.8	Describe anatomical basis of Claw hand	K	KH	Y		
AN12.9	Identify & describe fibrous flexor sheaths, ulnar bursa, radial bursa and digital synovial sheaths	K /S	SH	Y		

AN12.10	Explain infection of fascial spaces of palm*	K	KH	N		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Describe and demonstrate the muscle groups (superficial and deep set) of the ventral forearm with their attachments, nerve supply and actions
b. Describe and demonstrate the origin, course, relations, branches, distribution and termination of the radial artery
c. Describe and demonstrate the origin, course, relations, branches, distribution and termination of the ulnar artery
d. Describe and demonstrate the origin, course, relations, branches, distribution of the median nerve
e. Describe and demonstrate the origin, course, relations, branches, distribution of the ulnar nerve
f. Describe and demonstrate the origin, course, relations, branches, distribution of radial nerve
g. Describe and demonstrate the attachments of flexor retinaculum of the hand
h. Describe and demonstrate the structures passing superficial and deep to the flexor retinaculum of the hand
i. Explain the anatomical basis of carpal tunnel syndrome
j. Describe and demonstrate the small muscles/intrinsic muscles of the hand (thenar, hypothenar, lumbricals and interossei)
k. Describe the origin, insertion, nerve supply and actions of lumbrical muscles of the hand
l. Describe the origin, insertion, nerve supply and actions of interossei muscles of the hand
m. Describe and demonstrate the movements of the thumb
n. Describe the muscles producing movements of thumb
o. Describe and demonstrate the formation, termination and supply of the superficial palmar arch of the hand
p. Describe and demonstrate the course and relations of the ulnar nerve in the hand
q. Describe the anatomical basis of the claw hand
r. Describe and demonstrate the fibrous flexor sheaths of the hand
s. Describe and demonstrate the fascial spaces of the palm
t. Describe and demonstrate the ulnar and radial bursae of the hand
u. Explain infection of fascial spaces of palm

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
• Lecture	• Dissection with small group discussion	• Long essay • Modified long essay • Short essay • Short answer	• Spotters • Window discussion • Viva-voce

Topic: Forearm and hand continued

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN12.11	Identify, describe and demonstrate important muscle groups of dorsal forearm with attachments, nerve supply and actions	K/S	SH	Y	1	4
AN12.12	Identify & describe origin, course, relations, branches (or tributaries), termination of important nerves and vessels of back of forearm	K/S	SH	Y		
AN12.13	Describe the anatomical basis of Wrist drop	K	KH	Y		
AN12.14	Identify & describe compartments deep to extensor retinaculum	K/S	SH	Y		
AN12.15	Identify & describe extensor expansion formation	K/S	SH	Y		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Describe and demonstrate the attachments, nerve supply and actions of superficial and deep group of muscles of the dorsal forearm
b. Describe and demonstrate the origin, course, relations, branches, termination of the posterior interosseous nerve
c. Describe and demonstrate the origin, course, relations, branches, termination of posterior interosseous artery
d. Describe and demonstrate the cutaneous innervation of the palmar and dorsal aspect of the hand
e. Describe the anatomical basis of Wrist drop
f. Describe and demonstrate the attachments of extensor retinaculum of the hand
g. Describe and demonstrate the compartments deep to extensor retinaculum of the hand
h. Describe and demonstrate the extensor digital expansion of the hand

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**

• Lecture	• Dissection with small group discussion	• Short essay • Short answer	• Spotters • Window discussion • Viva-voce

UPPER LIMB

Topic: General features, joints, radiographs & surface marking
Number of competencies: 8
Number of procedures for certification: Nil
Total number of hours required: 11 [3 hours (theory) and 8 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN13.1	Describe and explain Fascia of upper limb and compartments, veins of upper limb and its lymphatic drainage	K	KH	Y	1	2
AN13.2	Describe dermatomes of upper limb	K	KH	Y		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Describe and demonstrate the superficial fascia, deep fascia and its modifications in the upper limb
b. Explain the compartments formed by the intermuscular septa of the upper limb
c. Define and describe the dermatomes of the upper limb
d. Describe the arrangements of veins of the upper limb
e. Describe and demonstrate formation, course and relations, tributaries, termination and clinical importance of the veins of the upper limb (dorsal venous arch, cephalic, basilic, median cubital vein, axillary vein)
f. Describe the lymphatic drainage of the upper limb and its functional importance

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
• Lecture	• Dissection with small group discussion	• Short essay • Short answer	• Spotters • Window discussion

UPPER LIMB

Topic: General features, joints, radiographs & surface marking continued

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN13.3	Identify & describe the type, articular surfaces, capsule, synovial membrane, ligaments, relations, movements, blood and nerve supply of elbow joint, proximal and distal radio-ulnar joints, wrist joint & first carpometacarpal joint	K/S	SH	Y	1	2
AN13.4	Describe Sternoclavicular joint, Acromioclavicular joint, Carpometacarpal joints & Metacarpophalangeal joint*	K	KH	N		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Describe and demonstrate the type, articular surfaces, capsule, synovial membrane, ligaments, relations, movements, blood supply and nerve supply of elbow joint
b. Describe and demonstrate the type, articular surfaces, capsule, ligaments of the proximal and distal radioulnar joint
c. Define and explain the movements, supination and pronation of the radioulnar joint
d. Describe and demonstrate the type, articular surfaces, capsule, synovial membrane, ligaments, relations, movements, blood supply and nerve supply of the wrist joint
e. Describe and demonstrate the type, articular surfaces, capsule, synovial membrane, ligaments, relations, movements, blood supply and nerve supply of first carpometacarpal joint
f. Describe the type, articular surfaces, capsule, ligaments of the sternoclavicular joint, Acromioclavicular joint, carpometacarpal joints and metacarpophalangeal joint*

TEACHING AND LEARNING METHODS		**ASSESSMENT METHODS**	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
• Lecture	• Dissection with small group discussion	• Short essay • Short answer	• Spotters • Window discussion

UPPER LIMB

Topic: General features, joints, radiographs & surface marking continued

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN13.5	Identify the bones and joints of upper limb seen in anteroposterior and lateral view radiographs of shoulder region, arm, elbow, forearm and hand	K/S	SH	Y	1	2

SPECIFIC LEARNING OBJECTIVES (SLOs')

Radiographs: 1. Shoulder region; 2. Arm; 3. Elbow; 4. Forearm; 5. Hand

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Identify and name the region of the radiograph
b. Differentiate and identify the X ray as either plain or contrast radiograph
c. Identify and describe the view as either AP, Lateral in the radiograph
d. Describe and demonstrate the different tissues from most to least opaque on the X-ray as: bone, soft tissue, air, fat on the radiograph
e. Identify and name the normal anatomic structures on X-ray of the upper limb (clavicles and scapulae, Humerus, radius, ulna, carpal bones, metacarpals and phalanges on the respective radiographs)
f. Describe and demonstrate the articulations/joints of the upper limb on the X-ray (shoulder joint, elbow joint, superior and inferior radioulnar joint, wrist joint and carpometacarpal joint on the respective radiograph)
g. Identify and explain - fracture, dislocation on the radiographs

TEACHING AND LEARNING METHODS		**ASSESSMENT METHODS**	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
• Lecture	• Dissection with small group discussion	• Short essay • Short answer	• Spotters • Window discussion

UPPER LIMB

Topic: General features, joints, radiographs & surface marking continued

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN13.6	Identify & demonstrate important bony land marks of upper limb: Jugular notch, sternal angle, acromial angle, spine of the scapula, vertebral level of the medial end, inferior angle of the scapula	K/S	SH	Y	-	2
AN13.7	Identify & demonstrate surface projection of: Cephalic and C Palpation of Brachial artery, Radial artery, Testing of muscles: Trapezius, pectoralis major, serratus anterior, latissimus dorsi, deltoid, biceps brachii, Brachioradialis	K/S	SH	Y		
AN13.8	Describe the development of the upper limb* (*This competency to be covered in one of the embryology classes*)	K	KH	N		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Identify & demonstrate important bony land marks of upper limb on the dissecting cadaver and /or living subjects (Jugular notch, sternal angle, acromial angle, spine of the scapula, vertebral level of the medial end, inferior angle of the scapula)
b. Draw and describe the surface marking of cephalic and basilic vein
c. Describe and demonstrate the Palpation of Brachial artery, Radial artery and explain its functional importance
d. Describe and demonstrate the testing of muscles trapezius, pectoralis major, serratus anterior, latissimus dorsi, deltoid, biceps brachii, Brachioradialis with its clinical importance

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
-	• Dissection with small group discussion	• Short essay • Short answer	• Spotters • Window discussion

THORAX

Topic: Thoracic cage
Number of competencies: 11
Number of procedures for certification: Nil
Total number of hours required: 3 [3 hours (theory)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Time required	
					Theory	**Practical**
AN 21.1	Identify and describe the salient features of sternum, typical rib and typical thoracic vertebra	K/S	SH	Y	**3**	**-**
AN21.2	Identify and describe the features 2nd, 11th and 12th ribs. 1st, 11th and 12th thoracic vertebrae*	K/S	SH	N		
AN21.8	Describe & demonstrate type, articular surfaces & movements of manubriosternal, costovertebral, costotransverse and xiphisternal joints	K/S	SH	Y		
AN21.9	Describe & demonstrate mechanics and types of respiration	K/S	SH	Y		
AN21.10	Describe costochondral and interchondral joints*	K	KH	N		

SPECIFIC LEARNING OBJECTIVES (SLO)

Bones: 1. Sternum; 2. Ribs; 3. Thoracic vertebra

At the end of the teaching and learning session the 1st phase MBBS student should be able to

a. Identify the bone
b. Hold the bone in anatomical position
c. Describe the type to which the bone belongs
d. Identify the main parts and the general features of the bone
e. Demonstrate the attachments of muscles
f. Describe and demonstrate the articulating surfaces and joints formed by the bone
g. Describe & demonstrate type, articular surfaces & movements of manubriosternal,
h. Describe & demonstrate type, articular surfaces & movements of costovertebral joint
i. Describe & demonstrate type, articular surfaces & movements of costotransverse joint
j. Describe & demonstrate type, articular surfaces & movements of xiphisternal joints
k. Define the sternal angle and explain its clinical importance

l. Explain the anatomical basis of sternal puncture
m. Identify the typical and atypical ribs
n. Identify and describe the features 2nd, 11th and 12th ribs *
o. Compare and contrast the typical and atypical rib features with examples
p. Identify and describe the typical thoracic vertebra
q. Identify and demonstrate the features of 1st, 11th and 12th thoracic vertebrae*
r. Compare and contrast the thoracic vertebrae with other vertebrae (cervical, Lumbar)
s. Describe & demonstrate mechanics and types of respiration

TEACHING AND LEARNING /ASSESSMENT METHODS			
Teaching methods		**Assessment methods**	
Theory	**Practical**	**Theory**	**Practical**
• Small group discussion	-	• Short answer	• Spotters • Viva-voce

Topic: Thoracic cage continued

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Time required	
AN21.3	Describe & demonstrate the boundaries of thoracic inlet, cavity and outlet	K/S	SH	Y	**Theory**	**Practical**
					1	4
AN21.4	Describe & demonstrate extent, attachments, direction of fibres, nerve supply and actions of intercostal muscles	K/S	SH	Y		
AN21.5	Describe & demonstrate origin, course, relations and branches of a typical intercostal nerve	K/S	SH	Y		
AN21.6	Mention origin, course and branches/ tributaries of: 1) anterior & posterior intercostal vessels 2) internal thoracic vessels	K	KH	Y		
AN21.7	Mention the origin, course, relations and branches of 1) atypical intercostal nerve 2) superior intercostal artery, subcostal artery*	K	KH	N		

SPECIFIC LEARNING OBJECTIVES (SLO)

At the end of the session, the 1st phase MBBS student should be able to:

a. Describe and demonstrate the boundaries of thoracic inlet
b. Enumerate the structures passing through the thoracic inlet
c. Explain the anatomical basis of the thoracic inlet syndrome*
d. Describe and demonstrate the thoracic outlet
e. Define the typical intercostal space. Enumerate the number of intercostal spaces on each side of the chest wall
f. Describe and demonstrate the boundaries of a typical intercostal space
g. Describe and demonstrate the contents of the typical intercostal space
h. Describe and demonstrate the attachments, direction of fibres, nerve supply of the intercostal muscles
i. Describe the actions of the intercostal muscles and correlate with the movements of respiration
j. Describe & demonstrate the origin, course, relations and branches of a typical intercostal nerve
k. Enumerate the arteries supplying the thoracic wall
l. Describe the origin, course and branches/tributaries of anterior & posterior intercostal vessels

m. Describe the origin, course and branches/tributaries of internal thoracic vessels.
n. Describe the origin, course and branches and distribution of atypical intercostal nerve
o. Describe the origin, course and branches and distribution of superior intercostal artery*
p. Describe the origin, course and branches and distribution of subcostal artery*

TEACHING AND LEARNING /ASSESSMENT METHODS			
Teaching methods		**Assessment methods**	
Theory	**Practical**	**Theory**	**Practical**
• Lecture • Small group discussion	• Dissection – small group discussion	• Short answer	• Spotters • Window discussion

THORAX

Topic: Thoracic cage and Mediastinum
Number of competencies: 1 and 7
Number of procedures for certification: Nil
Total number of hours required: 5 [1 hour (theory) & 4 hours (Practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Time required	
					Theory	**Practical**
AN21.11	Mention boundaries and contents of the superior, anterior, middle and posterior mediastinum	K	KH	Y	1	4
AN23.1	Describe & demonstrate the external appearance, relations, blood supply, nerve supply, lymphatic drainage and applied anatomy of oesophagus	K/S	SH	Y		
AN23.2	Describe & demonstrate the extent, relations tributaries of thoracic duct and enumerate its applied anatomy	K/S	SH	Y		
AN23.3	Describe & demonstrate origin, course, relations, tributaries and termination of superior venacava, azygos, hemiazygos and accessory hemiazygos veins	K/S	SH	Y		
AN23.4	Mention the extent, branches and relations of arch of aorta & descending thoracic aorta	K	KH	Y		
AN23.5	Identify & Mention the location and extent of thoracic sympathetic chain	K/S	SH	Y		
AN23.6	Describe the splanchnic nerves*	K	KH	N		
AN23.7	Mention the extent, relations and applied anatomy of lymphatic duct	K	KH	Y		

SPECIFIC LEARNING OBJECTIVES (SLO)

At the end of the session, the 1st phase MBBS student should be able to:

a. Define the mediastinum

b. Describe the subdivisions of the mediastinum
c. Describe and demonstrate the boundaries of superior mediastinum
d. Describe and demonstrate the contents of superior mediastinum
e. Describe and demonstrate the boundaries and contents of middle mediastinum
f. Describe and demonstrate the boundaries of posterior mediastinum
g. Describe and demonstrate the contents of posterior mediastinum
h. Describe & demonstrate the extent, relations, constrictions, blood supply, nerve supply, lymphatic drainage and applied anatomy of oesophagus
i. Describe and demonstrate extent, relations, tributaries and applied anatomy of thoracic duct
j. Describe & demonstrate the origin, course, relations, tributaries and termination of superior venacava
k. Describe & demonstrate the origin, course, relations, tributaries and termination of azygos, hemiazygos and accessory hemiazygos veins
l. Describe and demonstrate the extent, branches and relations of arch of aorta
m. Describe and demonstrate the extent, branches and relations of descending thoracic aorta
n. Describe and demonstrate the location and extent of thoracic sympathetic chain
o. Describe and demonstrate the formation, relations, area of distribution of splanchnic nerves*
p. Describe and demonstrate the extent, relations and applied anatomy of Right lymphatic duct

TEACHING AND LEARNING /ASSESSMENT METHODS

Teaching methods		**Assessment methods**	
Theory	**Practical**	**Theory**	**Practical**
• Lecture • Small group discussion	• Dissection – small group discussion	• Short essay • Short answer	• Spotters • Window discussion

Topic: Heart and pericardium
Number of competencies: 7
Number of procedures for certification: Nil
Total number of hours required: 6 [2 hour (theory) & 4 hours (Practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Time required	
					Theory	**Practical**
AN22.1	Describe & demonstrate subdivisions, sinuses in pericardium, blood supply and nerve supply of pericardium	K/S	SH	Y	2	4
AN22.2	Describe & demonstrate external and internal features of each chamber of heart	K/S	SH	Y		
AN22.3	Describe & demonstrate origin, course and branches of coronary arteries	K/S	SH	Y		
AN22.4	Describe anatomical basis of ischaemic heart disease	K	KH	Y		
AN22.5	Describe & demonstrate the formation, course, tributaries and termination of coronary sinus	K/S	SH	Y		
AN22.6	Describe the fibrous skeleton of heart	K	KH	Y		
AN22.7	Mention the parts, position and arterial supply of the conducting system of heart	K	KH	Y		

SPECIFIC LEARNING OBJECTIVES (SLO)

At the end of the session, the 1st phase MBBS student should be able to:

a. Define pericardium and name the layers of the pericardium
b. Describe and demonstrate the attachments and structures related to the fibrous pericardium
c. Describe the attachments and functions of serous pericardium
d. Describe the blood supply and nerve supply of pericardium
e. Name the sinuses of the heart
f. Describe and demonstrate the boundaries of transverse sinus of the pericardium
g. Describe and demonstrate the boundaries of oblique sinus of the pericardium

h. Identify and describe the external features of the heart:
   - apex
   - base
   - three surfaces – sterno-costal, diaphragmatic and left surface
   - three borders – right, inferior and left borders
   - Grooves and sulci along with its contents

i. Describe and demonstrate the internal features of right atrium
j. Describe and demonstrate the internal features of left atrium
k. Describe and demonstrate the internal features of right ventricle
l. Describe and demonstrate the internal features of left ventricle
m. Describe the fibrous skeleton of heart
n. Describe the parts, position and arterial supply of the conducting system of heart
o. Name the coronary arteries and their important branches
p. Describe and demonstrate the origin, course and branches and area of distribution of right and left coronary arteries
a. Describe the anatomical basis of ischemic heart
b. Explain the anatomical basis of coronary dominance
c. Describe & demonstrate the formation, course, tributaries and termination of coronary sinus
d. Describe and demonstrate the venous drainage of the heart

TEACHING AND LEARNING /ASSESSMENT METHODS

Teaching methods		**Assessment methods**	
Theory	**Practical**	**Theory**	**Practical**
• Lecture • Small group discussion	• Dissection - small group discussion	• Short essay • Short answer	• Spotters • Window Discussion

Topic: Lungs & Trachea
Number of competencies: 6
Number of procedures for certification: NIL
Total number of hours required: 6 [2 hour (theory) & 4 hours (Practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Time required	
					Theory	**Practical**
AN24.1	Mention the blood supply, lymphatic drainage and nerve supply of pleura, extent of pleura and describe the pleural recesses and their applied anatomy	K	KH	Y	2	4
AN24.2	Identify side, external features and relations of structures which form root of lung & bronchial tree and their clinical correlate	K/S	SH	Y		
AN24.3	Describe a bronchopulmonary segment	K	KH	Y		
AN24.4	Identify phrenic nerve & describe its formation & distribution	K/S	SH	Y		
AN24.5	Mention the blood supply, lymphatic drainage and nerve supply of lungs	K	KH	Y		
AN24.6	Describe the extent, length, relations, blood supply, lymphatic drainage and nerve supply of trachea	K	KH	N		

SPECIFIC LEARNING OBJECTIVES (SLO)

At the end of the session, the 1st phase MBBS student should be able to:

a. Define pleura and name the layers of the pleura
b. Describe the difference between parietal and visceral pleura
c. Describe the subdivisions of the parietal pleura
d. Describe the blood supply, lymphatic drainage and nerve supply of pleura
e. Describe the pulmonary ligament and explain its functional significance
f. Describe the attachments of the suprapleural membrane
g. Name the pleural recesses

h. Describe the pleural recesses and explain their applied anatomy
i. Identify and describe the external features, fissures, lobes and relations of the right lung
j. Identify and describe the external features, fissures, lobes and relations of the left lung
k. Compare and contrast the anatomical features of the right and left lungs
l. Differentiate between the root of lung and the hilum of lung
m. Enumerate the structures forming the root of lung and their relations
n. Define bronchopulmonary segment
o. Describe the bronchopulmonary segments of each lung
p. Describe the characteristic anatomical features of bronchopulmonary segments and their clinical importance
q. Describe the functional relations of arteries and veins to the bronchopulmonary segments
r. Identify and describe the formation, course, relations and area of distribution of phrenic nerve
s. Describe the blood supply, lymphatic drainage and nerve supply of lungs
t. Describe and demonstrate the extent, length, relations, blood supply, lymphatic drainage and nerve supply of trachea*

TEACHING AND LEARNING /ASSESSMENT METHODS

Teaching methods		**Assessment methods**	
Theory	**Practical**	**Theory**	**Practical**
• Lecture • Small group discussion	• Dissection – small group discussion	• Long essay • Short essay • Short answer	• Spotters • Window discussion

Topic: Lungs & Trachea (Histology)
Number of competencies: 1
Number of procedures for certification: 1
Total number of hours required: 3 [1 hour (theory) & 2 hours (Practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Time required	
AN25.1	Identify, draw and label a slide of trachea and lung	K/S	SH	**Y**	**Theory**	**Practical**
					1	2

SPECIFIC LEARNING OBJECTIVES (SLO)

At the end of the session, the 1st phase MBBS student should be able to:

a. Identify and draw the H & E slide of Trachea
b. Demonstrate and describe the layers of the trachea in H & E slide – mucosa with lining epithelium, submucosa – seromucous glands, fibro-musculo cartilaginous layer – hyaline cartilage, trachealis muscle, adventitia with blood vessels
c. Identify and draw the H & E slide of the lung
d. Demonstrate and describe the following structures in the slide of Lung: Intrapulmonary bronchus, terminal bronchiole, respiratory bronchiole, alveolar duct, alveolar sac, alveoli, alveolar capillaries

TEACHING AND LEARNING /ASSESSMENT METHODS

Teaching methods		Assessment methods	
Theory	**Practical**	**Theory**	**Practical**
• Lecture • Small group discussion	• Histology - small group discussion	• Short essay • Short answer	• Spotters • Slide Discussion

THORAX

Topic: Radiological anatomy (thorax)
Number of competencies: 2
Number of procedures for certification: Nil
Total number of hours required: 3 [1 hour (theory) & 2 hours (Practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Time required	
					Theory	**Practical**
AN25.7	Identify structures seen on a plain x-ray chest (PA view)	K/S	SH	Y	1	2
AN 25.8	Identify and describe in brief a barium swallow*	K/S	SH	N		

SPECIFIC LEARNING OBJECTIVES (SLO)

At the end of the session, the 1st phase MBBS student should be able to:

a. Identify and name the region of the radiograph
b. Identify and differentiate between plain and contrast radiographs of chest
c. Describe the differences between PA and AP views of chest radiograph
d. Describe and demonstrate the different tissues from most to least opaque on the X-ray as: bone, soft tissue, air, fat on the radiograph
e. Identify the anatomical structures on plain radiograph of chest (PA view)
f. Describe the basis of contrast radiography
g. Identify structures on a barium swallow*
h. Describe the structures seen on a barium swallow*

TEACHING AND LEARNING /ASSESSMENT METHODS

Teaching methods		Assessment methods	
Theory	**Practical**	**Theory**	**Practical**
• Lecture • Small group discussion	• Small group discussion	-	• Spotters • Viva voce

Topic: Surface marking of thorax
Number of competencies: 1
Number of procedures for certification: Nil
Total number of hours required: 2 [2 hours (Practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Time required	
					Theory	**Practical**
AN25.9	Demonstrate the surface marking of lines of pleural reflection, lung borders, and fissures, trachea, heart borders, apex beat and surface projection of valves of heart	K/S	SH	Y	-	2

SPECIFIC LEARNING OBJECTIVES (SLO)

At the end of the session, the 1st phase MBBS student should be able to:

a. Demonstrate the surface marking of lines of pleural reflection on the cadaver /simulator and explain one relevant clinical importance
b. Demonstrate the surface marking of borders of the lung (right / left) on the cadaver/simulator and explain one relevant clinical importance
c. Demonstrate the surface marking of fissures of the lung (right/left) on the cadaver/ simulator and explain one relevant clinical importance
d. Demonstrate the surface marking of trachea on the cadaver/simulator and explain one relevant clinical importance
e. Demonstrate the surface marking of borders of the heart on the cadaver/simulator and explain one relevant clinical importance
f. Demonstrate the surface marking of apex beat on the cadaver /simulator and explain one relevant clinical importance
g. Demonstrate the surface marking of valves of the heart on the cadaver/simulator and explain one relevant clinical importance

TEACHING AND LEARNING /ASSESSMENT METHODS

Teaching methods		Assessment methods	
Theory	**Practical**	**Theory**	**Practical**
-	• Small group discussion	-	• Viva voce • OSPE

THORAX

Topic: Embryology of thorax
Number of competencies: 5
Number of procedures for certification: Nil
Total number of hours required: 6 [4 hours of theory & 2 hours (Practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Time required	
					Theory	Practical
AN25.2	Describe the development of pleura, lungs and heart	K	KH	Y	4	2
AN25.3	Describe the fetal circulation and changes occurring at birth	K	KH	Y		
AN25.4	Describe the embryological basis of: 1) atrial septal defect 2) ventricular septal defect, 3) Fallot's tetralogy & 4) trachea-esophageal fistula	K	KH	Y		
AN25.5	Describe the developmental basis of congenital anomalies, transposition of great vessels, dextrocardia, patent ductus arteriosus and coarctation of aorta	K	KH	Y		
AN25.6	Mention the development of aortic arches arteries, SVC, IVC and coronary sinus*	K	KH	N		

SPECIFIC LEARNING OBJECTIVES (SLO)

At the end of the session, the 1st phase MBBS student should be able to:

a. Describe the formation of the respiratory diverticulum
b. Describe the parts of the respiratory diverticulum that develop into the larynx, trachea, bronchi, bronchioles and alveoli
c. Describe the stages in the maturation of the lungs
d. Give examples of some congenital abnormalities of the respiratory system
e. Explain the embryological basis of trachea-esophageal fistula
f. Describe the cardiogenic area and its relation to the pericardial cavity
g. Describe the formation of the heart tube, its parts and looping
h. Describe the changes in the sinus venosus

i. Describe the formation the interatrial septum
j. Describe the formation of the right and left atria
k. Describe the formation of the atrioventricular valves
l. Give examples of congenital malformations with special reference to atrial septal defects
m. Describe the formation of septa in the truncus, conus and ventricle
n. Describe the formation of the two ventricles
o. Describe the formation of the semilunar valves
p. Describe the formation of the conducting system of the heart
q. Describe the formation of transverse and oblique sinuses of the pericardium
r. Give examples of congenital malformations with special emphasis on ventricular septal defects and Fallot's tetralogy
s. Describe the pharyngeal arch arteries and their derivatives
t. Describe the branches of the dorsal aorta
u. Describe the derivatives of the vitelline, umbilical and cardinal veins
v. Describe the fetal circulation and the changes occurring in it after birth
w. Describe the formation of the lymphatic system
x. Give examples of congenital malformations of the arterial and venous systems

TEACHING AND LEARNING /ASSESSMENT METHODS			
Teaching methods		**Assessment methods**	
Theory	**Practical**	**Theory**	**Practical**
• Lecture • Team based learning	• Small group discussion - Model	• Short essay • Short answers	• Viva voce • OSPE

ABDOMEN AND PELVIS

Topic: Anterior abdominal wall
Number of competencies: 3
Number of procedures for certification: Nil
Total number of hours required: 4 [2 hours (theory) and 2 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN44.1	Describe & demonstrate the planes (transpyloric, transtubercular, subcostal, lateral vertical, linea alba, linea semilunaris), regions & quadrants of abdomen	K/S	SH	Y	2	2
AN44.2	Describe & identify the fascia, nerves & blood vessels of anterior abdominal wall	K/S	SH	Y		
AN44.6	Describe & demonstrate attachments of muscles of anterior abdominal wall.	K/S	SH	Y		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Demonstrate location of planes (transpyloric, transtubercular, subcostal, lateral vertical) of abdomen
b. Deduce clinical relevance of planes of abdomen
c. Classify regions of abdomen into quadrants
d. Assess location of viscera in appropriate quadrants of abdomen
e. Relate position of umbilicus with clinical relevance,
f. Explain referred pain around umbilicus, dermatome, applied aspects*
g. Explain distribution of fascia of anterior abdominal wall
h. Explain attachments of muscles of anterior abdominal wall
i. Explain course, relations, branches and applied aspects of nerves of anterior abdominal wall
j. Explain course, relations, branches and applied aspects of blood vessels of anterior abdominal wall
k. Give anatomical basis for extravasation urine in perineum, caput medusae

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical**

ABDOMEN AND PELVIS

• Lecture • Case based learning • Team based learning	• Demonstration with small group discussion	• Structured Long essay • Modified Long essay • Short essay • Short answer	• Spotters • Group discussion

ABDOMEN AND PELVIS

Topic: Rectus Sheath
Number of competencies: 2
Number of procedures for certification: Nil
Total number of hours required: 3 [1 hour (theory) and 2 hours (practical)]

<table>
<tr><th>NUMBER</th><th>COMPETENCY</th><th>DOMAIN
K/S/A/C</th><th>LEVEL
K/KH/SH/P</th><th>CORE
Y/N</th><th colspan="2">Teaching time required in hours</th></tr>
<tr><td>AN44.2</td><td>Describe the formation of rectus sheath and its contents</td><td>K/S</td><td>SH</td><td>Y</td><td>Theory</td><td>Practical</td></tr>
<tr><td>AN44.7</td><td>Enumerate common abdominal incisions*</td><td>K</td><td>KH</td><td>N</td><td>1</td><td>2</td></tr>
<tr><td colspan="7">SPECIFIC LEARNING OBJECTIVES (SLOs’)</td></tr>
<tr><td colspan="7">At the end of the teaching and learning session the 1st phase MBBS student should be able to:
a. Explain formation of rectus sheath
b. Describe formation of Linea alba, linea semilunaris
c. List contents of rectus sheath
d. Explain attachments of muscles of rectus sheath
e. Trace course and branches of nerves of rectus sheath
f. Trace course and branches of blood vessels of rectus sheath
g. Apply concept of anatomical basis of common abdominal incisions*</td></tr>
<tr><td colspan="3">TEACHING AND LEARNING METHODS</td><td colspan="4">ASSESSMENT METHODS</td></tr>
<tr><td colspan="2">Theory</td><td>Practical</td><td colspan="2">Theory</td><td colspan="2">Practical</td></tr>
<tr><td colspan="2">• Lecture
• Case based learning</td><td>• Demonstration with small group discussion</td><td colspan="2">• Structured Long essay
• Short essay
• Short answer</td><td colspan="2">• Spotters
• Group discussion</td></tr>
</table>

ABDOMEN AND PELVIS

Topic: Inguinal canal
Number of competencies: 2
Number of procedures for certification: Nil
Total number of hours required: 3 [1 hour (theory) and 2 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN44.4	Describe & demonstrate extent, boundaries, contents of inguinal canal including Hesselbach's triangle	K/S	SH	Y	1	2
AN44.5	Explain the anatomical basis of inguinal hernia.	K	KH	Y		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Identify extent of Inguinal canal
b. Explain boundaries of Inguinal canal
c. Name contents of inguinal canal in male and female individuals
d. Outline acquisition of coverings of spermatic cord in inguinal canal
e. Explain boundaries of Hesselbach's triangle.
f. Compare and contrast anatomical aspects of types of inguinal hernia
g. Give anatomical basis for cremasteric reflex
h. Explain importance of conjoint tendon

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical**
• Lecture	• Demonstration with small group discussion	• Structured Long essay • Short essay • Short answer	• Spotters • Group discussion

ABDOMEN AND PELVIS

Topic: Posterior abdominal wall
Number of competencies: 2
Number of procedures for certification: Nil
Total number of hours required: 3 [1 hour (theory) and 2 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN45.1	Describe thoracolumbar fascia	K	KH	Y	1	2
AN45.2	Describe & demonstrate lumbar plexus for its root value, formation & branches	K/S	SH	Y		
AN45.3	Mention the major subgroups of back muscles, nerve supply and action*	K	KH	N		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Explain layers, extent, attachments of thoracolumbar fascia
b. Describe major subgroups of back muscles, nerve supply and action*
c. Demonstrate approach to exposure of kidney from back

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical**
• Lecture	• Demonstration with small group discussion	• Structured Long essay • Short essay • Short answer	• Spotters • Group discussion

ABDOMEN AND PELVIS

Topic: Male external genitalia

Number of competencies: 5

Number of procedures for certification: Nil

Total number of hours required: 3 [1 hour (theory) and 2 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN46.1	Describe & demonstrate coverings, internal structure, side determination, blood supply, nerve supply, lymphatic drainage & descent of testis with its applied anatomy	K/S	SH	Y	1	2
AN46.2	Describe parts of epididymis	K	KH	Y		
AN46.3	Describe penis under following headings: (parts, components, blood supply and lymphatic drainage)	K	KH	Y		
AN46.4	Explain the anatomical basis of varicocele*	K	KH	N		
AN46.5	Explain the anatomical basis of phimosis & circumcision*	K	KH	N		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Discuss coverings of testis
b. Point out macroscopic structure of testis
c. Determine the side of testis
d. Explain blood supply, nerve supply, lymphatic drainage of testis
e. Deduce anatomical basis of varicocoele, hydrocoele*
f. List parts of epididymis
g. Explain parts, components, blood supply and lymphatic drainage of penis
h. Apply anatomical basis of phimosis & circumcision*
i. Explain spermatic cord and its contents
j. Correlate embryological basis for descent of testis, cryptorchidism, ectopic testis

ABDOMEN AND PELVIS

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical**
• Lecture • Case based learning	• Demonstration with small group discussion	• Structured Long essay • Modified Long eassay • Short essay • Short answer	• Spotters • Group discussion

ABDOMEN AND PELVIS

Topic: Peritoneum
Number of competencies: 4
Number of procedures for certification: Nil
Total number of hours required: 4 [2 hours (theory) and 2 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN47.1	Describe & identify boundaries and recesses of lesser & greater sac	K/S	SH	Y	2	2
AN47.2	Name & identify various peritoneal folds & pouches with its explanation	K/S	SH	Y		
AN47.3	Explain anatomical basis of ascites & peritonitis*	K	KH	N		
AN47.4	Explain anatomical basis of subphrenic abscess*	K	KH	N		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Outline peritoneal reflection,
b. Define peritoneal folds and ligaments
c. Draw neat labeled diagram of vertical and horizontal disposition of peritoneum
d. Explain peritoneal pouches
e. Define attachments of greater omentum, mesentery, sigmoid mesocolon
f. Explain boundaries and recesses of greater sac
g. Explain boundaries and recesses of lesser sac
h. Explain boundaries and clinical relevance of epiploic foramen and hepatorenal pouch of morrison
i. Relate anatomical basis of ascites & peritonitis*
j. Discuss anatomical basis of subphrenic abscess*
k. Categorise abdominal cavity into compartments and recesses

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical**

ABDOMEN AND PELVIS

• Lecture	• Demonstration with small group discussion	• Structured Long essay • Short essay • Short answer	• Spotters • Group discussion

ABDOMEN AND PELVIS

Topic: Spleen and Coeliac trunk
Number of competencies: 3
Number of procedures for certification: Nil
Total number of hours required: 3 [1 hour (theory) and 2 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
AN47.5	Describe & demonstrate major viscera of abdomen under following headings (anatomical position, external and internal features, important peritoneal and other relations, blood supply, nerve supply, lymphatic drainage and applied aspects)	K/S	SH	Y	**Theory**	**Practical**
					1	2
AN47.6	Explain the anatomical basis of Splenic notch, Accessory spleens, Kehr's Sign*	K	KH	N		
AN47.9	Describe & identify the origin, course, important relations and branches of Coeliac trunk	K/S	SH	Y		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Hold spleen in anatomical position
b. Identify external features of spleen
c. Define Hilton's law
d. Trace peritoneal relations of spleen
e. Identify visceral relations of spleen
f. Explain blood supply, nerve supply, lymphatic drainage of spleen
g. Correlate anatomical basis of splenic notch, accessory spleens, Kehr's sign
h. Trace origin, course, important relations and branches of coeliac trunk

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical**

ABDOMEN AND PELVIS

• Lecture • Case based learning • Team based learning	• Demonstration with small group discussion	• Structured Long essay • Modified Long essay • Short essay • Short answer	• Spotters • Group discussion

ABDOMEN AND PELVIS

Topic: Abdominal part of Esophagus and Stomach
Number of competencies: 2
Number of procedures for certification: Nil
Total number of hours required: 3 [1 hour (theory) and 2 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
AN47.5	Describe & demonstrate major viscera of abdomen under following headings (anatomical position, external and internal features, important peritoneal and other relations, blood supply, nerve supply, lymphatic drainage and applied aspects)	K/S	SH	Y	**Theory**	**Practical**
					1	2
AN47.6	Explain the anatomical basis of Different types of vagotomy, & Lymphatic spread in carcinoma stomach*	K	KH	N		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Explain blood supply, nerve supply, lymphatic drainage and applied aspects of abdominal part of esophagus
b. Interpret clinical basis for esophageal varices
c. Hold stomach in anatomical position
d. Identify external features of stomach
e. Trace peritoneal relations of stomach
f. Explain structures forming stomach bed and their clinical relevance
g. Explain visceral relations of stomach
h. Explain blood supply, nerve supply, lymphatic drainage of stomach
i. Justify anatomical basis of lymphatic spread in carcinoma stomach*
j. Correlate normal anatomy of stomach with its applied aspects
k. Infer different types of vagotomy*

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical**
• Lecture • Case based learning	• Demonstration with small group discussion	• Structured Long essay • Modified long essay	• Spotters • Group discussion

• Team based learning		• Short essay • Case based short essay • Short answer	

ABDOMEN AND PELVIS

Topic: Mesentery and Small Intestine
Number of competencies: 2
Number of procedures for certification: Nil
Number of teaching hours: 3 [1 hour (theory) and 2 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN47.5	Describe & demonstrate major viscera of abdomen under following headings (anatomical position, external and internal features, important peritoneal and other relations, blood supply, nerve supply, lymphatic drainage and applied aspects)	K/S	SH	Y	1	2
AN 47.9	Describe & identify the origin, course, important relations and branches of superior mesenteric artery	K/S	SH	Y		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Explain extent, borders, contents, relations, applied aspects of mesentery
b. Explain parts of small intestine
c. Differentiate between jejunum and ileum macroscopically
d. Explain nerve supply, lymphatic drainage of jejunum and ileum
e. Explain origin, course, important relations and branches of superior mesenteric artery
f. Infer clinical relevance of Meckel's diverticulum

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical**
• Lecture	• Demonstration with small group discussion	• Structured Long essay • Short essay • Short answer	• Spotters • Group discussion

ABDOMEN AND PELVIS

Topic: Large Intestine
Number of competencies: 2
Number of procedures for certification: Nil
Number of teaching hours: 2 [1 hour (theory) and 1 hour (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN47.5	Describe & demonstrate major viscera of abdomen under following headings (anatomical position, external and internal features, important peritoneal and other relations, blood supply, nerve supply, lymphatic drainage and applied aspects)	K/S	SH	Y	1	1
AN 47.9	Describe & identify the origin, course, important relations and branches of inferior mesenteric artery	K/S	SH	Y		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. State features, extent, peritoneal and other relations of large intestine
b. Explain anatomical position, external and internal features, important peritoneal and other relations, blood supply, nerve supply, lymphatic drainage and applied aspects of caecum
c. Explain anatomical position, external and internal features, important peritoneal and other relations, blood supply, nerve supply, lymphatic drainage and applied aspects of vermiform appendix
d. List positions of vermiform appendix
e. Trace origin, course, important relations and branches of inferior mesenteric artery
f. Explain marginal artery of Drummond

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical**
• Lecture • Case based learning • Team based learning	• Demonstration with small group discussion	• Structured Long essay • Modified Long essay • Short essay • Case based short essay • Short answer	• Spotters • Group discussion

ABDOMEN AND PELVIS

Topic: Duodenum
Number of competencies: 1
Number of procedures for certification: Nil
Number of teaching hours: 2 [1 hour (theory) and 1 hour (practical)]

<table>
<tr><th>NUMBER</th><th>COMPETENCY</th><th>DOMAIN K/S/A/C</th><th>LEVEL K/KH/SH/P</th><th>CORE Y/N</th><th colspan="2">Teaching time required in hours</th></tr>
<tr><td rowspan="2">AN47.5</td><td rowspan="2">Describe & demonstrate major viscera of abdomen under following headings (anatomical position, external and internal features, important peritoneal and other relations, blood supply, nerve supply, lymphatic drainage and applied aspects)</td><td rowspan="2">K/S</td><td rowspan="2">SH</td><td rowspan="2">Y</td><td>Theory</td><td>Practical</td></tr>
<tr><td>1</td><td>1</td></tr>
<tr><td colspan="7">SPECIFIC LEARNING OBJECTIVES (SLOs’)</td></tr>
<tr><td colspan="7">At the end of the teaching and learning session the 1st phase MBBS student should be able to:
a. Hold duodenum in anatomical position
b. Identify external and internal features of duodenum
c. Identify important peritoneal and other relations of duodenum
d. Explain blood supply, nerve supply, lymphatic drainage of duodenum
e. Correlate applied aspects of duodenum</td></tr>
<tr><td colspan="3">TEACHING AND LEARNING METHODS</td><td colspan="4">ASSESSMENT METHODS</td></tr>
<tr><td colspan="2">Theory</td><td>Practical</td><td colspan="2">Theory</td><td colspan="2">Practical</td></tr>
<tr><td colspan="2">• Lecture
• Case based discussion
• Team based learning</td><td>• Demonstration with small group discussion</td><td colspan="2">• Structured Long essay
• Modified long essay
• Short essay
• Case based short essay
• Short answer</td><td colspan="2">• Spotters
• Group discussion</td></tr>
</table>

ABDOMEN AND PELVIS

Topic: Pancreas
Number of competencies: 1
Number of procedures for certification: Nil
Number of teaching hours: 2 [1 hour (theory) and 1 hour (practical)]

<table>
<tr><th>NUMBER</th><th>COMPETENCY</th><th>DOMAIN K/S/A/C</th><th>LEVEL K/KH/SH/P</th><th>CORE Y/N</th><th colspan="2">Teaching time required in hours</th></tr>
<tr><td rowspan="2">AN47.5</td><td rowspan="2">Describe & demonstrate major viscera of abdomen under following headings (anatomical position, external and internal features, important peritoneal and other relations, blood supply, nerve supply, lymphatic drainage and applied aspects)</td><td rowspan="2">K/S</td><td rowspan="2">SH</td><td rowspan="2">Y</td><td>Theory</td><td>Practical</td></tr>
<tr><td>1</td><td>1</td></tr>
<tr><td colspan="7">SPECIFIC LEARNING OBJECTIVES (SLOs’)</td></tr>
<tr><td colspan="7">At the end of the teaching and learning session the 1st phase MBBS student should be able to:
a. Identify Anatomical position, external and internal features of pancreas
b. Explain Important peritoneal and other relations, blood supply, nerve supply, lymphatic drainage of pancreas
c. Correlate clinical aspects of pancreas</td></tr>
<tr><td colspan="3">TEACHING AND LEARNING METHODS</td><td colspan="4">ASSESSMENT METHODS</td></tr>
<tr><td colspan="2">Theory</td><td>Practical</td><td colspan="2">Theory</td><td colspan="2">Practical</td></tr>
<tr><td colspan="2">• Lecture
• Case based learning
• Team based learning</td><td>• Demonstration with small group discussion</td><td colspan="2">• Structured Long essay
• Modified long essay
• Short essay
• Case based short essay
• Short answer</td><td colspan="2">• Spotters
• Group discussion</td></tr>
</table>

ABDOMEN AND PELVIS

Topic: Portal vein
Number of competencies: 2
Number of procedures for certification: Nil
Number of teaching hours: 2 [1 hour (theory) and 1 hour (practical)]

<table>
<tr><th>NUMBER</th><th>COMPETENCY</th><th>DOMAIN
K/S/A/C</th><th>LEVEL
K/KH/SH/P</th><th>CORE
Y/N</th><th colspan="2">Teaching time required in hours</th></tr>
<tr><td>AN47.8</td><td>Describe & identify the formation, course relations and tributaries of portal vein</td><td>K/S</td><td>SH</td><td>Y</td><td>Theory
1</td><td>Practical
1</td></tr>
<tr><td>AN47.10</td><td>Enumerate the sites of porta-systemic anastomosis</td><td>K</td><td>KH</td><td>Y</td><td></td><td></td></tr>
<tr><td colspan="7">SPECIFIC LEARNING OBJECTIVES (SLOs’)</td></tr>
<tr><td colspan="7">At the end of the teaching and learning session the 1st phase MBBS student should be able to:
a. Explain formation, course, relations of portal vein
b. Trace tributaries of portal vein
c. Enumerate sites of porta-systemic anastomosis
d. Deduce anatomic basis of hematemesis & caput medusae in portal hypertension</td></tr>
<tr><td colspan="3">TEACHING AND LEARNING METHODS</td><td colspan="4">ASSESSMENT METHODS</td></tr>
<tr><td colspan="2">Theory</td><td>Practical</td><td colspan="2">Theory</td><td colspan="2">Practical</td></tr>
<tr><td colspan="2">• Lecture
• Case based learning</td><td>• Demonstration with small group discussion</td><td colspan="2">• Structured Long essay
• Modified long essay
• Short essay
• Short answer</td><td colspan="2">• Spotters
• Group discussion</td></tr>
</table>

ABDOMEN AND PELVIS

Topic: Liver and Extrahepatic biliary apparatus
Number of competencies: 3
Number of procedures for certification: Nil
Number of teaching hours: 3 [1 hour (theory) and 2 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN47.5	Describe & demonstrate major viscera of abdomen under following headings (anatomical position, external and internal features, important peritoneal and other relations, blood supply, nerve supply, lymphatic drainage and applied aspects)	K/S	SH	Y	1	2
AN47.6	Explain the anatomical basis of liver biopsy (site of needle puncture), referred pain in cholecystitis, obstructive jaundice*	K	KH	N		
AN47.7	Mention the clinical importance of Calot's triangle*	K	KH	N		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Hold liver in anatomical position
b. List factors maintaining stability of liver
c. Identify external features and important visceral relations of liver
d. Explain important peritoneal relations, blood supply, nerve supply, lymphatic drainage of liver
e. Classify liver into anatomical and physiological lobes and vascular segments
f. Identify bare areas of liver
g. Interpret clinical relevance of bare area of liver
h. Explain features of porta hepatis
i. Describe external features of extra hepatic biliary apparatus
j. Correlate clinical aspects of liver and extra hepatic biliary apparatus
k. Deduce clinical importance of Calot's triangle*
l. Outline sites of liver biopsy (site of needle puncture) *
m. Deduce referred pain in cholecystitis*
n. Correlate clinical aspects of obstructive jaundice*

ABDOMEN AND PELVIS

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical**
• Lecture • Case based discussion • Team based earning	• Demonstration with small group discussion	• Structured Long essay • Modified long essay • Short essay • Case based short essay • Short answer	• Spotters • Group discussion

ABDOMEN AND PELVIS

Topic: Kidney and Ureter
Number of competencies: 2
Number of procedures for certification: Nil
Number of teaching hours: 4 [2 hours (theory) and 2 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN47.5	Describe & demonstrate major viscera of abdomen under following headings (anatomical position, external and internal features, important peritoneal and other relations, blood supply, nerve supply, lymphatic drainage and applied aspects)	K/S	SH	Y	2	2
AN47.6	Explain the anatomical basis of radiating pain of kidney to groin*	K	KH	N		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Hold kidney in anatomical position and determine its side
b. List factors for stability of kidney
c. Identify external features of kidney
d. Explain coverings, important visceral relations, blood supply, nerve supply, lymphatic drainage of kidney
e. Deduce reason for movement of kidney with respiration
f. Identify macroscopic structure of kidney
g. Outline borders of kidney in Morris parallelogram
h. Deduce radiating pain of kidney to groin*
i. Correlate applied aspects of kidney
j. Explain extent, parts, course, relations, constrictions, blood supply, nerve supply, lymphatic drainage of ureter

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical**
• Lecture	• Demonstration with small group discussion	• Structured Long essay • Short essay • Short answer	• Spotters • Group discussion

ABDOMEN AND PELVIS

Topic: Thoraco-abdominal diaphragm

Number of competencies: 2

Number of procedures for certification: Nil

Number of teaching hours: 2 [1 hour (theory) and 1 hour (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN47.13	Describe & demonstrate the attachments, openings, nerve supply & action of the thoracoabdominal diaphragm	K/S	SH	Y	1	1
AN47.14	Describe the abnormal openings of thoracoabdominal diaphragm and diaphragmatic hernia*	K	KH	N		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Explain attachments of thoracoabdominal diaphragm
b. Identify major and minor openings of thoracoabdominal diaphragm
c. Enumerate structures passing through major and minor openings of thoracoabdominal diaphragm
d. Interpret changes in shape of major openings of diaphragm with respiration
e. Explain nerve supply & action of diaphragm
f. Correlate reasons for abnormal openings of diaphragm
g. Interpret congenital aspects of diaphragmatic hernia*

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical**
• Lecture	• Demonstration with small group discussion	• Structured Long essay • Short essay • Short answer	• Spotters • Group discussion

Please note: *The thoraco-abdominal diaphragm is to be assessed along with thorax in paper I in the university examination*

Topic: Suprarenal gland
Number of competencies: 1
Number of procedures for certification: Nil
Number of teaching hours: 2 [1 hour (theory) and 1 hour (practical)]

<table>
<tr><th>NUMBER</th><th>COMPETENCY</th><th>DOMAIN K/S/A/C</th><th>LEVEL K/KH/SH/P</th><th>CORE Y/N</th><th colspan="2">Teaching time required in hours</th></tr>
<tr><td rowspan="2">AN47.5</td><td rowspan="2">Anatomical position, external features coverings important visceral and other relations blood supply, nerve supply, lymphatic drainage applied aspects</td><td rowspan="2">K/S</td><td rowspan="2">SH</td><td rowspan="2">Y</td><td>Theory</td><td>Practical</td></tr>
<tr><td>1</td><td>1</td></tr>
<tr><td colspan="7">SPECIFIC LEARNING OBJECTIVES (SLOs’)</td></tr>
<tr><td colspan="7">At the end of the teaching and learning session the 1st phase MBBS student should be able to:
a. Identify anatomical position of suprarenal gland
b. Explain external features, coverings, important visceral and other relations of suprarenal gland
c. Explain blood supply, nerve supply, lymphatic drainage of suprarenal gland
d. Explain applied aspects of suprarenal gland</td></tr>
<tr><td colspan="3">TEACHING AND LEARNING METHODS</td><td colspan="4">ASSESSMENT METHODS</td></tr>
<tr><td colspan="2">Theory</td><td>Practical</td><td colspan="2">Theory</td><td colspan="2">Practical</td></tr>
<tr><td colspan="2">• Lecture</td><td>• Demonstration with small group discussion</td><td colspan="2">• Short essay
• Short answer</td><td colspan="2">• Spotters</td></tr>
</table>

ABDOMEN AND PELVIS

Topic: Posterior abdominal wall
Number of competencies: 3
Number of procedures for certification: Nil
Number of teaching hours: 3[1 hour (theory) and 2 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN 45.2	Describe & demonstrate lumbar plexus for its root value, formation & branches	K/S	SH	Y	1	2
AN 47.8	Describe & identify the formation, course relations and tributaries of inferior vena cava & renal vein	K/S	SH	Y		
AN 47.9	Describe & identify the origin, course, important relations and branches of abdominal aorta & common iliac artery	K/S	SH	Y		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Explain origin, course, important relations and branches of abdominal aorta
b. Explain formation, course relations and tributaries of inferior venacava
c. Explain root value, formation & branches* of lumbar plexus
d. Explain attachments, nerve supply, action of psoas major
e. Define boundaries of lumbosacral triangle of Marcille
f. Name contents of lumbosacral triangle of Marcille
g. Explain situation, relations, tributaries of cysterna chyli
h. Enumerate branches of lumbar sympathetic chain
i. Interpret clinical significance of coeliac ganglia

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical**
• Lecture	• Demonstration with small group discussion	• Short essay • Short answer	• Spotters

ABDOMEN AND PELVIS

Topic: Pelvic wall and viscera
Number of competencies: 8
Number of procedures for certification: NIL
Total number of hours required: 22 [9 hours (theory) and 13 hours (practical)]

<table>
<tr><th>NUMBER</th><th>COMPETENCY</th><th>DOMAIN K/S/A/C</th><th>LEVEL K/KH/SH/P</th><th>CORE Y/N</th><th colspan="2">Teaching time required in hours</th></tr>
<tr><td rowspan="2">AN48.1</td><td rowspan="2">Describe & identify the muscles of pelvic diaphragm</td><td rowspan="2">K/S</td><td rowspan="2">SH</td><td rowspan="2">Y</td><td>Theory</td><td>Practical</td></tr>
<tr><td>1</td><td>2</td></tr>
<tr><td colspan="7">SPECIFIC LEARNING OBJECTIVES (SLOs')</td></tr>
<tr><td colspan="7">At the end of the teaching and learning session the 1st phase MBBS student should be able to:
a. Demonstrate and describe the location, attachments, nerve supply, relations and functions/clinical importance of the following muscles:
i. Levator ani (pelvic diaphragm)
ii. Obturator internus
iii. Piriformis</td></tr>
<tr><td colspan="2">TEACHING AND LEARNING METHODS</td><td colspan="5">ASSESSMENT METHODS</td></tr>
<tr><td>Theory</td><td>Practical</td><td colspan="2">Theory</td><td colspan="3">Practical / Viva-voce</td></tr>
<tr><td>• Lecture</td><td>• Dissection with small group discussion</td><td colspan="2">• Short essay
• Short answer</td><td colspan="3">• Spotters</td></tr>
</table>

ABDOMEN AND PELVIS

Topic: Pelvic wall and viscera continued

<table>
<tr><th>NUMBER</th><th>COMPETENCY</th><th>DOMAIN K/S/A/C</th><th>LEVEL K/KH/SH/P</th><th>CORE Y/N</th><th colspan="2">Teaching time required in hours</th></tr>
<tr><td rowspan="2">AN48.2</td><td rowspan="2">Describe & demonstrate the (position, features, important peritoneal and other relations, blood supply, nerve supply, lymphatic drainage and clinical aspects of) important male & female pelvic viscera</td><td rowspan="2">K/S</td><td rowspan="2">SH</td><td rowspan="2">Y</td><td>Theory</td><td>Practical</td></tr>
<tr><td>6</td><td>8</td></tr>
<tr><td colspan="7">SPECIFIC LEARNING OBJECTIVES (SLOs’)</td></tr>
<tr><td colspan="7">At the end of the teaching and learning session the 1st phase MBBS student should be able to:
a. Demonstrate and describe the position, features, important peritoneal and other relations, blood supply, nerve supply, lymphatic drainage and clinical aspects of the following structures:
i. Pelvic part of ureter
ii. Urinary bladder
iii. Female urethra
iv. Male urethra
v. Ovary
vi. Fallopian tube
vii. Uterus (& its supports)
viii. Vagina
ix. Vas deferens
x. Ejaculatory ducts
xi. Seminal vesicles
xii. Prostate (age changes)
xiii. Rectum
xiv. Anal canal</td></tr>
<tr><td colspan="3">TEACHING AND LEARNING METHODS</td><td colspan="4">ASSESSMENT METHODS</td></tr>
<tr><td colspan="2">Theory</td><td>Practical</td><td colspan="2">Theory</td><td colspan="2">Practical</td></tr>
<tr><td colspan="2">• Lecture</td><td>• Dissection with small group discussion</td><td colspan="2">• Long essay
• Short essay
• Short answer</td><td colspan="2">• Spotters
• Window discussion</td></tr>
</table>

ABDOMEN AND PELVIS

Topic: Pelvic wall and viscera continued

<table>
<tr><th>NUMBER</th><th>COMPETENCY</th><th>DOMAIN
K/S/A/C</th><th>LEVEL
K/KH/SH/P</th><th>CORE
Y/N</th><th colspan="2">Teaching time required in hours</th></tr>
<tr><td>AN48.3</td><td>Describe & demonstrate the origin, course, important relations and branches of internal iliac artery</td><td>K/S</td><td>SH</td><td>Y</td><td>Theory</td><td>Practical</td></tr>
<tr><td>AN48.4</td><td>Describe the branches of sacral plexus</td><td>K/S</td><td>SH</td><td>Y</td><td>2</td><td>3</td></tr>
<tr><td colspan="7">SPECIFIC LEARNING OBJECTIVES (SLOs’)</td></tr>
<tr><td colspan="7">At the end of the teaching and learning session the 1st phase MBBS student should be able to:
a. Demonstrate and describe the origin, course, important relations, branches / tributaries and distribution and applied anatomy of the internal iliac vessels.
b. Describe the formation, branches and distribution of the sacral plexus.</td></tr>
<tr><td colspan="2">TEACHING AND LEARNING METHODS</td><td colspan="5">ASSESSMENT METHODS</td></tr>
<tr><td>Theory</td><td>Practical</td><td colspan="2">Theory</td><td colspan="3">Practical / Viva-voce</td></tr>
<tr><td>• Lecture</td><td>• Dissection with small group discussion</td><td colspan="2">• Short essay
• Short answer</td><td colspan="3">• Spotters
• Window discussion</td></tr>
</table>

ABDOMEN AND PELVIS

Topic: Pelvic wall and viscera continued

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
AN48.5	Explain the anatomical basis of suprapubic cystostomy, urinary obstruction in benign prostatic hypertrophy, retroverted uterus, prolapse uterus, internal and external hemorrhoids, anal fistula, vasectomy, tubal pregnancy & tubal ligation*	K/S	SH	N	Theory	Practical
					-	-

SPECIFIC LEARNING OBJECTIVES (SLOs)

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Explain the anatomical basis of the following:
   i. Catheterization in males and females
   ii. Suprapubic cystostomy
   iii. Urinary obstruction in benign prostatic hypertrophy
   iv. Retroverted uterus
   v. Prolapse uterus
   vi. Internal and external haemorrhoids
   vii. Anal fistula
   viii. Vasectomy
   ix. Tubal pregnancy
   x. Tubal ligation

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
-	-	-	-

Please note: *No separate time is allotted for these topics, as they will be done as part of the relevant lecture / practical classes*

ABDOMEN AND PELVIS

Topic: Pelvic wall and viscera continued

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
AN48.6	Describe the neurological basis of automatic bladder	K/S	SH	N	Theory	Practical
AN48.7	Mention the lobes involved in benign prostatic hypertrophy & prostatic cancer	K/S	SH	N	-	-
AN48.8	Mention the structures palpable during vaginal & rectal examination	K/S	SH	N		

SPECIFIC LEARNING OBJECTIVES (SLOs)

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Explain the anatomical basis of automatic bladder
b. Compare and contrast the anatomical basis of benign prostatic hypertrophy and prostatic cancer
c. Mention the structures palpable during
    i. Vaginal examination
    ii. Rectal examination

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
-	-	-	-

Please note: *No separate time is allotted for these topics, as they will be done as part of the relevant lecture / practical classes*

ABDOMEN AND PELVIS

Topic: Perineum
Number of competencies: 5
Number of procedures for certification: NIL
Total number of hours required: 8 [2 hours (theory) and 6 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN49.1	Describe & demonstrate the superficial & deep perineal pouch (boundaries and contents)	K/S	SH	Y	1	4
AN49.2	Describe & identify perineal body	K/S	SH	Y		
AN49.3	Describe & demonstrate perineal membrane in male & female	K/S	SH	Y		

SPECIFIC LEARNING OBJECTIVES (SLOs)

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Demonstrate and describe the
   i. Boundaries and subdivisions of the perineum
   ii. Superficial perineal pouch (boundaries and contents, sex differences)
   iii. Deep perineal pouch (boundaries and contents, sex differences
b. Describe formation, function and clinical importance of the perineal body
c. Describe & demonstrate location and attachments of the perineal membrane in male and female
d. Name the structures piercing the perineal membrane in males and females

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
• Lecture	• Dissection with small group dissection	• Short essay • Short answer	-

ABDOMEN AND PELVIS

Topic: Perineum continued

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
AN49.4	Describe & demonstrate boundaries, content & applied anatomy of ischiorectal fossa	K/S	SH	Y	**Theory**	**Practical**
					1	2

SPECIFIC LEARNING OBJECTIVES (SLOs)

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Demonstrate & describe boundaries, contents and applied anatomy of the ischiorectal fossa
b. Demonstrate & describe boundaries and contents of the pudendal canal
c. Demonstrate & describe the origin, course and distribution of the pudendal nerve
d. Demonstrate & describe the origin, course and distribution of the internal pudendal vessels
e. Explain the anatomical basis of perianal abscess

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
• Lecture	• Dissection with small group discussion	• Long essay • Short essay • Short answer	

Topic: Perineum continued

<table>
<tr><th>NUMBER</th><th>COMPETENCY</th><th>DOMAIN K/S/A/C</th><th>LEVEL K/KH/SH/P</th><th>CORE Y/N</th><th colspan="2">Teaching time required in hours</th></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td colspan="2"></td></tr>
<tr><td rowspan="2">AN49.5</td><td rowspan="2">Explain the anatomical basis of perineal tear, episiotomy, perianal abscess and anal fissure*</td><td rowspan="2">K/S</td><td rowspan="2">SH</td><td rowspan="2">N</td><td>Theory</td><td>Practical</td></tr>
<tr><td>-</td><td>-</td></tr>
<tr><td colspan="7">SPECIFIC LEARNING OBJECTIVES (SLOs)</td></tr>
<tr><td colspan="7">At the end of the teaching and learning session the 1st phase MBBS student should be able to:
a. Explain the anatomical basis of
i. Perineal tears
ii. Episiotomy
iii. Perianal abscess
iv. Pudendal nerve block
v. Rupture of membranous urethra
vi. Anal fissure</td></tr>
<tr><td colspan="3">TEACHING AND LEARNING METHODS</td><td colspan="4">ASSESSMENT METHODS</td></tr>
<tr><td colspan="2">Theory</td><td>Practical</td><td colspan="2">Theory</td><td colspan="2">Practical / Viva-voce</td></tr>
<tr><td colspan="2">-</td><td>-</td><td colspan="2">-</td><td colspan="2">-</td></tr>
</table>

Please note: *No separate time is allotted for these topics, as they will be done as part of the relevant lecture / practical classes*

ABDOMEN AND PELVIS

Topic: Vertebral Column
Number of competencies: 4
Number of procedures for certification: Nil
Number of teaching hours: 3 [1 hour (theory) and 2 hour (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
AN 50.1	Describe the curvatures of the vertebral column	K	KH	Y	**Theory**	**Practical**
AN50.2	Describe & demonstrate the type, articular ends, ligaments and movements of intervertebral joints, sacroiliac joints & pubic symphysis	K/S	SH	Y	1	2
AN50.3	Describe lumbar puncture (site, direction of the needle, structures pierced during the lumbar puncture)	K	KH	Y		
AN50.4	Explain the anatomical basis of scoliosis, lordosis, prolapsed disc, spondylolisthesis & spina bifida*	K	KH	N		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Explain curvatures of the vertebral column
b. Identify type, articular ends of vertebral column
c. Identify attachments of ligaments of vertebral column
d. Demonstrate movements of intervertebral joints, sacroiliac joints & pubic symphysis
e. Remove spinal cord form vertebral canal as team work
f. Observe procedure of lumbar puncture (site, direction of the needle, structures pierced during the lumbar puncture)
g. Interpret anatomical basis of scoliosis, lordosis, prolapsed disc, spondylolisthesis & spina bifida*

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical**
• Lecture	• Demonstration with small group discussion	• Short essay • Short answer	• Spotters • Viva voce

ABDOMEN AND PELVIS

Topic: Sectional Anatomy

Number of competencies: 2

Number of procedures for certification: Nil

Number of teaching hours: 4 [4 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN51.1	Describe & identify the cross-section at the level of T8, T10 and L1 (transpyloric plane)	K/S	SH	Y	-	4
AN51.2	Describe & identify the midsagittal section of male and female pelvis	K	SH	Y		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to interpret features of:

a. Cross-section at the level of T8
b. Cross-section at the level of T10
c. Cross-section at the level of L1 (transpyloric plane)
d. Midsagittal section of male pelvis
e. Midsagittal section of female pelvis

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical**
-	• Demonstration with small group discussion	• Short essay • Case based short essay • Short answer	• Spotters • Viva voce

ABDOMEN AND PELVIS

Topic: Systemic Histology of Abdomen and Pelvis

Number of competencies: 3

Number of procedures for certification: Nil

Number of teaching hours: 12 [4 hours of theory & 8 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN52.1	Describe & identify the microanatomical features of gastro-intestinal system: oesophagus, fundus of stomach, pylorus of stomach, duodenum, jejunum, ileum, large intestine, appendix, liver, gall bladder, pancreas & suprarenal gland	K/S	SH	Y	4	8
AN52.3	Describe & identify the microanatomical features of cardio-oesophageal junction	K/S	SH	Y		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Oesophagus

i. Correlate general plan of GIT with functions
ii. Name the layers of wall of GIT
iii. Correlate lining epithelium of esophagus with functions
iv. Explain importance of esophageal glands
v. Interpret relevance of enteric nerve plexus with role of esophagus in peristalsis

b. Cardiooesophageal junction*

i. Identify a slide of cardioesophageal junction
ii. Identify transition of its lining epithelium
iii. Define Barett's esophagus
iv. Interpret clinical aspects of gastroesophageal junction
v. Correlate histology of muscularis externa at gastroesophageal junction with its microscopic structure

c. Fundus of stomach

i. Classify parts of stomach based on microscopic structure
ii. Explain microscopic structure of layers of stomach

iii. Explain microscopic structure of fundus of stomach
iv. Draw a neat labeled diagram of gastric gland
v. Correlate functions of cells lining gastric gland with structure

d. Pylorus of stomach

i. Explain microscopic structure of pylorus of stomach
ii. Differentiate between gastric glands of fundic and pyloric parts of stomach

e. Duodenum, Jejunum, Ileum

i. Compare and contrast between microscopic structures of duodenum, jejunum and Ileum
ii. Differentiate between villi and microvilli
iii. Explain location and importance of Brunner's glands
iv. Correlate histology of mucosa and submucosa of small intestine with function
v. Interpret features of intestinal glands of Leiberkuhn with functional relevance
vi. Infer clinical relevance of Paneth cells
vii. Explain features of Peyer's patch
viii. Define M (Microfold) cells

f. Large intestine, Appendix

i. Differentiate between microscopic structure of large and small intestine
ii. Correlate structure of mucosa of large intestine with function
iii. Explain special features of muscularis externa of large intestine
iv. Describe layers of wall of appendix
v. Compare lymphatic nodules of Ileum and appendix
vi. Interpret the reason for naming appendix as abdominal tonsil
vii. Define hiatus muscularis

g. Liver, Gallbladder

i. Draw a neat labeled diagram of hepatic lobule
ii. Enumerate functions of hepatocytes
iii. Explain microscopic structure of portal triad
iv. Trace flow of bile and blood in hepatic lobule of liver
v. Define hepatic lobule, portal lobule and hepatic acinus of Rappaport

vi. Define space of Disse and space of Mall and their clinical relevance
vii. Define Von Kupfer cell and enumerate its functions
viii. Explain distribution of stroma, hepatic sinusoids, bile canaliculi in liver
ix. Correlate functions of mucosa of gall bladder with its histology
x. Enumerate special features of microscopic structure of gall bladder

h. Pancreas, Suprarenal gland

i. Explain distribution of stroma and parenchyma in pancreas
ii. Draw a neat labeled diagram of pancreatic acinus
iii. Differentiate between a pancreatic acinus and serous acinus
iv. Define centroacinar cell
v. Explain microscopic structure of islet of Langerhans
vi. Correlate functions of islet of Langerhans
vii. Name the layers of cortex of suprarenal gland
viii. Explain distribution of cells in layers of cortex of suprarenal gland and correlate with their functions
ix. Explain histological features of chromaffin cells of adrenal medulla
x. Explain functional relevance of vasculature in suprarenal gland

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical**
• Lecture	• Demonstration with small group discussion	• Short essay • Short answer	• Spotters • Slide discussion

ABDOMEN AND PELVIS

Topic: Histology of Urinary system & Male & Female reproductive system
Number of competencies: 2
Number of procedures for certification: NIL
Total number of teaching hours: 9 [3 hours of theory & 6 hours of practical]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN52.2	Describe & identify the microanatomical features of: Urinary system: kidney, ureter & urinary bladder; Male reproductive system: testis, epididymis, vas deferens, prostate & penis; Female reproductive system: ovary, uterus, uterine tube, cervix, placenta & umbilical cord	K/S	SH	Y	3	6
AN52.3	Describe & identify the microanatomical features of corpus luteum*	K/S	SH	N		

SPECIFIC LEARNING OBJECTIVES (SLOs)

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Identify, draw and describe a labelled diagram of the specific microscopic features of kidney - cortex, medulla, glomerulus, PCT, DCT, collecting tubule, loop of Henle, collecting duct, juxta-glomerular apparatus and explain / correlate their contribution to normal function
b. Differentiate between the PCT, DCT, collecting tubule, loop of Henle, collecting duct
c. Identify, draw and describe a labelled diagram of the specific microscopic features of ureter - layers and features of the layers and explain / correlate their contribution to normal function
d. Identify, draw and describe a labelled diagram of the specific microscopic features of urinary bladder- layers, and explain / correlate their contribution to normal function
e. Identify, draw & describe a labelled diagram of the microscopic features of testis - coverings, seminiferous tubules and it's contents, interstitial cells of Leydig, blood testis barrier and explain / correlate their contribution to normal function
f. Identify, draw and describe a labelled diagram of the specific microscopic features of epididymis- organization of duct of the epididymis and it's contents, connective tissue and explain / correlate their contribution to normal function
g. Compare and contrast microscopic features of testis & epididymis
h. Identify, draw and describe a labelled diagram of the specific microscopic features of vas deferens – layers and it's composition and explain / correlate their contribution to normal function
i. Identify, draw and describe a labelled diagram of the specific microscopic features of prostate – prostatic urethra, glandular structure, stroma, age changes and explain / correlate their contribution to normal function

j. Identify, draw and describe a labelled diagram of the specific microscopic features of penis- coverings, corpora, penile urethra and explain / correlate their contribution to normal function

k. Identify, draw and describe a labelled diagram of the specific microscopic features of ovary and explain/ correlate their contribution to normal function

l. Identify, draw and describe a labelled diagram of the specific microscopic features of proliferative and secretory phases of Uterine cycle and explain/ correlate their contribution to normal function

m. Identify, draw and describe a labelled diagram of the specific microscopic features of layers of uterine tube and explain/ correlate their contribution to normal function

n. Identify, draw and describe a labelled diagram of the specific microscopic features of layers of cervix - layers and explain/ correlate their contribution to normal function

o. Identify, draw and describe a labelled diagram of the specific microscopic features of placenta - decidua basalis, chorion, primary, secondary and tertiary villi, intervillous spaces, placental barrier and explain/ correlate their contribution to normal function

p. Identify, draw and describe a labelled diagram of the specific microscopic features of umbilical cord - covering, stroma, contents and explain/ correlate their contribution to normal function

q. Identify, draw and describe a labelled diagram of the specific microscopic features of corpus luteum and explain/ correlate their contribution to normal function*

TEACHING AND LEARNING METHODS		**ASSESSMENT METHODS**	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
• Lecture	• Small group discussion	• Short essay • Short answer	• Spotter • Slide discussion

***Please note:** The slide of mammary gland could be covered with the female reproductive system*

ABDOMEN AND PELVIS

Topic: Development of Diaphragm
Number of competencies: 4
Number of procedures for certification: NIL
Total number of teaching hours: 1 [1 hour of theory]

<table>
<tr><th>NUMBER</th><th>COMPETENCY</th><th>DOMAIN K/S/A/C</th><th>LEVEL K/KH/SH/P</th><th>CORE Y/N</th><th colspan="2">Teaching time required in hours</th></tr>
<tr><td>AN52.4</td><td>Describe the development of anterior abdominal wall*</td><td>K</td><td>KH</td><td>N</td><td>Theory</td><td>Practical</td></tr>
<tr><td>AN52.5</td><td>Describe the development and congenital anomalies of diaphragm</td><td>K</td><td>KH</td><td>Y</td><td>1</td><td>-</td></tr>
<tr><td colspan="7">SPECIFIC LEARNING OBJECTIVES (SLOs)</td></tr>
<tr><td colspan="7">At the end of the teaching and learning session the 1st phase MBBS student should be able to:
a. Name the different sources and discuss the development of the anterior abdominal wall*
b. Name the different sources, discuss the development and associated congenital anomalies of diaphragm
c. Explain the embryological basis of congenital diaphragmatic hernia</td></tr>
<tr><td colspan="3">TEACHING AND LEARNING METHODS</td><td colspan="4">ASSESSMENT METHODS</td></tr>
<tr><td colspan="2">Theory</td><td>Practical</td><td colspan="2">Theory</td><td colspan="2">Practical / Viva-voce</td></tr>
<tr><td colspan="2">• Lecture</td><td></td><td colspan="2">• Short essay
• Short answer</td><td colspan="2">• Viva-voce</td></tr>
</table>

Please note: *The thoraco-abdominal diaphragm is to be assessed along with thorax in paper I in the university examination*

ABDOMEN AND PELVIS

Topic: Development of GIT
Number of competencies: 1
Number of procedures for certification: NIL
Total number of teaching hours: 5 [3 hours (theory) and 2 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN52.6	Describe the development and congenital anomalies of: foregut, midgut & hindgut	K	KH	Y	3	2 (models)

SPECIFIC LEARNING OBJECTIVES (SLOs)

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Name the parts of the primitive gut and state the extent of each part
b. Describe the formation of the oesophagus and the reasons for its elongation
c. Describe the formation of the stomach, the rotations that it undergoes and name the peritoneal folds attached to it
d. Describe the formation of the duodenum, the mechanism of it becoming retroperitoneal and the reason for its dual blood supply
e. Describe the formation of the liver and extrahepatic biliary apparatus and name the peritoneal folds attached to the liver
f. Describe the formation of the pancreas from the pancreatic buds, its duct system and the mechanism of it becoming retroperitoneal
g. Describe the formation of the spleen and the peritoneal folds attached to it
h. Name some of the congenital anomalies of the foregut achalasia cardia, congenital hypertrophic pyloric stenosis, annular pancreas
i. State the extent of the midgut
j. Describe the formation of the primary intestinal loop, its pre and post-arterial segments, the vitelline duct and the caecal bud
k. Describe the physiological umbilical hernia, its time of occurrence and reasons for its occurrence
l. Describe the rotations of the gut
m. Describe the return of the intestinal loops into the abdominal cavity
n. Describe the formation of the mesenteries of the midgut and fixation of the gut
o. Describe the derivatives of the midgut
p. Name some congenital abnormalities of the midgut with special reference to Meckel's diverticulum, Omphalocele or exomphalos, Congenital umbilical hernia, omphalocele, and gastroschisis
q. Describe the formation of the peritoneal cavity and the lesser sac
r. Explain the embryological basis of the following congenital anomalies:
s. Describe the extent of the hindgut

t. Name the derivatives of the hindgut
u. Describe the division of the hindgut by the allantois
v. Name the derivatives of the pre-allantoic part of the hindgut
w. Describe the division of the cloaca by the urorectal septum
x. Describe the formation of the proctodeum and anal canal
y. Name the derivatives of the post-allantoic part of the hindgut
z. Name some congenital malformations of the hindgut structures: imperforate anus, Hirchsprung disease
aa. Explain the embryological basis of the following congenital anomalies: errors of rotation of the gut; errors of fixation of the gut; duodenal atresia

TEACHING AND LEARNING METHODS		**ASSESSMENT METHODS**	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
• Lecture	• Models	• Short essay • Short answer	• Viva-voce

ABDOMEN AND PELVIS

Topic: Development of Urinary system
Number of competencies: 1
Number of procedures for certification: NIL
Total number of teaching hours: 4 [2 hours (theory) and 2 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
AN52.7	Describe the development of urinary system	K	KH	Y	**Theory**	**Practical**
					2	2 (models)

SPECIFIC LEARNING OBJECTIVES (SLOs)

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Describe the location and components of the intermediate mesoderm
b. Describe the subdivisions of the primitive urogenital sinus
c. Describe the formation of the excretory tubules and its fate in males and females
d. Describe the formation of the mesonephric duct and its fate in males and females
e. Describe the formation of the kidney from the ureteric bud and metanephric blastema
f. Describe the ascent and rotation of the kidneys
g. Describe the formation of the ureters
h. Describe the formation of the urinary bladder with special reference to the trigone
i. Describe the formation of the male and female urethra
j. Name some congenital malformations with special reference to congenital polycystic kidney, urachal fistula and ectopia vesicae

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
• Lecture	• Models	• Short essay • Short answer	• Viva-voce

ABDOMEN AND PELVIS

Topic: Development of reproductive system

Number of competencies: 1

Number of procedures for certification: NIL

Total number of teaching hours: 4 [2 hours (theory) and 2 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
AN52.8	Describe the development of male & female reproductive system	K	KH	Y	**Theory**	**Practical**
					2	2 (models)

SPECIFIC LEARNING OBJECTIVES (SLOs)

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Explain the role of the Y chromosome in the formation of the genital system
b. Describe the formation of the gonadal ridge and the formation and migration of the primordial germ cells
c. Describe the formation of the indifferent gonad from the above
d. Describe the formation of the various cells and structures within testes
e. Describe the formation of the duct system of the testes from the mesonephric ducts and tubules
f. Describe the descent of the testes and the various factors responsible for it
g. Name some congenital anomalies of the testes with special reference to cryptorchidism
h. Describe the formation of the prostate gland, the seminal vesicle and the bulbourethral gland
i. Describe the formation of the male external genitalia and penile urethra
j. Describe the formation of the ovary from the indifferent gonad
k. Describe the descent of the ovary and the formation and remnants of the gubernaculum
l. Describe the formation and parts of the paramesonephric ducts
m. Describe the formation of the uterine tubes, uterus, and the broad ligament
n. Describe the formation of the vagina from the vaginal plate and sinovaginal bulbs
o. Describe the derivatives of the mesonephric tubules and ducts in the female
p. Describe the formation of the female external genitalia
q. Name some congenital malformations of the female genital tract - septate uterus, unicornuate uterus, uterus didelphys, ambiguous genitalia, rectovaginal fistula

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
• Lecture		• Short essay • Short answer	• Viva voce

ABDOMEN AND PELVIS

Topic: Osteology- Lumbar vertebra, Sacrum and Pelvis
Number of competencies: 2
Number of procedures for certification: Nil
Number of teaching hours: 6 [6 hours (theory)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
AN53.1	Identify & hold the bone (lumbar vertebra) in anatomical position, describe the salient features, articulations & demonstrate the attachments of muscle groups	K/S	SH	Y	**Theory**	**Practical**
					6	-
AN53.2	Demonstrate the anatomical position of bony pelvis & show boundaries of pelvic inlet, pelvic cavity, pelvic outlet	K/S	SH	Y		
AN53.3	Define true pelvis and false pelvis and demonstrate sex determination in male & female bony pelvis	K/S	SH	Y		
AN53.4	Explain and demonstrate clinical importance of bones of abdominopelvic region (sacralization of lumbar vertebra, lumbarization of 1st sacral vertebra, types of bony pelvis & coccyx) *	K/S	SH	N		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Determine anatomical position of lumbar vertebra
b. Demonstrate salient features of lumbar vertebra
c. Demonstrate articulations of lumbar vertebra
d. Identify attachments of muscle groups of lumbar vertebrae
e. Enumerate atypical features of fifth lumbar vertebra
f. Relate clinical importance of lumbar vertebra (sacralization of lumbar vertebra, lumbarization of 1st sacral vertebra) *
g. Define Fawcett's rule*, coccydynia*
h. Determine anatomical position of sacrum
i. Identify salient features of sacrum
j. Demonstrate articulations of sacrum

k. Enumerate structures passing through sacral canal, structures passing anterior to ala of sacrum
l. List the contents of sacral canal
m. Name the structures related to pelvic surface of sacrum
n. Determine anatomical position of bony pelvis,
o. Show boundaries of pelvic inlet, pelvic cavity, pelvic outlet
p. Explain types of bony pelvis & coccyx
q. Define true pelvis and false pelvis
r. Determine sex of bony pelvis

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical**
	• Demonstration with small group discussion	• Short essay • Short answer	• Spotters • Viva voce

ABDOMEN AND PELVIS

Topic: Radiological anatomy of Abdomen and Pelvis
Number of competencies: 3
Number of procedures for certification: Nil
Number of teaching hours: 2 [2 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
AN54.1	Describe & identify features of plain X ray abdomen	K/S	SH	Y	**Theory**	**Practical**
AN54.2	Describe & identify the special radiographs of abdominopelvic region (contrast X ray barium swallow, barium meal, barium enema, cholecystography, intravenous pyelography & hysterosalpingography)	K/S	SH	Y	-	2
AN54.3	Describe role of ERCP, CT abdomen, MRI, arteriography in radiodiagnosis of abdomen*	K	KH	N		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Identify features of plain X ray abdomen
b. Interpret findings in contrast X ray - barium swallow, barium meal, barium enema
c. Interpret findings in cholecystography
d. Interpret findings in intravenous pyelography
e. Interpret findings in hysterosalpingography
f. Interpret findings in ERCP*
g. Interpret findings in CT abdomen*
h. Interpret findings in MRI abdomen and pelvis*
i. Interpret findings in abdominal arteriography*

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical**
	• Demonstration with small group discussion	• Short essay • Short answer	• Viva voce

ABDOMEN AND PELVIS

Topic: Surface marking

Number of competencies: 3

Number of procedures for certification: Nil

Number of teaching hours: 2 [2 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN55.1	Demonstrate the surface marking of; regions and planes of abdomen, superficial inguinal ring, deep inguinal ring, Mcburney's point, renal angle & Murphy's point	K/S	SH	Y	-	2
AN55.2	Demonstrate the surface projections of: stomach, liver, fundus of gall bladder, spleen, duodenum, pancreas, ileocecal junction, kidneys & root of mesentery	K/S	SH	Y		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Mark regions and planes of abdomen on surface of the cadaver
b. Mark superficial inguinal ring
c. Mark deep inguinal ring
d. Mark Mcburney's point
e. Mark renal angle
f. Mark Murphy's point
g. Mark surface projections of: stomach, liver, fundus of gall bladder, spleen, duodenum, pancreas, ileocaecal junction, kidneys & root of mesentery

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical**
	• Demonstration with small group discussion	• Short answer	• OSPE/ Viva voce

LOWER LIMB

Topic: Features of individual bones of lower limb
Number of competencies: 4
Number of procedures for certification: Nil
Total number of hours required: 6 [6 hours (theory)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN14.1	Identify the given bone, its side, important features & keep it in anatomical position	K/S	SH	Y	6	-
AN14.2	Identify & describe joints formed by the given bone	K	SH	N		
AN14.3	Describe the importance of ossification of lower end of femur & upper end of tibia	K	KH	Y		
AN14.4	Identify and name various bones in the articulated foot with individual muscle attachment	K/S	SH	N		

SPECIFIC LEARNING OBJECTIVES (SLOs')

Bones – 1. Hip bone; 2. Femur; 3. Tibia; 4. Fibula; 5. Patella; 6. Articulated foot

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Identify the bone and determine its side
b. Hold the bone in anatomical position
c. Describe the type to which the bone belongs
d. Identify the main parts and their features
e. Identify the parts of the bone in direct contact with important neurovascular structures
f. Demonstrate the attachments of functional groups of muscles
g. Describe and demonstrate the articulating surfaces and joints formed by the bone
h. Describe the importance of ossification of lower end of femur
i. Describe the importance of ossification of upper end of tibia

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
• Small group discussion	-	• Short answer	• Spotters • Viva-voce

LOWER LIMB

Topic: Front & Medial side of thigh
Number of competencies: 5
Number of procedures for certification: Nil
Total number of hours required: 7 [1 hour (theory) and 6 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN15.1	Describe and demonstrate origin, course, relations, branches (or tributaries), termination of important nerves and vessels of anterior thigh	K/S	SH	Y	1	6
AN15.2	Describe and demonstrate major muscles with their attachment, nerve supply and actions	K/S	SH	Y		
AN15.3	Describe and demonstrate boundaries, floor, roof and contents of femoral triangle	K/S	SH	Y		
AN15.4	Explain anatomical basis of psoas abscess & femoral hernia*	K	KH	N		
AN15.5	Describe and demonstrate adductor canal with its content	K/S	SH	Y		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Describe and demonstrate attachments, nerve supply and actions of the muscles of front of thigh
b. Describe and demonstrate formation, course, tributaries, area of drainage of the great saphenous vein
c. Describe and demonstrate the positions of the perforator veins of the lower limb
d. Describe and demonstrate the origin, course, tributaries and area of drainage of femoral vein
e. Describe and demonstrate the origin, course, branches and distribution of femoral artery
f. Describe and demonstrate the origin, course, branches and distribution of profunda femoris artery
g. Describe and demonstrate the origin, course, relations and distribution of femoral nerve
h. Describe and demonstrate the origin, course, relations and distribution of saphenous nerve
i. Describe and demonstrate boundaries, floor, roof and contents of femoral triangle
j. Describe and demonstrate the femoral sheath
k. Describe and demonstrate the boundaries and contents of femoral canal

l. Explain the anatomical basis of femoral hernia*
m. Explain the anatomical basis of psoas abscess*
n. Describe and demonstrate the boundaries and contents of adductor canal
o. Describe and demonstrate the attachments, nerve supply and actions of adductor group of muscles
p. Describe and demonstrate the formation, course, branches and area of distribution of obturator nerve

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
• Lecture	• Dissection with small group discussion	• Long essay • Short essay • Short answer	• Spotters • Window discussion

LOWER LIMB

Topic: Gluteal region & back of thigh
Number of competencies: 6
Number of procedures for certification: Nil
Total number of hours required: 9 [1 hour (theory) & 8 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN16.1	Describe and demonstrate origin, course, relations, branches (or tributaries), termination of important nerves and vessels of gluteal region	K/S	SH	Y	1	8
AN16.2	Describe anatomical basis of sciatic nerve injury during gluteal intramuscular injections	K	KH	Y		
AN16.3	Explain the anatomical basis of Trendelenburg sign	K	KH	Y		
AN16.4	Describe and demonstrate the hamstrings group of muscles with their attachment, nerve supply and actions	K/S	SH	Y		
AN16.5	Describe and demonstrate the origin, course, relations, branches (or tributaries), termination of important nerves and vessels on the back of thigh	K/S	SH	Y		
AN16.6	Describe and demonstrate the boundaries, roof, floor, contents and relations of popliteal fossa	K/S	SH	Y		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Describe and demonstrate the boundaries and communications of the gluteal region
b. Describe and demonstrate attachments, nerve supply and actions of the Gluteus maximus muscle
c. Describe and demonstrate the structures under cover of gluteus maximus muscle
d. Describe and demonstrate attachments, nerve supply and actions of the gluteus medius, gluteus minimus and tensor faciae lata

e. Explain the anatomical basis of Trendelenburg sign
f. Describe and demonstrate the relations of structures to piriformis muscle and ischial spine
g. Describe and demonstrate the origin, course, relations, distribution and termination of pudendal nerve
h. Describe and demonstrate the origin, course, distribution and termination of Sciatic nerve
i. Describe and demonstrate the origin, course, distribution and termination superior gluteal nerve
j. Describe and demonstrate the origin, course, distribution and termination inferior gluteal nerve
k. Describe anatomical basis of sciatic nerve injury during gluteal intramuscular injections
l. Describe and demonstrate the origin, course, branches and the distribution of profunda femoris artery
m. Describe and demonstrate the anastomosis formed by the perforators of the profunda femoris artery
n. Describe and demonstrate the cruciate anastomosis
o. Describe and demonstrate trochanteric anastomosis
p. Enumerate the characteristic features of the hamstring muscles
q. Describe and demonstrate the attachment, nerve supply and actions of hamstrings group of muscles
r. Describe and demonstrate the boundaries and contents of popliteal fossa
s. Describe and demonstrate the formation, course, tributaries and area of drainage of small saphenous vein
t. Describe and demonstrate the formation, course, branches and distribution of popliteal artery
u. Describe and demonstrate the relationship of popliteal artery, vein and tibial nerve in upper, middle and lower third of the popliteal fossa

TEACHING AND LEARNING METHODS		**ASSESSMENT METHODS**	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
• Lecture	• Dissection with small group discussion	• Long essay • Short essay • Short answer	• Spotters • Window discussion

Topic: Hip Joint
Number of competencies: 3
Number of procedures for certification: Nil
Total number of hours required: 2 [1 hour (theory) & 1 hour (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN17.1	Describe and demonstrate the type, articular surfaces, capsule, synovial membrane, ligaments, relations, movements and muscles involved, blood and nerve supply, bursae around the hip joint	K/S	SH	Y	1	1
AN17.2	Describe anatomical basis of complications of fracture neck of femur*	K	KH	N		
AN17.3	Describe dislocation of hip joint and surgical hip replacement	K	KH	Y		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Describe and demonstrate the type, articulating surfaces, capsule, ligaments, important relations, movements and muscles causing them, blood supply and nerve supply of the hip joint
b. Describe the bursae around the hip joint
c. Describe anatomical basis of complications of fracture neck of femur
d. Describe the anatomical basis for dislocation of hip joint
e. Explain the anatomical basis of surgical hip replacement

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
• Lecture	• Dissection with small group discussion	• Short essay • Short answer	• Spotters • Window discussion

LOWER LIMB

Topic: Knee joint, Anterior compartment of leg & dorsum of foot
Number of competencies: 7
Number of procedures for certification: Nil
Total number of hours required: 5 [1 hour (theory) & 4 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN18.1	Describe and demonstrate major muscles of anterior compartment of leg with their attachment, nerve supply and actions	K/S	SH	Y	1	4
AN18.2	Describe and demonstrate origin, course, relations, branches (or tributaries), termination of important nerves and vessels of anterior compartment of leg	K/S	SH	Y		
AN18.3	Explain the anatomical basis of foot drop	K	KH	Y		
AN18.4	Describe and demonstrate the type, articular surfaces, capsule, synovial membrane, ligaments, relations, movements and muscles involved, blood and nerve supply, bursae around the knee joint	K/S	SH	Y		
AN18.5	Explain the anatomical basis of locking and unlocking of the knee joint	K	KH	Y		
AN18.6	Describe knee joint injuries with its applied anatomy*	K	KH	N		
AN18.7	Explain anatomical basis of osteoarthritis*	K	KH	N		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Describe and demonstrate major muscles of anterior compartment of leg with their attachment, nerve supply and actions
b. Describe and demonstrate the origin, course, relations, branches, termination of anterior tibial artery
c. Describe and demonstrate the origin, course, relations, branches, termination of dorsalis pedis artery

d. Describe and demonstrate the origin, course, relations, branches, termination of deep peroneal nerve
e. Explain the anatomical basis of foot drop
f. Describe and demonstrate the type, articular surfaces, capsule, synovial membrane, ligaments, relations, movements and muscles involved, blood and nerve supply, bursae around the knee joint
g. Explain the anatomical basis of locking and unlocking of the knee joint
h. Describe knee joint injuries with its applied anatomy
   - Prepatellar bursitis
   - Clergyman's knee
   - Soft tissue injuries: anterior and posterior cruciate injury, meniscal tear
   - Dislocation of the knee joint
   - Replacement of knee joint
i. Explain anatomical basis of osteoarthritis
j. Describe and demonstrate the attachments, nerve supply and actions of muscles of the lateral compartment of the leg
k. Describe and demonstrate the origin, course, branches of the common peroneal nerve
l. Describe and demonstrate the origin, course, relations, branches, termination of superficial peroneal nerve
m. Describe and demonstrate the attachments of sartorius, gracilis and semitendinosus on the medial compartment of leg
n. Describe and demonstrate the retinacula around the ankle
o. Describe and demonstrate the structures related to the extensor retinaculum of the foot
p. Describe and demonstrate the nerve supply of the dorsum of the foot

TEACHING AND LEARNING METHODS		**ASSESSMENT METHODS**	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
• Lecture	• Dissection with small group discussion	• Long essay • Modified long essay • Short essay • Short answer	• Spotters • Window discussion

***Please note:** Medial side of the leg and lateral side of the leg were found to be missed out in the CBME document and have been included in this section*

Topic: Back of Leg & Sole
Number of competencies: 7
Number of procedures for certification: Nil
Total number of hours required: 5 [1 hour (theory) & 4 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN19.1	Describe and demonstrate the major muscles of back of leg with their attachment, nerve supply and actions	K/S	SH	Y	1	4
AN19.2	Describe and demonstrate the origin, course, relations, branches (or tributaries), termination of important nerves and vessels of back of leg	K/S	SH	Y		
AN19.3	Explain the concept of "peripheral heart"	K	KH	Y		
AN19.4	Explain the anatomical basis of rupture of calcaneal tendon*	K	KH	N		
AN19.5	Describe factors maintaining importance arches of the foot with its importance	K	KH	Y		
AN19.6	Explain the anatomical basis of flat foot & club foot*	K	KH	N		
AN19.7	Explain the anatomical basis of metatarsalgia & plantar fasciitis*	K	KH	N		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Describe and demonstrate the superficial, intermediate and deep group of muscles of back of leg with their attachment, nerve supply and actions
b. Describe and demonstrate origin, course, branches and distribution of tibial nerve
c. Describe and demonstrate origin, course, branches (or tributaries) and distribution of posterior tibial vessels
d. Explain the concept of "peripheral heart"
e. Explain the anatomical basis of rupture of calcaneal tendon

f. Enumerate the types of arches of the foot
g. Explain the structure and functions of the arches of the foot
h. Compare and contrast the medial and lateral longitudinal arches of the foot
i. Describe factors maintaining arches of the foot with its functional importance
j. Explain the anatomical basis of flat foot
k. Explain the anatomical basis of the club foot*
l. Explain the anatomical basis of metatarsalgia*
m. Explain the anatomical basis of plantar fasciitis

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
• Lecture	• Dissection with small group discussion	• Short essay • Short answer	• Spotters • Window discussion

Please note: *This competency is not included in the CBME document but needs to be taught and assessed:*
***Describe the layers of the sole along with the major nerves and vessels supplying it. (Not to be assessed in practical examination)*

Topic: General Features, Joints, radiographs & surface marking
Number of competencies: 10
Number of procedures for certification: Nil
Total number of hours required: 16 [6 hours (theory) & 10 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN20.1	Describe and demonstrate the type, articular surfaces, capsule, synovial membrane, ligaments, relations, movements and muscles involved, blood and nerve supply of tibiofibular and ankle joint	K/S	SH	Y	1	2
AN20.2	Describe the subtalar and transverse tarsal joints*	K	KH	N		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Describe and demonstrate the type, articular surfaces, capsule, synovial membrane, ligaments, relations, movements and muscles involved, blood and nerve supply of proximal and distal tibiofibular joints
b. Describe and demonstrate the type, articular surfaces, capsule, synovial membrane, ligaments, relations, movements and muscles involved, blood and nerve supply of ankle joint
c. Describe and demonstrate the type, articulating surfaces, ligaments and movements and muscles producing the movements of the subtalar joints
d. Define inversion and eversion of the foot and explain the functional importance and the muscles producing these movements
e. Describe the transverse tarsal joints

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
• Lecture	• Dissection with small group discussion	• Short essay • Short answer	• Spotters • Window discussion

Topic: General Features, Joints, radiographs & surface marking continued

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN20.3	Describe and demonstrate fascia lata, venous drainage, lymphatic drainage, retinacula & dermatomes of lower limb	K/S	SH	Y	2	2
AN20.4	Explain anatomical basis of enlarged inguinal lymph nodes	K	KH	N		
AN20.5	Explain anatomical basis of varicose veins and deep vein thrombosis	K	KH	Y		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Describe and demonstrate the superficial and deep fascia of the thigh
b. Describe and demonstrate the attachments and salient features of the fascia lata of the thigh
c. Describe and demonstrate the attachment and functional importance of iliotibial tract
d. Describe the modifications of the deep fascia – retinacula of the lower limb
e. Describe the dermatomes of the lower limb and its functional importance
f. Describe the superficial and deep set of lymphatics of the lower limb
g. Explain anatomical basis of enlarged inguinal lymph nodes
h. Describe the venous drainage of the lower limb along with its functional importance
i. Explain the factors facilitating venous return of the lower limb
j. Explain anatomical basis of varicose veins
k. Explain the anatomical basis of deep vein thrombosis

TEACHING AND LEARNING METHODS		**ASSESSMENT METHODS**	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
• Lecture	• Dissection with small group discussion	• Long essay • Modified long essay • Short essay • Short answer	• Spotters • Window discussion

Topic: General Features, Joints, radiographs & surface marking continued

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN20.6	Identify the bones and joints of lower limb seen in anteroposterior and lateral view radiographs of various regions of lower limb	K/S	SH	Y	1	2

SPECIFIC LEARNING OBJECTIVES (SLOs')

Radiographs: 1. Hip joint Ap and lateral view; 2. Knee joint: AP and lateral view; 3. Ankle joint: AP and lateral view; 4. Foot AP and lateral view
At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Identify and name the region of the radiograph
b. Differentiate and identify the X ray as either plain or contrast radiograph
c. Identify and describe the view as either AP, Lateral in the radiograph
d. Describe and demonstrate the different tissues from most to least opaque on the X-ray as: bone, soft tissue, air, fat on the radiograph
e. Identify and name the normal anatomic structures on X-ray of the lower limb (Hip bone, femur, tibia, fibula, patella, articulated foot with names of the individual bones on the respective radiographs)
f. Describe and demonstrate the articulations/joints of the lower limb on the X-ray (Hip joint, knee joint, ankle joint, foot – subtalar joint on the respective radiograph)
g. Identify and explain - fracture, dislocation on the radiographs
h. ** CT, MRI, ultrasound of the lower limb can be utilized for teaching and learning along with the plain radiographs*

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
• Lecture • E - learning	• Dissection with small group discussion	-	• Spotters • OSPE • Viva voce

Topic: General Features, Joints, radiographs & surface marking continued

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN20.7	Identify & demonstrate important bony landmarks of lower limb: -vertebral levels of highest point of iliac crest, posterior superior iliac spines, iliac tubercle, pubic tubercle, ischial tuberosity, adductor tubercle, tibial tuberosity, head of fibula, medial and lateral malleoli, condyles of femur and tibia, sustentaculum tali, tuberosity of fifth metatarsal, tuberosity of the navicular	K/S	SH	Y	1	4
AN20.8	Identify & demonstrate palpation of femoral, popliteal, post tibial, anterior tibial & dorsalis pedis blood vessels in a simulated environment	K/S	SH	Y		
AN20.9	Identify & demonstrate palpation of vessels (femoral, popliteal, dorsalis pedis, post tibial), mid inguinal point, surface projection of: femoral nerve, saphenous opening, sciatic, tibial, common peroneal & deep peroneal nerve, great and small saphenous veins	K/S	SH	Y		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Identify & demonstrate important bony land marks of lower limb on the dissecting room cadaver/ living subjects/simulators: Vertebral levels of highest point of iliac crest, posterior superior iliac spines, iliac tubercle, pubic tubercle, ischial tuberosity, adductor tubercle, tibial tuberosity, head of fibula, medial and lateral malleoli, condyles of femur and tibia, sustentaculum tali, tuberosity of fifth metatarsal, tuberosity of the navicular
b. Identify & demonstrate palpation of femoral and its clinical importance
c. Identify and demonstrate palpation of popliteal artery and its clinical importance
d. Identify and demonstrate palpation of post tibial artery and its clinical importance
e. Identify and demonstrate palpation of anterior tibial artery and its clinical importance
f. Identify and demonstrate palpation of dorsalis pedis artery and its clinical importance
g. Identify and demonstrate surface projection of femoral nerve

h. Identify and demonstrate surface projection of saphenous opening
i. Identify and demonstrate surface projection sciatic nerve and its clinical importance
j. Identify and demonstrate surface projection tibial nerve and its clinical importance
k. Identify and demonstrate surface projection common peroneal nerve and its clinical importance
l. Identify and demonstrate surface projection of deep peroneal nerve and its clinical importance
m. Identify and demonstrate surface projection of great saphenous vein with clinical importance
n. Identify and demonstrate surface projection of small saphenous vein and its clinical importance

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
• Lecture • E - learning	• Dissection with small group discussion	-	• Spotters • OSPE • Viva voce

Please note: *This competency is not included in the CBME document but needs to be taught and assessed:*
***Describe and demonstrate the testing of muscles of the following muscles in the lower limb: quadriceps femoris, gluteus maximus, gluteus medius and maximus, hamstring group of muscles, gastrocnemius and soleus*

LOWER LIMB

Topic: General Features, Joints, radiographs & surface marking continued

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
AN20.10	Describe basic concept of development of lower limb*	K	KH	N	**Theory**	**Practical**
					1	-

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Describe the development of the lower limb
b. Explain the concept of the axis artery of the lower limb
c. Explain the embryological basis of the congenital anomalies of the lower limb

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
• Lecture • E - learning	-	-	-

HEAD AND NECK

Topic: Skull osteology
Number of competencies: 7
Number of procedures for certification: Nil
Total number of hours required: 6 [6 hours (theory)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN26.1	Demonstrate anatomical position of skull, identify and locate individual skull bones in skull	K/S	SH	Y	6	-
AN26.2	Describe the features of norma frontalis, verticalis, occipitalis, lateralis and basalis	K/S	SH	Y		
AN26.3	Describe cranial cavity, its subdivisions, foramina and structures passing through them	K/S	KH	Y		
AN26.4	Describe morphological features of mandible	K/S	SH	Y		
AN26.5	Describe features of typical and atypical cervical vertebrae (atlas and axis)	K/S	SH	Y		
AN26.6	Explain the concept of bones that ossify in membrane*	K	K/H	N		
AN26.7	Describe the features of the 7th cervical vertebra*	K/S	S/H	N		

SPECIFIC LEARNING OBJECTIVES (SLOs')

Bones – 1. Articulated skull; 2. Mandible; 3. Cervical vertebrae- atlas vertebra, axis vertebra and typical cervical vertebrae;
At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Hold the skull in anatomical position
b. Identify and locate individual skull bones in an articulated skull
c. Identify and describe the salient features of norma frontalis, verticalis, occipitalis, lateralis and basalis
d. Identify and describe the cranial cavity, its salient features and subdivisions, major foramina and structures passing through them
e. Identify and describe the following in relation to the mandible: parts, area of attachments of the muscles of mastication, major foramina with structures passing through them and large blood vessels and nerves related it
f. Identify and describe the salient features of typical and atypical cervical vertebrae (atlas axis and vertebra prominens)

g. Describe with examples bones which undergo membranous ossification			
TEACHING AND LEARNING METHODS		**ASSESSMENT METHODS**	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
• Small group discussion	-	• Short answer	• Spotters • Viva-voce

HEAD AND NECK

Topic: Scalp
Number of competencies: 2
Number of procedures for certification: Nil
Total number of hours required: 3 [1 hour (theory) + 2 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN27.1	Describe the layers of scalp, its blood supply, its nerve supply and surgical importance	K	KH	Y	1	2
AN27.2	Describe emissary veins with its role in spread of infection from extracranial route to intracranial venous sinuses	K	KH	Y		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Identify and describe the layers of scalp, its blood supply, nerve supply and lymphatic drainage
b. Describe the surgical importance of each layer of the scalp
c. Define emissary veins and describe their applied importance

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
• Lecture	• Dissection with small group discussion	• Long essay • Short essay • Short answer	• Spotters • Window discussion

HEAD AND NECK

Topic: Face & parotid region
Number of competencies: 10
Number of procedures for certification: Nil
Total number of hours required: 10 [2 hours (theory) & 8 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
AN28.1	Describe & demonstrate muscles of facial expression and their nerve supply	K/S	SH	Y	**Theory**	**Practical**
AN28.2	Describe sensory innervation of face	K	KH	Y	2	8
AN28.3	Describe & demonstrate origin/formation, course, branches/tributaries of vessels	K/S	SH	Y		
AN28.4	Describe & demonstrate branches of facial nerve with distribution	K/S	SH	Y		
AN28.5	Describe cervical lymph nodes and lymphatic drainage of head, face and neck	K	KH	Y		
AN28.6	Identify superficial muscles of face, their nerve supply and actions	K/S	SH	Y		
AN28.7	Explain the anatomical basis of facial nerve palsy	K	KH	Y		
AN28.8	Explain surgical importance of deep facial vein	K	KH	Y		
AN28.9	Describe & demonstrate the parts, borders, surfaces, contents, relations and nerve supply of parotid gland with course of its duct and surgical importance	K/S	SH	Y		
AN28.10	Explain the anatomical basis of Frey's syndrome*	K	KH	N		

HEAD AND NECK

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Explain the special features of the muscles of facial expression
b. Specify the names of the superficial muscles of face, their nerve supply and actions
c. Identify and describe the attachments, nerve supply and actions of the orbicularis oculi, orbicularis oris and buccinator
d. Describe the muscle groups acting on the oral and palpebral fissures
e. Describe the sensory innervation of the face
f. Explain the anatomical basis of facial palsy and trigeminal neuralgia
g. Describe the origin, termination, course and branches of the facial artery
h. Identify and describe the formation, course, tributaries and areas drained by the facial vein
i. explain the surgical importance of deep facial vein
j. Describe the lymphatic drainage of the face
k. Demonstrate and describe the coverings, parts, borders, surfaces, contents, relations and nerve supply of the parotid gland and course of parotid duct.
l. Identify and name the structures within the parotid gland
m. Demonstrate and describe the course and relations of the parotid duct
n. Explain the anatomical basis of Frey's syndrome

TEACHING AND LEARNING METHODS		**ASSESSMENT METHODS**	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
• Lecture	• Dissection with small group discussion	• Long essay • Modified long essay • Short essay • Short answer	• Spotters • Window discussion

Topic: Posterior triangle of neck
Number of competencies: 4
Number of procedures for certification: Nil
Total number of hours required: 7 [1 (theory) & 6 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN29.1	Describe & demonstrate attachments, nerve supply, relations and actions of sternocleidomastoid	K/S	SH	Y	1	6
AN29.2	Explain anatomical basis of Erb's & Klumpke's palsy	K	KH	Y		
AN29.3	Explain anatomical basis of wry neck*	K	KH	N		
AN29.4	Describe & demonstrate attachments of 1) inferior belly of omohyoid, 2) scalenus anterior, 3) scalenus medius & 4) levator scapulae*	K/S	SH	N		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Demonstrate and describe the boundaries, subdivisions and contents of the posterior triangle of the neck
b. Demonstrate and describe the attachments, nerve supply, relations and actions of the sternocleidomastoid
c. Explain the anatomical basis of Erb's palsy
d. Explain the anatomical basis of Klumpke's palsy
e. Demonstrate and describe the attachments, nerve supply, relations and actions of the inferior belly of omohyoid, scalenus anterior, scalenus medius and levator scapulae
f. Explain the anatomical basis of Erb's palsy

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
• Lecture	• Dissection with small group discussion	• Long essay • Modified long essay • Short essay • Short answer	• Spotters • Window discussion

HEAD AND NECK

Topic: Cranial cavity
Number of competencies: 5
Number of procedures for certification: Nil
Total number of hours required: 5 [1 hour (theory) & 4 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN30.1	Describe the cranial fossae & identify related structures	K/S	SH	Y	1	4
AN30.2	Describe & identify major foramina with structures passing through them	K/S	SH	Y		
AN30.3	Describe & identify dural folds & dural venous sinuses	K/S	SH	Y		
AN30.4	Describe clinical importance of dural venous sinuses	K	KH	Y		
AN30.5	Explain effect of pituitary tumours on visual pathway*	K	KH	N		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Identify the boundaries, contents and structures passing through the foramina of the cranial fossae
b. Demonstrate and describe the three meningeal layers
c. Demonstrate and describe the dural folds and dural venous sinuses
d. Describe the location, boundaries, relations and communications of the cavernous sinus
e. Explain the anatomical basis of cavernous sinus thrombosis
f. Explain the clinical importance of dural venous sinuses
g. Explain the effect of pituitary tumours on the visual pathway

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
• Lecture	• Dissection with small group discussion	• Long essay • Modified long essay • Short essay • Short answer	• Spotters • Window discussion

HEAD AND NECK

Topic: Orbit
Number of competencies: 5
Number of procedures for certification: Nil
Total number of hours required: 6 [2 hours (theory) & 4 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN31.1	Describe & identify extra ocular muscles of eyeball	K/S	SH	Y	2	4
AN31.2	Describe & demonstrate nerves and vessels in the orbit	K/S	SH	Y		
AN31.3	Describe anatomical basis of Horner's syndrome*	K	KH	N		
AN 31.4	Enumerate components of lacrimal apparatus	K	KH	Y		
AN 31.5	Explain the anatomical basis of oculomotor, trochlear and abducent nerve palsies along with strabismus	K	KH	Y		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Demonstrate and describe the boundaries of the orbit along with its foramina and fissures
b. Demonstrate and describe the nerve supply and actions of extraocular muscles
c. Describe the course and distribution of the frontal, nasociliary, oculomotor, trochlear, abducent and optic nerves
d. Describe the course and distribution of the ophthalmic artery
e. Describe the connections of the ciliary ganglion
f. Describe the anatomical basis of Horner's syndrome
g. Specify the components of lacrimal apparatus
h. Explain the anatomical basis of features of oculomotor, trochlear and abducent nerve palsies and strabismus

TEACHING AND LEARNING METHODS		**ASSESSMENT METHODS**	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
• Lecture	• Dissection with small group discussion	• Long essay • Modified long essay • Short essay • Short answer	• Spotters • Window discussion

HEAD AND NECK

Topic: Anterior triangle
Number of competencies: 2
Number of procedures for certification: Nil
Total number of hours required: 10 [2 hours (theory) & 8 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN32.1	Describe boundaries and subdivisions of anterior triangle	K/S	SH	Y	2	8
AN32.2	Describe & demonstrate boundaries and contents of muscular, carotid, digastric and submental triangles	K/S	SH	Y		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Demonstrate and describe the disposition and features of the fascial layers of the neck
b. Demonstrate the midline structures of the neck and describe their clinical relevance
c. Demonstrate and describe the boundaries and subdivisions of the anterior triangle
d. Demonstrate and describe the boundaries and contents of the muscular, carotid, digastric and submental triangle
e. Demonstrate and describe the gross anatomy of the common carotid, internal carotid and external carotid arteries, internal jugular vein and the vagus nerve

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
• Lecture	• Dissection with small group discussion	• Long essay • Short essay • Short answer	• Spotters • Window discussion

HEAD AND NECK

Topic: Temporal and Infratemporal regions
Number of competencies: 5
Number of procedures for certification: Nil
Total number of hours required: 11 [3 hours (theory) & 8 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN33.1	Describe & demonstrate extent, boundaries and contents of temporal and infratemporal fossae	K/S	SH	Y	3	8
AN33.2	Describe & demonstrate attachments, direction of fibres, nerve supply and actions of muscles of mastication	K/S	SH	Y		
AN33.3	Describe & demonstrate articulating surface, type & movements of temporomandibular joint	K/S	SH	Y		
AN 33.4	Explain the clinical significance of pterygoid venous plexus	K	KH	Y		
AN 33.5	Describe the features of dislocation of temporomandibular joint*	K	KH	N		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Demonstrate and describe the extent, boundaries and contents (maxillary artery, middle meningeal artery, mandibular nerve, otic ganglion and its connections, lingual nerve and inferior alveolar nerve) of the temporal and infratemporal fossae
b. Demonstrate and describe the attachments, direction of fibres, nerve supply and actions of muscles of mastication
c. Describe the type, articular surfaces, movements and muscles responsible for the movements of the temporomandibular joint
d. Explain the clinical significance of the pterygoid venous plexus
e. Describe the anatomical basis of dislocation of the temporomandibular joint

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
• Lecture	• Dissection with small group discussion	• Long essay • Modified long essay • Short essay • Short answer	• Spotters • Window discussion

Topic: Submandibular region
Number of competencies: 2
Number of procedures for certification: Nil
Total number of hours required: 5 [1 hour (theory) & 4 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN34.1	Describe & demonstrate the morphology, relations and nerve supply of submandibular salivary gland & submandibular ganglion	K/S	SH	Y	1	4
AN34.2	Describe the basis of formation of submandibular stones*	K	KH	N		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Describe the location, lobes, relations and nerve supply of the submandibular salivary gland
b. Demonstrate and describe the relations of the hyoglossus muscle
c. Demonstrate and describe the location, relations and connections of the submandibular ganglion
d. Demonstrate the origin, course, termination and relations of the submandibular duct
e. Describe the anatomical basis of the formation of submandibular stones

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
• Lecture	• Dissection with small group discussion	• Short essay • Short answer	• Spotters • Window discussion

HEAD AND NECK

Topic: Deep structures of the neck
Number of competencies: 10
Number of procedures for certification: Nil
Total number of hours required: 11 [3 hours (theory) & 8 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN35.1	Describe the parts, extent, attachments, modifications of deep cervical fascia	K	KH	Y	3	8
AN35.2	Describe & demonstrate location, parts, borders, surfaces, relations & blood supply of thyroid gland	K/S	SH	Y		
AN35.3	Demonstrate & describe the origin, parts, course & branches subclavian artery	K/S	SH	Y		
AN 35.4	Describe & demonstrate origin, course, relations, tributaries and termination of internal jugular & brachiocephalic veins	K/S	SH	Y		
AN 35.5	Describe and demonstrate extent, drainage & applied anatomy of cervical lymph nodes	K/S	KH	Y		
AN 35.6	Describe the anatomically relevant clinical features of Thyroid swellings*	K/S	SH	Y		
AN 35.7	Describe the clinical features of compression of subclavian artery and lower trunk of brachial plexus by cervical rib*	K	KH	Y		
AN 35.8	Describe and demonstrate the extent, formation, relation & branches of cervical sympathetic chain	K	KH	N		

AN 35.9	Describe the course and branches of IX, X, XI & XII nerve in the neck	K	KH	N		
AN 35.10	Describe the fascial spaces of neck	K	KH	N		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Demonstrate and describe the parts, extent, attachments and modifications of deep cervical fascia
b. Demonstrate and describe the thyroid gland under the following headings: location, parts, borders, surfaces, relations, blood supply and lymphatic drainage
c. Explain the anatomical basis of the liability of injury to the external and recurrent laryngeal nerves during thyroidectomy
d. Demonstrate and describe the origin, parts, course, branches and distribution of the subclavian artery
e. Demonstrate and describe the course, branches and distribution of the vagus nerve in the neck
f. Demonstrate and describe the course and distribution of the glossopharyngeal nerve in the neck
g. Demonstrate and describe the course and distribution of spinal accessory nerve in the neck
h. Demonstrate and describe the course and distribution of hypoglossal nerve in the neck
i. Describe the structures encountered during tracheostomy
j. Describe the anatomical basis of the clinical features of thyroid swellings
k. Describe the anatomical basis of the clinical features of compression of the subclavian artery and lower trunk of brachial plexus by a cervical rib
l. Describe the clinical importance of the fascial spaces of the neck

TEACHING AND LEARNING METHODS		**ASSESSMENT METHODS**	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
• Lecture	• Dissection with small group discussion	• Long essay • Modified long essay • Short essay • Short answer	• Spotters • Window discussion

Topic: Mouth, pharynx and palate
Number of competencies: 5
Number of procedures for certification: Nil
Total number of hours required: 6 [2 hours (theory) & 4 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN36.1	Describe the 1) morphology, relations, blood supply and applied anatomy of palatine tonsil 2) composition of soft palate *(please note that gross anatomy of pharynx needs to be included here)*	K	KH	Y	2	4
AN36.2	Describe the components and functions of Waldeyer's lymphatic ring	K	KH	Y		
AN36.3	Describe the boundaries and clinical significance of pyriform fossa*	K	KH	N		
AN 36.4	Describe the anatomical basis of tonsillitis, tonsillectomy, adenoids and peri-tonsillar abscess*	K	KH	N		
AN 36.5	Describe the clinical significance of Killian's dehiscence*	K	KH	N		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Demonstrate and describe the subdivisions and boundaries, layers of wall, muscles, their nerve supply, blood supply and lymphatic drainage of the pharynx
b. Demonstrate and describe the structure, muscles, nerve supply and functional anatomy of the soft palate
c. Demonstrate and describe the morphology, relations, blood supply and applied anatomy of the palatine tonsil
d. Describe the components and functions of Waldeyer's lymphatic ring
e. Demonstrate and describe the boundaries and clinical significance of the pyriform fossa
f. Describe the anatomical basis of Killian's dehiscence

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
• Lecture	• Dissection with small group discussion	• Long essay • Short essay • Short answer	• Spotters • Window discussion

HEAD AND NECK

Topic: Cavity of nose
Number of competencies: 3
Number of procedures for certification: Nil
Total number of hours required: 4 [2 hours (theory) & 2 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN37.1	Describe & demonstrate features of nasal septum, lateral wall of nose, their blood supply and nerve supply	K/S	SH	Y	2	2
AN37.2	Describe location and functional anatomy of paranasal sinuses	K	KH	Y		
AN37.3	Describe anatomical basis of sinusitis & maxillary sinus tumours*	K	KH	N		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Demonstrate and describe the parts of the nose
b. Demonstrate and describe the components and features of the nasal septum, lateral wall of nose, their blood supply and nerve supply
c. Explain the clinical importance of Little's area
d. Describe the location and functional anatomy of the paranasal sinuses
e. Describe the anatomical aspects of sinusitis and maxillary sinus tumors
f. Explain the dangerous areas of the nasal cavity and their clinical relevance

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
• Lecture	• Dissection with small group discussion	• Long essay • Short essay • Short answer	• Spotters • Window discussion

HEAD AND NECK

Topic: Larynx
Number of competencies: 3
Number of procedures for certification: Nil
Total number of hours required: 3 [1 hour (theory) & 2 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN38.1	Describe the morphology, identify structure of the wall, nerve supply, blood supply and actions of intrinsic and extrinsic muscles of the larynx	K/S	SH	Y	1	2
AN38.2	Describe the anatomical aspects of laryngitis*	K	KH	N		
AN38.3	Describe anatomical basis of recurrent laryngeal nerve injury*	K	KH	N		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Demonstrate and describe the boundaries of the laryngeal inlet
b. Demonstrate and describe the morphology, structure of the wall, nerve supply, blood supply and actions of the intrinsic and extrinsic muscles of the larynx
c. Describe the anatomical basis of recurrent laryngeal nerve injury

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
• Lecture	• Dissection with small group discussion	• Long essay • Short essay • Short answer	• Spotters • Window discussion

HEAD AND NECK

Topic: Tongue
Number of competencies: 2
Number of procedures for certification: Nil
Total number of hours required: 3 [1 hour (theory) & 2 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN39.1	Describe & demonstrate the morphology, nerve supply, embryological basis of nerve supply, blood supply, lymphatic drainage and actions of extrinsic and intrinsic muscles of tongue	K/S	SH	Y	1	2
AN39.2	Explain the anatomical basis of hypoglossal nerve palsy*	K	KH	N		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Describe the morphology, nerve supply, blood supply, lymphatic drainage and actions of the extrinsic and intrinsic muscles of tongue
b. Describe the origin, insertion, nerve supply and actions of the extrinsic and intrinsic muscles of tongue
c. Describe the embryological basis of nerve supply.

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
• Lecture	• Dissection with small group discussion	• Long essay • Short essay • Short answer	• Spotters • Window discussion

Topic: Organs of hearing and equilibrium
Number of competencies: 2
Number of procedures for certification: Nil
Total number of hours required: 3 [1 hour (theory) & 2 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN40.1	Describe & identify the parts, blood supply and nerve supply of external ear	K/S	SH	Y	1	2
AN40.2	Describe & demonstrate the boundaries, contents, relations and functional anatomy of middle ear and auditory tube	K/S	SH	Y		
AN40.3	Describe the features of internal ear*	K	KH	N		
AN 40.4	Explain anatomical basis of otitis externa and otitis media*	K	KH	N		
AN 40.5	Explain anatomical basis of myringotomy*	K	KH	N		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Identify and describe the parts, blood supply and nerve supply of the external ear
b. Describe the boundaries, contents, relations and functional anatomy of the middle ear and auditory tube
c. Name the parts of the inner ear and describe their functions
d. Describe the relations and blood supply of the inner ear
e. Explain the relation between the mastoid antrum and middle ear
f. Explain the anatomical aspects of otitis externa and otitis media
g. Explain the anatomical basis of myringotomy

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
• Lecture	• Dissection with small group discussion	• Short essay • Short answer	• Spotters • Window discussion

HEAD AND NECK

Topic: Eyeball
Number of competencies: 3
Number of procedures for certification: Nil
Total number of hours required: 3 [1 hour (theory) & 2 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN41.1	Describe & demonstrate parts and layers of eyeball	K/S	SH	Y	1	2
AN41.2	Describe the anatomical aspects of cataract, glaucoma & central retinal artery occlusion*	K	KH	N		
AN41.3	Describe the position, nerve supply and actions of intraocular muscles*	K	KH	N		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Demonstrate and describe the parts, layers and functions of the eyeball
b. Demonstrate and describe the position, nerve supply and actions of the extraocular muscles

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
• Lecture	• Dissection with small group discussion	• Long essay • Short essay • Short answer	• Spotters • Window discussion

Topic: Back
Number of competencies: 3
Number of procedures for certification: Nil
Total number of hours required: 3 [1 hour (theory) & 2 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN42.1	Describe the contents of the vertebral canal	K/S	SH	Y	1	2
AN42.2	Describe & demonstrate the boundaries and contents of suboccipital triangle	K/s	SH	Y		
AN42.3	Describe the position, direction of fibres, relations, nerve supply, actions of semispinalis capitis and splenius capitis*	K	KH	N		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Demonstrate and describe the contents of the vertebral canal
b. Demonstrate and describe the boundaries and contents of the suboccipital triangle
c. Demonstrate and describe the course of the third part of the vertebral artery in the suboccipital triangle
d. Describe the position, direction of fibres, relations, nerve supply, actions of semispinalis capitis and splenius capitis*

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
• Lecture	• Dissection with small group discussion	• Long essay • Short essay • Short answer	• Spotters • Window discussion

HEAD AND NECK

Topic: Head & neck Joints, Histology, Development, Radiography & Surface marking
Number of competencies: 9
Number of procedures for certification: Nil
Total number of hours required: 19 [9 (theory) & 10 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN43.1	Describe & demonstrate the movements with muscles producing the movements of atlantooccipital joint & atlantoaxial joint	K/S	SH	Y	9	16
AN43.2	Identify, describe and draw the microanatomy of pituitary gland, thyroid, parathyroid gland, tongue, salivary glands, tonsil, epiglottis, cornea, retina	K/S	SH	Y		
AN43.3	Identify, describe and draw microanatomy of olfactory epithelium, eyelid, lip, sclero-corneal junction, optic nerve, cochlea- organ of Corti, pineal gland*	K/S	SH	N		
AN 43.4	Describe the development and developmental basis of congenital anomalies of face, palate, tongue, branchial apparatus, pituitary gland, thyroid gland & eye	K	KH	Y		
AN 43.5	Demonstrate- 1) testing of muscles of facial expression, extraocular muscles, muscles of mastication, 2) palpation of carotid arteries, facial artery, superficial temporal artery, 3) location of internal and external jugular veins, 4) location of hyoid bone, thyroid cartilage and cricoid cartilage with their vertebral levels	K/S	SH	Y		
AN 43.6	Demonstrate surface projection of- thyroid gland, parotid gland and duct, pterion, common carotid artery, internal jugular vein, subclavian vein, external jugular vein, facial artery in the face & accessory nerve	K/S	SH	Y		

AN 43.7	Identify the anatomical structures in 1) plain X-ray skull, 2) AP view and lateral view 3) plain X-ray cervical spine AP and lateral view 4) plain X - ray of paranasal sinuses	K/S	SH	Y		
AN 43.8	Describe the anatomical route used for carotid angiogram and vertebral angiogram*	K/S	SH	N		
AN 43.9	Identify anatomical structures in carotid angiogram and vertebral angiogram*	K/S	KH	N		

SPECIFIC LEARNING OBJECTIVES (SLOs')

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Demonstrate the testing of muscles of facial expression, extraocular muscles, muscles of mastication, sternocleidomastoid and trapezius
b. Identify the slides of pituitary gland, thyroid, parathyroid gland, tongue, salivary glands, tonsil, epiglottis, cornea, retina.
c. Describe the microscopic anatomy and draw a neat labelled diagram of microstructure of pituitary gland, thyroid, parathyroid gland, tongue, salivary glands, tonsil, epiglottis, cornea, retina
d. Describe the microscopic anatomy and draw a neat labelled diagram of microstructure of olfactory epithelium, eyelid, lip, sclero-corneal junction, optic nerve, cochlea- organ of Corti, pineal gland*
e. Demonstrate the palpation of carotid arteries, facial artery, and superficial temporal artery
f. Demonstrate the location of hyoid bone, thyroid cartilage and cricoid cartilage and describe their vertebral levels
g. Demonstrate the surface projection of
    - thyroid gland
    - parotid gland and duct
    - pterion
    - carotid arteries
    - jugular veins
    - subclavian artery
    - subclavian vein
    - facial artery in the face
    - accessory nerve
    - apex of lung and cervical pleura
h. Identify the major radiological anatomical features in:
    - plain X ray skull - AP and lateral view plain X ray cervical spine - AP and lateral view

- plain X ray of paranasal sinuses

i. Describe the anatomical basis for carotid and vertebral angiograms*
j. Identify the anatomical structures in carotid and vertebral angiograms*

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical / Viva-voce**
• Lecture	• Demonstration with small group discussion	• Short essay (only histology) • Short answer (only histology)	• Spotters • Slide discussion • Surface marking • Viva-voce

NEUROANATOMY

Topic: Meninges and CSF & Ventricular System
Number of competencies: 4
Number of procedures for certification: Nil
Total number of hours required: 6 [2 hours (theory) and 4 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
AN56.1	Describe & identify various layers of meninges with its extent & modifications	K/S	SH	Y	**Theory**	**Practical**
					2 hours	4 hours
AN56.2	Describe circulation of CSF with its applied anatomy	K	KH	Y		
AN63.1	Describe & demonstrate parts, boundaries & features of IIIrd, IVth & lateral ventricle	K/S	SH	Y		
AN63.2	Describe anatomical basis of congenital hydrocephalus*	K	KH	N		

SPECIFIC LEARNING OBJECTIVES (SLOs)

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Identify the layers of the meninges
b. Describe the modifications of the meninges
c. Explain the formation, flow and functions of the CSF
d. Describe the tela choroidea and choroid plexus
e. Describe the parts of the lateral ventricle
f. Demonstrate the relations of the parts of the lateral ventricle
g. Describe the location and boundaries of 3rd ventricle
h. Describe the location and boundaries of 4th ventricle
i. Demonstrate the salient features of the floor of the 4th ventricle
j. Draw a neat labeled diagram of the floor of the 4th ventricle
k. Explain the anatomical basis for hydrocephalus and its clinical manifestations

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical**
• Lecture	• Dissection with small group discussion	• Short Essay • Short answer	• Spotter

NEUROANATOMY

Topic: Spinal Cord (including histology)
Number of competencies: 6
Number of procedures for certification: Nil
Total number of hours required: 7 [1 hour (theory) and 6 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
AN57.1	Identify external features of spinal cord	K/S	SH	Y	**Theory**	**Practical**
AN57.2	Describe extent of spinal cord in child & adult with its clinical implication	K	KH	Y	1 hour	4 hours (Dissection) 2 hours (Histology)
AN57.3	Draw & label transverse section of spinal cord at mid-cervical & mid- thoracic level	K	KH	Y		
AN57.4	Enumerate ascending & descending tracts at mid thoracic level of spinal cord	K	KH	Y		
AN57.5	Describe anatomical basis of syringomyelia*	K	KH	N		
AN64.1	Describe & identify the microanatomical features of **spinal cord,** cerebellum & cerebrum	K/S	SH	Y		

SPECIFIC LEARNING OBJECTIVES (SLOs)

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Demonstrate and explains the external and internal features of the spinal cord
b. Describe the spinal meninges and modifications
c. Describe the blood supply of the spinal cord
d. Compare and contrast between transverse sections taken at the level of cervical, thoracic, lumbar and sacral segments of the spinal cord with reference to the ratio of grey matter to white matter
e. Describe the major ascending and descending pathways of the spinal cord.
f. Draw a neat labeled cross- sectional diagram of the spinal cord depicting the ascending and descending tracts
g. Explain the anatomical basis of lumbar puncture
h. Explain the anatomical basis of spinal / epidural anesthesia

NEUROANATOMY

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical**
• Lecture	• Dissection with small group discussion • Histology: small group teaching	• Short Essay • Short answer	• Spotter • Window discussion

NEUROANATOMY

Topic: Medulla Oblongata
Number of competencies: 4
Number of procedures for certification: Nil
Total number of hours required: 3 [1 hour (theory) and 2 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN58.1	Identify external features of medulla oblongata	K/S	SH	Y	1 hour	2 hours
AN58.2	Describe transverse section of medulla oblongata at the level of 1) pyramidal decussation, 2) sensory decussation 3) ION	K	KH	Y		
AN58.3	Enumerate cranial nerve nuclei in medulla oblongata with their functional group	K	KH	Y		
AN58.4	Describe anatomical basis & effects of medial & lateral medullary syndrome*	K	KH	N		

SPECIFIC LEARNING OBJECTIVES (SLOs)

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Describe the external features of medulla oblongata
b. Demonstrate the external features of the medulla oblongata
c. Identify the salient cross-sectional features of medulla oblongata at the following levels: motor decussation, sensory decussation & inf. olivary nucleus
d. Draw a neat labeled diagram of medulla oblongata indicating the salient cross-sectional features at all the 3 levels mentioned above
e. Enumerate the cranial nerve nuclei at each level
f. Describe the functional components of the cranial nerve nuclei present in the medulla oblongata
g. Describe the blood supply of the medulla
h. Describe in brief the result of trauma (injury/hemorrhage/blockage of blood supply) to the medulla and its major clinical manifestations

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical**
• Lecture	• Dissection with small group discussion	• Short essay • Short answer	• Spotter

NEUROANATOMY

Topic: Pons
Number of competencies: 3
Number of procedures for certification: Nil
Total number of hours required: 3 [1 hour (theory) and 2 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
AN59.1	Identify external features of pons	K/S	SH	Y	**Theory**	**Practical**
AN59.2	Describe transverse section of pons at the upper and lower level	K	KH	Y	1 hour	2 hours
AN59.3	Enumerate cranial nerve nuclei in pons with their functional group	K	KH	Y		

SPECIFIC LEARNING OBJECTIVES (SLOs)

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Describe the external features of pons
b. Demonstrate the external features of the pons
c. Identify the salient cross sectional features of pons at the following levels: upper and lower levels
d. Draw a neat labeled diagram of pons indicating the salient cross sectional features at the 2 levels mentioned above
e. Enumerate the cranial nerve nuclei at each level
f. Describe the functional components of the cranial nerve nuclei present in the pons
g. Describe the blood supply of the pons
h. Describe in brief the result of trauma (injury/hemorrhage/blockage of blood supply) to the pons and its major clinical manifestations

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical**
• Lecture	• Dissection with small group discussion	• Short essay • Short answer	• Spotter

NEUROANATOMY

Topic: Cerebellum (including histology)
Number of competencies: 4
Number of procedures for certification: Nil
Total number of hours required: 4 [1 hour (theory) and 3 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN60.1	Describe & demonstrate external & internal features of cerebellum	K/S	SH	Y	1 hour	2 hours (Dissection) 1 hour (Histology)
AN60.2	Describe connections of cerebellar cortex and intracerebellar nuclei	K	KH	Y		
AN60.3	Describe anatomical basis of cerebellar dysfunction*	K	KH	N		
AN64.1	Describe & identify the microanatomical features of spinal cord, **cerebellum** & cerebrum	K/S	SH	Y		

SPECIFIC LEARNING OBJECTIVES (SLOs)

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Describe the external/gross features of cerebellum
b. Demonstrate the external /gross features of the cerebellum
c. Identify the salient internal features of cerebellum on sagittal and horizontal sections
d. Identify the nuclei in the cerebellum
e. Describe connections of cerebellar cortex and intracerebellar nuclei
f. Describe the microstructure of the cerebellum
g. Draw a neat labeled diagram of the micro-circuitry (cytoarchitecture) of the cerebellum
h. Describe the blood supply of the cerebellum
i. Describe in brief the result of trauma (injury/haemorrhage/blockage of blood supply) to the cerebellum and its major clinical manifestations

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical**
• Lecture	• Dissection with small group discussion • Histology: Small group teaching	• Short essay • Short answer	• Spotter • Window dissection

NEUROANATOMY

Topic: Midbrain
Number of competencies: 3
Number of procedures for certification: Nil
Total number of hours required: 3 [1 hour (theory) and 2 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN61.1	Identify external features of midbrain	K/S	SH	Y	1 hour	2 hours
AN61.2	Describe internal features of midbrain at the level of superior & inferior colliculus	K	KH	Y		
AN61.3	Describe anatomical basis & effects of Benedikt's and Weber's syndrome*	K	KH	N		

SPECIFIC LEARNING OBJECTIVES (SLOs)

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Describe the external features of midbrain
b. Demonstrate the external features of the midbrain
c. Identify the salient cross sectional features of mid-brain at the following levels: superior colliculus and inferior colliculus
d. Draw a neat labeled diagram of midbrain indicating the salient cross sectional features at the 2 levels mentioned above
e. Enumerate the cranial nerve nuclei at each of the levels
f. Describe the functional components of the cranial nerve nuclei present in the midbrain
g. Describe the blood supply of the midbrain
h. Describe in brief the result of trauma (injury/haemorrhage/blockage of blood supply) to the midbrain and its clinical manifestations
i. Describe the anatomical basis of Parkinson disease

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical**
• Lecture	• Dissection with small group discussion • Histology: Small group teaching	• Short essay • Short answer	• Spotter

NEUROANATOMY

Topic: Cranial nerve nuclei
Number of competencies: 1
Number of procedures for certification: Nil
Total number of hours required: 2 [2 hours (theory)]

<table>
<tr><th>NUMBER</th><th>COMPETENCY</th><th>DOMAIN K/S/A/C</th><th>LEVEL K/KH/SH/P</th><th>CORE Y/N</th><th colspan="2">Teaching time required in hours</th></tr>
<tr><td rowspan="2">AN62.2</td><td rowspan="2">Enumerate cranial nerve nuclei with its functional component</td><td rowspan="2">K</td><td rowspan="2">KH</td><td rowspan="2">Y</td><td>Theory</td><td>Practical</td></tr>
<tr><td>2 hours</td><td>-</td></tr>
<tr><td colspan="7">SPECIFIC LEARNING OBJECTIVES (SLOs)</td></tr>
<tr><td colspan="7">At the end of the teaching and learning session the 1st phase MBBS student should be able to:
a. Describe the functional components of each of the 12 cranial nerves
b. Demonstrate the origins of the 12 cranial nerves in a given specimen of brain
c. Describe in brief the course of each cranial nerve
d. Describe in brief the functions of each cranial nerve
e. Describe in brief the effects of injury to each of the cranial nerve</td></tr>
<tr><td colspan="3">TEACHING AND LEARNING METHODS</td><td colspan="4">ASSESSMENT METHODS</td></tr>
<tr><td colspan="2">Theory</td><td>Practical</td><td colspan="2">Theory</td><td colspan="2">Practical</td></tr>
<tr><td colspan="2">• Lecture</td><td></td><td colspan="2">• Short essay
• Short answer</td><td colspan="2"></td></tr>
</table>

NEUROANATOMY

Topic: Cerebral Hemispheres
Number of competencies: 6
Number of procedures for certification: Nil
Total number of hours required: 7 [2 hours (theory) and 5 hours (practical)]

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours	
					Theory	**Practical**
AN62.2	Describe & demonstrate surfaces, sulci, gyri, poles, & functional areas of cerebral hemisphere	K/S	SH	Y	2 hours	4 hours (Dissection) 1 hours (Histology)
AN62.3	Describe the white matter of cerebrum	K	KH	Y		
AN62.4	Enumerate parts & major connections of basal ganglia & limbic lobe	K	KH	Y		
AN62.5	Describe boundaries, parts, gross relations, major nuclei and connections of dorsal thalamus, hypothalamus, epithalamus, metathalamus and subthalamus	K	KH	Y		
AN62.6	Describe & identify formation, branches & major areas of distribution of circle of Willis	K/S	SH	Y		
AN64.1	Describe & identify the microanatomical features of spinal cord, cerebellum & cerebrum	K/S	SH	Y		

SPECIFIC LEARNING OBJECTIVES (SLOs)

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Describe the gross anatomy features on the medial, superolateral and the inferior surfaces of the cerebral hemisphere
b. Demonstrate the gross anatomy features on the medial, superolateral and the inferior surfaces of the cerebral hemisphere
c. Describe the white matter under the headings of association, projection and commissural fibers with examples for each
d. Describe the internal capsule in detail along with its blood supply
e. Describe in brief the corpus callosum
f. Enumerate parts & major connections of basal ganglia

g. Describe in brief the result of lesions in the basal ganglia
h. Enumerate parts & major connections of limbic lobe
i. Describe boundaries, parts, gross relations, major nuclei and connections of thalamus
j. Describe the blood supply to the cerebral hemisphere with special attention to the Circle of Willis
k. Describe the microstructure of the cerebrum

TEACHING AND LEARNING METHODS		ASSESSMENT METHODS	
Theory	**Practical**	**Theory**	**Practical**
• Lecture	• Dissection with small group discussion • Histology: Small group teaching	• Short essay • Short answer	• Spotter • Window dissection

NEUROANATOMY

Topic: Embryology
Number of competencies: 2
Number of procedures for certification: Nil
Total number of hours required: 3 [1 hour (theory) and 2 hours (practical)]

<table>
<tr><th>NUMBER</th><th>COMPETENCY</th><th>DOMAIN
K/S/A/C</th><th>LEVEL
K/KH/SH/P</th><th>CORE
Y/N</th><th colspan="2">Teaching time required in hours</th></tr>
<tr><td>AN64.2</td><td>Describe the development of neural tube, spinal cord, medulla oblongata, pons, midbrain, cerebral hemisphere & cerebellum</td><td>K</td><td>KH</td><td>Y</td><td>Theory</td><td>Practical</td></tr>
<tr><td>AN64.3</td><td>Describe various types of open neural tube defects with its embryological basis*</td><td>K</td><td>KH</td><td>N</td><td>1 hour</td><td>2 hours (Embryology models)</td></tr>
<tr><td colspan="7">SPECIFIC LEARNING OBJECTIVES (SLOs)</td></tr>
<tr><td colspan="7">At the end of the teaching and learning session the 1st phase MBBS student should be able to:
a. Describe the formation of the neural tube
b. Enumerate the structures developing from the neural crest cells
c. Name the parts of the neural tube and their derivatives
d. Enumerate the different types of neural tube defects leading to abnormalities at birth
e. Enumerate the avoidable causes of neural tube defects</td></tr>
<tr><td colspan="3">TEACHING AND LEARNING METHODS</td><td colspan="4">ASSESSMENT METHODS</td></tr>
<tr><td colspan="2">Theory</td><td>Practical</td><td colspan="2">Theory</td><td colspan="2">Practical</td></tr>
<tr><td colspan="2">• Lecture</td><td>• Small group teaching
• Self-directed learning (Embryology models)</td><td colspan="2">• Short Essay
• Short answer</td><td colspan="2">• Viva-voce</td></tr>
</table>

ETHICS IN ANATOMY

Topic: Ethics in anatomy
Number of competencies: 1
Number of procedures for certification: Nil
Total number of hours required: 4

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	Teaching time required in hours
AN82.1	Demonstrate respect and follow the correct procedure when handling cadavers and other biologic tissue	S	SH	Y	4

SPECIFIC LEARNING OBJECTIVES (SLOs)

At the end of the teaching and learning session the 1st phase MBBS student should be able to:

a. Appreciate the contribution made by body donors to her/his learning.
b. Demonstrate appropriate professional behavior while participating in dissection sessions.
c. Demonstrate the correct method of handling the instruments used for dissection.
d. Use the recommended safety precautions while handling the cadavers.
e. Appropriately discard the waste generated during dissection.
f. Reflect on how the experience of dissection of cadavers has impacted her/him.

TEACHING AND LEARNING METHODS	ASSESSMENT METHODS	
	Theory	**Practical**
• Ceremony to felicitate body donors • Cadaveric oath administration • Lecture cum demonstration on handling cadavers and other biological tissues	• Reflective writing (formative)	• Professionalism log (formative)

PHYSIOLOGY

Handbook of competencies and specific learning objectives

Specific learning objectives: Physiology - Theory

The SLOs are broad guidelines for teachers to aid in teaching and in no means a complete list for assessment of the students. This document is not to be meant to be circulated among students.

General Physiology

PY1.1 Describe the structure and functions of a mammalian cell

- Describe the structure of "Fluid-Mosaic" model of cell membrane
- List the functions of the components of the cell membrane
- List the cell organelles and describe their functions
- List the components of cytoskeleton (microfilaments, microtubules, molecular motors) and explain their function in intra cellular transport

PY1.2 Describe and discuss the principles of homeostasis

- Describe the concept of Milieu interior
- Discuss the regulatory systems that maintain homeostasis
- Describe positive and negative feedback mechanisms with appropriate examples

PY1.3 Describe intercellular communication

- List the types of Intercellular junctions and describe their functions
- Describe the various functional types of intercellular signaling (autocrine, paracrine, synapse, neuroendocrine and endocrine)

PY1.4 Describe apoptosis – programmed cell death

- Define apoptosis
- Describe the function of apoptosis

- Briefly describe the pathways involved in apoptosis

PY1.5 Describe and discuss transport mechanisms across cell membranes

- List the types of transports across cell membrane (passive, active, vesicular)
- Distinguish between active and passive transport mechanisms
- Define simple diffusion and explain the factors affecting simple diffusion
- Explain facilitated diffusion with examples.
- List the differences between simple and facilitated diffusion
- Define osmosis, osmotic pressure, tonicity of plasma.
- Explain Primary active transport with examples.
- Explain Secondary active transport with examples
- Explain Vesicular transport: Endocytosis, exocytosis with physiological examples

PY1.6 Describe the fluid compartments of the body, its ionic composition & measurements

- List the Units of measuring tonicity: moles and equivalents
- Explain the physiological importance of maintaining plasma tonicity
- Explain the difference between Osmolarity and osmolality
- Provide the normal value of total body water in normal healthy adult and list the factors which contribute to its variation.
- Describe the distribution of total body water in different body fluid compartments.
- List the difference in ionic composition of ECF and ICF and its importance in physiological functions
- Explain the methods to assess body fluid compartments and list the specific indicators used for each compartment.
- Explain the physiological basis of fluid replacement in dehydration / overhydration

PY1.7 Describe the concept of pH & Buffer systems in the body

- Describe the concept of pH and state the normal pH of arterial blood.
- Define a buffer
- List the buffer systems in the body
- Define acidosis and alkalosis.

PY1.8 Describe and discuss the molecular basis of resting membrane potential and action potential in excitable tissue

- Define 'stimulus' and 'excitability'
- Classify stimulus based on a) strength and b) modality
- Define resting membrane potential and indicate its normal value (range)
- Define the Nernst Potential of an ion
- Describe the ionic basis of the resting membrane potential and the application of the Goldman-Hodgkin-Katz equation
- Define Gibbs-Donnan effect and indicate its role in the genesis of the resting membrane potential
- Define action potential. Draw and label an action potential
- Describe the ionic basis of the action potential
- List blockers of voltage gated channels that participate in the action potential
- Distinguish between a local response (Graded Potential) and an action potential

PY1.9 Demonstrate the ability to describe and discuss the methods used to demonstrate the functions of the cells and its products, its communications and their applications in Clinical care and research.

- Describe the methods to assess cellular physiology with respect to the following:
    - Cellular functions:
        - Patch clamp technique
        - microscopy – secretory/ active/ non-secretory cells
    - Cellular products and communication: immunohistochemistry, estimation of secretory products
    - Cell culture

Hematology:

PY2.1 Describe the composition and functions of blood components

- List the components of blood (cellular and noncellular)
- and describe the functions.
- State the normal packed cell volume (hematocrit) and describe its use in clinical medicine

PY2.2 Discuss the origin, forms, variations and functions of plasma proteins

- List the plasma proteins and give normal values and the A/G ratio
- Describe the physiological role of the plasma proteins
- Describe the role of plasma proteins in Starlings forces and in the pathophysiology of edema
- Discuss the alterations in plasma protein levels in health and disease

PY2.3 Describe and discuss the synthesis and functions of Hemoglobin and explain its breakdown. Describe variants of hemoglobin

- Explain structure of normal hemoglobin.
- State the normal Hb range for males and females and explain the basis for the differences
- List the types of Hemoglobin (normal and abnormal)
- Explain the fate (breakdown) of hemoglobin
- Discuss the variants of hemoglobin

PY2.4 Describe RBC formation (erythropoiesis & its regulation) and its functions

- Define hemopoiesis.
- Define erythropoiesis.
- Describe the morphology of RBC
- State the normal life span of the RBC
- Describe the clinical importance of determining PCV and ESR
- List the sites of erythropoiesis in fetus and adult.
- Describe the stages of erythropoiesis and its regulation.
- Describe the morphology, normal count and clinical significance of reticulocytes

PY2.5 Describe different types of anemias & Jaundice

- Define anemia and classify based on i) Morphology ii) Etiology

- Explain the physiological basis of symptoms/signs of anemia
- Describe the causes and physiological basis of treatment of iron deficiency anemia
- Describe the cause and treatment of megaloblastic anemia
- List the types of polycythemia and discuss its consequences
- List the RBC indices and describe the variations in disease
- Define and classify jaundice.
- Differentiate the different types of jaundice.
- Describe Physiological jaundice

PY2.6 Describe WBC formation (granulopoiesis) and its regulation

- Classify WBCs and state their normal counts and variations from normal counts
- Describe the normal morphology and functions of each WBC
- Describe the stages and factors required for leucopoiesis
- Describe the stages of phagocytosis
- Enumerate the classical signs of inflammation

PY2.7 Describe the formation of platelets, functions and variations.

- Describe the morphology of the platelets
- Discuss the normal count of platelets and its variations
- Describe thrombopoiesis and factors regulating it
- Explain the functional role of platelets

PY2.8 Describe the physiological basis of hemostasis and, anticoagulants. Describe bleeding & clotting disorders (Hemophilia, purpura)

- Define hemostasis, and describe the sequence of events of hemostasis
- List out the difference between temporary hemostatic plug and a clot
- Enumerate the important clotting factors and their sites of production
- Explain the mechanism of clotting via: a) Intrinsic and b) extrinsic pathways.

- Describe the role of Vit K and calcium in coagulation
- Explain the process of clot retraction
- Lists the tests for hemostasis
- Differentiate between Coagulation and Bleeding disorders
- Explain the symptoms and the mode of inheritance of hemophilia
- Describe the steps of fibrinolysis
- List anticoagulants and their mechanism of action
- Discuss the physiological basis of the treatment of DIC and thrombosis.

PY2.9 Describe different blood groups and discuss the clinical importance of blood grouping, blood banking and transfusion

- List the blood group systems. Describe the ABO system, Rh system State the Landsteiner's Law
- Describe the mode of inheritance of blood groups
- Discuss the importance of blood groups
- Discuss the importance and the methods of cross matching: direct and indirect
- List the physiological basis of the symptoms and treatment of Rh incompatibility (erythroblastosis fetalis)
- List the hazards of blood transfusion
- Describe the complications of mismatched blood transfusion
- Describe how blood is stored and discuss the changes that occur in stored blood

PY2.10 Define and classify different types of immunity. Describe the development of immunity and its regulation

- Define and classify immunity (Innate/ acquired; specific and non-specific; active / passive) with examples
- List the cells and the organs which are responsible for immunity
- Draw a diagram explaining the structure of an antibody
- Discuss antigen presentation
- Explain the mechanism of humoral immunity in relation to cells involved, type of antibodies and the role in immunity
- Explain the mechanism of cell mediated immunity in relation to cells involved, roles of each cell

- Describe the role of cytokines in immunity
- Compare the primary and secondary responses in immunity
- Describe the basis of a) hypersensitivity reactions b) autoimmunity c) graft vs host reaction d) immune tolerance

Nerve muscle Physiology:

PY3.1 Describe the structure and functions of a neuron and neuroglia; Discuss Nerve Growth Factor & other growth factors/cytokines

- Describe the structure and functions of a neuron
- List the different types of neuroglia and list their functions
- Discuss the actions of Nerve Growth Factor & other growth factors

PY3.2 Describe the types, functions & properties of nerve fibers

- Define absolute and relative refractory period
- Discuss the implications of the absolute and relative refractory period
- Define All or None Law
- Distinguish between temporal and spatial summation
- Explain with the help of a diagram, the concept of 'local currents' in a nerve
- Distinguish between orthodromic and antidromic nerve conduction
- List the factors which affect conduction velocity in a nerve and indicate whether they increase or decrease conduction
- Explain the basis of how myelination and diameter affect nerve conduction
- Classify nerve fibres

PY3.3 Describe the degeneration and regeneration in peripheral nerves

- Classify nerve injuries

- Describe the features of Wallerian degeneration with the help of a diagram
- List some common causes of neuropathy
- List the factors affecting nerve regeneration

PY3.4 Describe the structure of neuro-muscular junction and transmission of impulses

- Describe structure of the neuromuscular junction
- List in sequence the events that occur at the neuromuscular junction
- Distinguish between the end plate potential and an action potential

PY3.5 Discuss the action of neuro-muscular blocking agents

- Identify, with examples potential sites where neuromuscular transmission can be affected (pre-synaptic, synaptic and post-synaptic)
- Explain the mechanism of action of the drugs acting at the neuromuscular junction.

PY3.6 Describe the pathophysiology of Myasthenia gravis

- Describe the physiological basis of the cause and clinical features of myasthenia gravis
- List the principles of treatment.
- Distinguish between myasthenia gravis and Eaton Lambert syndrome

PY3.7 Describe the different types of muscle fibres and their structure

- Compare and contrast the structure and functions of skeletal, cardiac and smooth muscle.
- Distinguish between fast and slow muscle fibres
- List the phenomena associated with increasing frequency of stimulation (Beneficial effect, Treppe, Clonus, Tetanus) and explain the basis of the phenomena
- Draw a diagram depicting the length-tension relationship (Starling's Law) and explain its basis
- Draw a diagram depicting the load-velocity relationship and explain the phenomena
- Define muscle fatigue and explain the mechanisms for it

- Explain the basis for the phenomenon of Quantal summation

PY3.8 Describe action potential and its properties in different muscle types (skeletal & smooth)

- Describe action potential, it's ionic basis and its properties in skeletal muscle
- Describe action potential, its ionic basis and its properties in smooth muscle and compare it with the action potential seen in skeletal muscle

PY3.9 Describe the molecular basis of muscle contraction in skeletal and in smooth muscles

- Draw and label the sarco-tubular system of the skeletal muscle
- List the steps involved in excitation-contraction coupling
- Describe a sarcomere
- List the molecular events associated with contraction and relaxation of skeletal muscle
- Explain the phenomenon of a) rigor mortis b) heat rigor
- List the processes of heat formation in the muscle
- Describe the structure of smooth muscle
- Describe the types of smooth muscles with their features
- Describe the following properties of smooth muscle:
    - Single muscle twitch
    - Latch bridge mechanism
    - plasticity
- Explain the molecular basis of smooth muscle contraction

PY3.10 Describe the mode of muscle contraction (isometric and isotonic) Differences between isometric and isotonic exercises with examples

- Distinguish between isometric and isotonic muscle contraction
- List examples of isometric and isotonic muscle contraction

PY3.11 Explain energy source and muscle metabolism

- Describe the sources of energy for skeletal muscle
- Describe the phenomenon of oxygen debt in skeletal muscle and explain its basis
- Distinguish between muscle hypertrophy and muscle hyperplasia
- List different ways in which performance enhancing drugs act on skeletal muscle

PY3.12 Explain the gradation of muscular activity

- Discuss the methods used to grade exercise (extent of exertion: Borg exertion scale, Metabolic equivalents, percentage of maximal heart rate) / Vo2 max.

PY3.13 Describe muscular dystrophy: myopathies

- Briefly describe how muscle strength and muscle mass is assessed
- Briefly describe what the muscular dystrophies are
- List the common causes of myopathies

PY3.17 Describe Strength-duration curve.

- Draw, label and explain the strength duration curve (SDC)
- List the changes that are seen in the SDC during nerve injury and in response to treatment

Gastrointestinal Physiology:

PY4.1 Describe the structure and functions of digestive system

- Describe the general organization of Gastrointestinal System
- Illustrate a typical section of the GI wall.
- List the functions of digestive system
- Describe the intrinsic and extrinsic innervations of GIT and their function. Add a note on the action of Acetylcholine and epinephrine.

PY4.2 Describe the composition, mechanism of secretion, functions, and regulation of saliva, gastric, pancreatic, intestinal juices and bile secretion

- Classify salivary glands.
- Describe the composition of salivary secretion and explain its functions
- Describe the mechanism of salivary secretion and its regulation
- Explain the functional anatomy and histology of stomach
- Describe the composition of gastric secretion and explain its functions. Explain in detail the mechanism of HCl secretion.
- Enumerate the phases of Gastric secretion and describe their regulation.
- Describe the experimental evidences to demonstrate the regulation of Gastric acid secretion.
- Explain the effects of total gastrectomy
- Explain the functional anatomy of the exocrine part of pancreas
- Describe the composition of pancreatic secretion and explain its functions
- Describe the mechanism of secretion and regulation of pancreatic juice.
- Describe the functional anatomy and histology of the small intestine
- Describe the composition and functions of succus entericus
- Describe the pathophysiological basis of malabsorption syndrome
- Describe the structural characteristics of the large intestine.
- List the functions of the large intestine

PY4.3 Describe GIT movements, regulation and functions. Describe defecation reflex. Explain role of dietary fibre.

- Describe the events in the various phases of Deglutition
- Discuss Basal Electrical rhythm and its ionic basis
- Describe Gastric emptying and the various factors influencing it
- Discuss the features and function of the Migrating Motor Complex
- Define the law of Gut. Discuss different types of movements of the small intestine
- Describe the movements of the large intestine. Add a note on Gastrocolic reflex.
- Describe the defecation reflex.

- Explain the formation and composition of faeces
- Discuss the physiological role of dietary fibres
- Describe the nervous and hormonal regulation of GI motility

PY4.4 Describe the physiology of digestion and absorption of nutrients

- Describe the sites and mechanism of digestion and absorption of Carbohydrates. Add a note on Lactose intolerance.
- Describe the sites and mechanism of digestion and absorption of Proteins.
- Describe the sites and mechanism of digestion and absorption of Fats. Add a note on Steatorrhea
- Describe the sites and mechanism of absorption of water
- Discuss the mechanism of absorption of vitamins, and minerals from the GIT into blood stream.
- Describe the pathophysiological basis of malabsorption syndrome

PY4.5 Describe the source of GIT hormones, their regulation and functions List the principal GI hormones and explain physiological functions of each of these hormones.

- List the GI hormones and their sites of production
- Describe the actions and regulation of the GI hormones.

PY4.6 Describe the Gut-brain axis and factors influencing it

- Describe the effect of Hypothalamic-Pituitary axis on GI function
- Describe the role of Autonomic nervous system on regulation of GI functions
- Discuss the role of gut microbiota and its influence on brain functions. Describe the effects of loss of Gut microbiota and its management (role of drugs, probiotics etc)
- Describe action of GI hormones/ peptides on the CNS

PY4.7 Describe & discuss the structure and functions of liver and gall bladder

- Describe the functional anatomy of hepatobiliary system.
- Describe the enterohepatic circulation
- Discuss the functions of liver
- Describe the mechanism of secretion and regulation of bile secretion.
- Discuss the composition and functions of bile secretion. Distinguish between hepatic and gall bladder bile
- Discuss the functions of gall bladder. Add a note on the effects of cholecystectomy

PY4.8 Describe & discuss gastric function tests, pancreatic exocrine function tests & liver function tests

- Enumerate Gastric function tests with clinical significance of each
- Enumerate Liver function tests with clinical significance of each
- Enumerate the Pancreatic function tests for exocrine part of Pancreas with clinical significance of each

PY4.9 Discuss the physiology aspects of: peptic ulcer, gastro oesophageal reflux disease, vomiting, diarrhoea, constipation, Adynamic ileus, Hirschsprung's disease

- Discuss dysphagia and its causes.
- Discuss the pathophysiology and effects of achalasia cardia
- Describe the cause and features of
    - GERD

    - Hiatus hernia
- Describe the pathophysiology, symptoms and management of peptic ulcer
- Discuss the pathophysiology, presentation and management of acute and chronic pancreatitis
- Discuss the pathophysiology of
    - Vomiting
    - Diarrhoea
    - Constipation
- Discuss the pathophysiology and presentation of Hirchsprung's disease, adynamic ileus

Cardiovascular Physiology:

PY5.1 Describe the functional anatomy of heart including chambers, sounds; and Pacemaker tissue and conducting system.

- Describe the functional anatomy of the heart and blood vessels
    - Differences between left and right side of the heart,
    - Describe the components of conducting system (with speed of conduction for each)
    - Types of blood vessels and their function
- Differentiate between systemic & pulmonary circulations.

PY5.2 Describe the properties of cardiac muscle including its morphology, electrical, mechanical and metabolic functions

- Describe the functional features of cardiac muscle in relation to: a) excitability b) conductivity c) autorhythmicity d) contractility e) non-fatigability f) all or none law g) refractory period h) extrasystole and compensatory pause i) staircase phenomenon j) Frank Starling Law

PY5.3 Discuss the events occurring during the cardiac cycle

- Define cardiac cycle, list the phases & its durations.
- Describe with illustration, the electrical and mechanical events during a single cardiac cycle (Wigger's diagram)
- Explain the Right atrial pressure changes during cardiac cycle with a JVP tracing.

- Mention the clinical significance of JVP.
- List the different heart sounds & explain their basis

PY5.4 Describe generation, conduction of cardiac impulse

- Explain with a graph, the ionic basis of pacemaker potential.
- Explain the effects of sympathetic & parasympathetic stimulation on pacemaker potential.
- Explain with a graph, the ionic basis of cardiac ventricular muscle AP.
- Describe functional significance of long refractory period in cardiac muscle.
- Describe with a diagram the pathway of sequential electrical excitation of the heart.
- Explain the basis & importance of A-V nodal delay in impulse conduction.
- Explain the basis of SAN acting as the primary pacemaker.
- Define an Ectopic pacemaker

PY5.5 Describe the physiology of electrocardiogram (E.C.G), its applications and the cardiac axis

- Define Electrocardiogram & list its uses.
- Explain the principle behind recording an ECG in relation to: The cardiac dipole, Einthoven's triangle and Einthoven's Law
- Classify the leads in a 12 lead ECG and explain the procedure of recording a conventional 12 lead ECG.
- Draw and label a normal Lead II ECG waveform. Define normal durations of segments and intervals of normal ECG waves
- Define the term Cardiac vector. Give the normal range of the mean cardiac vector & its significance.
- Determine the cardiac axis from a normal ECG. Define axis deviation & mention the causes for the same.

PY5.6 Describe abnormal ECG, arrythmias, heart block and myocardial Infarction

- Classify and describe arrhythmias based on its origin.
- Define sinus arrhythmia & explain its basis.
- Explain the different types of heart block
- Describe ECG changes in fibrillation and flutter

- Describe the ECG changes in Acute Myocardial Infarction & its basis.
- Describe the ECG changes in left and right ventricular hypertrophy
- Mention the salient ECG changes secondary to electrolyte disturbances

PY5.7 Describe and discuss haemodynamics of circulatory system

- Describe the functional classification of blood vessels
- Explain the hemodynamic principles governing blood flow through vessels (Poiseuille's law).
- Differentiate between laminar & turbulent flow & factors determining the same (Reynold's number).
- Describe the applications of the following:
    - Laplace law
    - Bernoulli's principle
    - Fahraeus Lindqvist effect

PY5.8 Describe and discuss local and systemic cardiovascular regulatory mechanisms

Included under competency number: PY5.9 and PY5.10

PY5.9 Describe the factors affecting heart rate, regulation of cardiac output & blood pressure

- Mention the normal heart rate (range) & its variations.
- List & explain the neural and hormonal mechanisms controlling heart rate.
- Define arterial pulse.
- Draw and label an arterial pressure pulse tracing
- Define the terms- Cardiac output, Cardiac index, Stroke volume, Venous return; state their normal values
- List & explain the factors determining cardiac output.
- Explain the heterometric and homomeric regulation of cardiac output
- List the methods of measuring cardiac output & explain their principles.
- Mention the factors affecting venous return.
- Define the terms & give their normal values: Blood pressure, Systolic blood pressure, Diastolic blood pressure, Pulse pressure & Mean arterial pressure

- Describe the factors determining systolic & diastolic pressures.
- List the various short-term mechanisms regulating blood pressure.
- Describe the role of baroreceptor reflex mechanism in short term regulation of BP.
- State & explain Marey's law.
- Describe the role of CNS ischemic response & Cushing's reflex in the regulation of BP.
- Explain the basis of postural hypotension
- Describe the regulation of cardiovascular activity by the vasomotor center & higher brain areas.
- Describe the role of long-term regulation of BP.
- Describe the role of Renin-Angiotensin-Aldosterone mechanism in long term increase in BP.
- List the various intermediate mechanisms for BP regulation.
- Explain the operational principles of: Stress-relaxation mechanism, Capillary fluid shift mechanism & Renin-Angiotensin mechanism in intermediate term regulation of BP.
- Define the terms – Hypertension, Hypotension

PY5.10 Describe & discuss regional circulation including microcirculation, lymphatic circulation, coronary, cerebral, capillary, skin, fetal, pulmonary and splanchnic circulation

- Define microcirculation & describe with a diagram the structure of microcirculation.
- List the functions of capillary circulation.
- Describe the pattern & regulation of blood flow through capillaries.
- List the factors governing movement of substances across the capillary wall.
- Explain the Starling's forces determining Net filtration pressure for fluid movement across the capillary wall
- Define edema & describe the basis of edema formation.
- Describe the composition, formation & functions of lymph.
- Explain the factors regulating lymph flow along the lymphatics.
- Describe the organization & functions of venous system.
- Define central venous pressure & give its normal value.
- Describe the factors determining peripheral venous pressure & flow of blood through it.
- Describe the method of measuring central venous pressure

- Explain the intrinsic methods for acute auto regulation of blood flow. (myogenic, metabolic, perfusion theories)
- Explain the mechanisms involved in long term local blood flow regulation.
- List the humoral vasoconstrictor & vasodilator agents regulating local blood flow.
- Mention the salient features of coronary circulation
- Explain the regulation of coronary blood flow
- Mention the causes & effects of coronary insufficiency
- Describe the clinical features of Ischemic heart disease with its basis
- Mention the salient features of cerebral circulation
- Explain the regulation of cerebral blood flow
- Define cerebral stroke & mention the causes for the same
- List the salient features of splanchnic circulation
- Define 'triple response' & explain the basis for the same
- Mention the circulatory readjustments which occur at birth

PY5.11 Describe the pathophysiology of shock, syncope and heart failure

- Define shock, mention the types & causes for each
- Describe the stages of shock
- Explain the principle in the management of shock
- Discuss the physiological basis of vasovagal syncope
- Define heart failure

Respiratory system

PY6.1 Describe the functional anatomy of respiratory tract

- List the structures of the respiratory system with their functions.
- Describe the structural divisions of airways with their function.
- Draw the layers of respiratory membrane
- List the respiratory & non-respiratory functions of respiratory system

- Describe the special features of pulmonary circulation

PY6.2 Describe the mechanics of normal respiration, pressure changes during ventilation, lung volume and capacities, alveolar surface tension, compliance, airway resistance, ventilation, V/P ratio, diffusion capacity of lungs

- List the primary & accessory muscles of inspiration & expiration
- Describe the mechanism of inspiration and expiration
- Define the physical laws applicable in respiratory physiology
- Describe the genesis of negative intrapleural pressure
- Draw a diagram to show the changes in air flow, intrapleural pressure and intra alveolar pressure during a breathing cycle
- Define pulmonary compliance and list the factors altering the compliance
- Distinguish between static and dynamic compliance.
- Draw the lung compliance curve & explain the basis for its pattern
- Describe the synthesis, composition & functions of pulmonary surfactant. Add a note on Respiratory distress syndrome
- Define closing volume, list the factors determining closing volume & mention its significance
- Define dead space with normal value, list its types and list the methods of determining dead space volume
- Explain the effect of shunt on physiological dead space
- Explain with illustration the relationship between alveolar ventilation & oxygen / carbon-di-oxide partial pressures in the alveolus
- Define Alveolar Ventilation-Perfusion ratio & mention its regional differences and explain its physiological basis
- Define Fick's law of diffusion and explain the factors affecting diffusion of gases across the respiratory membrane

PY6.3 Describe and discuss the transport of respiratory gases: Oxygen and Carbon dioxide

- List the methods of transport of oxygen in blood.
- Describe with illustration oxygen binding characteristics of hemoglobin.
- Describe the oxy-hemoglobin dissociation pattern at rest & during exercise.
- List & explain the factors causing right / left shift of oxy-hemoglobin dissociation curve.

- Compare and contrast the oxy-hemoglobin dissociation curve of fetal hemoglobin with that of adult hemoglobin.
- List the three methods of carbon-di-oxide transport in blood and explain each of them.
- Explain the chloride shift phenomenon in the transport of carbon-di-oxide as bicarbonate ions.
- Describe the carbon-di-oxide dissociation curve and list the factors affecting carbon-di-oxide dissociation curve.
- Explain the role of Bohr & Haldane effects on right / left shift of carbon-di-oxide dissociation curve.
- Explain the effects hyper & hypo ventilation on blood carbon-di-oxide levels.
- List the peripheral & central chemoreceptors regulating respiration & explain the mechanism of chemical regulation of respiration.
- List the centers of respiration in medulla & pons and describe their role in the control of respiration.
- Describe the role of Hering-Breuer reflex in neural regulation of respiration.
- List the different types abnormal patterns of breathing & explain the basis.
- Discuss with diagrams the types of periodic breathing and list the causes of each type.
- Briefly describe the mechanism of cough reflex, sneezing reflex & deglutition apnoea.

PY6.4 Describe and discuss the physiology of high altitude and deep sea diving

- Describe the process of acclimatization to high altitude.
- Describe the features of acute and chronic mountain sickness & basis of its treatment.
- Mention the hazards of deep-sea diving and explain the basis of various hazards of deep sea diving with specific reference to nitrogen narcosis and Decompression sickness Bends, Caisson's disease)
- Explain how Decompression sickness can be prevented and treated

PY6.5 Describe and discuss the principles of artificial respiration, oxygen therapy, acclimatization and decompression sickness.

- List the different methods of artificial respiration and cardiopulmonary resuscitation and its principle.
- Define hypoxia, classify hypoxia with examples
- Describe the role of oxygen therapy in hypoxia and list the side effects of 100% oxygen therapy.

PY6.6 Describe and discuss the pathophysiology of dyspnoea, hypoxia, cyanosis asphyxia; drowning, periodic breathing

- Define hypoxia. List the causes and types of hypoxia and discuss the pathophysiology of each types in detail. (repeated PY 6.5)
- Define apnoea
- Define dyspnoea and understand the concept of dyspneic index.
- Define asphyxia and list few major causes.
- Describe the mechanism of death in drowning
- Define cyanosis. Differentiate between central and peripheral cyanosis and list the causes.

PY6.7 Describe and discuss lung function tests & their clinical significance. List the various parameters of respiratory function assessed in pulmonary function testing.

- Describe the various lung volumes & capacities with its normal ranges
- Draw and label a normal spirogram
- List the static & dynamic lung volumes & capacities.
- Briefly discuss the methods of determining FRC & RV
- Draw a flow-volume loop and explain the determinants of its components
- Define minute ventilation, alveolar ventilation, maximum voluntary ventilation, breathing reserve and calculate the normal values
- Explain the differences in obstructive & restrictive lung pathologies using a flow – volume loop.
- Differentiate between obstructive & restrictive lung diseases
- Describe the application of lung function tests in clinical practice

Renal Physiology

PY7.1 Describe structure and function of kidney

- Describe the functional anatomy of kidney

- Describe the blood supply of the kidney and list its peculiarities
- Describe the regulation of blood flow to the kidneys and state how it is measured
- List the excretory functions of kidney
- List the non-excretory functions of kidney
- Define nephron. Describe the various parts of nephron
- Distinguish between cortical and juxta medullary nephrons

PY7.2 Describe the structure and functions of juxta glomerular apparatus and role of renin-angiotensin system

- Describe the Juxta Glomerular Apparatus with a labelled diagram
- List the functions of Juxta Glomerular Apparatus
- List the factors that activate the renin-angiotensin-aldosterone system (RAAS)
- With a flow diagram indicate the RAAS pathway
- Discuss the role of the RAAS with regards to (a) blood pressure regulation (b) fluid and volume balance

PY7.3 Describe the mechanism of urine formation involving processes of filtration, tubular reabsorption & secretion; concentration and diluting mechanism

- Discuss the characteristics of the filtration membrane
- Define Glomerular Filtration rate and state its normal value
- Discuss the determinants of glomerular filtration rate
- Explain how GFR can be measured
- Explain Tubulo-glomerular feedback and glomerulo-tubular balance
- Describe the Proximal tubular functions
- Describe the renal handling of sodium
- Describe the renal handling of potassium
- Describe the renal handling of water
- Explain obligatory and facultative reabsorption of water
- Explain the renal handling of glucose
- Discuss the concept of transport maximum and renal plasma threshold for glucose

- Explain the reabsorption of amino acids, urea
- Describe renal handling of calcium, magnesium, and phosphate
- Describe the factors influencing genesis of medullary gradient
- Describe the role of countercurrent multiplier and exchanger systems
- List various conditions leading to loss of concentrating and diluting ability of nephron
- Indicate the site and mechanisms action of common diuretics

PY7.4 Describe & discuss the significance & implication of Renal clearance

- Define clearance
- Describe how renal clearance can be used to measure GFR with specific regard to (a) substances used (b) limitations of different substances
- Describe how renal clearance can be used to measure Renal plasma flow (RPF)
- Given representative values, calculate GFR and RPF using the principle of renal clearance and interpret the result

PY7.5 Describe the renal regulation of fluid and electrolytes & acid-base balance

- Discuss the methods of acidification of urine in different parts of the renal tubules
- Discuss the regulation of HCO3- reabsorption
- Discuss the role of osmoreceptors, thirst and Angiotensin II in regulating water balance
- Describe the role of ADH in water balance. To list the clinical features of diabetes insipidus and explain the physiological basis

PY7.6 Describe the innervations of urinary bladder, physiology of micturition and its abnormalities

- Describe the functional anatomy of urinary bladder
- Describe the innervation of urinary bladder with the help of a diagram
- Describe micturition reflex
- Describe the functional abnormalities of urinary bladder

PY7.7 Describe artificial kidney, dialysis and renal transplantation

- List the types of renal failure (acute, Chronic) and list the clinical features
- Describe the principle of dialysis
- List the differences between haemodialysis and peritoneal dialysis

PY7.8 Describe & discuss Renal Function Tests

- List tests for urine analysis
- List blood analysis for renal function
- List the different concentration and dilution tests of urinary function

PY7.9 Describe cystometry and discuss the normal cystometrogram

- Describe the method by which a cystometrogram is generated
- Draw and label a normal cystometrogram
- Discuss the phases of the cystometrogram

Endocrine Physiology:

PY8.1 Describe the physiology of bone and calcium metabolism

- List the bone cells and enumerate their functions
- Enumerate normal serum calcium and the important functions of calcium
- Describe the normal distribution and daily requirements of calcium in the body
- Describe the hormonal regulation of calcium homeostasis (parathyroid, Calcitonin, Vitamin D)

PY8.2 Describe the synthesis, secretion, transport, physiological actions, regulation and effect of altered (hypo and hyper) secretion of pituitary gland, thyroid gland, parathyroid gland, adrenal gland, pancreas and hypothalamus

Introduction:

- Define hormone
- List all the endocrine organs and the major hormones secreted in each.
- Describe the mechanism of action and regulation of secretion of hormones
- Define second messenger system
- List the various second messenger systems
- Describe upregulation and down regulation.
- Differentiate between genomic and non-genomic effects
- Define the term paracrine and autocrine and give an example for each
- List the methods of assessing Hormone levels (bioassays, RIA, ELIZA)

Hypothalamus:

- List the hormones secreted by the hypothalamus and discuss the functions of each.
- Discuss the Hypothalamus-pituitary-organ axis in detail with examples.

Pituitary gland:

- Describe the functional anatomy of pituitary gland
- List the hormones secreted by anterior pituitary and posterior pituitary
- Describe the actions and regulation of growth hormone
- List the clinical features with physiological basis for each: a) gigantism, b) acromegaly, c) dwarfism
- List the actions and factors controlling the secretions of oxytocin and vasopressin

Thyroid gland:

- Describe the functional anatomy of thyroid gland.
- Describe the structure, biosynthesis and transport and metabolism of thyroid hormones.
- Describe the physiological actions and regulation of thyroid hormones.

- Discuss the clinical features with pathophysiological basis for each: a) cretinism, b) myxoedema, c) hyperthyroidism
- List Antithyroid drugs and the sites of their action
- Describe the Thyroid function tests

Calcium homeostasis:

- Describe the distribution, absorption and fate of calcium and phosphorus.
- Describe the plasma concentration, regulations and functions of calcium and phosphorus.
- List the components of the organic matrix of bone
- List the important dietary sources of calcium and phosphate
- Describe the physiological actions and regulation of parathyroid hormones.
- Describe the physiological actions of Vit D
- Describe the physiological actions of Calcitonin
- Mention the normal serum calcium levels. Describe the hormonal regulation of calcium homeostasis (parathyroid, Calcitonin, Vitamin D).
- Define tetany.
- List of clinical features of decreased serum calcium level
- Define osteoporosis

Adrenal cortex and medulla:

- Name the catecholamines secreted by adrenal medulla
- Describe the types of adrenergic receptors, physiological actions and regulations of catecholamines.
- Discuss the clinical features of Pheochromocytoma
- Describe the structure, biosynthesis and transport of adrenocortical hormones.
- Describe the metabolism, regulation and actions of adrenocortical hormones.
- Discuss the clinical features with pathophysiological basis for each: a) Addison's disease, b) Cushing's syndrome, c) Conn's syndrome, d) Adrenogenital syndrome
- List the features of Congenital adrenal hyperplasia

Pancreas:

- Name the hormones secreted by each cell of endocrine pancreas. List their functions.
- Name hormones that affect plasma glucose concentration and describe the action of each hormone
- Describe the structure and biosynthesis of insulin.
- Describe the mechanism of actions and regulation of insulin
- Describe the physiological response to hypoglycemia
- List the types of glucose transporters found in human body.
- Define and give the normal values of fasting blood sugar, post prandial blood sugar with clinical significance.
- Discuss glucose tolerance test with clinical significance
- Discuss physiological basis of clinical features of diabetes mellitus.

PY8.3 Describe the physiology of Thymus & Pineal Gland

- Discuss the functions of the thymus.
- Describe the physiological actions of melatonin.
- List functions of Pineal gland
- Discuss the effects of thymectomy

PY8.4 Describe function tests: Thyroid gland, Adrenal cortex, Adrenal medulla and pancreas

- Included under PY8.3

PY8.5 Describe the metabolic and endocrine consequences of obesity & metabolic syndrome, Stress response. Outline the psychiatry component pertaining to metabolic syndrome

- Define obesity
- Classify the different types of obesity
- List the criteria to diagnose metabolic syndrome
- Discuss obesity as a risk factor for enhanced cardio-metabolic disease

- Discuss the effects of stress response.
- Discuss the psychological /psychiatric components of eating disorders and the psychological/psychiatric consequences of obesity (stigma, labeling, self-esteem etc.)

PY8.6 Describe & differentiate the mechanism of action of steroid, protein and amine hormones

- List the various types of hormone-receptors with examples for each
- Define Hormone-receptor interaction
- Describe & differentiate the mechanism of action of steroid, protein and amine hormones.

Reproductive Physiology

PY9.1 Describe and discuss sex determination; sex differentiation and their abnormities and outline psychiatry and practical implication of sex determination.

- Distinguish sex chromosomes from somatic chromosomes
- Describe the basis of chromosomal sex differentiation
- Describe Barr bodies and their use
- Describe the basis of gonadal differentiation
- Describe the regulation of sex differentiation and development
- Describe the intra-uterine differentiation of the internal and external genitalia
- Discuss the legal implications of sex determination prenatally
- List the physiological basis for the key features of the following conditions:
  - ✓ Klinefelter syndrome
  - ✓ Turner's syndrome
  - ✓ True hermaphrodite
  - ✓ Pseudohermaphrodite

PY9.2 Describe and discuss puberty: onset, progression, stages; early and delayed puberty and outline adolescent clinical and psychological association.

- Define the terms: puberty, menarche and adrenarche
- State the age range at which puberty occurs in males and females
- Describe the factors that affect the onset of puberty
- Describe the normal stages of puberty as described by Marshall and Turner
- Describe the secondary sexual characteristics in males and females
- Briefly describe:
    a) precocious puberty
    b) delayed puberty
- List the psychological changes that are associated with normal, early and delayed puberty

PY9.3 Describe male reproductive system: functions of testis and control of spermatogenesis & factors modifying it and outline its association with psychiatric illness

- Describe the functional anatomy of the male reproductive system
- Describe the functions of the testis, prostate gland and seminal vesicles
- List the stages of spermatogenesis with a diagram
- Describe the factors that control and affect spermatogenesis
- Describe the biological actions of testosterone (including mood, cognition and behavior)
- Describe the hypothalamo–pituitary-gonadal axis in male.
- Describe the characteristic features and components of semen
- Describe the endocrine functions of testis
- Explain the functions of Sertoli cells
- Briefly describe:
    a) Cryptorchidism
    b) Hypogonadism in males
    c) Male infertility
    d) Vasectomy

PY9.4 Describe female reproductive system: (a) functions of ovary and its control; (b) menstrual cycle - hormonal, uterine and ovarian changes

- Describe the functional anatomy of the female reproductive system
- With regard to the ovary:
  - List the ovarian hormones and describe the physiological actions of each
  - Describe the control of ovarian function
- List the phases of the normal menstrual cycle and indicate their approximate durations
- Describe with diagrams the uterine changes of the menstrual cycle with hormonal basis.
- Describe with diagrams the ovarian cycle with hormonal basis
- Describe the hypothalamo-pituitary-gonadal axis in females.
- Describe the tests for ovulation
- Explain the following terms a) amenorrhea b) menorrhagia c) menopause d) anovulatory menstrual cycle

PY9.5 Describe and discuss the physiological effects of sex hormones

- List the sex hormones in the male and female
- Describe the regulation of sex hormone secretion in the male and female
- List the actions of the sex hormones on the different organs/systems of the body
- List clinical conditions where sex hormones may need to be suppressed or administered

PY9.6 Enumerate the contraceptive methods for male and female. Discuss their advantages & disadvantages

- Classify the contraceptive methods for male and female. Describe briefly the mechanism of action of each
- List the advantages and disadvantages of each method
- Describe the permanent methods of contraception in male and female

PY9.7 Describe and discuss the effects of removal of gonads on physiological functions

- List the functions of the gonads in the male and female

- Describe the effects of removal of the gonads at different stages of life

PY9.8 Describe and discuss the physiology of pregnancy, parturition & lactation and outline the psychology and psychiatry-disorders associated with it.

- Describe the development of the fertilized ovum to an early embryo
- Describe the structure and functions of the placenta
- List the placental hormones and describe their functions
- Describe the function of the feto-placental unit
- Briefly describe the physiological changes in the mother during pregnancy.
- List the factors that increase uterine contractility at birth
- Describe the mechanics of parturition and its stages
- Describe the hormonal regulation of breast development and lactation
- Describe the milk ejection reflex
- Briefly describe the emotional changes that a mother experiences during and after pregnancy

PY9.9 Interpret a normal semen analysis report including (a) sperm count, (b) sperm morphology and (c) sperm motility, as per WHO guidelines and discuss the results

- Describe the normal semen parameters in terms of (a) volume (b) sperm count, (c) sperm morphology and (d) sperm motility
- Discuss the factors that can affect sperm count and quality
- Define the following terms (a) oligospermia (b) azoospermia

PY9.10 Discuss the physiological basis of various pregnancy tests

- List the various tests of pregnancy with physiological basis.
- Discuss the immunological methods used to confirm pregnancy

PY9.11 Discuss the hormonal changes and their effects during perimenopause and menopause

- Define perimenopause and menopause
- Discuss the hormonal changes that occur during perimenopause and menopause and functional changes that occur in different systems
- Discuss the uses and side effects of hormone replacement therapy (HRT)

PY9.12 Discuss the common causes of infertility in a couple and role of IVF in managing a case of infertility.

- List the common causes of infertility in the male and female
- Discuss the approach and tests for infertility
- List the new reproductive technologies that are available for an infertile couple

Neurophysiology

Sensory system:

PY10.1 Describe and discuss the organization of nervous system

- Describe the organization and functions of nervous system
- Describe a neuron and its types
- Enumerate the types and function of Glial Cells.
- List the structural features of the blood brain barrier
- State the sites of production and removal of CSF
- Tabulate the composition of CSF against plasma
- List the functions of CSF
- Discuss clinical applications of CSF analysis
- Describe the procedure and uses of a lumbar puncture
- Describe the different types of hydrocephalus

PY10.2 Describe and discuss the functions and properties of synapse, reflex, receptors

- Draw a diagram of a synapse and label its parts
- List different types of synapses

- Describe synaptic transmission
- Enumerate and explain the properties of synapses
- Distinguish between electrical and chemical synapse
- Differentiate between EPSP and IPSP
- Define receptors. Classify receptors based on types of stimulus and location
- Describe the structure and functions of each sensory receptor
- Define receptor potential. Describe the mechanism of genesis of receptor potential
- Define the receptive field and indicate its importance
- Discuss the properties of receptors.
- Draw and label a reflex arc
- Classify reflexes and discuss the properties of reflexes

PY10.3 Describe and discuss somatic sensations & sensory tracts

- List and classify sensory modalities.
- Discuss the arrangement of tracts of ascending pathways in the cross section of spinal cord.
- Describe the anterolateral pathway with a neat labelled diagram. List the sensations carried it.
- Describe the dorsal column pathway with a neat labelled diagram. List the sensations carried by it.
- Compare and contrast the dorsal column and spinothalamic tracts.
- Define and classify pain. List the nociceptive stimuli. Enumerate types of pain
- Describe the pain pathways with neat labelled diagrams. (Neospinothalamic and Paleospinothalamic tracts)
- Discuss the gate control theory of pain
- Explain the differences between somatic and visceral pain
- Define referred pain. Explain the theories of referred pain
- Describe the endogenous analgesic / pain modulating systems

Motor system:

PY10.4 Describe and discuss motor tracts, mechanism of maintenance of tone, control of body movements, posture and equilibrium & vestibular apparatus

- List the descending tracts
- Describe the cortico bulbar and cortico spinal tract (pyramidal tract) from its origin to termination with a diagram and list its functions
- Describe the extrapyramidal tracts (vestibulospinal, rubrospinal, reticulospinal, olivospinal, tectospinal) and their functions
- Distinguish between upper and lower motor neuron lesion
- Define hemiplegia and describe the clinical features
- Describe the structure of the muscle spindle and its innervation in a diagram
- Define muscle tone
- Describe the importance of alpha-gamma co-activation
- Describe the Golgi tendon organ and its function.
- Describe the following reflexes: stretch, inverse-stretch, withdrawal, crossed extensor reflex
- Distinguish between decerebrate and decorticate rigidity.
- Distinguish between classical and ischemic decerebrate rigidity.
- Describe the righting reflexes.
- Enumerate and describe the structures constituting the vestibular apparatus
- Describe the neuronal connections of vestibular apparatus with the central nervous system.
- List the functions of the vestibular apparatus
- Enumerate the clinical disorders associated with the vestibular apparatus, and the tests that are performed in suspected vestibular dysfunction.
- Classify the lobes of cerebellum according to their physiological functions (Cerebellum also covered in PY 10.4)
- List the layers of the cerebellum and describe the internal circuitry and its function
- List the deep nuclei of cerebellum and their function
- List the afferent and efferent pathways of cerebellum and their functions
- Enumerate the functions of cerebellum
- List the features of cerebellar lesions and the clinical tests performed for cerebellar dysfunctions

PY10.5 Describe and discuss structure and functions of reticular activating system, autonomic nervous system (ANS)

- Describe the location of the reticular activating system and its connections
- List the functions of the reticular activating system
- Describe the organization and functions of the autonomic nervous system (ANS)
- List the neurotransmitters involved in the ANS and common blockers that are used clinically
- List the common causes and symptoms of autonomic dysfunctions
- List the tests of autonomic function

PY10.6 Describe and discuss Spinal cord, its functions, lesion & sensory disturbances

- Describe the parts of the spinal cord and the arrangement of spinal nerves
- Depict in a cross-sectional diagram of the spinal cord the location of ascending and descending tracts
- Describe and explain the effects of hemi section and complete transection of the spinal cord
- Describe the features of spinal shock
- Describe and explain briefly other spinal cord lesions like Tabes dorsalis and Syringomyelia

Higher mental functions, special senses

PY10.7 Describe and discuss functions of cerebral cortex, basal ganglia, thalamus, hypothalamus, cerebellum and limbic system and their abnormalities

- Name the lobes of cerebral cortex.
- Describe the functions of the different lobes, the motor and sensory cortical areas and the association areas
- Describe the layers of the cerebral cortex and their function
- Describe the motor and sensory homunculus and its characteristics
- Name the nuclei of the Basal Ganglia

- Describe the neuronal circuits of the basal ganglia
- Enumerate the functions of basal ganglia
- Indicate the cause and features of Parkinson's disease and the principle of treatment
- Describe other abnormal movements associated with lesions of parts of the basal ganglia
- Describe the functions of the different nuclei of the thalamus
- Describe the cause and features associated with Thalamic Syndrome
- Describe the functions of the different parts of hypothalamus
- List the anatomical structures comprising the Limbic System and in particular Papez circuit.
- List the functions of Limbic system.
- Describe Kluver Bucy Syndrome
- Describe Sham rage
- Cerebellum – covered under 10.4

PY10.8 Describe and discuss behavioral and EEG characteristics during sleep and mechanism responsible for its production

- List the different 'wave forms' of EEG and state their characteristics
- Describe the physiological basis of EEG
- List the uses of EEG
- List the stages of sleep
- List the features of different stages of sleep
- Discuss the physiological basis of sleep
- Compare and contrast REM and NREM sleep
- List the essential features of common sleep disorders

PY10.9 Describe and discuss the physiological basis of memory, learning and speech

- Tabulate the differences of the Rt and Lt Cerebral hemispheres
- Classify memory and list the stages of memory storage
- Describe the physiological basis of learning and memory
- Describe the key features of classical and operant conditioning
- Define and classify amnesia and describe the basic features of these disorders and of Alzheimer's disease
- Describe the pathways and areas in the brain involved in speech
- List the types of Aphasias and give the salient features of each.

PY10.10 Describe and discuss chemical transmission in the nervous system. (Outline the psychiatry element).

- Define neurotransmitters
- Explain the general characteristics of action of neurotransmitters
- Give the physiological classification of neurotransmitters and explain their functions
- Discuss the role of neurotransmitters in common psychiatric disorders like depression, psychoses, schizophrenia

PY10.12 Identify normal EEG forms

- Given the EEG recording, Identify the various waves of the EEG (alpha block, sleep spindles)

PY10.13 Describe and discuss perception of smell and taste sensation

- List the primary taste receptors and their distribution
- Explain the mechanism of taste receptor stimulation for different taste sensation
- Trace the taste pathway with the help of a diagram
- With the help of a diagram illustrate the structure of olfactory receptors
- Trace the olfactory pathway

PY10.14 Describe and discuss Patho-physiology of altered smell and taste sensation

- List and describe disorders of taste and smell
- Describe the clinical tests for taste and smell

PY10.15 Describe and discuss functional anatomy of ear and auditory pathways & physiology of hearing

- Describe the various structural components of human ear
- List the parts of the middle ear
- Describe the functions of the middle ear
- Describe the cochlea.
- Draw and describe the organ of Corti
- Describe the endocochlear potential
- Describe the theories of hearing
- Trace the auditory pathway

PY10.16 Describe and discuss pathophysiology of deafness. Describe hearing tests

- Describe the types of deafness and some common causes
- Describe the tuning fork tests to assess deafness
- Describe the role of audiometry in assessing deafness and list its advantages over tuning fork tests
- Describe the role of tympanogram

PY10.17 Describe and discuss functional anatomy of eye, physiology of image formation, physiology of vision including colour vision, refractive errors, colour blindness, physiology of pupil and light reflex

- Define refractive index.
- Draw a reduced eye.
- List the errors of refraction and indicate diagrammatically how they can be corrected.
- Define accommodation of the eye and explain the mechanisms involved
- Describe Purkinje Sanson images and their use
- Describe how aqueous humor is formed and drained. List and describe the different types of glaucoma
- Describe layers of the retina
- Differentiate between the rods and cones
- Describe the transduction of light

- Define photopic and scotopic vision; describe the phenomenon of dark and light adaptation
- Explain theories of color vision
- List the types of color blindness and the methods used to test for them
- List the pupillary reflexes and trace their pathways
- List the features of Argyl Robertson pupil

PY10.18 Describe and discuss the physiological basis of lesion in visual pathway

- Trace the visual pathways
- List and describe disorders of visual fields in relation to the visual pathway
- List the cortical visual areas and their function

PY10.19 Describe and discuss auditory & visual evoke potentials

- Explain evoked potential
- Discuss the physiological and clinical uses of auditory and visually evoked potentials

Integrated Physiology:

PY11.1 Describe and discuss mechanism of temperature regulation

- Define the normal range of body temperature
- Discuss the modes of heat loss from the body
- Describe the mechanisms of heat production in the body
- Discuss the role of the skin in regulation of body temperature
- Describe the function of Hypothalamus as the thermostat of the body

PY11.2 Describe and discuss adaptation to altered temperature (heat and cold)

- Describe the changes occurring in the body when exposed to higher temperatures
- Describe the changes occurring in the body when exposed to lower temperatures

- List the behavioral methods used to control ambient and body temperature

PY11.3 Describe and discuss mechanism of fever, cold injuries and heat stroke

- Discuss the abnormality in body temperature regulation in fever
- Describe the pathophysiology and management of heat stroke
- Describe the pathophysiology and management of frost bite

PY11.4 Describe and discuss cardio-respiratory and metabolic adjustments during exercise; physical training effects

- Describe the acute cardio respiratory and metabolic responses to whole body isotonic and resistance exercise
- Distinguish between endurance and resistance physical training
- List the tests to evaluate progress with endurance / resistance physical training
- Describe the whole body and skeletal muscle effects of sustained endurance / resistance training
- Define exercise, grading, type, oxygen debt

PY11.5 Describe and discuss physiological consequences of sedentary lifestyle

- Define sedentary lifestyle. (what is physical inactivity)
- Describe the physiological consequences of sedentary lifestyle
- What are current recommendations for Physical activity?
- List the methods to assess physical activity of an individual
- Describe the pathways through which sedentary lifestyle increases cardio-metabolic risk

PY11.6 Describe physiology of Infancy

- Define the following terms i) perinatal ii) neonatal iii) infancy
- Describe the changes in infancy (the first year of life) with regard to the following:
    - growth and weight gain
    - developmental milestones
    - nervous system changes
    - cardiovascular system

- respiratory system
- gastrointestinal system
- endocrine system
- renal and urinary system
- hematological and immune function

PY11.7 Describe and discuss physiology of aging; free radicals and antioxidants

- Distinguish between chronological and biological age
- List the various theories of aging
- Describe the role of free radicals and the antioxidants in aging
- Describe the system wise changes that occur with aging (including diseases of ageing)
- Define cellular senescence

PY11.8 Discuss & compare cardio-respiratory changes in exercise (isometric and isotonic) with that in the resting state and under different environmental conditions (heat and cold)

- Compare and contrast the acute cardiac, vascular and respiratory responses to isometric and isotonic exercise in thermoneutral conditions
- Compare and contrast cardiac, vascular and respiratory responses to exercise in conditions of acute and chronic heat and cold conditions.
- Highlight the differences in cardiorespiratory responses to exercise in heat and cold from those in thermoneutral conditions

PY11.9 Interpret growth charts

- Define growth chart
- List the types of growth chart
- Define: stunting, wasting, failure to thrive
- Interpret the WHO / IAP weight-for-age growth chart for the given data (case history)

PY11.10 Interpret anthropometric assessment of infants

- List the parameters used for anthropometric assessments in infants - height, weight, head circumference, mid arm circumference. Mention the normal values.
- Clinical implications of anthropometric assessments in infants

PY11.11 Discuss the concept, criteria for diagnosis of Brain death and its implications

- Define brain death
- List the criteria for diagnosing brain death (distinguish from coma)
- Explain the implications of brain death (including legal and organ donation issues)

PY11.12 Discuss the physiological effects of meditation

- Describe the physiological changes seen with meditation with regards to:
    - Neuroendocrine (cognitive, autonomic function, EEG, sleep, HPA axis)
    - cardiorespiratory function
    - metabolic activity

BIOCHEMISTRY

Handbook of competencies and specific learning objectives

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
Topic: Basic Biochemistry		**Number of competencies: (01) Number of procedures that require certification: (NIL)**					
Topic: Cell and organelles, Cell membrane, Transport across cell membranes							
BI1.1	**Describe the molecular and functional organisation of a cell and its subcellular components.**	**K**	**KH**	**Lecture, Small group discussion**	**Written/ Viva voce**		**Physiology**
Specific Learning Objectives							
	Explain the differences between prokaryotic and eukaryotic cell	K	KH				
	Describe structure and enumerate functions of sub-cellular organelles with suitable diagrams	K	KH				
	List the Marker enzymes of cell membrane and subcellular organelles	K	K				
	Describe process used to separate cell organelles						
	Describe structure and enumerate functions of cell membrane with suitable diagram (Fluid mosaic model)	K	KH				
	Explain components of cell membrane contributing to membrane asymmetry and membrane fluidity and their importance	K	KH				
	List different types of transport mechanism across cell membranes for small and large molecules	K	K				
	Describe different types of mechanism across cell membranes for small and large molecules including active (primary and secondary), passive (simple and facilitated diffusion), endocytosis and exocytosis with suitable examples	K	KH				
	Enumerate the disorders related to cell membrane and subcellular organelles	K	K				
	List the components of cytoskeleton including microtubules, actin filaments, intermediate filaments and explain their structure and function	K	K				

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
	Explain the types of intercellular junctions and different ways of intercellular signalling	K	KH				
	List the types and functions of Aquaporins	K	K				
	Explain the types and functions of ABC family of transporters	K	KH				
Topic: Enzymes		**Number of competencies: (07) Number of procedures that require certification: (NIL)**					
BI2.1	**Explain fundamental concepts of enzyme, isoenzyme, alloenzyme, Coenzyme & co-factors. Enumerate the main classes of IUBMB nomenclature.**	**K**	**KH**	**Lecture, case discussion**	**Written/ Viva voce**		
Specific Learning Objectives							
	Define Enzymes, Coenzymes and Cofactors, Isoenzyme, Alloenzyme, Proenzymes, Ribozymes with suitable examples	K	K				
	Classify enzymes(IUBMB) with suitable examples	K	KH				
	Explain the role of Coenzymes and Cofactors in enzyme catalysed reaction with examples	K	KH				
BI2.2	**Observe the estimation of SGOT & SGPT**	**K**	**K**	**Demonstrate**	**Viva voce**		
Specific Learning Objectives							
	Observe the estimation of SGOT, SGPT and ALP and interpret the results in given sample accurately	K	K				
BI2.3	**Describe and explain the basic principles of enzyme activity**	**K**	**KH**	**Lecture, case discussion**	**Written/Viva voce**		
Specific Learning Objectives							
	Describe the features of active site of enzyme and its relevance in enzyme action	K	KH				

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
	Explain the mechanism of Enzyme action related to substrate binding (lock and key mode and Koschland's induced fit theory) including concepts of activation energy, transition state and binding energy	K	KH				
	List different mechanisms of enzyme catalysis	K	K				
	Explain different factors affecting enzyme activity	K	KH				
	Explain the effect of substrate concentration on enzyme activity	K	KH				
	Define Km and Vmax and explain their significance	K	KH				
	Describe different types of Enzyme specificity with suitable examples	K	KH				
	Explain various mechanisms of short term regulation of enzyme activity with e.g. including Covalent modification, Zymogen activation, Allosteric regulation, Feedback regulation	K	KH				
	Explain various mechanisms of long term regulation of enzyme activity with examples including induction and repression	K	KH				
BI2.4	**Describe and discuss enzyme inhibitors as poisons and drugs and as therapeutic enzymes**	**K**	**KH**	**Lecture, Small group discussion**	**Written/ Viva voce**	**Pathology, General Medicine**	
Specific Learning Objectives							
	Explain Competitive and Non-competitive inhibition with examples of clinical importance	K	KH				
	Explain Suicide inhibition with example	K	KH				
	Describe the role of enzymes as Therapeutic agents	K	KH				
	Explain the role of enzymes as toxins with example	K	KH				
BI2.5	**Describe and discuss the clinical utility of various serum enzymes as markers of pathological conditions.**	**K**	**KH**	**Lecture, Small group discussion**	**Written/ Viva voce**	**Pathology, General Medicine**	
Specific Learning Objectives							
	Discuss the diagnostic importance of enzymes in cardiac, liver, pancreatic, bone and prostate disorders	K	KH				

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
	Discuss the diagnostic importance of enzymes and isoenzymes in myocardial infarction	K	KH				
	Discuss the therapeutic importance of isoenzymes with examples.	K	KH				
	Enumerate the difference between functional and non functional plasma enzymes with suitable examples	K	K				
	Explain the possible mechanisms of alteration in enzyme and isoenzyme levels in circulation in different pathological conditions of heart, liver, pancreas, bone and prostate	K	KH				
	Describe the role of enzymes as tumor markers	K	KH				
BI2.6	**Discuss use of enzymes in laboratory investigations (Enzyme-based assays)**	**K**	**KH**	**Lecture, Small group discussion**	**Written/Viva voce**	**Pathology, General Medicine**	
Specific Learning Objectives							
	Describe the use of enzymes in diagnostic assays	K	KH				
	Describe the use of enzymes in techniques like recombinant DNA technology, PCR etc	K	KH				
	Describe the use of enzymes as labels in techniques like ELISA, RIA	K	KH				
BI2.7	**Interpret laboratory results of enzyme activities & describe the clinical utility of various enzymes as markers of pathological conditions.**	**K**	**KH**	**Lecture, Small group discussion, DOAP sessions**	**Written/Viva voce**	**Pathology, General Medicine**	
Specific Learning Objectives							
	Interpret the lab test reports of enzymes and isoenzymes in cardiac disorders	K	KH				
	Interpret the lab test reports of enzymes and isoenzymes in liver disorders	K	KH				

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
	Interpret the lab test reports of enzymes and isoenzymes in of pancreatic disorders	K	KH				
	Interpret the lab test reports of enzymes and isoenzymes in bone disorders	K	KH				
	Interpret the lab test reports of enzymes and isoenzymes in prostate disorders	K	KH				
Topic: Chemistry and Metabolism of Carbohydrates		**Number of competencies: (10)**			**Number of procedures that require certification: (NIL)**		
BI3.1	**Discuss and differentiate monosaccharides, disaccharides and polysaccharides giving examples of main carbohydrates as energy fuel, structural element and storage in the human body**	**K**	**KH**	**Lecture, Small group discussion**	**Written/ Viva voce**		
Specific Learning Objectives							
	Define carbohydrates accurately	K	K				
	Explain the biomedical importance of carbohydrates as energy source, storage and structural element.	K	KH				
	Classify carbohydrates with examples	K	KH				
	List the Monosaccharide derivatives	K	K				
	Explain the clinical significance of Uronic acids, amino sugars, Glycosides, Sorbitol, Mannitol	K	KH				
	Describe the biologically important disaccharides and oligosaccharides	K	KH				
	Define Polysaccharides, Homopolysaccharides, Heteropolysaccharides	K	K				
	Explain the composition and importance of starch, glycogen, Dextran, Cellulose and Inulin.	K	KH				
	Explain the composition and importance of mucopolysaccharides	K	KH				

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
	Differentiate between glycation and glycosylation	K	KH				
	Explain the biological importance of Glycolipids	K	KH				
	Explain the biological importance of Glycoproteins	K	KH				
	Explain the biological importance of Sialic acid	K	KH				
	Explain the role of carbohydrates as Blood group substances	**K**	**KH**				
BI3.2	**Describe the processes involved in digestion and assimilation of Carbohydrates and storage.**	**K**	**KH**	**Lecture, Small group discussion**	**Written/ Viva voce**		
Specific Learning Objectives							
	Explain the process of digestion of carbohydrates	K	KH				
	Explain different types of Glucose transporters	K	KH				
	Explain Insulin dependent and Insulin independent uptake of glucose by tissues	K	KH				
	Explain the process of utilization of carbohydrates for energy generation	K	KH				
	Explain the process of conversion of carbohydrates into their storage form glycogen	K	KH				
BI3.3	**Describe and discuss the digestion and assimilation of carbohydrates from food.**	**K**	**KH**	**Lecture, Small group discussion**	**Written/ Viva voce**	**General Medicine**	
Specific Learning Objectives							
	List the digestible and non digestible dietary carbohydrates with their biological importance	K	K				
	Explain the process of digestion of dietary carbohydrates	K	KH				

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
	Explain the mechanism of absorption of digested end products of dietary carbohydrates	K	KH				
	Explain the causes, biochemical basis of clinical features and management of lactose intolerance	K	KH				
BI3.4	**Define and differentiate the pathways of carbohydrate metabolism, (Glycolysis, gluconeogenesis, glycogen metabolism, HMP shunt).**	**K**	**KH**	**Lecture, Small group discussion**	**Written/ Viva voce**	**General Medicine**	
Specific Learning Objectives							
	Describe the process of Glycolysis (aerobic and anaerobic) highlighting the significance, site, reactions, key steps, energetics, regulation and inhibitors	K	KH				
	Explain the substrate level phosphorylation reactions in glycolysis.	K	KH				
	Differentiate between aerobic and anaerobic glycolysis	K	KH				
	Explain Rapaport Leubering cycle and its significance	K	KH				
	List the cofactors required for Pyruvate dehydrogenase (PDH) reaction	K	K				
	Explain the significance, Site, reactions, key steps, energetics, regulation of Gluconeogenesis	K	KH				
	Explain the mechanism of transport of Lactate and Alanine from skeletal muscle to liver for gluconeogenesis	K	KH				
	Explain the role of adipose tissue in gluconeogenesis in prolonged fasting	K	KH				
	Explain the significance, Site, reactions, key steps, energetics, regulation of Glycogenesis	K	KH				
	Explain the significance, Site, reactions, key steps, energetics, regulation of Glycogenolysis	K	KH				
	Describe Glycogen storage disorders with enzyme defects and features	K	KH				

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
	Explain the significance of HMP shunt pathway	K	KH				
	Explain the significance of Uronic acid pathway	K	KH				
BI3.5	**Describe and discuss the regulation, functions and integration of carbohydrate along with associated diseases/disorders.**	**K**	**KH**	**Lecture, Small group discussion**	**Written/ Viva voce**	**General Medicine**	
Specific Learning Objectives							
	Discuss the regulation of glycolysis, gluconeogenesis in well fed and fasting conditions	K	KH				
	Discuss the regulation of glycogen metabolism in well fed and fasting conditions	K	KH				
	Describe the features of Glucose-6-Phosphate dehydrogenate deficiency	K	KH				
	Name the enzyme defect in Galactosemia and describe the clinical features	K	K				
	Name the enzyme defect and features of Essential Fructosuria, Hereditary fructose intolerance, Essential pentosuria	K	K				
BI3.6	**Describe and discuss the concept of TCA cycle as amphibolic pathway and its regulation.**	**K**	**KH**	**Lecture, Small group discussion**	**Written/ Viva voce**		
Specific Learning Objectives							
	Describe the sequential steps of Citric acid cycle with significance, site, key steps, energetics, regulation and inhibitors	K	KH				
	Explain the Amphibolic role of Citric acid cycle	K	KH				
	Explain the Anaplerotic reactions of Citric acid cycle	K	KH				

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
BI3.7	**Describe the common poisons that inhibit crucial enzymes of carbohydrate metabolism(eg. fluoride, arsenate)**	**K**	**KH**	**Lecture, Small group discussion**	**Written/ Viva voce**		**Physiology**
Specific Learning Objectives							
	Explain the action of inhibitors on glycolytic enzymes and their importance	K	KH				
	Explain the action of inhibitors on enzymes of citric acid cycle and their importance	K	KH				
BI3.8	**Discuss and interpret laboratory results of analytes associated with metabolism of carbohydrates.**	**K**	**KH**	**Lecture, Small group discussion**	**Written/ Viva voce**	**Pathology, General Medicine**	
Specific Learning Objectives							
	List the lab investigations done in Glycogen storage disorders, Galactosemia, Glucose-6-Phosphate dehydrogenase deficiency, Essential Fructosuria, Hereditary fructose intolerance	K	K				
	Interpret the lab investigations done in Glycogen storage disorders, Galactosemia, Glucose-6-Phosphate dehydrogenase deficiency, Essential Fructosuria, Hereditary fructose intolerance	K	KH				
BI3.9	**Discuss the mechanism and significance of blood glucose regulation in health and disease.**	**K**	**KH**	**Lecture, Small group discussion**	**Written/ Viva voce**	**General Medicine**	
Specific Learning Objectives							
	State the normal plasma glucose levels in fasting, post prandial and random samples and interpret the given reports	K	K				
	Explain the mechanism of regulation of blood glucose levels in well fed condition and fasting/starvation	K	KH				

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
	Explain the importance of blood glucose regulation in normal healthy individual in well fed, overnight fasting and during exercise states	K	KH				
	Explain the derangements in blood glucose regulations in abnormal conditions of diabetes mellitus and starvation	K	KH				
	Explain various metabolic changes taking place in diabetes mellitus	K	KH				
	Describe the biochemical basis of acute complications of diabetes mellitus	K	KH				
	Describe the biochemical basis of chronic complications of diabetes mellitus	K	KH				
	Differentiate the hormonal regulation of blood glucose among obese and non obese individuals	K	KH				
BI3.10	**Interpret the results of blood glucose levels and other laboratory investigations related to disorders of carbohydrate metabolism.**	**K**	**KH**	**Lecture, Small group discussion**	**Written/ Viva voce**	**General Medicine**	
Specific Learning Objectives							
	State the normal plasma levels of glucose in fasting, postprandial and random conditions	K	K				
	Interpret the plasma glucose levels as hyperglycemia or hypoglycemia against normal biological reference intervals	K	KH				
	Explain diagnostic criteria of diabetes mellitus including WHO and ADA guidelines	K	KH				
	List the complications of diabetes mellitus including acute metabolic, microvascular and macrovascular complications	K	K				
	List the lab investigations done in diabetes mellitus and its relevance	K	K				

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
	Define oral glucose tolerance test and list the indications, contraindications and different types of GTT including classical, oral, intravenous, mini, clinical/physiological GTT	K	K				
	Explain the precautions advised to patients before GTT	K	KH				
	Interpret the oral GTT report against the recent recommendations of normal, impaired glucose tolerance (IGT), impaired fasting glucose (IFG) and diabetic levels	K	KH				
	Explain the rationale behind glycosylated haemoglobin as an indicator of control status of diabetes mellitus	K	KH				
	Mention the normal glycated Hb levels and interpret the given reports	K	K				
	Describe the importance of measuring serum insulin and c peptide in diabetic individuals	K	KH				
	Describe the importance of glycosuria among diabetic individuals	K	KH				
	Explain the importance of microalbuminuria among diabetic individuals	K	KH				
	Explain the derangement in lipid status among diabetes individuals	K	KH				
Topic: Chemistry and Metabolism of Lipids		**Number of competencies: (07)**		**Number of procedures that require certification: (NIL)**			
BI4.1	**Describe and Discuss main classes of lipids (essential/non essential fatty acids, cholesterol and hormonal steroids, triglycerides, major phospholipids and sphingolipids) relevant to human system and their major functions**	**K**	**KH**	**Lecture, Small group discussion**	**Written/ Viva voce**	**General medicine**	
Specific Learning Objectives							
	Define lipids and explain the biomedical importance of lipids in the body	K	K				
	Classify lipids with examples	K	KH				

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
	Classify fatty acids with examples	K	KH				
	Mention the essential fatty acids and their significance in the body.	K	K				
	Explain the biological importance of MUFA and PUFA	K	KH				
	Describe the composition and importance of triacyglycerol	K	KH				
	Classify phospholipids, mention their composition and biological significance of the various phospholipids	K	KH				
	Explain the biochemical defect, clinical features and diagnosis of respiratory distress syndrome.	K	KH				
	Mention the Composition and importance of glycolipids	K	KH				
	Describe the Composition the biologically important products derived from cholesterol	K	KH				
BI4.2	**Describe the processes involved in digestion and absorption of Lipids and also the key features of their metabolism**	**K**	**KH**	**Lecture, Small group discussion**	**Written/ Viva voce**	**General Medicine**	
Specific Learning Objectives							
	List the various dietary lipids	K	K				
	Mention the sites and describe the role of various enzymes, hormones and bile salts in lipid digestion	K	K				
	Explain the process and advantages of emulsification of fat and formation of micelles.						
	Mention the end product of digestion of lipids, its absorption and transport into lymphatics and blood vessels	K	K				
	Define steatorrhea and explain the causes and biochemical diagnosis of steatorrhea						

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
	Mention the sites and outline the synthesis of triacylglycerol in the body	K	K				
	List the various lipases and explain their physiological and pathological importance	K	K				
	Describe the mobilisation of depot fat from adipose tissue and the factors regulating it.	K	KH				
	Describe the role of carnitine in fatty acid oxidation and explain why small and medium chain fatty acids can be oxidised in carnitine deficiency	K	KH				
	Describe in detail oxidation, regulation and energetics of beta oxidation of fatty acids and mention the differences between the same and alpha, omega , peroxisomal and odd chain fatty acid oxidations	K	KH				
	Mention the metabolic defect and clinical effects associated with propionyl CoA carboxylase deficiency and methylmalonic aciduria , acyl CoA dehydrogenase, Translocase and Carnitine deficiency, Refsums' disease, Zellweger syndrome and organic acidurias	K	K				
	Outline the synthesis of palmitic acid in the body	K	KH				
	Mention the advantages of the fatty acid synthase complex in the body. Mention other multienzyme complexes.	K	K				
	Describe the desaturase and chain elongation system involved in fatty acid synthesis and explain why essential fatty acids cannot be synthesised by the body	K	KH				
	Differentiate between beta oxidation and synthesis of fatty acid	K	KH				
	Name the different ketone bodies and their importance.	K	K				

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
	Mention the organ/tissue and subcellular location of synthesis of ketone bodies; describe the synthesis of the 3 ketone bodies.	K	KH				
	Mention the organs that utilise ketone bodies and explain the steps involved in its utilisation and the key enzyme required.	K	K				
	Explain the biochemical basis for the signs and symptoms associated with ketoacidosis and the laboratory findings that help in the differential diagnosis and monitoring of this condition.	K	KH				
	Mention the biological importance of cholesterol in the body	K	K				
	Mention the organ/tissue and subcellur location and describe the step, enzymes involved in the synthesis of cholesterol (up to mevalonate in detail)	K	KH				
	Explain the significance of HMG CoA reductase in cholesterol synthesis and the effect of lipid lowering drugs.	K	KH				
	Differentiate between HMG CoA synthase, HMG CoA reductase and HMG CoA lyase enzymes	K	KH				
	Explain the short term and long term regulation of cholesterol synthesis with special emphasis on the effect of dietary cholesterol receptor mediated uptake of LDL cholesterol.	K	KH				
	Describe the formation vitamin D and steroid hormones from cholesterol	K	KH				
	Explain the formation bile acids (primary and secondary) and bile salts as the end product of cholesterol metabolism and its enterohepatic circulation.	K	KH				
	Describe the formation of pulmonary surfactant	K	KH				

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
	Mention the lipid storage disorders and the biochemical defect associated with it	K	KH				
	Define and describe Fatty liver and its pathological effects	K	K				
	Explain the effect of alcohol in development of fatty liver	K	KH				
	Differentiate between alcoholic fatty liver and non alcoholic steatohepatitis (NASH)	K	KH				
	Mention the lipoptropic factors and their role in fatty liver	K	K				
	Explain the significance, Site, reactions, key steps, energetics, regulation of Glycogenolysis	K	KH				
BI4.3	**Explain the regulation of lipoprotein metabolism and associated disorders**	**K**	**KH**	**Lecture, Small group discussion**	**Written/ Viva voce**	**General Medicine**	
B14.4	**Describe the structure and functions of lipoproteins, their functions, interrelations and relations with atherosclerosis.**	**K**	**KH**	**Lecture, Small group discussion**	**Written/ Viva voce**	**General Medicine**	
Specific Learning Objectives							
	Describe the structure , composition and function of various Lipoproteins	K	KH				
	Classify the lipoproteins based on separation technique	K	KH				
	Describe the Formation and cellular uptake and the fate of Chylomicrons, VLDL, LDL and HDL.	K	KH				
	Explain the role of various apoliporoteins, CETP, LCAT, ACAT in the metabolism of lipoproteins	K	KH				
	Explain the role of lipoprotein lipase and the effect of Km on its tissue specific activity.	K	KH				

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
	Classify hyper and hypolipoproteinemias based on Frederickson's criteria, mention the biochemical defects associated and the laboratory findings	K	KH				
	Define Atherosclerosis – and explain the role of lipids in atherogenesis (OxLDL, Lpa, Small dense LDL, HDL)	K	KH				
	Mention the important markers of atherosclerosis	K	K				
BI4.5 BI 4.7	**Interpret the laboratory results of analytes associated with metabolism of lipids**	**K**	**KH**	**Lecture, Small group discussion**	**Written/ Viva voce**	**General Medicine**	
Specific Learning Objectives							
	Explain the various components of a Lipid profile	K	KH				
	Mention the biological reference intervals of total cholesterol, HDL, VLDL and Triglycerides as per current applicable (NCEP) guidelines	K	K				
	Interpret the lipid profile and apolipoprotein analysis and arrive at the type of lipoprotein disorder.	K	KH				
	Mention other specific biochemical analytes associated with defects in metabolism of lipids (Ex MCAD levels in MCAD deficiency, propionyl CoA carboxylase and biotin levels in propionyl CoA carboxylase deficiency, urinary dicarboxylic acids in defective oxidation of fatty acid)	K	K				

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
BI4.6	**Describe the therapeutic uses of prostaglandins and inhibitors of eicosanoid synthesis**	**K**	**KH**	**Lecture, Small group discussion**	**Written/ Viva voce**	**General Medicine**	
Specific Learning Objectives							
	Define Eicosanoids and differentiate prostaglandins, prostacyclins, thomboxanes and leukotrienes.	K	K				
	List the important Prostaglandins and their source in the body	K	K				
	Compare and contrast the biological actions of various prostaglandins	K	KH				
	Describe the therapeutic uses of prostaglandins in various conditions (Gastric ulcers, Bronchial asthma, hypertension, Induction of labour, PDA)	K	KH				
	Describe the of action of anti-inflammatory drugs on PG synthesis	K	KH				
	Mention the biological importance of thromboxanes and leukotrienes	K	KH				
Topic: Chemistry and Metabolism of Proteins	**Number of competencies: (05)**			**Number of procedures that require certification: (NIL)**			
BI5.1	**Describe and discuss structural organization of proteins.**	**K**	**KH**	**Lecture, Small group discussion**	**Written/ Viva voce**		
Specific Learning Objectives							
	Define amino acid	K	K				
	Classify amino acid based on structure with examples	K	KH				
	Classify amino acid based on special groups and metabolic fate with examples	K	KH				

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
	Classify amino acid based on Nutritional with examples and List essential , semi essential amino acid	K	KH				
	Describe the relevance of Selenocysteine –the 21st amino acid	K	KH				
	Describe Isoelectric pH and its application	K	KH				
	List nonstandard amino acid with examples	K	K				
	Describe peptide bond and its role in protein formation	K	KH				
	Describe Structural organization of proteins	K	KH				
	Describe primary, secondary, super secondary structures/ motifs, domains, tertiary and quaternary structures with appropriate examples. Describe Bonds stabilizing protein structure	K	KH				
	Describe process of denaturation and its application	K	KH				
	List method to determine primary, secondary, tertiary and quaternary structure` of protein	K	K				
BI5.2	**Describe and discuss functions of proteins and structure-function relationships in relevant areas e.g. hemoglobin and selected hemoglobinopathies**	**K**	**KH**	**Lecture, Small group discussion**	**Written/ Viva voce**	**Pathology, General Medicine**	**Physiology**
Specific Learning Objectives							
	Classify the proteins based on functions (Structural, Hormonal, Catalytic, Transport with suitable examples)	K	KH				
	Classify plasma proteins and enumerate their function	K	KH				
	Describe specific functions and clinical significance of plasma proteins including Albumin,α, β and γ globulins.	K	KH				

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
	Define an Acute phase reactant including positive and Negative function and enumerate their clinical significance.	K	KH				
	Describe primary structure of insulin and how it influences the function of a protein.	K	KH				
	Describe α helix and beta -Pleated sheet and how it influences the secondary organization of protein.	K	KH				
	Describe structure of myoglobin and how it influences the function al (three dimensional) organization of protein.	K	KH				
	Describe structure of hemoglobin and how it influences the quaternary organization of protein.	K	KH				
	Classify abnormal hemoglobin with respect to their alteration in structure and functions with examples.	K	KH				
	Describe hemoglobinopathies.	K	KH				
	Describe biochemical basis and genetics of sickle cell anaemia and explain the basis of its clinical features, investigations and principles of management.	K	KH				
	Describe biochemical basis and genetics of thalassemia and explain the basis of its clinical features investigations and principles of management.	K	KH				
	Differentiate between adult and fetal haemoglobin and Analyze the results of haemoglobin composition studies and use them to differentiate between the major hemoglobinopathies.	K	KH				

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
BI5.3	**Describe the digestion and absorption of dietary proteins.**	**K**	**KH**	**Lecture, Small group discussion**	**Written/ Viva voce**	**Pediatrics**	
Specific Learning Objectives							
	List foodstuffs containing complete proteins.	K	K				
	Describe process of digestion that occurs in different part of human gastrointestinal tract.	K	KH				
	Enumerate the various proteolytic enzymes involved in the digestion of proteins.	K	KH				
	Describe the absorption of digested amino acids in to the cells.	K	KH				
	Describe the dynamics of the free amino acid pool.	K	KH				
	Discuss how the absorbed amino acids get transported in the circulatory system.	K	KH				
	Discuss how to treat diseases associated with protein digestion and absorption.	K	KH				
BI5.4	**Describe common disorders associated with protein metabolism.**	**K**	**KH**	**Lecture, Small group discussion**	**Written/ Viva voce**	**Pediatrics**	
Specific Learning Objectives							
	Describe the metabolic processes including Transamination, Deamination (Oxidative and nonoxidative) and their significance in degradation of proteins and amino acids.	K	KH				
	Describe Sources and fate of ammonia including Trapping, Transport and Disposal of ammonia.	K	KH				
	Explain the basis of ammonia toxicity with clinical significance.	K	KH				

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
	Describe Significance, Site, reactions, key steps, energetics, regulation, and associated disorders of Urea cycle.	K	KH				
	Discuss disorders of urea cycle with respect to defective enzyme, clinical features, and treatment.	K	KH				
	Enumerate specialized products formed from Glycine and their importance.	K	K				
	Discuss biochemical basis of Metabolic disorders of Glycine, Glycinuria and Primary hyperoxaluria.	K	KH				
	Outline the metabolic (Catabolic and anabolic) pathway of Phenylalanine and Tyrosine and discuss the synthesis of catecholamines and other specialised products formed and their importance	K	KH				
	Explain metabolic enzyme defect, clinical features, laboratory investigations and basis of treatment in Phenylketonuria, Tyrosinemia and Alkaptonuria.	K	KH				
	Outline the metabolism (Catabolic and anabolic) of Tryptophan and discuss the synthesis of serotonin, melatonin and other specialised products formed and their importance	K	KH				
	Explain biochemical basis, clinical features and basis of treatment in Carcinoid syndrome and Hartnup's disease.	K	KH				
	Outline the metabolism of Sulphur containing amino acids cysteine and methionine including their functions, synthesis of SAM, SAH, and Homocysteine and enumerate importance of trans methylation.	K	KH				
	Discuss biochemical basis of Cystinuria, Homocystinuria, their clinical features and treatment.	K	KH				
	Outline the metabolism of branch chain amino acid and its importance	K	KH				

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
	Discuss Metabolic defects of branched chain amino acids their clinical features and treatment including Maple syrup urine disease (MSUD)	K	KH				
	Describe Formation of Nitric oxide and its therapeutic importance.	K	KH				
	Define Polyamines and enumerate their clinical importance with examples.	K	K				
	List important functions of and products formed from Histidine, Serine, Aspartate, Asparagine, glutamate, glutamine, serine, branched chain amino acids.	K	K				
	Outline one carbon metabolism and describe its significance.	K	KH				
BI5.5	**Interpret laboratory results of analytes associated with Metabolism of proteins**	**K**	**KH**	**Lecture, Small group discussion**	**Written/ Viva voce**	**General Medicine**	
Specific Learning Objectives							
	Describe Inborn errors of metabolism of protein.	K	KH				
	Enumerate normal reference interval of blood urea and its importance in interpretation of kidney disease.	K	KH				
	Enumerate normal reference interval of ammonia and its importance in interpretation of urea cycle disorders and hepatic coma.	K	KH				
	Enumerate normal reference interval of phenyl alanine in blood and urine, its importance in laboratory diagnosis of PKU.	K	KH				
	Enumerate screening tests for PKU and Explain their significance including Guthrie test and ferric chloride test.	K	KH				
	Describe role of Paper and thin layer chromatographic in identification of Phenyl alanine, Tyrosine, Tryptophan, Glycine to detect inborn errors of aminoacids.	K	KH				

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
	Enumerate normal reference interval of Homocysteine and its importance in Homocystinuria, myocardial infarction, stroke and pulmonary embolism.	K	KH				
	Enumerate normal reference interval of dopamine, norepinephrine (noradrenaline), epinephrine (adrenaline) and significance of VMA in interpretation of Pheochromocytoma.	K	KH				
	Discuss excretion of 5-hydroxy indole acetate in urine in carcinoid syndrome and its interpretation in laboratory diagnosis.	K	KH				
	Enumerate normal reference interval of branch chain amino acids and its role in diagnosis of maple syrup urine disease.	K	KH				
	Enumerate techniques used to separate and identify amino acids and proteins including their principle including chromatography and electrophoresis.	K	KH				
	List Biological Reference range of serum total protein, albumin, total globulin, C reactive protein and enumerate the causes of their increased and decreased levels.	K	KH				
	Discuss approach to the Laboratory investigation of Multiple Myeloma.	K	KH				

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
Topic: Metabolism and homeostasis	**Number of competencies: (15)**				**Number of procedures that require certification: (NIL)**		
BI6.1	**Discuss the metabolic processes that take place in specific organs in the body in the fed and fasting states.**	**K**	**KH**	**Lecture, Small group discussion**	**Written/ Viva voce**	**General Medicine**	
Specific Learning Objectives							
	Describe metabolic adaptations/stages under well fed state, fasting and starvation	K	KH				
	Describe metabolic adaptations during re feeding after prolonged starvation	K	KH				
	Describe metabolic profile of brain, adipose tissue, skeletal muscle, cardiac muscle and liver during well fed state and fasting	K	KH				
	Explain relative changes of important parameters during starvation	K	KH				
	Describe effect of exercise on metabolic profile	K	KH				
	Explain feed fast cycle/starve feed cycle	K	KH				
Topic: Chemistry of Nucleic acids and Nucleotide metabolism							
BI6.2	**Describe and discuss the metabolic processes in which nucleotides are involved**	**K**	**KH**	**Lecture, Small group**	**Written/ Viva voce**		
Specific Learning Objectives							
	Name the Purines and Pyrimidines	K	K				
	Distinguish the chemical structure of the various Purines and Pyrimidines	K	KH				
	Explain the structure of nucleosides and Nucleotides	K	KH				
	List the properties of nitrogenous bases/ nucleosides /Nucleotides	K	K				
	Enumerate the functions of Nucleotides.	K	K				

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
	Explain the importance of cAMP, cGMP, SAM, PAPS	K	KH				
	Enumerate the guanosine, uridine and cytidine derivatives and their function	K	K				
	Enumerate the synthetic nucleotide analogues and their therapeutic importance	K	K				
	Name the carbon and nitrogen sources in purine and pyrimidine ring	K	K				
	Explain purine Salvage pathways and its importance	K	KH				
	Explain pyrimidine Salvage pathways and its importance	K	KH				
	Describe the degradation pathway of Purine nucleotides	K	KH				
	State the reference range of serum and urinary uric acid	K	K				
	Enumerate the end products of pyrimidine catabolism and their significance	K	K				
BI6.3	**Describe the common disorders associated with nucleotide metabolism.**	**K**	**KH**	**Lecture, Small group discussion**	**Written/ Viva voce**		**Physiology**
Specific Learning Objectives							
	Discuss the, manifestation and biochemical basis of Lesch Nyhan syndrome.	K	KH				
	Classify Gout and enumerate the causes of Gout	K	KH				
	Discuss the biochemical basis for severe combined immunodeficiency disorder	K	KH				
BI6.4	**Discuss the laboratory results of analytes associated with gout & Lesch Nyhan syndrome**	**K**	**KH**	**Lecture, Small group discussion**	**Written/ Viva voce**	**General Medicine**	
Specific Learning Objectives							
	State the reference range of serum and urinary uric acid in male and female	K	K				

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
	State the normal urate pool and its daily turnover	K	K				
	Define Hyperuricemia and enumerate its causes	K	K				
	Interpret the laboratory results of a patient suspected with gouty arthritis	K	KH				
Topic: Vitamins							
BI6.5	**Describe the biochemical role of vitamins in the body and explain the manifestations of their deficiency**	**K**	**KH**	**Lecture, Small group discussion**	**Written/ Viva voce**	**General Medicine**	
Specific Learning Objectives							
	Define the role of vitamins in health and disease	K	K				
	Classify vitamins and enumerate all the vitamins in each class	K	KH				
	Differentiate the characteristics of water soluble and fat soluble vitamins	K	KH				
	Describe the structure and chemistry of vitamers of vitamin A and provitamin A	K	KH				
	List the sources of Vitamin A and beta carotene and RDA of vitamin A in adults and children	K	K				
	Discuss the digestion, transport and storage of vitamin A	K	KH				
	Enumerate the functions of different vitamers of vitamin A	K	K				
	Describe the events of Wald's visual cycle with the help of a neat labeled diagram	K	KH				
	Discuss the different stages of deficiency manifestations of vitamin A	K	KH				
	State the common manifestations of hypervitaminosis A	K	K				
	Enumerate the therapeutic uses of vitamin A	K	K				
	State the provitamin forms of vitamin D	K	K				

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
	List the sources of Vitamin D and RDA of vitamin D in adults and children	K	K				
	Discuss the synthesis of vitamin D and its conversion to its active form Calcitriol accurately	K	KH				
	Enumerate the reasons to justify Vitamin D is a hormone	K	K				
	Discuss the role of Calcitriol on calcium and phosphorus metabolism with reference to mineralization of bones	K	KH				
	Name the deficiency disorder of Vitamin D in children and adults	K	K				
	Discuss the causes and deficiency manifestation of Rickets	K	KH				
	Define renal rickets, vitamin D dependent rickets and Hypophosphatemic rickets	K	KH				
	Enumerate the extra skeletal functions of calcitriol	K	K				
	Name the structure and different forms of vitamin E	K	K				
	Discuss the role of alpha tocopherol as an antioxidant with special reference to its role as chain breaking antioxidant in lipid peroxidation	K	KH				
	Describe the biochemical functions of Vitamin E	K	KH				
	List the rich and moderate sources and RDA of Vitamin E	K	K				
	Describe the deficiency manifestation of Vitamin E	K	KH				
	Name the structure and different forms vitamin K	K	K				
	List the rich and moderate sources and RDA of vitamin K	K	K				
	Describe the biochemical functions of vitamin K	K	KH				
	Describe the deficiency manifestation of vitamin K	K	KH				
	Enumerate the common manifestations of Hypervitaminosis K	K	K				
	Name the ring structure and coenzymes Thiamine	K	K				
	List the rich and moderate sources and RDA of Thiamine	K	K				

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
	Describe the major biochemical functions of Thiamine	K	KH				
	Relate the function of TPP with carbohydrate metabolism	K	KH				
	Describe the deficiency manifestation of Thiamine	K	KH				
	Classify and distinguish the different types of Berberi accurately	K	KH				
	Enumerate the antagonists of Thiamine	K	K				
	Name the ring structure and coenzymes of Riboflavin	K	K				
	Illustrate the formation of FMN and FAD	K	KH				
	List the common sources and RDA of Riboflavin	K	K				
	Describe the major biochemical functions of Riboflavin giving examples of different metabolic reactions in which FMN and FAD participate	K	KH				
	Describe the deficiency manifestation of Riboflavin	K	KH				
	Enumerate the antagonists of Riboflavin	K	K				
	Name the ring structure and coenzymes of Niacin	K	K				
	Illustrate the formation of NAD^+ and $NADP^+$	K	KH				
	List the common sources and RDA of Niacin	K	K				
	Describe the biochemical functions of Niacin coenzyme NAD^+/NADH giving an example each in carbohydrate, lipid and amino acid metabolism	K	KH				
	State at least two reactions each of generation and utilization of $NADP^+$ and NADPH respectively	K	K				
	Enumerate the causes of Niacin deficiency	K	K				
	Describe the deficiency manifestation of Niacin	K	KH				
	Enumerate the Therapeutic uses and toxicity of Niacin	K	K				
	Name the components of Pantothenic acid structure	K	K				

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
	Enumerate the Coenzyme derivatives of pantothenic acid	K	K				
	Discuss the importance of acetyl CoA and Succinyl CoA pool	K	KH				
	State the sources, RDA and deficiency manifestations of pantothenic acid	K	K				
	Name the ring structure and different forms and coenzyme of Pyridoxine	K	K				
	List the common sources and RDA of Pyridoxine	K	K				
	Describe the biochemical functions of Pyridoxine with special reference to role of PLP in amino acid metabolism	K	KH				
	Describe the deficiency manifestation, therapeutic uses and toxicity manifestations of Pyridoxine	K	KH				
	Name the components in structure of Biotin	K	K				
	List the common sources and RDA of Biotin	K	K				
	Describe the biochemical functions of Biotin	K	KH				
	Mention the biotin independent reactions	K	KH				
	State the deficiency manifestations of Biotin	K	K				
	State the role of Avidin - Biotin in clinical assays	K	K				
	Mention the components in structure of Folic acid	K	K				
	Illustrate the formation of THF	K	KH				
	List the common sources and RDA of Folic acid	K	K				
	Discuss the role of folic acid in one carbon metabolism	K	KH				
	Describe the deficiency manifestation of Folic acid	K	KH				
	List the tests to assess the Folic acid deficiency status	K	K				
	Enumerate the antifolate drugs and their therapeutic uses	K	K				

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
	Name the ring structure with its components and co enzyme form of vitamin B12	K	K				
	List the common sources and RDA of Vitamin B12	K	K				
	Discuss the digestion and absorption of Vitamin B12 emphasizing the role of intrinsic factor of castle	K	KH				
	Describe the functions of Vitamin B12 stating the reaction in which methyl and adenosyl cobalamin participate	K	KH				
	Describe the biochemical basis and deficiency manifestation of Vitamin B12 and tests to assess the Vitamin B12 deficiency status	K	KH				
	Discuss the chemistry of vitamin C	K	KH				
	List the common sources and RDA of vitamin C	K	KH				
	Enumerate the biochemical functions of vitamin C	K	K				
	Describe the deficiency manifestation of vitamin C	K	KH				
	Enumerate the therapeutic uses of vitamin C	K	K				
	Enumerate the vitamin like substances and mention their structure and function	K	K				
Topic: Biological oxidation							
BI6.6	**Describe the biochemical processes involved in generation of energy in cells.**	**K**	**KH**	**Lecture, Small group discussion**	**Written/ Viva voce**		
Specific Learning Objectives							
	Define primary, secondary/intermediary and tertiary metabolism/internal respiration/cellular respiration	K	K				
	Define substrate level and oxidative phosphorylation and enumerate its sites and examples.	K	K				

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
	Define high energy compounds and enumerate its examples	K	K				
	Describe the organization, components and flow of electrons in electron transport chain	K	KH				
	Explain the chemiosmotic theory	K	KH				
	Describe the Binding change mechanism of ATP synthesis by ATP synthase	K	KH				
	Explain the regulation of ATP synthesis by oxidative phosphorylation	K	KH				
	Enumerate the inhibitors of electron transport chain and oxidative phosphorylation	K	K				
	Define uncouplers and enumerate its examples	K	K				
	Describe the role of brown adipose tissue in thermogenesis	K	KH				
Topic: Acid base balance, Water and electrolyte balance							
BI6.7	**Describe the processes involved in maintenance of normal pH, water &electrolyte balance of body fluids and the derangements associated with these.**	**K**	**KH**	**Lecture, Small group discussion**	**Written/ Viva voce**	**General Medicine**	**Physiology**
Specific Learning Objectives							
	Enumerate the functions of water	K	K				
	Outline the distribution of water in various body compartments	K	KH				
	Explain the principles of water balance by considering water input sources and water output process	K	KH				
	Explain the various regulatory mechanisms by which water balance is maintained	K	KH				
	Illustrate the distribution of electrolytes in various body compartments	K	KH				

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
	State the serum reference range for measured electrolytes; sodium, potassium, chloride and bicarbonate	K	K				
	Describe the concepts of osmolality, plasma osmolality and effective osmolality	K	KH				
	Describe the hormonal regulation of water and electrolyte balance	K	KH				
	Discuss the role of Renin – Angiotensin system in regulation of water and electrolyte balance	K	KH				
	Discuss the causes, pathophysiology and biochemical alterations in conditions of dehydration and over hydration	K	KH				
	Explain the composition and basis of dehydration management with ORS	K	KH				
	Discuss briefly the causes, pathophysiology and manifestations of dehydration	K	KH				
	Define acids and bases	K	K				
	Derive Henderson Hasselbalch's equation and discuss its importance	K	KH				
	Define buffer, buffering capacity and its significance	K	K				
	Classify buffers in the body and plasma	K	KH				
	Explain role and mechanism of bicarbonate buffer system in maintenance of pH	K	KH				
	Explain the role of phosphate buffer system and protein buffer system in maintenance of pH	K	KH				
	Explain the role of respiratory system in maintaining acid balance	K	KH				
	Explain the isohydric transport of CO2 in blood	K	KH				
	Highlight the importance of renal system in maintaining acid balance	K	KH				

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
	Discuss the key mechanisms by which kidneys help in maintaining acid base balance	K	KH				
	Define titrable acidity	K	K				
	Highlight the importance of glutaminase and ammonia in buffering acid base balance.	K	KH				
	Classify acid base disorders based on the metabolic/ respiratory component and pH	K	KH				
	Describe the causes, pathophysiology and compensatory mechanisms in metabolic acidosis	K	KH				
	Define Anion gap and write its reference range	K	K				
	Classify metabolic acidosis based on anion gap giving at least three causes in each type	K	KH				
	Describe the causes, pathophysiology and compensatory mechanisms in metabolic Alkalosis	K	KH				
	Classify metabolic alkalosis based on urinary chloride levels	K	KH				
	Recognize the relationship between serum potassium and metabolic Alkalosis	K	KH				
	Describe the causes, pathophysiology and compensatory mechanisms in Respiratory acidosis	K	KH				
	Describe the causes, pathophysiology and compensatory mechanisms in Respiratory alkalosis	K	KH				
	Define acids and bases	K	K				
	Derive Henderson Hasselbalch's equation and discuss its importance	K	KH				

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
BI6.8	**Discuss and interpret results of Arterial Blood Gas (ABG) analysis in various disorders**	**K**	**KH**	**Lecture, Small group discussion,**	**Written/ Viva voce**	**General Medicine**	
Specific Learning Objectives							
	Discuss the role of Arterial Blood Gas (ABG) analysis in diagnosing various acid base disorders / Explain the application of ABG analysis in clinical practice	K	KH				
	Interpret results of Arterial Blood Gas (ABG) analysis data in the given cases	K	KH				
Topic: Minerals							
BI6.9	**Describe the functions of various minerals in the body, their metabolism and homeostasis**	**K**	**KH**	**Lecture, Small group discussion**	**Written/ Viva voce**	**General Medicine**	**Physiology**
Specific Learning Objectives							
	Define major minerals and micro minerals	K	K				
	Enumerate RDA, dietary sources, functions, biological reference interval of calcium and phosphorus	K	K				
	Explain distribution in the body, transport across cells, absorption and regulation of metabolism of calcium and phosphorus	K	KH				
	Enumerate RDA, dietary sources, functions, proteins containing iron in the body, transport and storage forms of iron	K	K				
	Explain distribution in the body, transport across cells, absorption, mucosal block theory of iron absorption and regulation of metabolism of iron	K	KH				
	Enumerate functions, proteins containing and dietary sources of Copper, Zinc, Selenium, Magnesium and other trace elements like,	K	K				

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
	iodine, nickel, molybdenum and chromium.						
	Enumerate functions, dietary sources, RDA and biological reference interval of sodium, potassium and chloride.	K	K				
BI6.10	**Enumerate and describe the disorders associated with mineral metabolism**	**K**	**KH**	**Lecture, case discussion**	**Written/ Viva voce**	**General Medicine**	
Specific Learning Objectives							
	Enumerate the signs and symptoms, laboratory investigations and disorders associated with metabolism of calcium, phosphorus, iron, sodium and chloride	K	K				
	Describe the biochemical basis of signs and symptoms of disorders associated with metabolism of calcium, phosphorus, ,iron, sodium and chloride	K	KH				
	Interpret the mineral status of calcium, phosphorus, ,iron, sodium and chloride in normal people and in associated disorders using laboratory investigations	K	KH				
	Enumerate the disorders associated with Copper, Zinc, Selenium, Magnesium & other trace elements like, iodine, nickel, molybdenum and chromium	K	K				
Topic: Haem metabolism							
BI6.11	**Describe the functions of haem in the body and describe the processes involved in its metabolism and describe porphyrin metabolism**	**K**	**KH**	**Lecture, case discussion**	**Written/Viva voce**	**Pathology, General Medicine**	**Physiology**
Specific Learning Objectives							
	List the function of haem and haem containing compounds.	K	K				
	Describe the biosynthesis and regulation of haem synthesis	K	KH				

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
	Enumerate and classify disorders of haem metabolism, associated porphyrias and the respective enzyme defects	K	K				
	Describe the associated features and diagnosis of porphyria(Hereditary porphyria and acquired porphyria)	K	KH				
	Describe catabolism of heam including generation of bilirubin, transport to liver, and conjugation in liver, excretion of bilirubin in bile and enterohepatic circulation.	K	KH				
BI6.12	**Describe the major types of haemoglobin and its derivatives found in the body and their physiological/ pathological relevance.**	**K**	**KH**	**Lecture, Small group discussion**	**Written/Viva voce**	**Pathology, General Medicine**	**Physiology**
Specific Learning Objectives							
	Describe the structure of hemoglobin including assembly of Polypeptide chain and explain the structure function relation ships	K	KH				
	List the Function of hemoglobin	K	K				
	Explain Transport of oxygen, carbon dioxide and protons by haemoglobin, Bohr effect and Role of 2, 3 BPG.	K	KH				
	Enumerate major types of haemoglobin and their normal levels in blood of adults, neonates and children including Hb A, HbA_2,HbF and others	K	K				
	Describe the difference in polypeptide composition of Hb A, HbA_2 and HbF	K	KH				
	Enumerate Normal & Abnormal hemoglobin derivatives	K	K				
	Explain what are carboxyhaemoglobin, methemoglobin, sulf-haemoglobin and glycated haemoglobin and their clinical relevance	K	KH				
	Describe the genesis and molecular pathology of hemoglobinopathies and thalassemias.	K	KH				

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
	Enumerate the sickle cell anemia, thalassemia and other hemoglobin variants	K	K				
	Explain the pathohysiology and laboratory diagnosis of thalassemia and hemoglobinopathies	K	KH				
	Define and classify anemia	K	K				
	Enumerate the functions of myoglobin	K	K				
Topic: Organ function tests							
BI6.13	**Describe the function of the kidney, liver, thyroid and adrenal glands**	**K**	**KH**	**Lecture, Small group discussion**	**Written/ Viva voce**	**Pathology, General Medicine**	**Physiology, Human Anatomy**
Specific Learning Objectives							
	Enumerate functions of kidney, liver, thyroid and adrenal glands	K	K				
	Describe the role of kidney in excretion of metabolic wastes, maintaining water and electrolyte balance, activation of Vitamin D and synthesis of erythropoietin	K	KH				
	Define GFR- Glomerular filtration rate	K	K				
	Explain the role of glomerular filtration barrier in urine formation	K	KH				
	Describe role of liver in biochemical functions, including synthesis of plasma proteins, cholesterol, triacyl glycerol and lipoprotein synthesis	K	KH				
	Describe role of liver in metabolism involving carbohydrates, ketogenesis, protein catabolism and TCA cycle, storage of fat soluble vitamins.	K	KH				
	Describe role of liver in detoxification including ammonia, bilirubin, cholesterol, and drug metabolites	K	KH				

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
	Explain synthesis, regulation and secretion of thyroid hormones using hypothalamo-hypophysial-thyroid axis.	K	KH				
	Describe metabolic effects of thyroid hormone including calorigenic effect, Basal metabolic rate, involvement in protein synthesis and protein catabolism, involvement in carbohydrate and fatty acid metabolism	K	KH				
	Explain synthesis, secretion, transport and metabolism of adrenal cortical hormones and adrenal medullary hormones	K	KH				
	Describe Biological effects of Adrenal hormones including glucocorticoids, gonadal hormones and catecholamines as neurotransmitters	K	KH				
BI6.14	**Describe the tests that are commonly done in clinical practice to assess the function of these organs(kidney, liver, thyroid and adrenal glands)**	**K**	**KH**	**Lecture, Small group discussion**	**Written/ Viva voce**	**General Medicine Pathology**	**Physiology Human Anatomy**
Specific Learning Objectives							
	Classify renal function tests, liver function tests, thyroid function tests and adrenal function tests	K	KH				
	Enumerate the physical properties, normal and abnormal constituents of urine	K	K				
	Enumerate the tests performed to assess the physical properties, normal and abnormal constituents of urine	K	K				
	Define clearance and renal threshold	K	K				
	Classify clearance tests	K	KH				
	Explain the relationship of GFR with clearance	K	KH				

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
	Describe the procedure of clearance test and formulae to calculate clearance (endogenous creatinine/urea clearance test, inulin clearance test)	K	KH				
	Enumerate the advantages and disadvantages of clearance tests (endogenous creatinine/urea clearance test, inulin clearance test)	K	K				
	Explain the role of cystatin C as glomerular filtration marker	K	KH				
	Enumerate the markers of glomerular permeability	K	K				
	Enumerate tubular function tests and describe their procedure (specific gravity, measurement of osmolality, concentration test, dilution test, urinary acidification test)	K	KH				
	Enumerate the immunological tests in renal disease	K	K				
	Explain the clinical relevance of van Den Bergh reaction, serum total and direct bilirubin, urinary bilirubin and urobilinogen, serum total protein, albumin, A:G ratio, enzymes including AST, ALT, ALP, GGT, prothrombin time, blood ammonia, Special tests include ceruloplasmin, ferritin, alpha1antitrypsin in diagnosis of liver diseases.	K	KH				
	Enumerate the markers of excretory function, liver injury, cholestasis, chronic liver disease.	K	KH				
	Explain the clinical relevance of assay of thyroid hormones T3, T4, fT3, and fT4, plasma TSH, TRH response test and thyroid autoantibodies like anti TPO, serum hormones in thyroid diseases.	K	KH				
	Explain the clinical relevance of tests for adrenal functions including cortisol (morning and evening), urinary free cortisol, ACTH, ACTH stimulation test, 17 –hydroxy progesterone, testosterone adrenal disease.	K	KH				

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
BI6.15	**Describe the abnormalities of kidney, liver, thyroid and adrenal glands**	**K**	**KH**	**Lecture, Small group discussion**	**Written/ Viva voce**	**General Medicine Pathology**	**Physiology Human Anatomy**
Specific Learning Objectives							
	Define and enumerate the causes of uremia, azotemia, polyuria, oliguria, anuria, isosthenuria, hematuria, hemoglobinuria, proteinuria, microalbuminuria, glycosuria and explain their clinical relevance	K	K				
	Define acute renal failure and chronic renal failure	K	K				
	Explain the grading of chronic kidney disease based on GFR	K	KH				
	Describe the salient clinical features of nephritic syndrome and nephritic syndrome	K	KH				
	Enumerate different types of renal stones and their cause	K	K				
	Define, classify and enumerate salient features and laboratory investigations of jaundice	K	K				
	Differentiate prehepatic, hepatic and post hepatic jaundice using salient features and laboratory investigations	K	KH				
	Enumerate the causes of congenital and acquired hyperbilirubinemia	K	K				
	Enumerate the salient features of hepatitis, cholestasis, cirrhosis of liver, alcoholic liver disease, non alcoholic fatty liver disease, Reye syndrome.	K	K				
	Enumerate the causes and explain the salient features of primary and secondary causes of hyperthyroidism, hypothyroidism	K	KH				
	Enumerate the causes and explain the salient features of Adrenal gland- dysfunction including Cushing's disease, Addison's disease, Conn's syndrome, pheochromocytoma.	K	KH				

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
Topic: Molecular biology		**Number of competencies: (07)**			**Number of procedures that require certification: (NIL)**		
BI7.1	**Describe the structure and functions of DNA and RNA and outline the cell cycle.**	**K**	**KH**	**Lecture, Small group discussion**	**Written/ Viva voce**		
Specific Learning Objectives							
	Enumerate the functions of DNA	K	K				
	Describe the structure of Watson and Crick model of DNA with the help of a neat labelled diagram	K	KH				
	Enumerate different forms of DNA and their differences	K	K				
	Define Tm or melting temperature of DNA	K	K				
	Enumerate the difference between DNA and RNA	K	K				
	Illustrate cell cycle with the help of a neat labelled diagram	K	KH				
	Recognize the phase where replication occurs in cell cycle	K	KH				
	Describe the structure and function of mRNA	K	KH				
	Describe the function structure of tRNA with the help of a neat labelled diagram	K	KH				
	Compare and Contrast the difference between prokaryotic and eukaryotic ribosomes	K	KH				
BI7.2	**Describe the processes involved in replication & repair of DNA and the transcription & translation mechanisms**	**K**	**KH**	**Lecture, Small group**	**Lecture, Small group**		
Specific Learning Objectives							
	Define Replication	K	K				
	Enumerate at least four salient features of Replication	K	K				
	Discuss the role of various proteins in DNA replication process	K	KH				
	Describe the replication process in prokaryotes with the help of a neat	K	KH				

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
	labelled diagram						
	Illustrate the Okazaki fragment formation with the help of a neat labelled diagram	K	KH				
	Enumerate the different types and functions of eukaryotic DNA Polymerases	K	K				
	Discuss replication Process in Eukaryotes with the help of a neat labelled diagram	K	KH				
	Enumerate at least three inhibitors in each of prokaryotic and eukaryotic replication process	K	K				
	Highlight the importance of Telomerase in health and disease condition	K	KH				
	List the DNA repair mechanisms	K	K				
	Discuss Mismatch repair mechanism with the help of a neat labelled diagram and its significance	K	KH				
	Discuss base excision repair mechanism with the help of a neat labelled diagram and its significance	K	KH				
	Discuss Nucleotide repair mechanism with the help of a neat labelled diagram and its significance	K	KH				
	Define Transcription	K	K				
	Enumerate the similarities and differences between Replication and Transcription	K	K				
	Discuss the DNA templates and prokaryotic enzyme for Transcription process	K	KH				
	Discuss the importance of Promoter region in initiation and regulation of transcription process	K	KH				

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
	Describe transcription in Prokaryotes with the help of a neat labelled diagram.	K	KH				
	Enumerate the differences between prokaryotic and eukaryotic Transcription	K	K				
	Discuss Transcription process in Eukaryotes with the help of a neat labelled diagram.	K	KH				
	Discuss the posttranscriptional modifications in hnRNA with the help of a neat labelled diagram.	K	KH				
	Discuss the post transcriptional modifications in, tRNA with the help of a neat labelled diagram.	K	KH				
	Discuss the post transcriptional modifications in rRNA	K	KH				
	State the role of Ribozymes giving at least two examples	K	K				
	Discuss the role of reverse transcriptase in synthesis of cDNA.	K	KH				
	Enumerate the inhibitors of transcription process in prokaryotes and eukaryotes and state their significance	K	K				
	Define codon	K	K				
	Discuss the organization of genetic code	K	KH				
	Name the initiator and terminator codons	K	K				
	Discuss the characteristic features of Genetic Code	K	KH				
	Define translation process	K	K				
	Enumerate all the requirements of protein biosynthesis	K	K				
	Illustrate the formation of charged tRNA	K	KH				
	Discuss the initiation of protein biosynthesis with the help of a neat labelled diagram.	K	KH				

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
	Describe the elongation step of protein biosynthesis with the help of a neat labelled diagram.	K	KH				
	Describe the termination step of protein biosynthesis with the help of a neat labelled diagram.	K	KH				
	Discuss the mechanism of inhibitors of protein biosynthesis in both prokaryotes and eukaryotes	K	KH				
	Define and state the importance of polysomes	K	K				
	Discuss the common mechanisms of protein targeting to various destination and associated disorder with example of I cell disease and others.	K	KH				
	Discuss the co and post translational modifications in protein biosynthesis process	K	KH				
	Describe briefly Protein folding mechanism and role of Chaperones and Heat shock proteins and associated disorders Alzheimer's disease, Prion diseases	K	KH				
	Discuss briefly mitochondrial DNA, genes and related disorders	K	KH				
BI7.3	**Describe gene mutations and basic mechanism of regulation of gene expression**	**K**	**KH**	**Lecture, Small group**	**Lecture, Small group**	**Pediatrics**	
Specific Learning Objectives							
	Observe the estimation of SGOT, SGPT and ALP and interpret the results in given sample accurately	K	KH				
	Define Mutation	K	K				
	Classify point mutations based on the type of nucleotide altered	K	KH				
	Categorize point mutations based on consequence citing examples	K	KH				
	Explain the frameshift mutations and its consequences in protein biosynthesis	K	KH				

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
	State the importance of regulation of gene expression	K	K				
	Discuss the types of gene regulation in prokaryotes	K	KH				
	Explain the gene expression in Prokaryotes giving example of Lac Operon	K	KH				
	Explain the concept of intron, exon, cistron and Gene	K	KH				
	Enumerate at least four types of gene regulation in Eukaryotes	K	KH				
	Explain briefly the role of transcriptional activators and coregulators.	K	KH				
	Explain the gene amplification mechanism in regulation of gene expression in Eukaryotes	K	KH				
	Illustrate gene rearrangement mechanism in Antibody synthesis	K	KH				
	Discuss briefly gene regulation at RNA level	K	KH				
	Explain gene silencing by RNA interference (RNAi) in regulation of gene expression	K	KH				
	Highlight the concepts of epigenetics in regulation of gene expression	K	KH				
	Briefly explain the concepts of Concept of Genomics, proteomics and metabolomics	K	KH				
Topic: Molecular biology techniques and Gene therapy							
BI7.4	**Describe applications of molecular technologies like recombinant DNA technology, PCR in the diagnosis and treatment of diseases with genetic basis.**	**K**	**KH**	**Lecture, case discussion**	**Written/Viva voce**	**Pediatrics, General Medicine**	
Specific Learning Objectives							
	Define Recombinant DNA technology	K	K				
	Define Hybrid / chimeric/ Recombinant DNA	K	K				
	Discuss on Restriction Endonucleases and their role in recombinant DNA technology	K	KH				

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
	List and Explain the role of vectors in recombinant DNA technology	K	KH				
	Explain plasmids and their role in recombinant DNA technology	K	KH				
	Enumerate the host cells and process of DNA transfer into host cells in recombinant DNA technology	K	KH				
	Explain the process of recombinant DNA technology using plasmid as vector	K	KH				
	Discuss the construction of Genomic Library and its clinical significance	K	KH				
	Explain the formation of cDNA and construction of cDNA library	K	KH				
	Define and illustrate the role of DNA Probes	K	K				
	Enumerate the applications of Recombinant DNA technology emphasizing on its application in field of Medicine	K	KH				
	Define and discuss the process of Polymerase Chain Reaction	K	K				
	Enumerate the applications of Polymerase Chain Reaction	K	K				
	Explain Southern Blot technique and state its applications	K	KH				
	State the importance of Northern blot technique	K	K				
	State the importance of Western blot technique	K	K				
	Explain briefly DNA microarray technique and its applications	K	KH				
	Enumerate the DNA markers; SNP, VNTRs, RFLP and state their importance	K	K				
	State the importance of RFLP and write any two of its applications	K	K				
	Explain the basis of DNA fingerprinting/DNA Profiling with the help of neat labelled diagram.	K	KH				
	Define and classify gene therapy	K	K				
	Explain the vectors used in gene therapy	K	KH				

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
	Discuss the process of gene therapy giving example of gene therapy in SCID	K	KH				
	Discuss role of gene therapy in cancer treatment	K	KH				
	Discuss the therapeutic role of RNAi (RNA interference) / Antigene and Antisense therapy in cancer treatment	K	KH				
	Give an overview of Human Genome Project (HGP)	K	KH				
Topic: Xenobiotics and Detoxification							
BI 7.5	**Describe the role of xenobiotics in disease**	**K**	**KH**	**Lecture, Small group discussion**	**Written/ Viva voce**		
Specific Learning Objectives							
	Define xenobiotics and biotransformation	K	K				
	List the common xenobiotics	K	K				
	Mention the biological damage caused by xenobiotics (e.g.: mutagenic, carcinogenic, allergenic)and the disease associated (Ex Cancer, teratogenic condition due to exposure to pesticides)	K	K				
	Describe the phase 1 and phase 2 reactions involved in the metabolism of xenobiotics	K	KH				
	Explain other detoxification reactions such as reduction, hydrolysis, acetylation, methylation and reduction other detoxification reactions	K	KH				
	Explain the significance of cytochromes in detoxification	K	KH				
	Describe the metabolic consequences of alcoholism	K	KH				

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
Topic: Free Radicals and Antioxidants							
BI7.6	**Describe the anti-oxidant defence systems in the body.**	**K**	**KH**	**Lecture, Small group discussion**	**Written/ Viva voce**		
Specific Learning Objectives							
	Define Antioxidants	K	K				
	Classify antioxidants	K	KH				
	Explain enzymatic antioxidants and their significance	K	KH				
	Explain the role of Vitamin E as an antioxidant	K	KH				
	Explain the importance of Nutrient and Metabolic antioxidants	K	KH				
BI7.7	**Describe the role of oxidative stress in the pathogenesis of conditions such as cancer, complications of diabetes mellitus and atherosclerosis**	**K**	**KH**	**Lecture, Small group discussion**	**Written/ Viva voce**	**General Medicine, Pathology**	
Specific Learning Objectives							
	Define Free Radicals and Reactive Oxygen Species (ROS) and list the different types of free radicals	K	K				
	Explain the different reactions and mechanisms involved in production of free radicals	K	KH				
	Explain the free radical damage to various biomolecules with special reference to lipid peroxidation	K	KH				
	Discuss the role of oxidative stress in pathogenesis of inflammatory disorders , respiratory disorders and cataract	K	KH				
	Describe the role of oxidative stress in the pathogenesis of cancer	K	KH				
	Describe the role of oxidative stress in the pathogenesis of complications of diabetes mellitus	K	KH				

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
	Describe the role of oxidative stress in the pathogenesis of atherosclerosis	K	KH				
	Mention the test to measure oxidative stress in serum	K	K				
Topic: Nutrition		**Number of competencies: (05)**			**Number of procedures that require certification: (NIL)**		
BI8.1	**Discuss the importance of various dietary components and explain importance of dietary fibre.**	**K**	**KH**	**Lecture, Small group discussion**	**Written/ Viva voce**	**General Medicine, Pediatrics, Pathology**	
Specific Learning Objectives							
	List the important dietary components of food	K	K				
	Define calorific value of food and list the calorific value of carbohydrate , protein and fat	K	K				
	List the sources, recommended daily intake and types of dietary carbohydrates	K	K				
	Discuss about the major dietary polysaccharide and cane sugar with their clinical importance	K	KH				
	Define dietary fibre and their requirement per day and list the dietary fibres with examples	K	K				
	Enumerate the physiological effect of dietary fibre and their clinical importance	K	K				
	List the sources, different types of dietary fat and recommended daily intake	K	K				

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
	List the different sources of cholesterol and the clinical importance of cholesterol	K	K				
	Discuss about polyunsaturated fatty acids, essential fatty acids	K	KH				
	List the sources of dietary protein and recommended daily intake of protein	K	K				
	Discuss about essential amino acids	K	KH				
	Define nitrogen balance and enumerate their types	K	K				
	Enumerate the factors affecting nitrogen balance	K	K				
	List the indices used to assess the nutritional value of protein and add a note on amino acid score	K	K				
	Discuss about limiting amino acid and mutual supplementation	K	KH				
BI8.2	**Describe the types and causes of protein energy malnutrition and its effects**	**K**	**KH**	**Lecture, case discussion**	**Written/ Viva voce**	**General Medicine, Pediatrics, Pathology**	
Specific Learning Objectives							
	Classify protein energy malnutrition	K	K				
	Enumerate the causes for protein energy malnutrition	K	K				
	Describe aetiology, clinical features, investigation and treatment of kwashiorkor and add a note on biochemical mechanism underlying the disease	K	KH				
	Describe aetiology, clinical features, investigation and treatment of marasmus and add a note on biochemical mechanism underlying the disease	K	KH				

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
	Differentiate between kwashiorkor and marasmus	K	KH				
	Discuss marasmic kwashiorkor and its sequelae	K	KH				
	Discuss about treatment of protein energy malnutrition	K	KH				
	Define and list the causes of cachexia due to diseases	K	K				
BI8.3	**Provide dietary advice for optimal health in childhood and adult, in disease conditions like diabetes mellitus, coronary artery disease and in pregnancy**	**K**	**KH**	**Lecture, case discussion**	**Written/ Viva voce**	**General Medicine**	
Specific Learning Objectives							
	Define respiratory quotient and list the RQ of carbohydrate, fat, protein and mixed diet.	K	K				
	Define Basal Metabolic Rate , list the factors affecting BMR, different types of measurements of BMR and normal value of BMR	K	K				
	Describe Specific Dynamic Action (SDA)	K	KH				
	List the different types of physical activity and add a note on energy requirement of different physical activity	K	K				
	List the components of balanced diet	K	K				
	Discuss about food guide pyramid	K	KH				
	Discuss the general principles of prescribing a diet based on body weight, protein requirement, calorie requirement and SDA and importance of prescribing a diet	K	KH				
	Describe the different steps of prescribing the diet for a 60kg sedentary man	K	KH				
	Describe glycemic index with reference meal as 50gram of glucose and list the glycemic index of common foods	K	KH				

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
	Describe the different steps of prescribing the diet for diabetic patient with respect to glycemic index and add a note on dietary guidelines to be followed by the diabetic patient	K	KH				
	Describe the different steps of prescribing the diet for cardiac patient and add a note on dietary guidelines to be followed by the cardiac patient	K	KH				
	Describe the different steps of prescribing the diet for pregnant	K	KH				
	Discuss about total parenteral nutrition	K	KH				
BI8.4	**Describe the causes (including dietary habits), effects and health risks associated with being overweight/ obesity**	**K**	**KH**	**Lecture, case discussion**	**Written/ Viva voce**	**General Medicine, Pathology**	
Specific Learning Objectives							
	Define obesity with respect to body mass index (BMI)	K	K				
	List the causes for overweight and obesity including genetic causes for obesity	K	K				
	Discuss about regulators of appetite	K	KH				
	Describe the different steps of prescribing the diet for overweight and obese individual and add a note on Atkin's diet	K	KH				
	Enumerate the ill effects associated with overweight and obese	K	K				
	Discuss the steps to be followed for prevention and treatment of overweight and obese	K	KH				

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
BI8.5	**Summarize the nutritional importance of commonly used items of food including fruits and vegetables.(macro-molecules & its importance**	**K**	**KH**	**Lecture, Small group discussion**	**Written/Viva voce**	**Community medicine, General Medicine, Pediatrics**	
Specific Learning Objectives							
	List the common food items of Indian population and their ratio in diet	K	K				
	Discuss cereals and millets are the major sources of energy and their nutritional value	K	KH				
	Discuss about mutual supplementation of cereals and pulses	K	KH				
	Discuss, milk is a complete protein	K	KH				
	Discuss, egg is the reference protein	K	KH				
	Discuss the nutritional importance of fruits and vegetables	K	KH				
	Discuss, water is the essential nutrient of life	K	KH				

Topic: Extracellular Matrix	**Number of competencies: (03)**			**Number of procedures that require certification: (NIL)**			
BI9.1	**List the functions and components of the extracellular matrix (ECM).**	**K**	**KH**	**Lecture, Small group discussion**	**Written/ Viva voce**		
Specific Learning Objectives							
	List the functions of extracellular matrix	K	K				
	Enumerate the different components of ECM	K	K				
	Describe the structure of collagen	K	KH				
	Describe the structure and functions of mucopolysaccharides	K	KH				

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
	Explain the role of mucopolysaccharides in formation of extracellular matrix	K	KH				
	Enumerate the functions of Proteoglycans in extracellular matrix	K	K				
	Explain briefly the role of non-collagen proteins in extracellular matrix formation	K	KH				
	Explain the role of Laminin, Elastin and Fibronectin	K	KH				
BI9.2	**Discuss the involvement of ECM components in health and disease.**	**K**	**KH**	**Lecture, Small group discussion**	**Written/ Viva voce**	**General Medicine**	
Specific Learning Objectives							
	Enumerate the various genetic disorders from abnormalities in the synthesis of collagen	K	K				
	Discuss briefly the pathophysiology of Ehler Danlos syndrome, Marfan syndrome Alport syndrome	K	KH				
	Explain the alterations of ECM components in osteoarthritis or rheumatoid arthritis	K	KH				
BI9.3	**Describe protein targeting & sorting along with its associated disorders.**	**K**	**KH**	**Lecture, Small group discussion**	**Written/ Viva voce**		
Specific Learning Objectives							
	Discuss briefly the co-translational and post translational modification of proteins in endoplasmic reticulum resulting in sorting of proteins	K	KH				
	Discuss the mechanism involving signal sequences by which proteins are targeted to a specific destination	K	KH				
	Explain the role of Golgi apparatus in protein glycosylation and protein sorting	K	KH				

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
	Discuss the role of Chaperones and chaperonin system in protein folding	K	KH				
	State the disorders associated with defective protein targeting	K	KH				
	Discuss briefly the pathophysiology of Zellweger syndrome, Refsum's disease and I-cell disease	K	KH				
Topic: Oncogenesis and Immunity		**Number of competencies: (05)**			**Number of procedures that require certification: (NIL)**		
Topic: Biochemistry of cancer							
BI10.1	**Describe the cancer initiation, promotion, oncogenes & oncogene activation. Also focus on p53 & apoptosis**	**K**	**KH**	**Lecture, Small group discussion**	**Written/ Viva voce**	**Obstetrics &Gynaecology, General Surgery, Pathology**	
Specific Learning Objectives							
	Define cancer and enumerate the causes of cancer including physical, chemical, genetic, biological	K	K				
	Explain different types of cell signaling including G protein coupled signaling, catalytic receptor signaling, steroid receptor signaling with suitable examples of hormones and growth factors	K	KH				
	Elaborate the role of mutagens and antimutagens in etiology of cancer	K	KH				
	Explain the action of oncogens and anti oncogens.	K	KH				
	Describe the role of Oncogenic viruses and associated cancer.	K	KH				
	Explain biochemical functions of oncogenes, proto-oncogenes and oncosuppressor genes	K	KH				

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
	Compare characteristic features of tumor cells with normal cell	K	KH				
	Elaborate the role of cell cycle, abnormal cell growth and programmed cell death (apoptosis) in causing cancer	K	KH				
	Describe activation of oncogenes including point mutation of proto-oncogene and insertional mutagenesis	K	KH				
	Describe protective action of oncosuppressor gene including p53, RB gene and effects of loss of its action.	K	KH				
	Explain apoptosis including requirement for apoptosis, apoptosis mediating gene, apoptosis protecting gene and mechanism of apoptosis	K	KH				
BI10.2	**Describe various biochemical tumor markers and the biochemical basis of cancer therapy.**	**K**	**KH**	**Lecture, case discussion**	**Written/ Viva voce**	**Obstetrics &Gynecology, General Surgery, Pathology**	
Specific Learning Objectives							
	Define and classify tumor markers with suitable examples	K	K				
	Enumerate diagnostic and prognostic application of tumor markers including their elevation in benign and malignant condition	K	K				
	Explain biochemical basis of cancer therapy, anticancer drugs and mode of action including alkylating agents, antimetabolites, topoisomerase inhibitors, antibiotics, hormones, receptor blockers, radiotherapy, hybridoma technology, monoclonal antibody and their application	K	KH				

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
Topic: Immunology							
BI10.3	**Describe the cellular and humoral components of the immune system & describe the types and structure of antibody**	**K**	**KH**	**Lecture, case discussion**	**Written/ Viva voce**	**Obstetrics &Gynecology, General Surgery, Pathology**	
Specific Learning Objectives							
	Describe the central and peripheral lymphoid organs	K	KH				
	Describe briefly the cells of the lymphoreticular system and their role in cell mediated immune response.	K	KH				
	Describe the role of T-helper cells in immune responses	K	KH				
	Describe the structure and functions of different types of antibody	K	KH				
	Describe immunoglobulin class switching	K	KH				
BI 10.4	**Describe and discuss innate and adaptive immune response, self/nonself recognition and the central role of T helper cells in immune response**	**K**	**KH**	**Lecture, Small group discussion**	**Written/ Viva voce**	**General Medicine Pathology**	**Physiology**
Specific Learning Objectives							
	Describe innate and adaptive immune response	K	KH				
	Describe the role of T-helper cells in immune responses	K	KH				
	Define an antigen and discuss the various determinants of antigenicity	K	K				
	Describe the concept of self/non-self antigens	K	KH				
	Describe the concepts of immune tolerance and autoimmunity	K	KH				
	Mention the basis for graft versus host rejection	K	K				

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
BI 10.5	**Describe antigens and concepts involved in vaccine development**	**K**	**KH**	**Lecture, Small group discussion**	**Written/ Viva voce**	**Pathology Pediatrics Microbiology**	
Specific Learning Objectives							
	Define and describe the different types of vaccines	K	K				
	Describe the immunological basis of vaccine development	K	KH				
	Compare active and passive immunization	K	KH				
	Mention the various phases in vaccine development	K	K				
Topic: Biochemical Laboratory Tests	**Number of competencies: (24)**				**Number of procedures that require certification: (05)**		
BI11.1	**Describe commonly used laboratory apparatus and equipments, good safe laboratory practice and waste disposal.**	**K**	**KH**	**Lecture, Small group discussion**	**Written/ Viva voce**		
Specific Learning Objectives							
	List commonly used laboratory glassware and equipments	K	K	Demonstrate	MCQs/Viva voce		
	Indicate commonly used laboratory glassware and equipments	K	K	Small group discussion			
	Describe Good and safe laboratory practices	K	KH	Small group discussion			
	Explain the current guidelines for Biomedical waste disposal	K	KH	Demonstrate			

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
BI11.2	**Describe the preparation of buffers and estimation of pH.**	**K**	**KH**	**Lecture, Small group discussion**	**Written/ Viva voce**		
Specific Learning Objectives							
	Define buffers, molarity, normality, molar solution, normal solution, percentage solution	K	K	Small group discussion	MCQ/ Viva voce/ SEQ/		
	Identify the uses of at least 4 buffers in biochemistry laboratory	K	K	Small group discussion			
	Describe the method to prepare at least two commonly used buffers in biochemistry laboratory	K	KH	Small group discussion			
	Describe the importance of HH equation in determination of pH	K	KH	Lecture			
	Describe the principle, parts and uses of pH meter	K	KH	Demonstrate			
	Explain the procedure to estimate pH using pH meter	K	KH	Demonstrate			
	Observe the estimation of pH of different buffers using pH meter	S	KH	Demonstrate			
BI11.3	**Describe the chemical components of normal urine.**	**K**	**KH**	**Lecture, Small group discussion**	**Written/Viva voce**		
Specific Learning Objectives							
	List the chemical components of normal urine categorising under organic and inorganic constituents	K	K	Small group discussion	MCQ/ viva voce		
	List the chemical tests to be performed to detect organic and inorganic components of normal urine	K	K	Small group discussion			
	Explain the principles of all the chemical tests listed to detect organic and inorganic components of normal urine	K	KH	Small group discussion			
	Describe the clinical significance of organic constituents of normal urine.	K	KH	Small group discussion			
	Describe the clinical significance inorganic constituents of normal urine.	K	KH	Small group discussion			
	Interpret the physiological and pathological variations in organic and inorganic constituents of urine	K	KH	Small group discussion			

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
BI11.4	**Perform urine analysis to estimate and determine normal and abnormal constituents**	**S**	**P**	**DOAP session**	**Skill assessment**	**General Medicine**	**Physiology**
Specific Learning Objectives							
	Describe the ways of urine sample collection and the preservatives used	K	KH	Small group discussion	Qualitative analysis/ OSPE/ Interpret Case chart/ Viva Voce		
	Describe the physical properties of urine for volume, colour, odour, appearance, pH, Specific gravity under normal physiological conditions	K	KH	Small group discussion			**Physiology**
	Describe the physical properties of urine for colour, odour, appearance, pH, Specific gravity in abnormal/diseased conditions	K	KH	Small group discussion		**General Medicine**	
	Describe the abnormal constituents of urine in different diseases conditions	K	KH	Small group discussion		**General Medicine**	
	Perform the physical analysis of normal urine for colour odour and appearance by observation	S	P	DOAP Session			
	Estimate the pH of given urine sample using pH paper correctly by comparison of colour change by visual analysis	S	P	DOAP Session			
	Estimate the specific gravity of given urine sample using urinometer correctly with temperature correction	S	P	DOAP Session			
	Perform urine analysis to determine at least 3 organic and 3 inorganic constituents of normal urine by chemical tests according to the given procedure	S	P	DOAP Session			
	List the common abnormal constituents of urine	K	KH	Small group discussion			
	List the chemical tests to be performed to detect abnormal constituents of urine	K	KH	Small group discussion			
	Describe the principles of all the chemical tests listed to be performed to detect abnormal constituents of urine	K	KH	Small group discussion			
	Perform urine analysis to determine abnormal constituents like protein, reducing substance, ketone bodies, blood, bile salts, bile pigments by chemical tests according to the given procedure	S	P	DOAP Session			
	Perform the dipstick analysis of given urine sample for chemical constituents according to the given procedure and observe the findings	S	P	DOAP Session			

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
BI11.5	**Describe screening of urine for inborn errors & describe the use of paper chromatography**	**K**	**KH**	**Lecture, Small group discussion**	**Written/ Viva voce**	**General Medicine**	
Specific Learning Objectives							
	Enumerate the urine screening tests for inborn errors of metabolism	K	KH	Lecture		**General Medicine**	
	Identify the urine screening tests for inborn errors of metabolism as positive or negative and interpret the findings	K	KH	Demonstrate			
	Describe the principle and uses of paper chromatography	K	KH	Demonstrate			
	Interpret the given paper/TLC chromatogram of amino acids accurately	S	SH	Lab report interpreting			
	Interpret the given lab reports of screening tests for inborn errors of metabolism	S	SH	Lab report interpreting			
BI11.6	**Describe the principles of colorimetry**	**K**	**KH**	**Lecture, Small group discussion**	**Written/ Viva voce**		
Specific Learning Objectives							
	Describe the principle of photoelectric colorimeter/spectrophotometer and the application of beer lamberts law	K	KH	Small group discussion			
	Describe the parts of photoelectric colorimeter using a labelled diagram	K	KH	Demonstrate			
	Explain the differences between colorimeter and spectrophotometer	K	KH	Demonstrate			

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
BI11.7	**Demonstrate the estimation of serum Creatinine and Creatinine clearance**	**S**	**P**	**Practical**	**Skills assessment**		
Specific Learning Objectives							
	Explain the principle of Jaffe's method and modified Jaffe's method for estimation of serum Creatinine	K	KH	Small group discussion	Quantitative analysis/ OSPE/ Interpret Case chart/ Viva Voce		
	Describe the principle of Jaffe's method for estimation of urine creatinine	K	KH	Small group discussion			
	Perform the estimation of serum creatinine by Jaffe's method using colorimeter as per the standard test protocol	S	P	Practical			
	Perform the estimation of urine creatinine by Jaffe's method using colorimeter as per the standard test protocol	S	P	Practical			
	Calculate the creatinine clearance using the formula UV/P with given volume of urine output and the serum Creatinine and urine Creatinine determined in previous experiment	S	SH	Practical			
	Interpret the given serum creatinine, urine creatinine and creatinine clearance values against biological reference intervals	S	SH	Practical			
	Interpret the given serum creatinine, urine creatinine and creatinine clearance values in pathological conditions	S	SH	Practical			
	Explain the difference between measured and calculated eGFR and its clinical significance	K	KH	Small group discussion			
	Explain the use of urine Creatinine in expressing the excretion of other compounds as ratios	K	KH	Small group discussion			

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
BI11.8	**Demonstrate estimation of serum proteins, albumin and A:Gratio**	**S**	**P**	**Practical**	**Skills assessment**		
Specific Learning Objectives							
	Describe the principle of Biuret method for estimation of serum Total protein	K	KH	Small group discussion	Quantitative analysis/ OSPE/ Interpret Case chart/ Viva Voce		
	Describe the principle of Dye binding method (BCG) for estimation of serum Albumin	K	KH	Small group discussion			
	Perform the estimation of serum Total protein by Biuret method using colorimeter as per the standard test protocol	S	P	Practical			
	Perform the estimation of serum Albumin by Dye binding (BCG) method using colorimeter as per the standard test protocol	S	P	Practical			
	Calculate A:G ratio using serum total protein and serum albumin values obtained in previous experiment	S	SH	Practical			
	Interpret the given serum protein, albumin and A:G ratio values against biological reference intervals	S	SH	Small group discussion			
BI11.9	**Demonstrate the estimation of serum total cholesterol and HDL-cholesterol**	**S**	**P**	**Practical**	**Skills assessment**		
Specific Learning Objectives							
	Describe the principle of chemical/enzymatic method for estimation of serum Total Cholesterol	K	KH	Small group discussion	Quantitative analysis/ OSPE/ Interpret Case chart/ Viva Voce		
	Describe the principle of given method for estimation of serum HDL Cholesterol	K	KH	Small group discussion			
	Perform the estimation of serum Total cholesterol by chemical method using Colorimeter/Semi automated analyser as per the standard test protocol	S	P	Practical			
	Perform the estimation of serum HDL cholesterol by chemical method using Colorimeter/Semi automated analyser as per the standard test protocol	S	P	Practical			
	Interpret the given serum Total cholesterol and serum HDL Cholesterol values against biological reference intervals	S	SH	Small group discussion			

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
BI11.10	**Demonstrate the estimation of triglycerides**	**S**	**P**	**Practical**	**Skills assessment**		
Specific Learning Objectives							
	Describe the principle of given method for estimation of serum triglycerides	K	KH	Small group discussion	Quantitative analysis/ OSPE/ Interpret Case chart/ Viva Voce		
	Perform the estimation of serum triglycerides by given method using Colorimeter/Semi automated analyser as per standard test protocol	S	P	Demonstrate			
	Interpret the given serum triglycerides values against biological reference intervals	S	SH	Small group discussion			
BI11.11	**Demonstrate estimation of calcium and phosphorous**	**S**	**P**	**Practical**	**Skills assessment**		
Specific Learning Objectives							
	Describe the principle of OCPC/Dye binding method for estimation of serum Total calcium	K	KH	Small group discussion	Quantitative analysis/ OSPE/ Interpret Case chart/ Viva Voce		
	Describe the principle of given method for estimation of serum phosphorous	K	KH	Small group discussion			
	Perform the estimation of serum Total calcium by given method using Semi automated analyser as per standard test protocol	S	P	Practical			
	Perform the estimation of serum phosphorous by chemical method using colorimeter as per the standard test protocol	S	P	Practical			
	Interpret the given serum Total calcium and serum phosphorous values against biological reference intervals	S	SH	Practical			
BI11.12	**Demonstrate the estimation of serum bilirubin**	**S**	**P**	**Practical**	**Skills assessment**		
Specific Learning Objectives							
	Describe the principle of given method for estimation of serum Total Bilirubin	K	KH	Small group discussion	Quantitative analysis/ OSPE/ Interpret Case chart/ Viva Voce		
	Perform the estimation of serum Total bilirubin by given method using Colorimeter as per the standard test protocol	S	P	Practical			
	Interpret the given serum Total bilirubin values against biological reference intervals	S	SH	Small group discussion			

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
BI11.13	**Demonstrate the estimation of SGOT/SGPT**	**S**	**P**	**Practical**	**Skills assessment**		
Specific Learning Objectives							
	Describe the principle of given method for estimation of serum SGOT	K	KH	Small group discussion	Quantitative analysis/ OSPE/ Interpret Case chart/ Viva Voce		
	Describe the principle of given method for estimation of serum SGPT	K	KH	Small group discussion			
	Perform the estimation of serum SGOT by given method using Semi automated/autoanalyser as per the standard test protocol	S	P	Practical			
	Perform the estimation of serum SGPT by given method using Semi automated/autoanalyser as per the standard test protocol	S	P	Practical			
	Interpret the given serum SGOT and serum SGPT values against biological reference intervals	S	SH	Small group discussion			
BI11.14	**Demonstrate the estimation of alkaline phosphatase**	**S**	**P**	**Practical**	**Skills assessment**		
Specific Learning Objectives							
	Describe the principle of given method for estimation of serum Alkaline phosphatase	K	KH	Small group discussion	Quantitative analysis/ OSPE/ Interpret Case chart/ Viva Voce		
	Perform the estimation of serum Alkaline phosphatase by given method using Colorimeter/Semi automated analyser as per the standard test protocol	S	P	Practical			
	Interpret the given serum alkaline phosphatase values against biological reference intervals	S	SH	Small group discussion			
BI11.15	**Describe & discuss the composition of CSF**	**K**	**KH**	**Lecture, Small group discussion**	**Written/Viva voce**		
Specific Learning Objectives							
	Describe the normal physical properties of CSF	K	KH	Small group discussion	Viva voce/ SAQ		
	Describe the physical properties of CSF in abnormal conditions	K	KH	Small group discussion			

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
	Describe the normal chemical composition of CSF	K	KH	Small group discussion	Viva voce/ SAQ		
	Discuss the alterations in chemical composition of CSF in abnormal conditions	K	KH	Small group discussion			
	Tabulate the physical and chemical lab CSF findings in different pathological conditions	K	KH	Small group discussion			
BI11.16	**Observe use of commonly used equipments/techniques in biochemistry** **Laboratory including:** **•pH meter** **•Paper chromatography of aminoacid** **•Protein electrophoresis** **•TLC,PAGE** **•Electrolyte analysis by ISE** **•ABG analyzer** **•ELISA** **•Immunodiffusion** **•Autoanalyser** **•Quality control** **•DNA isolation from blood/tissue**	**S**	**KH**	**Demonstrate**	**Skill assessment**		
Specific Learning Objectives							
	Observe the estimation of pH of any two buffers using pH meter and their applications	S	KH	Demonstrate	Written/Viva voce/OSPE		
	Observe the paper chromatography of aminoacids using standard aminoacid mixtures and urine sample and their applications	S	KH	Demonstrate			
	Observe the Thin layer chromatography of aminoacids using standard aminoacid mixtures and urine sample and their applications	S	KH	Demonstrate			
	Observe the agarose gel serum protein electrophoresis of normal and abnormal serum samples and their applications	S	KH	Demonstrate			

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
	Observe the agarose gel hemoglobin electrophoresis of normal and abnormal blood samples and their applications	S	KH	Demonstrate	Written/Viva voce/OSPE		
	Observe the PAGE for separation of proteins and their applications	S	KH	Demonstrate			
	Observe the serum electrolyte analysis by ISE and their applications	S	KH	Demonstrate			
	Observe the blood gas analysis on ABG analyser and their applications	S	KH	Demonstrate			
	Observe the ELISA procedure with quantitation using plate reader and their applications	S	KH	Demonstrate	Written/Viva voce/OSPE		
	Observe the immunodiffusion technique and their applications	S	KH	Demonstrate			
	Observe the functioning of autoanalysers and describe the principles and advantages of autoanalysers in clinical biochemistry laboratory	S	KH	Demonstrate			
	Explain quality control process in clinical biochemistry laboratory and their use	K	KH	Demonstrate			
	Observe the isolation of DNA from blood/tissues and describe the application	S	KH	Demonstrate			
BI11.17	**Explain the basis and rationale of biochemical tests done in the following conditions:** **-diabetes mellitus,** **-dyslipidemia,** **-myocardial infarction,** **-renal failure, gout,** **-proteinuria,** **-nephrotic syndrome,** **-edema,** **-jaundice,** **-liver diseases, pancreatitis, disorders of acid-base balance,** **- Thyroid disorders.**	**K**	**KH**	**Lecture, Small group discussion**	**Written/ Viva voce**	**General Medicine, Pathology**	
Specific Learning Objectives							

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
	List the lab tests used to diagnose diabetes mellitus	K	K	Lecture	MCQ/SEQ/ Viva voce/ Interpret Case chart		
	List the tests used to monitor diabetes mellitus status	K	K	Lecture			
	Explain the basis and rationale of glycated haemoglobin to monitor diabetic status	K	KH	Lecture			
	Explain the basis and rationale of lipid profile in evaluation of cardiovascular risk assessment	K	KH	Lecture			
	Explain the basis and rationale of dyslipidemia in diabetes mellitus	K	KH	**ECE**			
	Enumerate the tests used to evaluate cardiac function	K	KH	Lecture			
	Explain the basis and rationale of the tests used in diagnosis of Myocardial infarction	K	KH	**ECE**			
	Explain the basis and rationale of the lab tests done to assess the functioning of kidney	K	KH	Small group Discussion			
	Discuss the commonly done renal function tests in renal failure	K	KH	**ECE**			
	Explain the basis and rationale of serum uric acid in gout	K	KH	Case based learning			
	Explain an algorithm for evaluation of proteinuria	K	KH	Chart based discussion		**Pathology**	
	Explain the basis and rationale of tests used in diagnosis of Nephrotic syndrome	K	KH	Small group Discussion			
	Explain an algorithm for laboratory evaluation of edema	K	KH	Chart based discussion		**Pathology**	
	Explain the lab evaluation for different types of Jaundice	K	KH	Small group Discussion		**Pathology**	
	Describe the lab tests done to assess the functioning of Liver	K	KH	Small group Discussion			
	Explain the basis and rationale of lab tests done in Liver disorders	K	KH	Case based learning discussion			
	Explain the basis and rationale of lab tests done to assess the functioning of pancreas	K	KH	Small group discussion			

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
	Discuss the lab tests done in pancreatic disorders	K	KH	Case based learning discussion			
	Explain the basis and rationale of lab tests done to assess the functioning of thyroid	K	KH	Small group discussion Lecture	MCQ/SEQ/ Viva voce/ Interpret Case chart	**Pathology**	
	Discuss the lab tests done in thyroid disorders	K	KH	Small group Discussion			
	Discuss the lab tests done in acid base disorders	K	KH	Small group Discussion			
	Interpret the given lab report of patient with jaundice	S	SH	**ECE** Case based learning		**Medicine**	
	Interpret the given lab report of patient with renal dysfunction	S	SH	**ECE** Case based learning		**Medicine**	
	Interpret the given lab report of pancreatic function tests	S	SH	**ECE** Case based learning			
	Interpret the given lab report of thyroid function tests	S	SH	**ECE** Case based learning		**Medicine**	
	Interpret the given lab report of cardiac function tests	S	SH	**ECE** Case based learning			
	Interpret the given lab report of patient with type 2 diabetes mellitus	S	SH	**ECE** Case based learning		**Medicine**	
	Interpret the given lab report of patient with acute chest pain presenting to emergency department	S	SH	**ECE** Case based learning		**Medicine**	

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
	Justify the given lab findings in patient presenting with arthritis	S	SH	**ECE** Case based learning			
BI11.18	**Discuss the principles of spectrophotometry.**	**K**	**KH**	**Lecture, Small group discussion**	**Written/ Viva voce**		
Specific Learning Objectives							
	Describe the principle of spectrophotometry	K	KH	Small group discussion	Viva voce		
	Describe the parts of spectrophotometer	K	KH	Demonstrate			
BI11.19	**Outline the basic principles involved in the functioning of instruments commonly used in a biochemistry laboratory and their applications.**	**K**	**KH**	**Lecture, Small group Discussion**	**Written/ Viva voce**		
Specific Learning Objectives							
	Describe the principle and uses of colorimeter	K	KH	Demonstrate	SAQ/ Viva voce		
	Describe the principle and uses of spectrophotometer	K	KH	Demonstrate			
	Describe the principle and uses of urinometer	K	KH	Demonstrate			
	Describe the principle and uses of pH meter	K	KH	Demonstrate			
	Describe the principle and uses of semiautomated analyser	K	KH	Demonstrate			
	Describe the principle and uses of fully automated chemistry analyser	K	KH	Demonstrate			
	Describe the principle and uses of fully automated immunoanalyser	K	KH	Demonstrate			
	Describe the principle and uses of centrifuge	K	KH	Demonstrate			
	Describe the principle and uses of electrophoresis apparatus	K	KH	Demonstrate			
	Describe the principle and uses of glucometer	K	KH	Demonstrate			
	Describe the principle and uses of ABG analyser	K	KH	Demonstrate			
	Describe the principle and uses of electrolyte analyser by ISE	K	KH	Demonstrate			

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
BI11.20	**Identify abnormal constituents in urine, interpret the findings and correlate these with pathological states.**	**S**	**SH**	**DOAP sessions**	**Skill assessment**		
Specific Learning Objectives							
	Identify the abnormal constituents of urine from the given chemical tests	S	SH	DOAP sessions	Qualitative analysis/ OSPE/ Interpret Case chart/ Viva Voce		
	Interpret the abnormal physical and chemical test findings of the given urine sample	S	SH	DOAP sessions			
	Correlate the abnormal urine findings in given urine sample with pathological states	S	SH	Case based discussions			
BI11.21	**Demonstrate estimation of glucose, creatinine, urea and total protein in serum.**	**S**	**SH**	**DOAP sessions**	**Skill assessment**		
Specific Learning Objectives							
	Describe the principle of enzymatic method for estimation of serum glucose	K	KH	Small group discussion	Quantitative analysis/ OSPE/ Interpret Case chart/ Viva Voce		
	Perform the estimation of serum Glucose by enzymatic method using colorimeter	S	P	DOAP sessions			
	Interpret the given serum glucose levels against biological reference intervals	S	SH	Small group discussion			
	Describe the principle of Jaffe's method for estimation of serum creatinine	K	KH	Small group discussion			
	Perform the estimation of serum creatinine by Jaffe's method using colorimeter	S	P	DOAP sessions			
	Interpret the given serum creatinine levels against biological reference intervals	S	SH	Small group discussion			
	Describe the principle of for estimation of serum urea by an end-point method	K	KH	Small group discussion			
	Perform the estimation of serum urea by an end-point method using colorimeter	S	P	DOAP sessions			
	Interpret the given serum glucose levels against biological reference intervals	S	SH	Small group discussion			
	Describe the principle of Biuret method for estimation of serum total	K	KH	Small group			

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
	protein			discussion	Quantitative analysis/ OSPE/ Interpret Case chart/ Viva Voce		
	Perform the estimation of serum Total protein by Biuret method using colorimeter	S	P	DOAP sessions			
	Interpret the given serum Total protein levels against biological reference intervals	S	SH	Small group discussion			
BI11.22	**Calculate albumin: globulin(AG) Ratio and Creatinine clearance**	**K**	**KH**	**Lecture, Small group Discussion**	**Written/ Viva voce**	**General Medicine**	
Specific Learning Objectives							
	Calculate A: G ratio using given serum total protein and serum albumin values and interpret the results.	S	SH	Practical	Quantitative analysis/ OSPE/ Interpret Case chart/ Viva Voce		
	Calculate the creatinine clearance using the formula UV/P with given volume of urine output and interpret the results.	S	SH	Practical			
BI11.23	**Calculate energy content of different food Items, identify food items with high and low glycemic index and explain the importance of these in the diet**	**K**	**KH**	**Lecture, Small group Discussion**	**Written/ Viva voce**	**General Medicine**	
Specific Learning Objectives							
	Calculate the energy content of different food items correctly based on their carbohydrate, protein and lipid content	K	KH				
	Identify food items with high and low glycemic index	K	KH				
	Explain the importance of low and high glycemic index food items in diet in normal and diseased conditions	K	KH				

BIOCHEMISTRY

Specific Learning Objectives (SLO)

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
BI11.24	**Enumerate advantages and/or disadvantages of use of unsaturated, saturated and trans fats in food.**	**K**	**KH**	**Lecture, Small group Discussion**	**Written/ Viva voce**	**General Medicine**	
Specific Learning Objectives							
	Explain the advantages and/or disadvantages of use of unsaturated fats in food.	K	KH				
	Explain the advantages and/or disadvantages of use of saturated fats in food.	K	KH				
	Explain the advantages and/or disadvantages of use of trans fats in food.	K	KH				

BIOCHEMISTRY

Topic	Competency Number	Number of Teaching hours
Relevance of Biochemistry in Medicine		1 hr (Orientation lecture)
Cell and organelles, Cell membrane, Transport across cell membranes	BI1.1	2 hrs
Enzymes	BI2.1, BI2.3, BI2.4, BI2.5, BI2.6, BI2.7	9 hrs
Chemistry of Carbohydrates	BI3.1	3 hrs
Carbohydrate metabolism	BI3.2, BI3.3, BI3.4,BI3.5, BI3.6, BI3.7, BI3.9	14 hrs
Chemistry of lipids	BI4.1, BI11.24	3 hrs
Lipid metabolism	BI4.2, BI4.3, BI4.4, BI4.6	12 hrs
Chemistry of amino acids and Proteins	BI5.1, BI5.2	3 hrs
Protein and amino acid metabolism	BI5.3, BI5.4, BI5.5, BI11.17	13 hrs
Plasma proteins	BI5.2	3 hrs
Metabolism and homeostasis	BI6.1, BI3.8, BI4.5, BI4.7, BI3.10, BI11.17	6 hrs
Biological Oxidation	BI6.6	3 hrs
Heme metabolism	BI6.11, BI6.12, BI5.2, BI11.17	7 hrs
Extracellular matrix	BI9.1, BI9.2	4 hrs
Vitamins	BI6.5	12 hrs
Minerals	BI6.9, BI6.10	8 hrs
Chemistry of Nucleic acids	BI17.1	2 hrs
Nucleotide metabolism	BI6.2, BI6.3, BI6.4	4 hrs
Molecular Biology	BI7.1, BI7.2, BI7.3, BI9.3	11 hrs
Molecular biology techniques and Gene therapy	BI7.4	4 hrs
Biochemistry of Cancer	BI10.1, BI10.2	5 hrs
Immunology	BI10.3, BI10.4, BI10.5	1 hr
Nutrition and dietetics	BI8.1, BI8.2, BI8.3, BI8.4, BI8.5, BI11.17, BI11.23, BI11.24	7 hrs
Organ function tests	BI6.13, BI6.14, BI6.15, BI11.17	11 hrs

BIOCHEMISTRY

Acid base balance	BI6.7, BI6.8, BI11.17	4 hrs
Water and electrolyte balance	BI6.7	3 hrs
Free Radicals and Antioxidants	BI7.6, BI7.7	3 hrs
Xenobiotics and Detoxification	BI7.5	1 hr
Clinical chemistry	BI11.16	2 hrs
	Total	**160 hrs**
Analysis of Normal constituents of urine	BI11.3, BI11.4	3x2=6 hrs
Analysis of Pathological Constituents of Urine	BI11.4, BI11.20	4x2=8 hrs
Urine screening tests for Inborn errors of metabolism	BI11.5, BI5.5	1x2= 2 hrs
Calculate the energy content of food items	BI11.23	1x2= 2 hrs
Estimation of plasma glucose by Enzymatic method and Glucometer as point of care testing	BI11.21, BI3.10	2x2= 4 hrs
Estimation of serum and urine creatinine by Jaffe's method, Creatinine clearance	BI11.7, BI11.21	2x2= 4 hrs
Estimation of blood urea by an end-point method	BI11.21	2x2= 4 hrs
Estimation of Total Protein and Albumin in serum by Biuret and BCG method, A:G ratio	BI11.8, BI11.21	2x2= 4 hrs
Estimation of Total cholesterol and High density lipoprotein(HDL) cholesterol	BI11.9	1x2= 2 hrs
Estimation of Triacylglycerols	BI11.10	1x2= 2 hrs
Estimation of Calcium and Phosphorous	BI11.11	1x2= 2 hrs
Estimation of Serum Bilirubin	BI11.12	1x2=2 hrs
Estimation of AST, ALT activity	BI11.13	1x2=2 hrs
Estimation of ALP activity	BI11.14	1x2=2 hrs
Lab safety and Biomedical waste disposal, Commonly used lab equipment, glassware and reagents	BI11.1	1x2= 2 hrs
Preparation of buffers and estimation of pH using pH meter	BI11.2, BI11.6, BI11.9	1x2=2 hrs
Colorimetry, Spectrophotometry	BI11.6, BI11.18	1x2=2 hrs
Clinical chemistry autoanalyser and quality control (Internal and External quality control, Precision, Accuracy, QC rules), Biological reference intervals	BI11.16, BI11.19	1x2=2 hrs

BIOCHEMISTRY

Specimen collection and preanalytical errors in clinical Biochemistry lab		1x2= 2 hrs
Serum protein electrophoresis, types and applications	BI11.16, BI11.19	1x2=2 hrs
Paper chromatography/TLC of amino acids/sugars, types and applications	BI11.5, BI5.5, BI11.16, BI11.19	1x2=2 hrs
Analysis of CSF	BI11.15	1x2=2 hrs
Estimation of serum electrolytes by ISE	BI11.16, BI11.19	1x2= 2 hrs
Blood gas analysis using ABG analyser	BI11.16, BI11.19	1x2=2 hrs
Principle, procedure and applications of ELISA, protein extraction, Blotting tec hniques, PAGE	BI11.16, BI11.19	1x2=2 hrs
Principle, procedure and applications of PCR, DNA isolation	BI11.16, BI11.19	1x2=2 hrs
	Total	**70 hrs**
Note: BI11.4, BI11.7, BI11.8, BI11.20, BI11.21 are required to certify. All competencies are core competencies. BI9.3 is a non core competency. There is overlapping of competencies between topics. Number of teaching hours is in reference to syllabus.		

Revised Ordinance Governing

MBBS Degree Course and Curriculum of

Phase-II Subjects – RS3

SRI SIDDHARTHA
ACADEMY OF HIGHER EDUCATION

(Deemed to be University, declared u/s 3 of the UGC Act, 1956)

Agalakote, B.H. Road, Tumkur – 572107, Karnataka, India

SRI SIDDHARTHA ACADEMY OF HIGHER EDUCATION

("Deemed to be University u/s 3 of the UGC Act, 1956")
Accredited 'A' Grade by NAAC
Agalakote, B.H.Road, Tumkur – 572 107.KARNATAKA, INDIA.

No. SSAHE/ACA-S&C/01/CBME/MBBS Para-Clinical/2019 Date: 23/12/2019

NOTIFICATION

Sub: Revised Ordinance pertaining to Regulations and Curriculum of MBBS Phase-II as per CBME Guidelines for RS-3 Batch.

Ref: 1). Proceedings of BOS Para-Clinical UG held on 08/06/2019
2). Proceedings of the Academic Council meeting held on 30/07/2019
3). Proceedings of 19th BOM meeting held on 21/12/2019

In exercise of the powers vested under section 6 of 6.4 of MoA / Rules of SSAHE, the Revised Ordinance pertaining to Regulations and Curriculum of MBBS Phase-II as per CBME guidelines for RS-3 batch is notified herewith as per Annexure.

By Order,

REGISTRAR

To,
Dean / Principal, Sri Siddhartha Medical College & Hospital,

Copy to
1) Office of the Chancellor, SSAHE, for kind information,
2) PA to Vice-Chancellor / PA to Registrar / Controller of Examinations / Finance Officer, SSAHE
3) All Officers of the Academy Examination Branch / Academic Section
4) Guard File / Office copy.

SECTION I

PREAMBLE

Introduction to CBME based curriculum

The Medical Council of India has revised the undergraduate medical education curriculum so that the Indian Medical Graduate is able to recognize "health for all" as a national goal and should be able to fulfill his/her societal obligations. The revised curriculum has attempted to enunciate the competencies the student must be imparted and should have learnt, with clearly defined teachinglearning strategies and effective methods of assessment. Communicating effectively and sympathetically with patients and their relatives has been visualized as a core area of the revised curriculum. These and other goals identified in the curriculum are to be implemented in all medical colleges under the ambit of Medical Council of India from August 2019 and to smoothen this process Guidelines have been prepared for its effective implementation. In response to the need for a seamless introduction of the curriculum into the Undergraduate system, all medical colleges need to upgrade the teaching-learning skills of their faculty. Earlier experience with implementation of curricular changes suggests that a carefully managed, sustainable approach is necessary to ensure that every college has access to the new skills and knowledge enunciated in the new curriculum. Faculty training and development thus assumes a key role in the effective implementation and sustenance of the envisaged curricular reforms.

INTRODUCTION

The undergraduate medical curriculum of the medical council of India is created to ensure that the medical doctor who emerges from the MBBS training program is capable of assisting the nation to achieve its goal of health for all. In addition, it aspires to ensure that the "graduate" meets or exceeds global bench-mark in knowledge, attitude, skills and communication. This intent is at the core of the Graduate Medical Regulations, 2019.

The Graduate Medical Regulations, 2019 represents the first major revision to the medical curriculum since 1997 and hence incorporates changes in science and thought over two decades. A significant advance is the development of global competencies and subject-wise outcomes that define the roles of the "Indian Medical Graduate". Learning and assessment strategies have been outlined that will allow the learner to achieve these competencies/outcomes. Effective appropriate and empathetic communication, skill acquisition, student-doctor method of learning, aligned and integrated learning and assessment are features that have been given additional emphasis in the revised curriculum.

The revised curriculum is to be implemented by all medical colleges under the ambit of Medical Council of India from August 2019. The roll out will be progressive over the duration of the MBBS course.

This document represents a compilation of the resource material that was used in the Curricular Implementation Support Program (CISP) and has attempted to provide a stepwise and comprehensive approach to implement the curriculum. It details the philosophy and the steps required in a simple and richly illustrated manner. Teaching slide decks, faculty guides and online resource material supplement this document. The document is to be used in conjunction with the Competency document, AETCOM module and the GMR document.

Indian Medical Graduate Training Programme

The undergraduate medical education programme is designed with a goal to create an "Indian Medical Graduate" (IMG) possessing requisite knowledge, skills, attitudes, values and responsiveness, so that she or he may function appropriately and effectively as a physician of first contact of the community while being globally relevant. To achieve this, the following national and institutional goals for the learner of the Indian Medical Graduate training programme are hereby prescribed:-

National Goals

At the end of undergraduate program, the Indian Medical Graduate should be able to:

(a) Recognize "health for all" as a national goal and health right of all citizens and by undergoing training for medical profession to fulfill his/her social obligations towards realization of this goal.

(b) Learn every aspect of National policies on health and devote her/him to its practical implementation.

(c) Achieve competence in practice of holistic medicine, encompassing promotive, preventive, curative and rehabilitative aspects of common diseases.

(d) Develop scientific temper, acquire educational experience for proficiency in profession and promote healthy living.

(e) Become exemplary citizen by observance of medical ethics and fulfilling social and professional obligations, so as to respond to national aspirations.

Institutional Goals

(1) In consonance with the national goals each medical institution should evolve institutional goals to define the kind of trained manpower (or professionals) they intend to produce. The Indian Medical Graduates coming out of a medical institute should:

(a) be competent in diagnosis and management of common health problems of the individual and the community, commensurate with his/her position as a member of the health team at the primary, secondary or tertiary levels, using his/her clinical skills based on history, physical examination and relevant investigations.

(b) be competent to practice preventive, promotive, curative, palliative and rehabilitative medicine in respect to the commonly encountered health problems.

(c) appreciate rationale for different therapeutic modalities; be familiar with the administration of "essential medicines" and their common adverse effects.

(d) be able to appreciate the socio-psychological, cultural, economic and environmental factors affecting health and develop humane attitude towards the patients in discharging one's professional responsibilities.

(e) possess the attitude for continued self learning and to seek further expertise or to pursue research in any chosen area of medicine, action research and documentation skills.

(f) be familiar with the basic factors which are essential for the implementation of the National Health Programmes including practical aspects of the following:

(i) Family Welfare and Maternal and Child Health (MCH)

(ii) Sanitation and water supply

(iii) Prevention and control of communicable and non-communicable diseases

(iv) Immunization

(v) Health Education

(vi) Indian Public Health Standards (IPHS), at various levels of service delivery

(vii) Bio-medical waste disposal

(viii) Organizational and/or institutional arrangements.

(g) acquire basic management skills in the area of human resources, materials and resource management related to health care delivery, hospital management, inventory skills and counseling.

(h) be able to identify community health problems and learn to work to resolve these by designing, instituting corrective steps and evaluating outcome of such measures.

(i) be able to work as a leading partner in health care teams and acquire proficiency in communication skills.

(j) be competent to work in a variety of health care settings.

(k) have personal characteristics and attitudes required for professional life such as personal integrity, sense of responsibility and dependability and ability to relate to or show concern for other individuals.

All efforts must be made to equip the medical graduate to acquire the skills as detailed in Table 11 Certifiable procedural skills – A Comprehensive list of skills recommended as desirable for Bachelor of Medicine and Bachelor of Surgery (MBBS) – Indian Medical Graduate.

Goals and Roles for the Learner

In order to fulfil the goal of the IMG training programme, the medical graduate must be able to function in the following roles appropriately and effectively:-

- Clinician who understands and provides preventive, promotive, curative, palliative and holistic care with compassion.
- Leader and member of the health care team and system with capabilities to collect analyze, synthesize and communicate health data appropriately.
- Communicator with patients, families, colleagues and community.
- Lifelong learner committed to continuous improvement of skills and knowledge.
- Professional, who is committed to excellence, is ethical, responsive and accountable to patients, community and profession.

Competency Based Training Programme of the Indian Medical Graduate

Competency based learning would include designing and implementing medical education curriculum that focuses on the desired and observable ability in real life situations. In order to effectively fulfil the roles as listed in clause 2, the Indian Medical Graduate would have obtained the following set of competencies at the time of graduation:

Clinician, who understands and provides preventive, promotive, curative, palliative and holistic care with compassion

- Demonstrate knowledge of normal human structure, function and development from a molecular, cellular, biologic, clinical, behavioural and social perspective.
- Demonstrate knowledge of abnormal human structure, function and development from a molecular, cellular, biological, clinical, behavioural and social perspective.
- Demonstrate knowledge of medico-legal, societal, ethical and humanitarian principles that influence health care.
- Demonstrate knowledge of national and regional health care policies including the National Health Mission that incorporates National Rural Health Mission (NRHM) and National Urban Health Mission (NUHM), frameworks, economics and systems that influence health promotion, health care delivery, disease prevention, effectiveness, responsiveness, quality and patient safety.
- Demonstrate ability to elicit and record from the patient, and other relevant sources including relatives and caregivers, a history that is complete and relevant to disease identification, disease prevention and health promotion.
- Demonstrate ability to elicit and record from the patient, and other relevant sources including relatives and caregivers, a history that is contextual to gender, age, vulnerability, social and economic status, patient preferences, beliefs and values.
- Demonstrate ability to perform a physical examination that is complete and relevant to disease identification, disease prevention and health promotion.
- Demonstrate ability to perform a physical examination that is contextual to gender, social and economic status, patient preferences and values.

- Demonstrate effective clinical problem solving, judgment and ability to interpret and integrate available data in order to address patient problems, generate differential diagnoses and develop individualized management plans that include preventive, promotive and therapeutic goals.
- Maintain accurate, clear and appropriate record of the patient in conformation with legal and administrative frame works.
- Demonstrate ability to choose the appropriate diagnostic tests and interpret these tests based on scientific validity, cost effectiveness and clinical context.
- Demonstrate ability to prescribe and safely administer appropriate therapies including nutritional interventions, pharmacotherapy and interventions based on the principles of rational drug therapy, scientific validity, evidence and cost that conform to established national and regional health programmes and policies for the following:

(i) Disease prevention,

(ii) Health promotion and cure,

(iii) Pain and distress alleviation, and

(iv) Rehabilitation.

- Demonstrate ability to provide a continuum of care at the primary and/or secondary level that addresses chronicity, mental and physical disability.
- Demonstrate ability to appropriately identify and refer patients who may require specialized or advanced tertiary care.
- Demonstrate familiarity with basic, clinical and translational research as it applies to the care of the patient.

Leader and member of the health care team and system

- Work effectively and appropriately with colleagues in an inter-professional health care team respecting diversity of roles, responsibilities and competencies of other professionals.
- Recognize and function effectively, responsibly and appropriately as a health care team leader in primary and secondary health care settings.
- Educate and motivate other members of the team and work in a collaborative and collegial fashion that will help maximize the health care delivery potential of the team.
- Access and utilize components of the health care system and health delivery in a manner that is appropriate, cost effective, fair and in compliance with the national health care priorities and policies, as well as be able to collect, analyze and utilize health data.
- Participate appropriately and effectively in measures that will advance quality of health care and patient safety within the health care system.
- Recognize and advocate health promotion, disease prevention and health care quality improvement through prevention and early recognition: in a) life style diseases and b) cancers, in collaboration with other members of the health care team.

Communicator with patients, families, colleagues and community

- Demonstrate ability to communicate adequately, sensitively, effectively and respectfully with patients in a language that the patient understands and in a manner that will improve patient satisfaction and health care outcomes.

- Demonstrate ability to establish professional relationships with patients and families that are positive, understanding, humane, ethical, empathetic, and trustworthy.
- Demonstrate ability to communicate with patients in a manner respectful of patient's preferences, values, prior experience, beliefs, confidentiality and privacy.
- Demonstrate ability to communicate with patients, colleagues and families in a manner that encourages participation and shared decision-making.

Lifelong learner committed to continuous improvement of skills and knowledge

- Demonstrate ability to perform an objective self-assessment of knowledge and skills, continue learning, refine existing skills and acquire new skills.
- Demonstrate ability to apply newly gained knowledge or skills to the care of the patient.
- Demonstrate ability to introspect and utilize experiences, to enhance personal and professional growth and learning.
- Demonstrate ability to search (including through electronic means), and critically evaluate the medical literature and apply the information in the care of the patient.
- Be able to identify and select an appropriate career pathway that is professionally rewarding and personally fulfilling.

Professional who is committed to excellence, is ethical, responsive and accountable to patients, community and the profession

- Practice selflessness, integrity, responsibility, accountability and respect.
- Respect and maintain professional boundaries between patients, colleagues and society.
- Demonstrate ability to recognize and manage ethical and professional conflicts.
- Abide by prescribed ethical and legal codes of conduct and practice.
- Demonstrate a commitment to the growth of the medical profession as a whole.

Broad Outline on training format

In order to ensure that training is in alignment with the goals and competencies listed in sub-clause 2 and 3 above:

- There shall be a "Foundation Course" to orient medical learners to MBBS programme, and provide them with requisite knowledge, communication (including electronic), technical and language skills.
- The curricular contents shall be vertically and horizontally aligned and integrated to the maximum extent possible in order to enhance learner's interest and eliminate redundancy and overlap.
- Teaching-learning methods shall be learner centric and shall predominantly include small group learning, interactive teaching methods and case based learning.
- Clinical training shall emphasize early clinical exposure, skill acquisition, certification in essential skills; community/primary/secondary care-based learning experiences and emergencies.
- Training shall primarily focus on preventive and community based approaches to health and disease, with specific emphasis on national health priorities such as family welfare, communicable and noncommunicable diseases including cancer, epidemics and disaster management.
- Acquisition and certification of skills shall be through experiences in patient care, diagnostic and skill laboratories.
- The development of ethical values and overall professional growth as integral part of curriculum shall be emphasized through a structured longitudinal and dedicated programme on professional development including attitude, ethics and communication.

- Progress of the medical learner shall be documented through structured periodic assessment that includes formative and summative assessments. Logs of skill-based training shall be also maintained.

Appropriate Faculty Development Programmes shall be conducted regularly by institutions to facilitate medical teachers at all levels to continuously update their professional and teaching skills, and align their teaching skills to curricular objectives.

SECTION II

Admission to the Indian Medical Graduate Programme

NATIONAL ELIGIBILITY-CUM-ENTRANCE TEST AND COMMON COUNSELLING

SECTION III

Migration

AS PER MCI GUIDELINES

SECTION IV

REGULATIONS GOVERNING MBBS DEGREE COURSE
[Eligibility for Admission, Duration, Attendance and Scheme of Examination]

1. ELIGIBILITY

As per guidelines of Medical Council of India

2. DURATION OF THE COURSE

Every learner shall undergo a period of certified study extending over 4 ½ academic years, divided into nine semesters from the date of commencement of course to the date of completion of examination which shall be followed by one year of compulsory rotating internship.

Each academic year will have at least 240 teaching days with a minimum of eight hours of working on each day including one hour as lunch break

The period of 4 ½ years is divided as follows:

• **Pre-Clinical Phase [(Phase I) - First Professional phase of 13 months** preceded by Foundation Course of one month]: will consist of preclinical subjects – Human Anatomy, Physiology, Biochemistry, Introduction to Community Medicine, Humanities, Professional development including Attitude, Ethics & Communication (AETCOM) module and early clinical exposure, ensuring both horizontal and vertical integration.

• **Para-clinical phase [(Phase II) - Second Professional (12 months**)]: will consist of Para-clinical subjects namely Pathology, Pharmacology, Microbiology, Community Medicine, Forensic Medicine and Toxicology, Professional development including Attitude, Ethics & Communication (AETCOM) module and introduction to clinical subjects ensuring both horizontal and vertical integration.

The clinical exposure to learners will be in the form of learner-doctor method of clinical training in all phases. The emphasis will be on primary, preventive and comprehensive health care. A part of training during clinical postings should take place at the *primary level* of health care. It is desirable to provide learning experiences in secondary health care, wherever possible**.** This will involve:

(a) Experience in recognizing and managing common problems seen in outpatient, inpatient and emergency settings,

(b) Involvement in patient care as a team member,

(c) Involvement in patient management and performance of basic procedures.

- **Clinical Phase – [(Phase III) Third Professional (28 months)]**

(a) Part I (13 months) - The clinical subjects include General Medicine, General Surgery, Obstetrics & Gynaecology, Pediatrics, Orthopaedics, Dermatology, Otorhinolaryngology, Ophthalmology, Community Medicine, Forensic Medicine and Toxicology, Psychiatry, Respiratory Medicine, Radiodiagnosis & Radiotherapy and Anaesthesiology & Professional development including AETCOM module.

(b) Electives (2 months) - To provide learners with opportunity for diverse learning experiences, to do research/community projects that will stimulate enquiry, self directed experimental learning and lateral thinking [9.3].

(c) Part II (13 months) - Clinical subjects include:

i. Medicine and allied specialties (General Medicine, Psychiatry, Dermatology Venereology and Leprosy (DVL), Respiratory Medicine including Tuberculosis)

ii. Surgery and allied specialties (General Surgery, Orthopedics [including trauma]), Dentistry, Physical Medicine and rehabilitation, Anaesthesiology and Radiodiagnosis)

iii. Obstetrics and Gynecology (including Family Welfare)

iv. Pediatrics

v. AETCOM module

- **A learner shall not be entitled to graduate after 10 years of his/her joining of the first part of the MBBS course**

<table>
<tr><td>Jan</td><td>Feb</td><td>Mar</td><td>Apr</td><td>May</td><td>Jun</td><td>Jul</td><td>Aug</td><td>Sep</td><td>Oct</td><td>Nov</td><td>Dec</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>Foundation course</td><td colspan="4">I MBBS</td></tr>
<tr><td colspan="8">I MBBS</td><td>Phase I exam</td><td colspan="3">II MBBS</td></tr>
<tr><td colspan="8">II MBBS</td><td>Phase II exam</td><td colspan="3">III MBBS PART 1</td></tr>
<tr><td colspan="9">III MBBS PART 1</td><td>Phase III part 1 exam</td><td colspan="2">Electives and skills</td></tr>
<tr><td colspan="12">III MBBS PART 2</td></tr>
<tr><td colspan="2">Phase III part 2 exam</td><td></td><td colspan="9">Internship</td></tr>
<tr><td colspan="3">Internship</td><td colspan="9"></td></tr>
</table>

DISTRIBUTION OF SUBJECTS BY PROFESSIONAL PHASE

Phase and Year of MBBS Training	Subjects and new teaching elements	Duration	University examination
First professional MBBS	• Foundation course (1month) • Human Anatomy, Physiology& Biochemistry • Introduction of Community Medicine, Humanities • Early Clinical Exposure • Attitude. Ethics and Communication Module (AETCOM)	1+13 months	I Professional

Second professional MBBS	• Pathology, Microbiology, Pharmacology, Forensic Medicine And Toxicology • Introduction to clinical subjects including community Medicine • Clinical postings • AETCOM	12 months	II Professional
Third professional MBBS-part I	• General Medicine ,General Surgery, OBG, Paediatrics, Orthopaedics, Dermatology, Pyschiatry, Otorhinolaryngology, Ophthalmology, Community Medicine, Forensic Medicine and Toxicology, Respiratory Medicine, Radiodiagnosis & Radiotherapy, Anaesthesiology • Clinical Subjects /postings • AETCOM	12 months	III Professionalpart I
Electives	• Electives ,skills and assessment	2 months	
Third professional MBBS-part II	• General Medicine ,Paediatrics, General Surgery, Orthopaedics, Obstetrics and Gynaecology, including Family welfare and allied specialties • Clinical Postings /subjects • AETCOM	13 months	III Professionalpart II

3. ATTENDANCE

Every candidate should have **attendance not less than 75% of the total classes conducted in theory and not less than 80% of the classes conducted in practical** in each calendar year calculated from the date of commencement of the term to the last working day as notified by the University in each of the subjects prescribed to be eligible to appear for the university examination. **75% attendance in Professional Development Programme (AETCOM Module) is required for eligibility to appear for final examination in each professional year** (vide Medical Council of India Notification on Graduate Medical Education (Amendment) Regulations 2019, published in the Gazette of India Part III, Section 4, Extraordinary issued on 4th November 2019)

- In subjects that are taught in more than one phase – the learner must have 75% attendance in theory and 80% in practical in each phase of instruction in that subject.
- If an examination comprises more than one subject (for e.g., General Surgery and allied branches), the candidate must have 75% attendance in each subject and 80% attendance in each clinical posting.
- Learners who do not have at least 75% attendance in the electives will not be eligible for the Third Professional - Part II examination.

The Principal should notify at the College the attendance details at the end of each term without fail under intimation to this University.

A candidate lacking in the prescribed attendance and progress in any subject(s) in theory or practical should not be permitted to appear for the examination in that subject(s).

4. TEACHING HOURS

Second Professional teaching hours

Subjects	Lecture (hours)	Small group learning (Tutorials / Seminars) /Integrated learning (hours)	Clinical Postings (hours) *	Self - Directed Learning (hours)	Total (hours)
Pathology	80	138	-	12	230
Pharmacology	80	138	-	12	230
Microbiology	70	110	-	10	190
Community Medicine	20	30	-	10	60
Forensic Medicine and Toxicology	15	30	-	5	50
Clinical Subjects	75**	-	540***		615
Attitude, Ethics & Communication Module (AETCOM)		29	-	8	37
Sports and extracurricular activities	-	-	-	28	28
Total	-	-	-	-	1440

* At least 3 hours of clinical instruction each week must be allotted to training in clinical and procedural skill laboratories. Hours may be distributed weekly or as a block in each posting based on institutional logistics.

** 25 hours each for Medicine, Surgery and Gynecology & Obstetrics.

***The clinical postings in the second professional shall be 15 hours per week (3 hrs per day from Monday to Friday).

*Early clinical exposure hours to be divided equally in all three subjects **AETCOM module shall be a longitudinal programme

- Teaching and learning shall be aligned and integrated across specialties both vertically and horizontally for better learner comprehension. Learner centered learning methods should include

problem oriented learning, case studies, community oriented learning, self- directed and experiential learning.

- Didactic lectures shall not exceed one third of the schedule; two third of the schedule shall include interactive sessions, practicals, clinical or/and group discussions. The learning process should include clinical experiences, problem oriented approach, case studies and community health care activities.

SCHEME OF EXAMINATION

5. INTERNAL ASSESSMENT:

General guidelines

- Regular periodic examinations shall be conducted throughout the course. There shall be **minimum three internal assessment examinations** in each Para-clinical subject and no less than two examinations in each clinical subject in a professional year.
- An end of posting clinical assessment shall be conducted for each clinical posting in each professional year
- The **third internal examination** should be conducted on the lines of the university examination.
- When subjects are taught in more than one phase, the internal assessment must be done in each phase and must contribute proportionately to final assessment. For example, General Medicine must be assessed in second Professional, third Professional Part I and third Professional Part II, independently.

- An **average of the marks scored in the three internal assessment examinations** will be considered as the final internal assessment marks.
- Learners **must secure not less than 40 % marks in theory and practical separately and not less than 50% marks of the total marks (combined in theory and practical)** assigned for internal assessment in a particular subject in order to be eligible for appearing at the final University examination of that subject.
- A candidate who has not secured requisite aggregate in the internal assessment may be subjected to remedial measures by the institution. If he/she successfully completes the remediation measures, he/she is eligible to appear for University Examination. Remedial measures shall be completed before submitting the internal assessment marks online to the university.
- **Internal assessment marks will reflect under separate head in the marks card of the university examination. The internal assessment marks (theory/practical) will not be added to the marks secured (theory/practical) in the university examination for consideration of pass criteria.**
- **The results of IA should be displayed on the notice board within a 1-2 week of the test.**
- Learners must have completed the required certifiable competencies for that phase of training and completed the logbook appropriate for that phase of training to be eligible for appearing at the final university examination of that subject.

6. UNIVERSITY EXAMINATION

Examination schedule

<table>
<tr><th>Jan</th><th>Feb</th><th>Mar</th><th>Apr</th><th>May</th><th>Jun</th><th>Jul</th><th>Aug</th><th>Sep</th><th>Oct</th><th>Nov</th><th>Dec</th></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>Foundation course</td><td colspan="4">I MBBS</td></tr>
<tr><td colspan="8">I MBBS</td><td>Phase I exam</td><td colspan="3">II MBBS</td></tr>
<tr><td colspan="8">II MBBS</td><td>Phase II exam</td><td colspan="3">III MBBS PART 1</td></tr>
<tr><td colspan="9">III MBBS PART 1</td><td>Phase III part 1 exam</td><td>Electives and skills</td></tr>
<tr><td colspan="12">III MBBS PART 2</td></tr>
<tr><td colspan="2">Phase III part 2 exam</td><td></td><td colspan="9">Internship</td></tr>
<tr><td colspan="3">Internship</td><td colspan="9"></td></tr>
</table>

General guidelines

- University examinations are to be designed with a view to ascertain whether the candidate has acquired the necessary knowledge, minimal level of skills, ethical and professional values with clear concepts of the fundamentals which are necessary for him/her to function effectively and appropriately as a physician of first contact. Assessment shall be carried out on an objective basis to the extent possible.

- Nature of questions will include different types such as structured essays (Long Answer Questions - LAQ), Short Essays and Short Answers Questions (SAQ). Marks for each part should be indicated separately.

- The learner **must secure at least 40% marks in each of the two papers with minimum 50% of marks in aggregate (both papers together) to pass.**

- Practical/clinical examinations will be conducted in the laboratories. The objective will be to assess proficiency and skills to conduct experiments, clinical examination, interpret data and form logical conclusion, wherever applicable.

- **There shall be one main examination in an academic year and a supplementary to be held not later than 90 days after the declaration of the results of the main examination.**

- **A learner shall not be entitled to graduate after 10 years of his/her joining of the first part of the MBBS course.**

- **A maximum number of four permissible attempts would be available to clear the first Professional University examination, whereby the first Professional course will have to be cleared within 4 years of admission to the said course. Partial attendance at any University examination shall be counted as an availed attempt.**

- **SECOND PROFESSIONAL EXAMINATION:**

  The second professional examination shall be held at the end of second professional training (11 months), in the subjects of Pathology, Microbiology and Pharmacology.

Phase II

Table: Examination components, Subjects and Distribution of Marks

THEORY	PATHOLOGY	PHARMACOLOGY	MICROBIOLOGY
Written Paper			
No. of Papers & Maximum Marks for each paper.	**2×100=200**	**2×100=200**	**2×100=200**
Total theory	**200**	**200**	**200**
PRACTICAL			
1. Practical exam	**80**	**80**	**80**
2. Viva-voce	**20**	**20**	**20**
Total practical	**100**	**100**	**100**
Internal assessment*			
Internal Assessment (Theory)	**40**	**40**	**40**
Internal assessment (Practical)	**40**	**40**	**40**

*** Internal assessment marks will reflect under separate head in the marks card of the university examination.**

Type, number of questions and distribution of marks for written paper

TYPES OF QUESTION	NUMBER OF QUESTIONS	MARKS FOR EACH QUESTION
Multiple Choice Questions	**20**	**1**
Long essay	**2**	**10**
Short essay	**6**	**5**
Short answers	**10**	**3**

7. SUBMISSION OF LABORATORY RECORD

a. At the time of Practical Examination each candidate shall submit to the Examiners his/her laboratory record duly certified by the Head of the Department as a bonafide record of the work done by the candidate.

8. ELIGIBILITY TO APPEAR FOR EXAMINATION

The following criteria to be met by the students to be eligible for the university exams:

a. Shall have undergone satisfactorily the approved course of study in the subject/subjects for the prescribed duration.
b. Shall have attended not less than 75% of the total classes conducted in theory and not less than 80% of the total classes conducted in practical separately to become eligible to appear for examination in that subject/subjects.
c. Minimum of 40% marks to be obtained **separately** in theory and practical AND atleast 50% marks of the total marks **combined** in theory and practical assigned for internal assessment is to be obtained in a particular subject to appear for university exam. (average of 3 internal assessments theory and practical separately)
d. Learners must have completed the required certifiable competencies for that phase of training and completed the logbook appropriate for that phase of training to be eligible for appearing at the final university examination of that subject.

9. CRITERIA FOR PASS

For declaration of pass in any subject in the University examination, a candidate shall pass both in Theory and Practical examination components separately as stipulated below:

- The Theory component consists of marks obtained in University Written papers only. For a pass in theory, a candidate must secure at least 40% marks in each of the two papers with minimum 50% of marks in aggregate (both papers together).
- For a pass in practical examination, a candidate shall secure not less than 50% marks in aggregate, i.e., marks obtained in university practical examination and viva voce added together.

- **Internal assessment marks will reflect as a separate head of passing at the university examination.**
- A candidate not securing 50% marks in aggregate in Theory or Practical examination + viva in a subject shall be declared to have failed in that subject and is required to appear for both Theory and Practical again in the subsequent examination in that subject.

10. DECLARATION OF CLASS

a. A candidate having appeared in all the subjects in the same examination and passed that examination in the first attempt and secures 75% of marks or more of **grand total marks (university examination + internal assessment)** prescribed will be declared to have passed the examination with distinction.

b. A candidate having appeared in all the subjects in the same examination and passed that examination in the first attempt and secures 65% of marks or more but less than 75% of **grand total marks (university examination + internal assessment)** prescribed will be declared to have passed the examination in First Class.

c. A candidate having appeared in all the subjects in the same examination and passed that examination in the first attempt and secures 50% of marks or more but less than 65% of **grand total marks (university examination + internal assessment)** prescribed will be declared to have passed the examination in Pass Class.

d. A candidate passing a university examination in more than one attempt shall be placed in Pass class irrespective of the percentage of marks secured by him/her in the examination.

Note: Please note fraction of marks will not be rounded off for clauses (a), (b) and (c)

Appointment of Examiners

(a) Person appointed as an examiner in the particular subject must have at least four years of total teaching experience as assistant professor after obtaining postgraduate degree in the subject in a college affiliated to a recognized/approved/permitted medical college.

(b) For the Practical/ Clinical examinations, there shall be at least four examiners for 100 learners, out of whom not less than 50% must be external examiners. Of the four examiners, the senior-most internal examiner will act as the Chairman and coordinator of the whole examination programme so that uniformity in the matter of assessment of candidates is maintained. Where candidates appearing are more than 100, two additional examiners (one external & one internal) for every additional 50 or part there of candidates appearing, be appointed.

(c) In case of non-availability of medical teachers, approved teachers without a medical degree (engaged in the teaching of MBBS students as whole-time teachers in a recognized medical college), may be appointed examiners in their concerned subjects provided they possess requisite doctorate qualifications and four years teaching experience (as assistant professors) of MBBS students. Provided further that the 50% of the examiners (Internal & External) are from the medical qualification stream.

(d) External examiners may not be from the same University.

(e) The internal examiner in a subject shall not accept external examinership for a college from which external examiner is appointed in his/her subject.

(f) A University having more than one college shall have separate sets of examiners for each college, with internal examiners from the concerned college.

(g) External examiners shall rotate at an interval of 2 years.

(h) There shall be a Chairman of the Board of paper-setters who shall be an internal examiner and shall moderate the questions.

(i) All eligible examiners with requisite qualifications and experience can be appointed internal examiners by rotation in their subjects.

(j) All theory paper assessment should be done as central assessment program (CAP) of concerned university.

(k) Internal examiners should be appointed from same institution for unitary examination in same institution. For pooled examinations at one centre approved internal examiners from same university may be appointed.

(l) The grace marks up to a maximum of five marks may be awarded at the discretion of the University to a learner for clearing the examination as a whole but not for clearing a subject resulting in exemption.

SECTION V

COURSE CONTENTS

PATHOLOGY

PREAMBLE

Pathology bridges the gap between basic sciences and clinical medicine, so a proper understanding of pathological processes is crucial for medical practice. The main goals of undergraduate pathology teaching have always been to provide a language or framework for the description of disease and to provide students with knowledge of the functional and structural changes in disease so that clinical signs and symptoms can be understood and interpreted. The understanding of the pathological basis of disease is so vital for practice of medicine that its teaching needs to be integrated throughout the medical course.

The new Graduate Medical Education Regulations provides for an outcome driven undergraduate curriculum, to provide the orientation and the skills necessary for life-long learning, to enable proper care of the patient. The undergraduate medical curriculum has thus evolved from being teacher-centered to student centered, from discipline-based to integrated core and options-based and from passive acquisition of knowledge imparted by teachers to active problem-based learning. Skill acquisition is an indispensable component of the learning process in modern medicine. However the need for development of professional attitude, behaviour and communication skills befitting a medical practitioner is well perceived and emphasized by the new curriculum with incorporation of AETCOM sessions.

Pathology teaching is perceived as fact-based, but the present curriculum will evolve pathology into clinical oriented specialty. The key elements of the curriculum such as integrating basic science with clinical oriented learning, direct faculty feedback, interactive with experiential learning and competency-based student assessments will bring in remarkable changes in pathology teaching. These changes will provide the Indian Medical Graduate a strong foundation in the pathophysiological basis of disease which is critical to the formation of a competent clinician.

TABLE OF CONTENTS

Sl. No.	Content
1	Goal and Objectives
2	Terms and teaching guidelines
3	Minimum teaching hours
4	Competencies, Specific learning Objectives, Teaching learning and Assessment methods
5	Topics for Self Directed Learning
6	Certifiable competencies
7	Time table
8	Competency distribution in each block
9	List of Instruments , Specimens, Slides and Charts
10	Topics for Integration
11	Distribution of AETCOM module
12	Evaluation methodology
13	Annexures
	Annexure I- Log book format
	Annexure II- Model Question paper
	Annexure III – Recommended Books

GOAL AND OBJECTIVES

GOAL

The broad goal of the teaching of undergraduate student in Pathology is to provide the students with a comprehensive knowledge of the mechanisms and causes of disease, in order to enable him/her to achieve complete understanding of the natural history and clinical manifestations of disease.

OBJECTIVES

a) KNOWLEDGE

At the end of the course, the student should be able to:-

1. Describe the structure and ultrastructure of a sick cell, mechanisms of cell degeneration, cell death and repair and be able to correlate structural and functional alterations.
2. Explain the pathophysiological processes which govern the maintenance of homeostasis, mechanisms of their disturbance and the morphological and clinical manifestations associated with it.
3. Describe the mechanisms and patterns of tissue response to injury such that she/he can appreciate the pathophysiology of disease processes and their clinical manifestations.
4. Correlate normal and altered morphology (gross and microscopic) of different organ systems in common diseases to the extent needed for understanding of disease processes and their clinical significance.

b) SKILLS

At the end of the course, the student should be able to:-

1. Describe the rationale and principles of technical procedures of the diagnostic laboratory tests and interpretation of the results.
2. Perform the simple bed-side tests on blood, urine and other biological fluid samples.
3. Draw a rational scheme of investigations aimed at diagnosing and managing the cases of common disorders.
4. Understand biochemical/physiological disturbances that occur as a result of disease in collaboration with preclinical departments.

c) INTEGRATION

At the end of training he/she should be able to integrate the causes of disease and relationship of different etiological factors (social, economic and environmental) and that contribute to the natural history of diseases most prevalent in India.

TERMS AND TEACHING GUIDELINES

1. LECTURE

Is a teaching learning method which includes traditional and interactive sessions involving a large group.

2. SMALL GROUP DISCUSSION

Is an instructional method involving small groups of students in an appropriate learning context.

3. DOAP (Demonstration- Observation - Assistance - Performance)

A practical session that allows the student to observe demonstration,assists the performer, perform in a simulated environment, perform under supervision or perform independently.

4. SELF DIRECTED LEARNING

A process in which individuals take the initiative, with or without the help of others in diagnosing their learning needs, formulating learning goals, identifying human and material sources for learning , choosing and implementing appropriate learning methods.

5. SKILL ASSESSMENT

Is a session that assesses the skill of the student including those in the practical laboratory, skills lab, skills station that uses mannequins/ paper case/simulated patients/real patients as the context demands.

6. CORE

A competency that is necessary in order to complete the requirements of the subject (traditional must know)

7. NON – CORE

A competency that is optional in order to complete the requirements of the subject (traditional nice (good) to know/ desirable to know.

MINIMUM TEACHING HOURS

Sl No	Topic	Number of competencies	Lecture	SGD/ Tutorial	DOAP	SDL
1	Introduction to pathology	3	1	2	0	0
2	Cell Injury and Adaptation	8	5	4	4	0
3	Amyloidosis	2	0	2	0	0
4	Inflammation	4	4	2	4	0
5	Healing and repair	1	1	1	0	0
6	Hemodynamic disorders	7	4	2	2	1
7	Neoplastic disorders	5	6	4	4	0
8	Basic diagnostic Cytology	3	0	4	0	0
9	Immunopathology and AIDS	7	5	2	0	0
10	Infections and Infestations	4	1	6	0	1
11	Genetic and Paediatric diseases	3	3	0	0	0
12	Environmental and Nutritional diseases	3	2	0	0	2
13	Introduction to haematology	5	2	0	2	1
14	Microcytic Anaemia	3	1	0	1	0
15	Macrocytic Anaemia	4	1	0	1	0
16	Haemolytic Anaemia	7	3	2	2	0
17	Aplastic anaemia	2	1	0	0	0
18	Leucocytic disorders	2	2	4	2	0
19	Lymph node and spleen	7	1	4	2	0
20	Plasma cell disorder	1	0	2	0	0
21	Haemorrhagic disorders	5	3	2	0	0
22	Blood banking and transfusion	6	2	0	2	0
23	Clinical Pathology	3	0	2	2	0
24	Gastrointestinal Tract	7	4	4	2	0
25	Hepatobiliary system	6	2	4	2	0

26	Respiratory system	7	5	2	2	0
27	Cardiovascular system	10	2	8	2	0
28	Urinary tract	16	4	6	2	1
29	Male genital tract	5	2	0	2	0
30	Female genital tract	9	4	2	2	0
31	Breast	4	2	0	2	0
32	Endocrine system	9	2	4	2	4
33	Bone and soft tissue	5	2	2	2	2
34	Skin	4	1	0	0	0
35	Central Nervous system	3	1	2	2	0
36	Eye	1	-	-	-	-
	Revision at the end of first block (one)	-	-	-	2	-
	Revision at the end of second block (one)	-	-	-	2	-
	Revision at the end of third block (three)	-	-	-	6	-
	Total	**181**	**79**	**79**	**60**	**12**

COMPETENCIES, SPECIFIC LEARNING OBJECTIVES, TEACHING LEARNING AND ASSESSMENT METHODS

TOPIC- INTRODUCTION TO PATHOLOGY (PA-1)

PA 1.1 - Describe the role of a pathologist in diagnosis and management of disease

TLM : SGD – 2 hrs **Assessment:** Written, Viva voce

1.1.1. Describe the role of Pathologist in diagnosis and treatment.

1.1.2. Describe the role of Pathology in correlating clinical findings and disease process
.

1.1.3. Enumerate different sections of Pathology and its diagnostic role.

PA 1.2 - Enumerate common definitions and terms used in Pathology

PA 1.3 - Describe the history and evolution of Pathology

TLM : Lecture – 1 hr **Assessment:**Written, Viva voce

1.2.1. Define Etiology, Pathogenesis and Pathology.

1.2.2. Correlate the clinical findings with pathology.

1.3.1. Describe the brief history and evolution of Pathology

TOPIC- CELL INJURY AND ADAPTATION (PA-2)

PA 2.1 - Demonstrate knowledge of the causes, mechanisms, types and effects of cell injury and their clinical significance

TLM : Lecture – 1 hr **Assessment:**Written, Viva voce

2.1.1. Enumerate the different causes of cell injury.

PA 2.2 - Describe the etiology of cell injury. Distinguish between reversible-irreversible injury: mechanisms; morphology of cell injury

TLM : Lecture – 1 hr **Assessment:**Written, Viva voce

2.2.1. Describe the pathogenesis of cell injury.(At least a few causes)

2.2.2. Enumerate the microscopic differences between reversible and irreversible cell injury.

2.2.3. Describe the mechanism of reversible and irreversible cell injury.

2.2.4. Enumerate few biochemical changes frequently associated with irreversible cell injury.

2.2.5. What is lipofuscin and mention its importance.

PA 2.3 - Intracellular accumulation of fats, proteins, carbohydrates, pigments

TLM : Lecture – 1 hr **Assessment:**Written, Viva voce

2.3.1. Enumerate the causes of intracellular and extracellular hyaline deposition

2.3.2. Enumerate the causes of fatty degeneration. Name the organs affected.

2.3.3. Discuss the pathogenesis of fatty liver. Describe the morphology of fatty liver.

2.3.4. Enumerate special stains used to demonstrate Fat, Glycogen and Calcium.

2.3.5 Enumerate the causes of intracellular accumulation of proteins.

2.3.6. Enumerate different types of pigments in health and disease.

2.3.7. Name special stains to demonstrate hemosiderin and melanin.

PA 2.4 - Describe and discuss Cell death- types, mechanisms, necrosis, apoptosis(basic as contrast with necrosis),autolysis

TLM : Lecture – 1 hr **Assessment:**Written, Viva voce

2.4.1. Define necrosisand enumerate the different types with examples. Discuss the morphology and fate of coagulative, liquefactive and caseous necrosis.

2.4.2. Discuss the pathogenesis and morphology of fat necrosis.

2.4.3. Discuss the pathogenesis and pathology of Apoptosis.

2.4.4. Describe the clinical significance of Apoptosis and Necrosis.

2.4.5. Difference between apoptosis and necrosis.

2.4.6. Define autolysis. Explain the mechanism with example.

PA 2.5 - Describe and discuss pathologic calcifications, gangrene

TLM : DOAP – 2 hrs
Assessment: Skill Assessment

2.5.1. Describe the pathogenesis of Fatty liver in various conditions.

2.5.2. Describe the macro and microscopic changes in Fatty liver.

2.5.3. Enumerate causes of Pathologic calcifications.

2.5.4. Differentiate between metastatic and dystrophic calcifications.

2.5.5. Recognize calcification grossly, microscopically and name special stains for calcium.

2.5.6. Enumerate several conditions associated with extracellular and intracellular protein accumulations.

2.5.7. Enumerate causes of accumulation of Glycogen and special stains used for detection of glycogen.

2.5.8. Identify the changes of fatty degeneration in Liver.

2.5.9. Identify and describe Monckeberg's medial calcification.

2.5.10. Identify the gross specimen of gangrene.

2.5.11. Enumerate the types of gangrene and discuss their pathogenesis.

PA 2.6 - Describe and discuss cellular adaptations: atrophy, hypertrophy, hyperplasia, metaplasia, dysplasia

TLM : SGD – 2 hrs

Assessment: Written, Viva voce

2.6.1. Define the term Adaptation.

2.6.2. Mention different types of Adaptation

2.6.3. Describe the pathogenesis and clinical significance of each Adaptation.

PA 2.7 - Describe and discuss the mechanisms of cellular aging and apoptosis

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

2.7.1. Discuss the mechanism of cellular aging

PA 2.8 - Identify and describe various forms of cell injuries, their manifestations and consequences in gross and microscopic Specimens.

TLM : DOAP – 2 hrs
Assessment: Skill Assessment

2.8.1. Identify the morphology of coagulative, liquefactive and caseous necrosis.

2.8.2. Define and morphologically identify different types of Gangrene.

2.8.3. Correlate clinical presentation and morphological changes in Necrosis and Gangrene

PA 2.0 - Cell Injury

TLM : Tutorial/ Formative assessment – 2 hrs **Assessment:**Written, Viva voce

TOPIC: AMYLOIDOSIS (PA- 3)

PA 3.1 - Describe the pathogenesis and pathology of amyloidosis

PA 3.2 - Identify and describe amyloidosis in a pathology specimen

TLM : SGD – 2 hrs **Assessment:**Written, Viva voce

3.1.1. Describe the pathogenesis and pathology of Amyloidosis.

3.1.2. Enumerate the diseases associated with amyloid deposition and name the common organs affected.

3.1.3. Enumerate the Investigations used in diagnosis of amyloidosis.

3.1.4. Special stains used to demonstrate the amyloid

3.2.1. Identify the gross specimen of amyloid kidney/spleen. (Optional)

3.2.2. Identify the amyloid deposition microscopically.

3.2.3. Interpretation of the special stain done.

TOPIC: INFLAMMATION (PA- 4)

PA 4.1 - Define and describe the general features of acute and chronic inflammation including stimuli, vascular and cellular events

TLM : Lecture – 2 hr
Assessment: Written, Viva voce

4.1.1. Define and differentiate acute and chronic inflammation.

4.1.2. Describe the pathogenesis of acute and chronic inflammation.

4.1.3. Describe the various vascular and cellular events involved in acute inflammation.

4.1.4. Define and describe chemotaxis, phagocytosis and opsonisation.

PA 4.2 - Enumerate and describe the mediators of acute inflammation

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

4.2.1. Enumerate the chemical mediators of acute inflammation.

4.2.2. Describe the role of important mediators of acute inflammation.

4.2.3. Enumerate the sequelae of acute inflammation.

4.2.4. Describe the clinical outcome of acute inflammation.

PA 4.3 - Define and describe chronic inflammation including causes, types enumerate types, non-specific and granulomatous; and examples of each

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

4.3.1. Define the chronic inflammation

4.3.2. Enumerate types of chronic inflammation

4.3.3. Describe the pathogenesis of granuloma formation.

4.3.4. Enumerate the examples of granulomatous diseases

PA 4.4 - Identify and describe acute and chronic inflammation in gross and microscopic specimens.

TLM : DOAP – 2 hrs
Assessment: Skill Assessment

4.4.1. Identify the granulomas microscopically.

4.4.2. Identify epithelioid cell and giant cell microscopically.

4.4.3. Identify the different morphological features of chronic inflammation.

4.4.4. Recognize grossly the granulomatous inflammation of lymph node, Actinomycosis.

4.4.5. Identify and describe the specimen of acute appendicitis and pneumonia.

4.4.6. Recognize microscopic features of acute inflammation

PA4.0 - Inflammation

TLM : Tutorial/ Formative assessment – 2 hrs
Assessment: Written, Viva voce

TOPIC: HEALING AND REPAIR (PA- 5)

PA 5.1 - Define and describe the process of repair and regeneration including wound healing and its types

TLM : Lecture – 1 hr **Assessment:**Written, Viva voce

5.1.1. Define and differentiate regeneration from repair.

5.1.2. Describe various steps in healing.

5.1.3. Differentiate primary healing from secondary healing

5.1.4. Describe various steps involved in fracture healing.

5.1.5. The classification of tissues based on the proliferative capacity of cells.

5.1.6. Complications and factors affecting wound healing.

5.1.7. Complications and factors affecting healing of fracture.

5.1.8. Mechanism of repair by connective tissue deposition

PA 5.0 - Healing and repair

TLM : Tutorial/ Formative assessment – 1 hr
Assessment: Written, Viva voce

TOPIC: HEMODYNAMIC DISORDERS (PA-6)

PA 6.1 - Define and describe edema, its types, pathogenesis and clinical correlations.

TLM : Lecture – 1 hr **Assessment:**Written, Viva voce

6.1.1. Define edema and explain the fluid balance.

6.1.2. Mention the differences between transudate and exudate.

6.1.3. Enumerate the types of edema and describe their pathophysiology(Renal, Cardiac, pulmonary, cerebral, nutritional and hepatic), clinical features and consequences

PA 6.2 - Define and describe hyperemia, congestion, hemorrhage

TLM : DOAP – 1 hr
Assessment: Skill Assessment

6.2.1. Identify the difference between hyperemia, congestion and hemorrhage

6.2.2. Enumerate the causes and identify the gross and microscopy of Chronic venous congestion Lung, Liver and Spleen

6.2.3. Enumerate the consequences of congestion and haemorrhage.

PA 6.3 - Define and describe shock, its pathogenesis and its stages

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

6.3.1. Define Shock and discuss the concept of adequate cardiac output and its importance

6.3.2. Enumerate the types and discuss the mechanisms of the various types of shock

6.3.3. Describe the various stages of shock with their clinical manifestations and morphological changes in various organs

PA-6.4a - Define and describe normal haemostasis

TLM : SDL – 1 hr
Assessment: Written, Viva voce

6.4a.1. Describe the role of endothelial cells, platelets and coagulation factors in maintaining hemostasis.

6.4a.2. Write the coagulation cascade

PA 6.4b - Describe the etiopathogenesis and consequences of thrombosis

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

6.4b.1. Define thrombosis and explain Virchow's triad

6.4b.2. Enumerate hypercoagulable states.

6.4b.3. List the types of thrombus and its morphology

6.4b.4. List the differences between a postmortem and antemortem thrombus.

6.4b.5. Fate of thrombus and its clinical consequences

6.4b.6. Difference between arterial and venous thrombus.

6.4b.7. Contribution of alteration in blood flow to thrombosis.

PA 6.5 - Define and describe embolism and its causes and common types.

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

6.5.1. Define an embolism and enumerate the differences between a thrombus and an embolus.

6.5.2. Enumerate the types of embolism and describe their etiopathogenesis with examples and clinical manifestations

PA 6.6 - Define and describe Ischaemia/infarction its types, etiology, morphologic changes and clinical effects.

PA 6.7 - Identify and describe the gross and microscopic features of infarction in a pathology specimen

TLM : DOAP – 1 hrs
Assessment: Skill Assessment

6.6.1. Define infarction and enumerate the different types of infarction.

6.6.2. Describe the etiopathogenesis of infarction

6.7.1. Identify the gross features of infarction in various organs

6.7.2. Identify the microscopic features of infarction in various organs

PA6.0 - Hemodynamic Disorder

TLM : Tutorial/ Formative assessment – 2 hrs
Assessment: Written, Viva voce

TOPIC: NEOPLASTIC DISORDERS (PA-7)

PA 7.1a - Define and classify neoplasia, biologic behavior and spread.

TLM : Lecture – 2 hr
Assessment: Written, Viva voce

7.1a.1. Define and classify neoplasia

7.1a.2. For both males and females, list in descending order:
- the five most common cancers
- the five most common causes of cancer death

7.1a.3. Define and differentiate with examples: Ectopia, Heterotopia, Hamartoma, Teratoma.

7.1a.4. Outline the classification and nomenclature for benign and malignant neoplasms using appropriate prefixes and suffixes and indicating specific exceptions to rules of nomenclature.

7.1a.5. Discuss the differences between benign and malignant neoplasms.

7.1a.6. Enumerate the routes of spread. Compare and contrast the route of spread of Carcinoma versus Sarcoma with exceptions.

7.1a.7. Define metastasis and discuss the mechanism of metastasis.

7.1a.8. Define staging and grading of tumours and its clinical significance.

7.1a.9. List the most common sites of origin of: adenoma, adenocarcinoma, squamous cell carcinoma, melanoma

PA 7.1b - Describe the characteristics of neoplasia including gross, microscopy. Differentiate between benign from malignant neoplasm

TLM : DOAP – 4 hrs
Assessment: Skill Assessment

7.1b.1. Identify the gross and microscopic features of benign neoplasms.

7.1b.2. Identify the gross and microscopic features of malignant neoplasms

PA 7.2 - Describe the molecular basis of cancer.

TLM : Lecture – 2 hr
Assessment: Written, Viva voce

7.2.1. Describe the cell cycle.

7.2.2. Write a note on cell signalling pathways

7.2.3. Describe role of proto-oncogenes, oncogenes and onco-proteins in carcinogenesis

7.2.4. Describe the role of important tumour suppressor genes(Rb gene, p53, APC) in carcinogenesis.

7.2.5. Enumerate and discuss the steps of multistep carcinogenesis.

PA 7.3 - Enumerate carcinogens and describe the process of carcinogenesis

TLM : Lecture – 2 hr
Assessment: Written, Viva voce

7.3.1. Define and classify carcinogens.

7.3.2. Classify and enumerate chemical carcinogens

7.3.3. Describe the mechanism of chemical carcinogenesis

7.3.4. Discuss the mechanism of Radiation carcinogenesis (UV rays and Ionizing radiation) and name the associated cancers.

7.3.5. Classify microbial carcinogens and enumerate associated neoplasms.

7.3.6. Discuss the mechanism of microbial carcinogenesis.

7.3.7. Elaborate the role of the following in the development of human cancer in relation to at least 2 specific neoplasms associated with each:

- physical agents
- chronic inflammatory conditions
- hormones

PA-7.4 - Describe the effects of tumour on the host including paraneoplastic syndrome

PA-7.5 - Describe immunology and the immune response to cancer

TLM : SGD – 2 hrs
Assessment: Written, Viva voce

7.4.1. Discuss the local and systemic effects of tumour on the host.

7.4.2. Define and discuss Paraneoplastic syndromes.

7.4.3. Discuss the different types and clinical significance of tumour markers and their role in lab diagnosis.

7.5.1. Describe host immune response to cancer.

PA7.0 - Neoplasia

TLM : Tutorial/ Formative assessment – 2 hrs
Assessment: Written, Viva voce

TOPIC: BASIC DIAGNOSTIC CYTOLOGY (PA-8)

PA 8.1 - Describe the diagnostic role of cytology and its application in clinical care.

TLM : SGD – 2 hrs **Assessment:**Written, Viva voce

8.1.1. Describe the procedure of FNAC, its advantages and limitations.

PA 8.2 - Describe the basis of exfoliative cytology including the technique & stains used

PA 8.3 - Observe a diagnostic cytology and its staining and interpret the specimen

TLM : SGD – 2 hrs **Assessment:**Written, Viva voce

8.2.1. Describe the sites of exfoliative cytology (PAP smear, body fluids, sputum, urine)

8.2.2. Enumerate the steps and name different stains used in pap stain.

8.3.1. Observe and interpret the cytology reports

TOPIC: IMMUNOPATHOLOGY AND AIDS (PA-9)

PA 9.1 - Describe the principles and mechanisms involved in immunity.

TLM : SGD – 1 hr **Assessment:**Written, Viva voce

9.1.1. Define innate immunity.

9.1.2. Describe the components and mechanism of innate immunity.

9.1.3. Define and enumerate the types of Adaptive immunity.

9.1.4. Describe the cells of the immune system and their role in immunity.

9.1.5. Describe the mechanism of humoral immunity.

9.1.6. Describe the mechanism of cell mediated immunity.

9.1.7. Define and describe the mechanism of Major Histocompatibility Complex (MHC).

PA 9.2 - Describe the mechanism of hypersensitivity reactions.

TLM : SGD – 1 hr **Assessment:**Written, Viva voce

9.2.1. Define and classify Hypersensitivity reactions.

9.2.2. Describe the mechanism of Type I hypersensitivity reactions with schematic diagram with examples.

9.2.3. Describe the mechanism of Type IIhypersensitivity reactions with schematic diagram with examples

9.2.4. Describe the mechanism of Type IIIhypersensitivity reactions with schematic diagram with examples

9.2.5. Describe the mechanism of Type IV hypersensitivity reactions with schematic diagram with examples.

9.2.6. Categorize the given clinical scenarios into different types of hypersensitivity reactions.

PA 9.3 - Describe the HLA system and the immune principles involvedin transplant and mechanism of transplant rejection.

TLM : Lecture – 1 hr **Assessment:**Written, Viva voce

9.3.1. Define HLA system and Major Histocompatibility Complex molecules.

9.3.2. Describe the function of MHC class I and class II molecules.

9.3.3. Describe the mechanism ofrecognition and rejection of allografts with schematic diagrams.

9.3.4. Describe the mechanism and morphology of rejection of Kidney grafts.

9.3.5. Describe the methods of increasing graft survival.

9.3.6. Describe the mechanism and types of Graft Versus Host Disease (GVHD)

PA 9.4 - Define autoimmunity. Enumerate autoimmune disorders.

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

9.4.1. Define Autoimmune disease

9.4.2. Classify Autoimmune diseases

9.4.3. Define and enumerate the types of immunologic tolerance.

9.4.4. Describe the mechanism of central tolerance.

9.4.5. Describe the mechanism of peripheral tolerance.

9.4.6. Describe the mechanism of autoimmunity with a neat labelled schematic diagram.

9.4.7. Describe the general features associated with autoimmune diseases

PA 9.5 - Define and describe the pathogenesis of Systemic Lupus Erythematosus

TLM : Lecture – 1 hr **Assessment:**Written, Viva voce

9.5.1. Define SLE and enumerate and describe various types of SLE

9.5.2. Describe the revised criteria for classification of SLE

9.5.3. Enumerate and describe the spectrum of autoantibodies in SLE.

9.5.4. Describe the etiopathogenesis of SLE with a neat labelled schematic diagram.

9.5.5. Describe the morphological features in SLE.

9.5.6. Enumerate the clinical features of SLE.

PA 9.6 - Define and describe the pathogenesis and pathology of HIV and AIDS

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

9.6.1. Define AIDS and Describe the epidemiology and aetiology of AIDS.

9.6.2. Describe the structure and life cycle of HIV with a neat labelled schematic diagram.

9.6.3. Describe the pathogenesis of HIV and pathology of AIDS with schematic diagram.

9.6.4. Enumerate and describe the clinical features of AIDS.

9.6.5. Enumerate and describe AIDS defining opportunistic infections.

9.6.6. Enumerate neoplasms found in patients with HIV infections

PA 9.7 - Define and describe the pathogenesis of other common autoimmune diseases

TLM : Lecture – 1 hr **Assessment:**Written, Viva voce

9.7.1. Define Sjögren Syndrome.

9.7.2. Describe the etiopathogenesis of Sjögren syndrome.

9.7.3. Describe the clinical features of morphological findings in Sjögren syndrome.

9.7.4. Enumerate organ specific autoimmune diseases and systemic autoimmune diseases

TOPIC-INFECTIONS AND INFESTATIONS (PA-10)

PA 10.1 - Define and describe the pathogenesis and pathology of malaria.

PA 10.2 - Define and describe the pathogenesis and pathology of cysticercosis.

TLM : SGD – 2 hrs **Assessment:**Written, Viva voce

10.1.1. Enumerate parasite causing malaria

10.1.2. Describe the life cycle of malarial parasite

10.1.3. Describe morphology of malarial parasite

10.1.4. Discuss the lab diagnosis in malaria.

10.2.1. Enumerate cause of cysticercosis

10.2.2. Discuss etiopathology of cysticercosis

PA 10.3 - Define and describe the pathogenesis and pathology of leprosy

TLM : Lecture – 1 hr **Assessment:**Written, Viva voce

10.3.1. Define and Classify Leprosy

10.3.2. Discuss the pathogenesis of leprosy

10.3.3. Differentiate morphology of tuberculoid and lepromatous leprosy

PA 10.4 - Define and describe the pathogenesis and pathology of common bacterial, viral, protozoal and helminthic diseases.

TLM : SGD – 4 hrs **Assessment:**Written, Viva voce

10.4.1. Describe general principle of microbial pathogenesis

10.4.2. Describe the aetiology, pathogenesis and organ changes in Typhoid fever.

10.4.3. Describe the aetiology, clinical features and organ changes in Bacillary dysentery.

10.4.4. Describe the clinical manifestations, mode of transmission, salient diagnostic methods of Measles, Herpes and Rabies

10.4.5. Describe the aetiology, clinical manifestations and organ changes in Amoebic dysentery and amoebic abscess

10.4.6. Describe the aetiology, clinical features, organ changes and laboratory findings in Filariasis/ Hydatid cyst

10.4.7. Describe the aetiology, pathogenesis, organ changes, clinical manifestations and laboratory diagnosis of fungal lesions(Candida, Aspergillosis, Mucormycosis, Cryptococcosis)

10.4.8. Describe the causative agent, types, clinical manifestations and laboratory diagnosis of Syphilis.

PA 10 - Study on Corona Virus

TLM : SDL – 1 hr **Assessment:**Written, Viva voce

TOPIC: GENETIC AND PAEDIATRIC DISEASES (PA-11)

PA 11.1 - Describe the pathogenesis and features of common cytogenetic abnormalities and mutations in childhood

TLM : Lecture – 1 hr **Assessment:**Written, Viva voce

11.1.1. Define gene, mutation, the types of mutation

11.1.2. Discuss the transmission patterns of single gene disorders with examples for each

11.1.3. Describe the normal Karyotype

11.1.4. Discuss the various structural abnormalities of chromosomes

PA 11.2 - Describe the pathogenesis and pathology of tumour and tumour like conditions in infancy and childhood

TLM : Lecture – 1 hr **Assessment:**Written, Viva voce

11.2.1. Describe the tumour like lesions in infancy and childhood with few examples for each.

11.2.2. Name some common benign tumours in children.

11.2.3. Discuss the morphology of common benign tumours.

11.2.4. Classify common childhood malignant tumours.

11.2.5. Discuss the molecular pathogenesis and morphology of Neuroblastoma.

11.2.6. Discuss the molecular pathogenesis and syndromes associated with Wilm's tumour.

11.2.7. Enumerate the morphology and clinical features in Wilm's tumour.

11.2.8. Discuss the molecular pathogenesis and morphology of Retinoblastoma.

PA 11.3 - Describe the pathogenesis of common storage disorders in infancy and childhood

TLM : Lecture – 1 hr **Assessment:**Written, Viva voce

11.3.1. Discuss the pathogenesis lysosomal storage diseases.

11.3.2. Name the lysosomal storage diseases and associated enzyme deficiency.

11.3.3. Describe the morphology of Niemann-Pick disease, Gaucher's disease

TOPIC: ENVIRONMENTAL AND NUTRITIONAL DISEASES (PA-12)

PA 12.1 - Enumerate and describe the pathogenesis of disorders caused by air pollution, tobacco and alcohol.

TLM : SDL – 1 hr **Assessment:**Written, Viva voce

12.1.1. Enumerate the disorders caused by air pollution, tobacco and alcohol

12.1.2. Describe the pathogenesis of disorders caused by air pollution, tobacco and alcohol.

12.1.3. Enumerate the health effects of indoor and outdoor air pollution.

12.1.4. Describe the organ specific effects of tobacco smoke constituents.

12.1.5. Describe the acute and chronic adverse effects of alcohol abuse.

PA 12.2 - Describe the pathogenesis of disorders caused by protein calorie malnutrition and starvation

TLM : Lecture – 1 hr **Assessment:**Written, Viva voce

12.2.1. Enumerate causes and types of Malnutrition

12.2.2. Describe the clinical features and morphology of Marasmus and Kwashiorkar

PA 12.3 - Describe the pathogenesis of obesity and its consequences

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

12.3.1. Define Obesity and describe the pathogenesis of Obesity with reference to the role of leptins, adipose tissue and gut hormones.

12.3.2. Discuss the clinical consequences of Obesity.

TOPIC: INTRODUCTION TO HAEMATOLOGY (PA-13)

PA-13.1 - Describe hematopoiesis and extramedullary hematopoiesis.

TLM : SDL – 1 hr
Assessment: Written, Viva voce

13.1.1. Describe normal hematopoiesis

13.1.2. List sites of extra medullary hematopoiesis.

PA-13.3 - Define and classify anemia

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

13.3.1. Define Anemia.

13.3.2. Classify anemia based on morphology and etiology

PA-13.4 - Enumerate and describe the investigation of anemia

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

13.4.1. Write the investigations required for the laboratory diagnosis of anemia

13.4.2. What is CBC, ESR, PCV

13.4.3. Peripheral smear and bone marrow examination in the diagnosis of anemias

PA 13.2 - Describe the role of anticoagulants in hematology

PA 13.5 - Perform, Identify and describe the peripheral blood picture in anemia

TLM : DOAP – 2 hrs
Assessment: Skill Assessment

13.2.1. List and write the mechanism of action of anticoagulants used in hematology.

13.2.2. Discuss the appropriate use of anticoagulants in hematology and blood bank.

13.5.1. Make a peripheral blood smear and stain the smear using Leishman stain

13.5.2. Write the principle of Romanowsky stains

13.5.3. Identify blood cells in a normal peripheral blood smear.

TOPIC: MICROCYTIC ANAEMIA (PA-14)

PA-14.1 - Describe iron metabolism

PA 14.2 - Describe the etiology, investigations and differential diagnosis of microcytic hypochromic anemia

TLM : Lecture – 1 hr **Assessment:**Written, Viva voce

14.1.1. Describe iron metabolism

14.2.1. List the causes of microcytic hypochromic anemia.

14.2.2. Describe the investigations in a case of iron deficiency anemia.

14.2.3. Discuss the differential diagnosis of microcytic hypochromic anemia.

14.2.4. Write the peripheral blood and bone marrow findings in iron deficiency anemia.

PA-14.3 - Identify and describe the peripheral smear in microcytic anemia

TLM : DOAP – 2 hrs
Assessment: Skill Assessment

14.3.1. Identify and describe the peripheral blood picture of microcytic anemia

TOPIC: MACROCYTIC ANAEMIA (PA-15)

PA 15.1 - Describe the metabolism of Vitamin B12 and the etiology and pathogenesis of B12 deficiency

PA 15.2 - Describe laboratory investigations of macrocytic anemia

PA 15.4 - Enumerate the differences and describe the distinguishing features of megaloblastic and non-megaloblastic macrocytic anemia

TLM : Lecture – 1 hr **Assessment:**Written, Viva voce

15.1.1. Describe the metabolism of vitamin B12.

15.1.2. Discuss the etiology and pathogenesis of vitamin B12 deficiency.

15.2.1. List the causes of macrocytic anemia

15.2.2. Describe laboratory investigations of macrocytic anemia.

15.2.3. Describe the peripheral blood and bone marrow picture in megaloblastic anemia

15.4.1. Discuss the etiology of megaloblastic anemia

15.4.2. Describe the distinguishing features of megaloblastic and non megaloblastic macrocytic anemia.

15.4.3. Enumerate the differences between megaloblastic and non megaloblastic macrocytic anemia.

PA 15.3 - Identify and describe the peripheral smear in macrocytic anemia

TLM : DOAP – 2 hrs
Assessment: Skill Assessment

15.3.1. Identify and describe the peripheral blood picture of macrocytic anemia

TOPIC: HEMOLYTIC ANAEMIA (PA-16)

PA-16.1 - Define and classify hemolytic anemia

PA 16.2 - Describe the pathogenesis and clinical features and hematologic indices of hemolytic anemia

PA 16.5 - Describe the peripheral blood picture in different hemolytic Anaemias

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

16.1.1. Define hemolytic anemia

16.1.2. List the causes of inherited and acquired hemolytic anemia by mechanisms.

16.2.1. Describe the pathogenesis of intravascular and extravascular hemolytic anemias

16.2.2. Enumerate clinical features in hemolytic anemia

16.2.3. Enumerate the laboratory investigations in haemolytic anaemia.

16.5.1. Describe the peripheral blood picture in different hemolytic anemias with respect to RBC morphology.

PA-16.3 - Describe the pathogenesis, features, hematologic indices and peripheral blood picture of sickle cell anemia and thalassemia

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

16.3.1. Describe the pathogenesis, hematologic features and laboratory diagnosis of sickle cell anemia

16.3.2. Describe the pathogenesis, hematologic features and laboratory diagnosis of thalassemia.

16.3.3. List the features to distinguish thalassemia from iron deficiency anemia.

PA-16.4a - Describe the etiology pathogenesis, hematologic indices and peripheral blood picture of Acquired hemolytic anemia

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

16.4a.1. Explain the etiopathogenesis of acquired hemolytic anemia.

16.4a.2. Descibe the laboratory diagnosis of acquired hemolytic anemia.

PA-16.4b - Case based discussion

TLM : SGD – 2 hrs
Assessment: Written, Viva voce

1.Sickle cell anemia

2. Thalassemia

3. Hereditary spherocytosis

4. Autoimmune hemolytic anemia

PA-16.6 - Prepare a peripheral blood smear and identify hemolytic anaemia from it

TLM : DOAP – 2 hrs
Assessment: Skill Assessment

16.6.1. Prepare a peripheral smear

16.6.2. Stain the smear

16.6.3. Interpret the smear findings

16.6.4. Interpret the clinical and hematological features in the chart of hemolytic anemia.

TOPIC: APLASTIC ANEMIA (PA-17)

PA-17.1 - Enumerate the etiology, pathogenesis and findings in aplastic anemia

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

17.1.1. Enumerate the causes of aplastic anemia

17.1.2. Enumerate the pathogenesis of aplastic anemia

17.1.3. Enumerate the bone marrow findings in aplastic anemia

PA-17.2 - Enumerate the indications and describe the findings in bone marrow aspiration and biopsy

17.2.1. List the types of bone marrow study

17.2.2. List the indications and contraindications for bone marrow study

17.2.3. Describe the bone marrow findings with specific examples of involvement

TOPIC: LEUKOCYTE DISORDERS (PA-18)

PA-18.1 - Enumerate and describe the causes of leucocytosis leucopenia, lymphocytosis and leukemoid reactions

TLM : SGD – 2 hrs
Assessment: Written, Viva voce

18.1.1. List the causes for leucocytosis and leucopenia

18.1.2. Define leukemoid reaction

18.1.3. List the differences between leukemoid reaction and chronic myeloid leukemia

PA-18.2 - Describe the etiology, genetics, pathogenesis classification, features, hematologic features of acute and chronic leukemia

TLM : Lecture – 2 hrs
Assessment: Written, Viva voce

TLM : DOAP – 2 hrs
Assessment: Skill Assessment

18.2.1. Describe the etiology, genetics, pathogenesis of acute and chronic leukemia

18.2.2. Enumerate the classification of acute and chronic leukemia (FAB and WHO)

18.2.3. Describe the hematologic features of acute and chronic leukemia

18.2.4. Briefly describe Chronic myeloproferative disorders

18.2.5. Demonstrate hematological findings and interpret charts

18.2.6. Identify the hematological findings in the smears

PA- 13, 14, 15, 16, 17, 18 - Anaemias and leucocyte disorders

TLM : Tutorial/ Formative assessment – 2 hrs
Assessment: Written, Viva voce

TOPIC: LYMPH NODE AND SPLEEN (PA-19)

PA-19.1 - Enumerate the causes and describe the differentiating features of lymphadenopathy

PA-19.6 - Enumerate and differentiate the causes of splenomegaly.

PA-19.7 - Identify and describe the gross specimen of an enlarged spleen

TLM : SGD – 2 hrs
Assessment: Written, Viva voce/Skill assessment

19.1.1. Enumerate causes of lymphadenopathy.

19.1.2. Describe the differentiating features of lymphadenopathy

19.6.1. Categoriseand enumerate the causes of Splenomegaly

19.6.2. Discuss the differential diagnosis of an enlarged spleen in a given specimen

19.7.1. Identify Gross features of enlarged enlarged spleen in a given specimen

PA-19.2 - Describe the pathogenesis and pathology of tuberculous lymphadenitis

TLM : SGD – 2 hrs **Assessment:**Written, Viva voce

19.2.1. Describe Pathogenesis and pathology of tuberculous lymphadenitis

PA-19.3 - Identify and describe the features of tuberculous lymphadenitis in a gross and microscopic specimen

PA-19.5 - Identify and describe the features of Hodgkin's lymphoma in a gross and microscopic specimen.

TLM : DOAP – 2 hrs
Assessment: Skill Assessment

19.3.1. Identify the gross features of tuberculous lymphadenitis in a given specimen

19.3.2. Describe gross and microscopy of tuberculous lymphadenitis

19.3.3. Describe microscopy of tuberculous lymphadenitis with neat diagram

19.3.4. Mention the special stain used to demonstrate tubercle bacilli

19.5.1. Identify microscopy of Hodgkin’s Lymphoma of a given slide with neat diagram

PA-19.4 - Describe and discuss the pathogenesis, pathology and the differentiating features of Hodgkin's and non-Hodgkin's lymphoma

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

19.4.1. Classify Lymphoid neoplasm (WHO) and enumerate the clinical features of Lymphoma

19.4.2. Classify Hodgkin’s lymphoma

19.4.3. Enumerate the clinical features of Hodgkin’s Lymphoma

19.4.4. Write on etiopathogenesis of Hodgkin’s lymphoma

19.4.5. Describe the gross & microscopy of Hodgkin’s lymphoma with the help of neat labeled diagram

19.4.6.Tabulate the differences between Hodgkin's and non-Hodgkin's lymphoma

TOPIC: PLASMA CELL DISORDERS (PA-20)

PA-20.1 - Describe the features of plasma cell myeloma

TLM : SGD – 2 hrs
Assessment: Skill Assessment

20.1.1. Describe clinical features and laboratory findings in plasma cell myeloma

20.1.2. Describe the complications of plasma cell myeloma SGD (2hrs)

TOPIC: HEMORRHAGIC DISORDERS (PA-21)

PA-21.1 - Describe normal haemostasis and haemophilia.

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

21.1.1. Define haemostasis

21.1.2. Describe normal haemostasis

21.1.3. Describe the vessel wall in normal haemostasis

21.1.4. Discuss the mechanism of primary haemostasis with a flow chart

21.1.5. Discuss the mechanism of secondary haemostasis with a flow chart

21.1.6. Brief the fate of haemostatic plug

21.1.7. Discuss the extravascular factors that influence haemostasis

21.1.8. List tests for intrinsic pathway abnormalities and give the procedure and normal values

21.1.9. List tests for extrinsic pathway abnormalities and give the procedure and normal values

21.2.1.Describe the clinical findings, inheritance and lab findings in haemophilia A & B

PA 21.2 - Classify and describe the etiology, pathogenesis and pathology of vascular and platelet disorders including ITP

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

21.2.1. Classify bleeding disorders

21.2.2. Enumerate the causes of bleeding due to vessel wall abnormality.

21.2.3. Enumerate bleeding disorder due to platelets.

21.2.4. List causes of thrombocytopenia

21.2.5. List the laboratory investigations of platelet disorders

21.2.6. Describe the etiopathogenesis of idiopathic thrombocytopenia

21.2.7. List the laboratory investigations of idiopathic thrombocytopenia

21.2.8. Describe clinical findings, inheritance in von Willebrand disease

21.2.9. List the laboratory findings in von Willebrand disease

PA-21.3 - Differentiate platelet from clotting disorders based on the clinical and hematologic features. Differentiate platelet from clotting disorders based on the clinical and hematologic features.

TLM : SGD – 2 hrs
Assessment: Written, Viva voce

21.3.1. Differentiate platelet and clotting disorders clinically

21.3.2. Differentiate platelet and clotting disorders hematologically.

PA 21.4 - Define and describe disseminated intravascular coagulation, its laboratory findings and diagnosis of disseminated intravascular coagulation

PA 21.5 - Define and describe disseminated intravascular coagulation, its laboratory findings and diagnosis of Vitamin K deficiency.

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

21.4.1. Define Disseminated Intravascular Coagulation (DIC)

21.4.2. Mention the causes DIC

21.4.3. Describe pathogenesis of DIC using flow chart

21.4.4. Discuss laboratory findings in Disseminated Intravascular Coagulation

21.5.1. List Vitamin K dependent factors

21.5.2. Describe the approach to diagnosis of Vitamin K deficiency using flow chart

TOPIC: BLOOD BANKING AND TRANSFUSION (PA-22)

PA-22.1 - Classify and describe blood group systems (ABO and RH)

PA-22.2 - Enumerate the indications, describe the principles, enumerate and demonstrate the steps of compatibility testing.

PA-16.7 - Describe the correct technique to perform a cross match

TLM : DOAP – 2 hrs
Assessment: Skill Assessment

22.1.1. Classify different blood group system.

22.1.2. Mention importance of Rh factor.

22.1.3. Describe Bombay blood group. Mention its clinical importance.

22.1.4 Describe ABO & Rh incompatibility.

22.1.5. Mention different methods of blood grouping

22.1.6. Enumerate steps of ABO grouping & Rh typing and demonstrate the same.

22.2.1. Mention indications & principles of Major and minor cross matching.

22.2.2. Describe Coombs test, its principle & usage.

22.2.3. Describe criteria for Donor selection & rejection.

22.2.4. Describe Precautions to be taken during transfusion

16.7.1. Enumerate steps of major & minor cross matching and demonstrate the same.

PA- 22.4 - Enumerate blood components and describe their clinical uses.

PA- 22.5 - Enumerate and describe infections transmitted by blood transfusion.

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

22.4.1. Enumerate different blood components

22.4.2. Mention anticoagulants used in blood banks.

22.4.3. Mention different blood bags and their uses.

22.4.4. Mention storage and shelf life of different blood components

22.4.5. Describe indications for clinical use of different blood components

22.5.1. Enumerate different infections transmitted through blood transfusion.

22.5.2. Enumerate diseases tested for before transfusion and mention the methods of testing.

PA 22.6 - Describe transfusion reactions and enumerate the steps in the investigation of a transfusion reaction.

PA 22.7 - Enumerate the indications and describe the principles and procedure of autologous transfusion.

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

22.6.1. Describe transfusion reactions.

22.6.2. Mention types of transfusion reactions.

22.6.3. Describe clinical features of transfusion reactions.

22.6.4. Mention immediate steps to be taken following transfusion reaction

22.6.5. Enumerate steps in investigating blood transfusion reactions including documentation check, serological investigations, tests for haemolysis and microbiological tests.

22.7.1. Define autologous blood transfusion. Enumerate advantages and indications for autologous blood transfusion.

TOPIC: CLINICAL PATHOLOGY (PA-23)

PA 23.1 - Describe abnormal urinary findings in disease states and identify and describe common urinary abnormalities in a Clinical specimen

TLM : DOAP – 2 hrs
Assessment: Skill Assessment

23.1.1. Mention different methods of collection of urine and preservation

23.1.2. Enumerate disease conditions associated with variation in total urine volume.

23.1.3. Enumerate disease conditions associated with variation in urine pH.

23.1.4. Enumerate disease conditions associated with variation in urine colour.

23.1.5. Enumerate disease conditions associated with variation in urine odour.

23.1.6. Enumerate disease conditions associated with variation in urine clarity/appearance.

23.1.7. Enumerate disease conditions associated with variation in urine specific gravity

23.1.8. Define glycosuria. Enumerate pathological conditions associated with glycosuria. Demonstrate the test for glycosuria.

23.1.9. Define ketonuria. Enumerate pathological conditions associated with ketonuria. Demonstrate the test for ketonuria,

23.1.10. Define proteinuria. Enumerate pathological conditions associated with proteinuria. Demonstrate the test for proteinuria.

23.1.11. Define haematuria, enumerate pathological conditions associated with haematuria. Demonstrate the test for haematuria.

23.1.12. Describe principles of chemical tests and Dipsticks tests for determination of Sugar, Ketone bodies, Proteins and Blood in urine.

23.1.13. Describe urinary microscopic findings with reference to cells, crystals and casts in disease states.

23.1.14. Interpret urinary findings in Nephritic syndrome, Nephrotic syndrome, Diabetic ketoacidosis, Urinary tract infection.

PA 23.2 - Describe abnormal findings in body fluids in various disease states.

PA 23.3 - Describe and interpret the abnormalities in a panel containing semen analysis.

TLM : SGD – 2 hrs
Assessment: Written, Viva voce

23.2.1. Mention different body fluids, method of collection and preservation.

23.2.2. Mention differences between transudate and exudate.

23.2.3. Mention changes in body fluid parameters in tuberculosis

23.2.4. Mention changes in body fluid parameters in malignancy

23.2.5. Mention changes in body fluid parameters in pyogenic infections.

23.2.6. Identify etiology of pleural effusion and ascitis by interpreting given body fluid parameters.

23.3.1. Describe indications for semen analysis and interpretation of semen analysis report.

TOPIC: GASTROINTESTINAL TRACT (PA-24)

PA24.1 - Describe the etiology, pathogenesis, pathology and clinical features of oral cancers include salivary gland tumors

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

24.1.1. Describe Leukoplakia and Erythroplakia.

24.1.2. Describe aetiology, pathogenesis of squamous cell carcinoma of oral cavity.

24.1.3. Describe gross and microscopic features of squamous cell carcinoma of oral cavity

24.1.4. Classify salivary gland tumours

24.1.5. Describe Morphology & clinical features of Pleomorphic adenoma, Warthin tumour & Mucoepidermoid carcinoma.

24.1.6. Barrett's oesophagus

24.1.7. Describe the aetiology, pathogenesis, types, morphological features of carcinoma oesophagus

PA-24.2 - Describe the etiology, pathogenesis, pathology, microbiology, clinical and microscopic features of peptic ulcer disease.

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

24.2.1. Define peptic ulcer disease.

24.2.2. Describe aetiology andpathogenesis of PUD,

24.2.3. Describe gross and microscopic features of Peptic ulcer.

24.2.4. Describe clinical features and complications of PUD.

24.2.5. Define Gastritis and discuss its types

24.2.6. Describe etiopathogenesis, morphology and clinical features of Acute Gastritis

PA-24.4 - Describe and aetiology and pathogenesis and pathologic features of carcinoma of the stomach

TLM : SGD – 2 hrs
Assessment: Written, Viva voce

24.4.1. Describe epidemiology, etiopathogenesis and clinical features of carcinoma stomach.

24.4.2. Describe gross andmicroscopy of Carcinoma stomach.

24.4.3. Mention gross morphological differences between benign and malignant gastric ulcers.

PA-24.6 - Describe and aetiology and pathogenesis and pathologic and distinguishing features of Inflammatory bowel disease

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

24.6.1. Define IBD,

24.6.2. Describe epidemiology, aetiology and pathogenesis of IBD.

24.6.3. Describe gross and microscopy, clinical features and complications of Crohn's disease.

24.6.4. Describe gross and microscopy, clinical features & complications of ulcerative colitis.

24.6.5. Enumerate the differences between Ulcerative Colitis and Crohn's disease

PA-24.7 - Describe the aetiology, pathogenesis, pathology and distinguishing features of carcinoma of the colon

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

24.7.1. Enumerate polyps and adenomas of colon.

24.7.2. Describe Familial Adenomatous Polyposis.

24.7.3. Describe aetiology, pathogenesis of Carcinoma of colon.

24.7.4. Describe gross morphology and microscopy of Carcinoma of colon.

24.7.5. Describe clinical features, investigations, staging and prognosis of carcinoma of colon.

24.7.6. Enumerate pre-neoplastic lesions of Intestine

PA-24.3 - Describe and identify the microscopic features of peptic ulcer. – Include slides of Pleomorphic adenoma and specimen of Ca Stomach, Ca Colon, TB intestine, Peptic ulcer

PA 24.5 - Describe and aetiology, pathogenesis and pathologic features of Tuberculosis of the intestine

TLM : DOAP – 2 hrs
Assessment: Skill Assessment

24.3.1. Identify microscopic features of pleomorphic adenoma.

24.3.2. Identify gross features in specimen of carcinoma ofstomach.

24.3.3. Identify gross features in specimen of carcinoma of colon.

24.3.4. Identify microscopic features of carcinoma of stomach.

24.3.5. Identify microscopic features of carcinoma of colon.

24.3.6. Identify the gross and microscopic features of peptic ulcer

24.5.1. Identify Gross features in specimen of TB intestine (Optional)

24.5.2. Identify microscopic features of Tuberculosis of intestine.(Optional)

PA-24 - Gastrointestinal system

TLM : Tutorial/ Formative assessment – 2 hrs
Assessment: Written, Viva voce

TOPIC: HEPATOBILIARY SYSTEM (PA-25)

PA-25.1 - Describe bilirubin metabolism, enumerate the aetiology and pathogenesis of jaundice, distinguish between direct and indirect hyperbilirubinemia

TLM : SGD – 2 hrs
Assessment: Written, Viva voce

25.1.1. Describe bilirubin metabolism

25.1.2. Enumerate the etiology and pathogenesis of jaundice

25.1.3. Distinguish between direct and indirect hyperbilirubinemia

PA-25.2 - Describe the pathophysiology and pathologic changes seen in hepatic failure and their clinical manifestations, complications and consequences.

PA-25.3 - Describe the aetiology and pathogenesis of viral and toxic hepatitis: distinguish the causes of hepatitis based on the clinical and laboratory features. Describe the pathology, complications and consequences of hepatitis.

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

25.2.1. Describe the pathophysiology, complications and clinical consequences of liver failure

25.3.1. Define hepatitis and list the causes of hepatitis

25.3.2. Describe the pathogenesis of various viral hepatitis

25.3.3. Describe the morphology of viral hepatitis

25.3.4. Enumerate the complications and discuss the clinical consequences of hepatitis.

25.3.5. Describe the etiopathogenesis of toxic hepatitis

25.3.6. Discuss the clinical findings and laboratory findings in relation to the progression of hepatitis

PA-25.4 - Describe the pathophysiology, pathology and progression of alcoholic liver disease including cirrhosis.

PA-25.5 - Describe the aetiology, pathogenesis and complications of portal hypertension.

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

25.4.1. Describe the etiopathogenesis and pathophysiology of Alcoholic liver disease

25.4.2. Describe the stages of alcoholic liver disease with progression to cirrhosis

25.4.3. Define cirrhosis

25.4.4. Describe the etiopathogenesis, classification and pathology of cirrhosis

25.4.5. Enumerate the clinical manifestations and complications of cirrhosis

25.5.1. Define portal hypertension

25.5.2. Describe the etiopathogenesis of Portal hypertension

25.5.3. Enumerate the clinical consequences and complications of portal hypertension

PA-25.6 - Interpret liver function and viral hepatitis serology panel. Distinguish obstructive from non-obstructive jaundice based on clinical features and liver function tests

TLM : DOAP – 2 hrs
Assessment: Skill Assessment

25.6.1. To distinguish between obstructive from non-obstructive jaundice (Charts)

25.6.2. Interpret liver function tests with viral hepatitis serology panel.

25.6.3. Identify gross and microscopic feature of cirrhosis.

25.6.4. Identify gross and microscopic feature of chronic cholecystitis.

25.6.5. Enumerate and recognise different types of gall stones.

PA-25 - Hepatobiliary system

TLM : Tutorial/ Formative assessment – 2 hrs
Assessment: Written, Viva voce

TOPIC: RESPIRATORY SYSTEM (PA-26)

PA-26.1 - Define and describe the aetiology, types, pathogenesis, stages, morphology and complications of pneumonia.

PA 26.2 - Describe the aetiology, gross and microscopic appearance and complications of lung abscess

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

26.1.1. Describe the etiological classification and pathogenesis of pneumonia.

26.1.2. Describe the stages of lobar pneumonia

26.1.3. Describe the morphology of Lobar and Bronchopneumonia.

26.1.4. List the complications of pneumonia

26.1.5. To list the differences between lobar and bronchopneumonia.

26.1.6. Discuss the causes and pathology of Acute Respiratory Distress Syndrome.

26.2.1. Enlist the causes for lung abscess

26.2.2. Describe the gross and microscopy of lung abscess

26.2.3. List the complications of lung abscess

PA-26.3 - Define and describe the aetiology, types, pathogenesis, stages, morphology and complications and evaluation of Obstructive airway disease (OAD)

TLM : Lecture – 1 hr **Assessment:**Written, Viva voce

26.3.1. Define emphysema and list the types of emphysema

26.3.2. Describe the etiopathogenesis and morphology of emphysema

26.3.3. Define bronchiectasis, and describe the etiopathogenesis

26.3.4. Describe the gross morphology and microscopy of bronchiectasis

26.3.5. Describe the etiopathogenesis of Asthma

26.3.6. Enumerate the Pulmonary function test findings and list the complications of Obstructive airway disease.

PA-26.4 - Define and describe the etiology, types, pathogenesis, stages, morphology microscopic appearance and complications of tuberculosis

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

26.4.1. Define granulomatous inflammation and describe Ghon's complex

26.4.2. Describe the epidemiology, aetiology and pathogenesis of tuberculosis.

26.4.3. Differentiate between primary and secondary tuberculosis

26.4.4. Describe the natural history and spectrum of pulmonary tuberculosis

26.4.5. Discuss the spread and complications of pulmonary Tuberculosis

26.4.6. Describe gross appearance and microscopy of Pulmonary Tuberculosis.

26.4.7. Describe the Laboratory diagnosis of Tuberculosis

PA-26.5 - Define and describe the aetiology, types, exposure, environmental influence, pathogenesis, stages, morphology, microscopic appearance and complications of Occupational lung disease

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

26.5.1. Define Pneumoconiosis and list the types according to the etiological agents

26.5.2. Describe the risk factors and pathogenesis of Pneumoconiosis.

26.5.3. Describe the gross and microscopy of common pneumoconiosis

PA-26.6 - Define and describe the etiology, types, exposure, genetics environmental influence, pathogenesis, stages, morphology, microscopic appearance, metastases and complications of tumors of the lung and pleura.

PA-26.7 - Define and describe the etiology, types, exposure, genetics environmental influence, pathogenesis, morphology, microscopic appearance and complications of mesothelioma.

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

26.6.1. Classify the histologic types of lung carcinoma. Describe the etiopathogenesis of lung carcinoma

26.6.2. Describe the risk factors of lung carcinoma

26.6.3. Describe the gross and microscopy of the main histological types

26.6.4. Enumerate the spread of lung cancer

26.6.5. Distinguish the morphology of primary carcinoma lung and metastasis to lung

26.7.1. Describe in brief the environmental influence and morphology of mesothelioma(non-core)

PA- 26.0 Respiratory System

TLM : DOAP – 2 hrs
Assessment: Skill Assessment

26.0.1. Identify the gross morphology of Pneumonia, Bronchiectasis, Emphysema, TB lung, Carcinoma lung.

26.0.2. Identify the microscopy of lobar pneumonia and TB lung.

PA-26.0 - Respiratory System

TLM : Tutorial/ Formative assessment – 2 hrs
Assessment: Written, Viva voce

TOPIC: CARDIOVASCULAR SYSTEM (PA-27)

PA-27.1 - Distinguish arteriosclerosis from atherosclerosis. Describe the pathogenesis and pathology of various causes and types of arteriosclerosis

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

27.1.1. Define arteriosclerosis and distinguish between the types of arteriosclerosis

27.1.2. Discuss the epidemiology and the role of risk factors in the pathogenesis of atherosclerosis

27.1.3. Describe the pathogenesis of atherosclerosis

27.1.4. Describe the morphology and microscopy of atherosclerotic plaque and the complicated plaque

27.1.5. Enumerate the clinical consequences of atherosclerosis in different organs

PA-27.5 - Describe the epidemiology, risk factors, etiology, pathophysiology, pathology, presentations, gross and microscopic features, diagnostic tests and complications of ischemic heart disease

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

27.5.1. Describe the epidemiology, risk factors and spectrum of IHD

27.5.2. Descibe pathogenesis and dynamic plaque changes in IHD

27.5.3. Describe the clinical presentations of IHD in relation to the plaque changes

27.5.4. Describepathogenesis and response of myocardium to ischemia

27.5.5. Describe the gross and microscopy of myocardial infarction

27.5.6. Discuss the lab diagnosis and complications of acute coronary syndromes

PA-27.2 - Describe the etiology, dynamics, pathology types and complications of aneurysms including aortic aneurysms.

PA-27.3 - Describe the etiology, types, stages pathophysiology, pathology and complications of heart failure.

PA27.10 - Describe the etiology, pathophysiology, pathology features and complications of syphilis on the cardiovascular system.

TLM : SGD – 2 hrs
Assessment: Written, Viva voce

27.2.1. Define aneurysm and enumerate the causes and types of aneurysms

27.2.2. Describe the dynamics and pathology of abdominal aortic aneurysm

27.2.3. Describe the clinical course and complications of aneurysms

27.2.4. Classify and discuss the pathology of aortic dissection

27.3.1. Describe the etiology, types and stages of heart failure

27.3.2. Describe the pathology and complications of heart failure

27.10.1. Describe the pathology of Syphilitic aneurysms.(Optional)

PA-27.4 - Describe the etiology, pathophysiology, pathology, gross and microscopic features, criteria and complications of rheumatic fever.

PA-27.6 - Describe the etiology, pathophysiology, pathology, gross and microscopic features, diagnosis and complications of infective endocarditis.

TLM : SGD – 2 hrs
Assessment: Written, Viva voce

27.4.1. Describe the etiopathogenesis of rheumatic fever

27.4.2. Describe the gross and microscopic features of acute rheumatic carditis

27.4.3. Describe the gross and microscopic features of rheumatic valvular disease

27.4.4. Describe the clinical criteria and complications of acute rheumatic fever.

27.6.1. Describe the etiology, pathogenesis and morphology of infective endocarditis

27.6.2. Differentiate between acute and sub-acute infective endocarditis

27.6.3. Describe and differentiate between the major forms of valvular vegetations

PA 27.7 - Describe the etiology, pathophysiology, pathology, gross and microscopic features, diagnosis and complications of pericarditis and pericardial effusion

PA 27.9 - Classify and describe the etiology, types, pathophysiology, pathology, gross and microscopic features, diagnosis and complications of cardiomyopathies

TLM : SGD – 2 hrs
Assessment: Written, Viva voce

27.7.1. Describe the etiology, types and pathology of pericarditis

27.7.2. Describe the morphological patterns of pericarditis

27.7.3. Describe the etiology and types of pericardial effusions

27.9.1. Enumerate the etiology and types of cardiomyopathies

27.9.2. Enumerate the complications of cardiomyopathies. (Optional)

PA 27.8 - Interpret abnormalities in cardiac function testing in acute coronary syndromes

TLM : DOAP – 2 hrs
Assessment: Skill Assessment

27.8.1. Interpret abnormalities in serological cardiac function tests in acute coronary syndromes.

27.8.2. Identify gross and microscopy of Atherosclerosis and Myocardial infarction

PA-27.0 - Cardiovascular system

TLM : Tutorial/ Formative assessment – 2 hrs
Assessment: Written, Viva voce

TOPIC: URINARY TRACT (PA-28)

PA-28.1 - Describe the normal histology of the kidney.

PA-28.5 - Define and classify glomerular diseases. Enumerate and describe the etiology, pathogenesis, mechanisms of glomerular injury, pathology, distinguishing features and clinical manifestations of glomerulonephritis.

PA-28.6 - Define and describe the etiology, pathogenesis, pathology, laboratory, urinary findings, progression and complications of IgA nephropathy.

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

28.1.1. Recognize the normal structure of glomeruli, tubules, interstitium and blood supply of a Nephron.

28.5.1. Define glomerular diseases.

28.5.2. Classify glomerular diseases.

28.5.3. Discuss the etiopathogenesis emphasising the immune mechanism of glomerular injury.

28.5.4. Describe the morphology of Acute post infectious glomerulonephritis.

28.5.5. Discuss the clinical features of acute post infectious glomerulonephritis.

28.5.6. Distinguish between Nephritic and Nephrotic syndrome.

28.5.7. Distinguish the morphological features in RPGN, Minimal change disease and Chronic glomerulonephritis.

28.6.1. Define IgA nephropathy

28.6.2. Discuss the etiopathogenesis of IgA nephropathy.

28.6.3. Describe the morphological features in IgA nephropathy

28.6.4. Enumerate the lab findings in IgA nephropathy.

28.6.5. Mention the complications of IgA nephropathy.

PA 28.2 - Define, classify and distinguish the clinical syndromes and describe the etiology, pathogenesis, pathology, morphology, clinical and laboratory and urinary findings, complications of renal failure.

PA-28.3 - Define and describe the etiology, precipitating factors, pathogenesis, pathology, laboratory urinary findings, progression and complications of acute renal failure.

PA-28.4 - Define and describe the etiology, precipitating factors, pathogenesis, pathology, laboratory urinary findings progression and complications of chronic renal failure.

TLM : SGD – 2 hrs
Assessment: Written, Viva voce

28.2.1. Define Renal Failure.

28.2.2. Classify renal failure on etiological basis.

28.3.1. Define Acute renal failure.

28.3.2. Discuss the etiopathogenesis of ARF.

28.3.3. Describe the pathology of Acute Renal failure.

28.3.4. Enumerate the laboratory findings in acute renal failure.

28.3.5. Enumerate the clinical features and complications of ARF

28.3.6. Renal Function Tests

28.4.1. Define chronic renal failure.

28.4.2. Discuss the etiopathogenesis of CRF.

28.4.3. Describe the pathology of CRF.

28.4.4. Enumerate the laboratory findings in CRF.

28.4.5. Mention the complications of CRF.

PA 28.8 - Enumerate and classify diseases affecting the tubular Interstitium.

PA-28.9 - Define and describe the etiology, pathogenesis, pathology, laboratory, urinary findings, progression and complications of acute tubular necrosis.

PA-28.10 - Describe the etiology, pathogenesis, pathology, laboratory findings, distinguishing features progression and complications of acute and chronic pyelonephritis and reflux nephropathy

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

28.8.1. Enumerate the (2 major) processes of injury to the renal tubules and interstitium.

28.8.2. Discuss the etiological classification of Tubulointerstitial Nephritis.

28.9.1. Define Acute tubular necrosis.

28.9.2. Discuss the etiopathogenesis of ATN.

28.9.3. Discuss the morphological features in ATN.

28.9.4. Enumerate the laboratory findings in ATN.

28.9.5. Discuss the progression and complications of ATN

28.10.1. Discuss the etiopathogenesis of Acute pyelonephritis.

28.10.2. Describe the morphology in Acute pyelonephritis.

28.10.3. Enumerate the lab findings in Acute pyelonephritis.

28.10.4. Discuss the progression and complications of Acute pyelonephritis

28.10.5. Discuss the etiopathogenesis of Chronic pyelonephritis.

28.10.6. Describe the morphology of chronic pyelonephritis.

28.10.7. Enumerate the laboratory findings in chronic pyelonephritis.

28.10.8. List the complications of chronic pyelonephritis.

28.10.9. Enumerate the distinguishing features of acute and chronic pyelonephritisLecture (1hr)

PA-28.7 - Enumerate and describe the findings in glomerular manifestations of systemic disease.

PA-28.11 - Define classify and describe the etiology, pathogenesis pathology, laboratory, urinary findings, distinguishing features progression and complications of vascular disease of the kidney.

PA-28.15 - Describe the etiology, genetics, pathogenesis, pathology, presenting features and progression of thrombotic angiopathies.

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

28.7.1. Enlist the important systemic diseases showing glomerular involvement.

28.7.2. Describe the morphological features in Lupus nephritis.

28.7.3. Describe the morphological findings in Diabetic nephropathy

28.11.1. Classify various vascular diseases of kidney.

28.11.2. Define Nephrosclerosis.

28.11.3. Mention types of nephrosclerosis.

28.11.4. Discuss the etiopathogenesis of benign nephrosclerosis

28.11.5. Describe the morphology in benign nephrosclerosis.

28.11.6. Enumerate the laboratory findings in benign nephrosclerosis.

28.11.7. Discuss the etiopathogenesis of Malignant nephrosclerosis.

28.11.8. Describe the morphology in malignant nephrosclerosis

28.11.9. Enumerate the laboratory findings malignant nephrosclerosis.

28.11.10. List the complications in malignant nephrosclerosis.

28.11.11. Discuss the distinguishing features of benign and malignant nephrosclerosis.

28.15.1. Describe the etiopathogenesis, and genetics of Thrombotic Microangiopathies.

28.15.2. Describe the morphology in thrombotic microangiopathies.

28.15.3. Discuss the clinical features and progression of thrombotic microangiopathies. (Optional)

PA-28.12 - Define classify and describe the genetics, inheritance, etiology, pathogenesis, pathology, laboratory, urinary findings, distinguishing features, progression and complications of cystic disease of the kidney.

PA-28.13 - Define classify and describe the etiology, pathogenesis, pathology, laboratory, urinary findings, distinguishing features progression and complications of renal stone disease and obstructive uropathy

TLM : SGD – 2 hrs
Assessment: Written, Viva voce

28.12.1. Define cystic diseases of kidney

28.12.2. Classify various Cystic diseases of kidney.

28.12.3. Discuss the genetic inheritance, pathogenesis and, pathology of APKD.

28.12.4. Enumerate the laboratory and urinary findings in APKD.

28.12.5. Discuss the progression and complications of APKD

28.12.6. Describe the genetic inheritance, pathogenesis, and pathology of CPKD.

28.12.7. Mention the complications of CPKD.

28.13.1. Define obstuctive uropathy.

28.13.2. Classify obstructive uropathy based on causes.

28.13.3. Define Hydronephrosis.

28.13.4. Describe the etiopathogenesis, of hydronephrosis.

28.13.5. Describe the morphogy in hydronephrosis

28.13.6. Enumerate the laboratory findings in hydronephrosis.

28.13.7. Discuss the progression and complications of hydronephrosis.

28.13.8. Distinguish between hydronephrosis and APKD

28.13.9. Describe the various types of renal calculi.

28.13.10. Discuss the clinical features and complications of renal stones.

PA-28.14 - Classify and describe the etiology, genetics, pathogenesis, pathology, presenting features, progression and spread of renal tumors.

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

28.14.1. Classify Renal tumors.

28.14.2. Discuss the etiopathogenesis and genetic abnormalities in RCC.

28.14.3. Describe the morphology of RCC.

28.14.4. Discuss the clinical features of RCC.

28.14.5. Discuss the progression and complications of RCC.

PA-28.16 - Describe the etiology, genetics, pathogenesis, pathology, presenting features and progression of Urothelial tumors.

TLM : SDL – 1 hr
Assessment: Written, Viva voce

28.16.1. Discuss the etiopathogenesis of Urothelial tumors of urinary bladder.

28.16.2. Describe the morphology of Urothelial carcinoma of urinary bladder.

28.16.3. Discuss the clinical features and progression of Urothelial carcinoma. (Optional)

PA 28.0 - Urinary System

TLM : DOAP – 2 hrs
Assessment: Skill Assessment

28.0.1. Identify the gross and microscopic features of Chronic pyelonephritis and Renal cell carcinoma.

28.0.2. Enumerate and identify types of renal stones.

28.0.3. Identify gross morphology of Hydronephrosis.

PA 28.0- Urinary System

TLM : Tutorial/ Formative assessment – 2 hrs **Assessment:**Written, Viva voce

TOPIC: MALE GENITAL TRACT (PA-29)

PA-29.1 - Classify testicular tumors and describe the pathogenesis, pathology, presenting and distinguishing features, diagnostic tests, progression and spread of testicular tumors.

PA-29.2 - Describe the pathogenesis, pathology, presenting and distinguishing features, diagnostic tests, progression and spread of carcinoma of the penis.

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

29.1.1. Classify Testicular tumors

29.1.2. Describe the pathogenesis of germ cell tumors.

29.1.3. Describe the morphology of seminoma testis.

29.1.4. Discuss the presenting features, progression and spread of seminoma testis.

29.1.5. Distinguish seminoma and Non-seminomatous germ cell tumors.

29.1.6. Enumerate various bio-markers used in the diagnosis of germ cell tumors.

29.2.1. Discuss the pathogenesis of carcinoma penis.

29.2.2. Describe the morphology of carcinoma penis

29.2.3. Discuss the presenting features, progression and spread of carcinoma penis

29.2.4. Distinguish Condyloma acuminatum, Bowens disease and carcinoma penis.

PA-29.3 - Describe the pathogenesis, pathology, hormonal dependency presenting and distinguishing features, urologic findings & diagnostic tests of benign prostatic hyperplasia.

PA-29.4 - Describe the pathogenesis, pathology, hormonal dependency presenting and distinguishing features, diagnostic tests, progression and spread of carcinoma of the prostate.

PA-29.5 - Describe the etiology, pathogenesis, pathology and progression of prostatitis.

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

29.3.1. Discuss the hormonal role in the pathogenesis of BPH.

29.3.2. Describe the morphological features of BPH.

29.3.3. Discuss the presenting features and urologic findings in BPH.

29.3.4. Enumerate the diagnostic tests in BPH.

29.4.1. Discuss the pathogenesis of Adenocarcinoma prostate emphasising the role of hormones.

29.4.2. Discuss the morphological findings in adenocarcinoma prostate.

29.4.3. Discuss the clinical features, progression and spread of adenocarcinoma prostate.

29.4.4. Enumerate the various diagnostic tests in adenocarcinoma prostate.

29.4.5. Distinguish the salient features of BPH and adenocarcinoma prostate.

29.5.1. Enumerate the causes of prostatitis.

29.5.2. Discuss the pathogenesis of chronic prostatitis (most common)

29.5.3. Describe the morphology of chronic prostatitis.

29.5.4. Discuss the progression of chronic prostatitis. (Optional)

PA29 – Male Genital Tract

TLM : DOAP – 2 hrs
Assessment: Skill Assessment

29.0.1. Identify the gross morphology of carcinoma penis.

29.0.2. Identify the gross and microscopic features of seminoma testis.

29.0.3. Identify the microscopic features of Benign prostatic hyperplasia.

TOPIC: FEMALE GENITAL TRACT (PA-30)

PA-30.1 - Describe the epidemiology, pathogenesis, etiology, pathology, screening, diagnosis and progression of carcinoma of the Cervix.

PA-30.6 - Describe the etiology and morphologic features of cervicitis.

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

30.1.1. Describe the epidemiology of Carcinoma Cervix.

30.1.2. List the morphological types of carcinoma cervix

30.1.3. Describe the etiopathogenesis, clinical features and morphology of Squamous cell carcinoma-cervix.

30.1.4. Describe the Progression of CIN to carcinoma cervix

30.1.5. Describe the screening methods employed in carcinoma cervix with emphasis on pap smear collections methods and salient pap smear findings of carcinoma cervix.

30.6.1. Describe the etiology and morphologic features of cervicitis. (Optional)

PA-30.2 - Describe the pathogenesis, etiology, pathology, diagnosis and progression and spread of carcinoma of the endometrium.

PA-30.7 - Describe the etiology, hormonal dependence, features and morphology of endometriosis.

PA-30.8 - Describe the etiology and morphologic features of adenomyosis.

PA-30.9 - Describe the etiology, hormonal dependence and morphology of endometrial hyperplasia.

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

30.2.1. Discuss the etiopathogenesis of carcinoma -endometrium

30.2.2. Describe the morphology of endometrial carcinoma.

30.2.3. Discuss the premalignant lesions and its progression to carcinoma endometrium

30.2.4. Describe the Clinical features and spread of carcinoma endometrium

30.7.1. Discuss the etiopathogenesis, clinical features, morphology of endometriosis. (Optional)

30.8.1. Describe the etiology and morphologic features of adenomyosis. (Optional)

30.9.1. Discuss the etiopathogenesis, clinical features, morphology of endometrial hyperplasia. (Optional)

PA-30.4 - Classify and describe the etiology, pathogenesis, pathology, morphology, clinical course, spread and complications of ovarian tumors

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

30.4.1. Classify ovarian tumours

30.4.2. Describe the pathogenesis, gross and microscopy of surface epithelial tumours.

30.4.3. Define and describe the pseudomyxoma peritonei.

30.4.4. Describe the classification, gross and microscopy of germ cell tumours.

30.4.5. Describe the gross and microscopy of mature cystic teratoma.

30.4.6. Describe the morphology of sex cord tumors.

30.4.7. Define and describe Krukenberg tumour and Struma ovarii.

30.4.8. Describe the clinical features, mode of spread and tumour markers used in ovarian tumour

PA-30.5 - Describe the etiology, pathogenesis, pathology, morphology, clinical course, spread and complications of gestational trophoblastic neoplasms

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

30.5.1. Define and classify the gestational trophoblastic diseases.

30.5.2. Describe the etiopathogenesis of Molar pregnancy,

30.5.3. Describe the gross and microscopy of complete/partial hydatidiform mole.

30.5.4. Describe the gross & microscopy of Invasive mole and gestational choriocarcinoma.

PA-30.3 - Describe the pathogenesis, etiology, pathology, diagnosis and progression and spread of carcinoma of the leiomyomas and leiomyosarcomas

TLM : DOAP – 2 hrs
Assessment: Skill Assessment

30.3.1. Describe the etiology and pathogenesis of leiomyoma -uterus

30.3.2. List the morphological types of leiomyoma

30.3.3. Describe the gross and microscopy of leiomyoma

30.3.4. Describe the fate of leiomyoma

30.3.5. List the salient differences between leiomyoma with leiomyosarcoma uterus.

30.3.6. Identify gross and microscopy of leiomyoma

30.4.1. Identify and differentiate between the serous and mucinous tumours by their gross and microscopic features.

30.4.2. Identify the gross and microscopy of mature cystic teratoma.

30.5.2. Identify the gross and microscopy of hydatidiform mole.

PA30.0 - Male and Female Genital System

TLM : Tutorial/ Formative assessment – 2 hrs
Assessment: Written, Viva voce

TOPIC: BREAST (PA-31)

PA-31.1 - Classify and describe the types, etiology, pathogenesis, hormonal dependency of breast pathology and benign disease.

PA-31.4 - Enumerate and describe the etiology, hormonal dependency and pathogenesis of gynecomastia.

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

31.1.1. Classify the benign epithelial lesions of breast and discuss their clinical significance

31.1.2. Discuss etiopathogenesis and morphology of fibrocystic disease

31.1.3. Definition and classification of Proliferative breast diseases (proliferative breast disease with atypia and proliferative breast disease without atypia).

31.1.4. Enumerate and briefly discuss the morphology of proliferative breast disease without atypia (Epithelial hyperplasia, sclerosing adenosis, Radial scar, Complex fibroadenoma and Duct Papilloma)

31.1.5. Define and list proliferative breast disease with atypia (Atypical ductal hyperplasia and atypical lobular hyperplasia). Discuss their clinical significance.

31.1.6. List the fibroepithelial neoplasms, Discuss their clinical significance and morphology (fibroadenoma and phyllodes tumour)

31.4.1 Describe the etiopathogenesis and morphology of Gynaecomastia. (Optional)

PA-31.2 - Classify and describe the epidemiology, pathogenesis, classification, morphology, prognostic factors, hormonal dependency, staging and spread of carcinoma of the breast

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

31.2.1. Classify Breast carcinoma

31.2.2. Discuss epidemiology and etiopathogenesis of breast carcinoma, with a note on molecular mechanisms/subtypes

31.2.3. Discuss the gross and microscopy of invasive ductal carcinoma-NST, medullary carcinoma and lobular carcinoma

31.2.4. Discuss prognostic factors of breast carcinoma

31.2.5. Describe the clinical features, staging and spread of carcinoma- Breast

31.2.6. Discuss the clinical approach to breast lump with reference to carcinoma breast

31.2.7. Discuss the clinical significance and morphology of Paget's disease of nipple

PA-31.3 - Describe and identify the morphologic and microscopic features of carcinoma of the breast.

TLM : DOAP – 2 hrs
Assessment: Skill Assessment

31.3.1. Identify and describe the gross and microscopy of Infiltrating ductal carcinoma of breast

31.3.2. Identify gross and microscopic features of Fibroadenoma. (Optional)

TOPIC: ENDOCRINE SYSTEM (PA-32)

PA 32.1 - Enumerate, classify and describe the etiology, pathogenesis, pathology and iodine dependency of thyroid swellings

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

32.1.1. Describe the pathogenesis of simple and multinodular Goitre

32.1.2. Describe role of Iodine and pathology in simple and multinodular goitre

32.1.3. Classify thyroid neoplasms

32.1.4. Describe the role of iodine in papillary thyroid carcinoma

32.1.5. Describe the pathogenesis and pathology of papillary thyroid carcinoma

PA-32.2 - Describe the etiology, cause, iodine dependency, pathogenesis, manifestations, laboratory and imaging features and course of thyrotoxicosis.

PA-32.3 - Describe the etiology, pathogenesis, manifestations, laboratory and imaging features and course of thyrotoxicosis/ hypothyroidism.

TLM : SGD – 2 hrs
Assessment: Written, Viva voce

32.2.1. Define Thyrotoxicosis

32.2.2. Enumerate etiology of Thyrotoxicosis

32.2.3. Describe the etiopathogenesis and clinical features of Grave's disease

32.2.4. Describe role of Iodine in Thyrotoxicosis

32.2.5. Describe the Clinical Features of Thyrotoxicosis

32.2.6. Describe the laboratory and imaging features of Thyrotoxicosis

32.2.7. Describe the Clinical course of thyrotoxicosis

32.2.8. Discuss the morphological changes in Grave's disease

32.2.9. Describe the testing methods to diagnose Graves' disease

32.3.1. Define Hypothyroidism

32.3.2. Enumerate etiology of Hypothyroidism

32.3.3. Describe the pathogenesis of Hypothyroidism

32.3.4. Describe role of Iodine in Hypothyroidism

32.3.5. Describe the Clinical Features of Hypothyroidism

32.3.6. Describe the laboratory and imaging features of Hypothyroidism

32.3.7. Describe the Clinical course of Hypothyroidism

32.3.8. Describe the etiopathogenesis and pathology of Hashimoto's thyroiditis

PA-32.4 - Classify and describe the epidemiology, etiology, pathogenesis, pathology, clinical laboratory features, complications and progression of diabetes mellitus

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

32.4.1. Define Diabetes Mellitus

32.4.2. Describe epidemiology of Diabetes Mellitus

32.4.3. Enumerate etiology of Diabetes Mellitus

32.4.4. Describe the pathogenesis of Diabetes Mellitus

32.4.5. Describe the pathology of Diabetes Mellitus

32.4.6. Describe the Clinical Features of Diabetes Mellitus

32.4.7. Describe the laboratory features of Diabetes Mellitus

32.4.8. List the complications of Diabetes Mellitus

32.4.9. Describe the Pathogenesis of complication of Diabetes Mellitus

32.4.10. Describe the Laboratory features of complications of Diabetes Mellitus

32.4.11. Describe the Clinical course of Diabetes Mellitus

PA-32.5 - Describe the etiology, genetics, pathogenesis, manifestations, laboratory and morphologic features of hyperparathyroidism.

TLM : SDL – 1 hr
Assessment: Written, Viva voce

32.5.1. Define hyperparathyroidism

32.5.2. Describe the genetics of hyperparathyroidism

32.5.3. Enumerate etiology of hyperparathyroidism

32.5.4. Describe the pathogenesis of hyperparathyroidism

32.5.5. Identify the Morphological features of hyperparathyroidism

32.5.6. Describe the Clinical Features of hyperparathyroidism

32.5.7. Interpret the laboratory features of hyperparathyroidism. (Optional)

PA-32.6 - Describe etiology, pathogenesis, manifestations, laboratory, morphologic features, complications and metastases of pancreatic cancer.

TLM : SDL – 1 hr
Assessment: Written, Viva voce

32.6.1. Define Pancreatic Cancer

32.6.2. Enumerate etiology of Pancreatic Cancer

32.6.3. Describe the pathogenesis of Pancreatic Cancer

32.6.4. Describe the Morphological features of Pancreatic Cancer

32.6.5. Describe the Clinical Features of Pancreatic Cancer

32.6.6. Describe the laboratory features of Pancreatic Cancer

32.6.7. Describe the complications of Pancreatic Cancer

32.6.8. Describe the pathology of metastatic pancreatic Cancer (Optional)

PA-32.7 - Describe the etiology, pathogenesis, manifestations, laboratory, morphologic features, complications of adrenal insufficiency

PA-32.8 - Describe the etiology, pathogenesis, manifestations, laboratory, morphologic features complications of Cushing's syndrome.

TLM : SDL – 1 hr
Assessment: Written, Viva voce

32.7.1. Define Adrenal insufficiency

32.7.2. Enumerate etiology of Adrenal insufficiency

32.7.3. Describe the pathogenesis of Adrenal insufficiency

32.7.4. Describe the Morphological features of Adrenal insufficiency

32.7.5. Describe the Clinical Features of Adrenal insufficiency

32.7.6. Describe the Laboratory Features of Adrenal insufficiency

32.7.7. Describe the complications of Adrenal insufficiency. (Optional)

32.8.1. Define Cushing's syndrome

32.8.2. Enumerate etiology of Cushing's syndrome

32.8.3. Describe the pathogenesis of Cushing's syndrome

32.8.4. Describe the morphological features of Cushing's syndrome

32.8.5. Describe the Clinical Features of Cushing's syndrome

32.8.6. Describe the Laboratory Features of Cushing's syndrome

32.8.7. Describe the complications of Cushing's syndrome. (Optional)

PA-32.9 - Describe the etiology, pathogenesis, manifestations, laboratory and morphologic features of adrenal neoplasms.

TLM : SDL – 1 hr
Assessment: Written, Viva voce

32.9.1. Classify adrenal neoplasms

32.9.2. Enumerate etiology of adrenal neoplasms

32.9.3. Describe the pathogenesis of adrenal neoplasms

32.9.4. Describe the morphological features of adrenal neoplasms

32.9.5. Describe the clinical features of adrenal neoplasms

32.9.6. Describe the laboratory features of adrenal neoplasms. (Optional)

PA-32.0 - Endocrine System

TLM : DOAP – 2 hrs
Assessment: Skill Assessment

32.0.1. Identify the gross and microscopic features of Multinodular goitre and Papillary carcinoma.

32.0.2. Identify the microscopic features of Hashimoto's thyroiditis.

PA-32.0 - Endocrine System

TLM : Tutorial/ Formative assessment – 2 hrs
Assessment: Written, Viva voce

TOPIC: BONE AND SOFT TISSUE (PA-33)

PA-33.1 - Classify and describe the etiology, pathogenesis, manifestations, radiologic and morphologic features and complications of osteomyelitis

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

33.1.1. Define Osteomyelitis

33.1.2. Classify Osteomyelitis

33.1.3. Enumerate etiology of Osteomyelitis

33.1.4. Describe pathogenesis of Osteomyelitis

33.1.5. Describe the Morphological features of Osteomyelitis

33.1.6. Describe the Clinical Features of Osteomyelitis

33.1.7. Describe the Radiological Features of Osteomyelitis

33.1.8. Describe the complications of Osteomyelitis

PA-33.2 - Classify and describe the etiology, pathogenesis, manifestations, radiologic and morphologic features and complications and metastases of bone tumors

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

33.2.1. Define Bone tumours

33.2.2. Classify Bone tumours

33.2.3. Enumerate etiology of Bone tumours

33.2.4. Describe pathogenesis of Bone tumours

33.2.5. Describe the morphological features of Bone tumours

33.2.6. Describe the clinical features of Bone tumours (Giant cell tumour, Osteosarcoma, Ewing's tumour)

33.2.7. Describe the radiological features of Bone tumours

33.2.8. Describe the complications of Bone tumours

33.2.9. Describe the pathology of Bone tumour metastasis

PA-33.3 - Classify and describe the etiology, pathogenesis, manifestations, radiologic and morphologic features and

complications and metastases of soft tissue tumors

TLM : SGD – 2 hrs
Assessment: Written, Viva voce

33.3.1. Define soft tissue tumors.

33.3.2. Classify soft tissue tumors.

33.3.3. Enumerate etiology of soft tissue tumors.

33.3.4. Describe pathogenesis of soft tissue tumors.

33.3.5. Describe the morphological features of soft tissue tumors.

33.3.6. Describe the clinical features of soft tissue tumors.

33.3.7. Describe the radiological features of soft tissue tumors.

33.3.8. Describe the complications of soft tissue tumors.

33.3.9. Describe the pathology of soft tissue tumour metastasis

PA-33.4 - Classify and describe the etiology, pathogenesis, manifestations, radiologic and morphologic features and complications of Paget's disease of the bone.

PA-33.5 - Classify and describe the etiology, immunology, pathogenesis, manifestations, radiologic and laboratory features, diagnostic criteria and complications of rheumatoid arthritis.

TLM : SDL – 2 hrs
Assessment: Written, Viva voce

33.4.1. Define Paget's disease of the bone

33.4.2. Enumerate etiology of Paget's disease of the bone

33.4.3. Describe pathogenesis of Paget's disease of the bone

33.4.4. Describe the Morphological features of Paget's disease of the bone

33.4.5. Describe the Clinical Features of Paget's disease of the bone

33.4.6. Describe the Radiological Features of Paget's disease of the bone

33.4.7. Describe the complications of Paget's disease of the bone. (Optional)

33.5.1. Define Rheumatoid Arthritis

33.5.2. Classify Rheumatoid Arthritis

33.5.3. Enumerate etiology of Rheumatoid Arthritis

33.5.4. Describe immunology of Rheumatoid Arthritis

33.5.5. Describe pathogenesis of Rheumatoid Arthritis

33.5.6. Describe the morphological features of Rheumatoid Arthritis

33.5.7. Describe the clinical features of Rheumatoid Arthritis

33.5.8. Describe the laboratory features of Rheumatoid Arthritis

33.5.9. Describe the radiological features of Rheumatoid Arthritis

33.5.10. Enumerate the diagnostic criteria of Rheumatoid Arthritis

33.5.11. Describe the complications of Rheumatoid Arthritis. (Optional)

PA-33.0 - Bone and Soft Tissue

TLM : DOAP – 2 hrs
Assessment: Skill Assessment

33.0.1. Identify the gross and microscopic features of Osteoclastoma and Osteosarcoma.

TOPIC: SKIN (PA-34)

PA-34.1 - Describe the risk factors pathogenesis, pathology and natural history of squamous cell carcinoma of the skin.

PA-34.2 - Describe the risk factors pathogenesis, pathology and natural history of basal cell carcinoma of the skin.

PA-34.3 - Describe the distinguishing features between a nevus and melanoma. Describe the etiology, pathogenesis, risk factors morphology clinical features and metastases of melanoma.

TLM : Lecture – 1 hr **Assessment:**Written, Viva voce

34.1.1. Describe the risk factors of squamous cell carcinoma of the skin

34.1.2. Describe the pathogenesis of squamous cell carcinoma of the skin

34.1.3. Describe the pathology of squamous cell carcinoma of the skin

34.1.4. Describe the natural history of squamous cell carcinoma of the skin

34.2.1. Describe the risk factors of basal cell carcinoma of the skin

34.2.2. Describe the pathogenesis of basal cell carcinoma of the skin

34.2.3. Describe the pathology of basal cell carcinoma of the skin

34.2.4. Describe the natural history of basal cell carcinoma of the skin

34.3.1. Define nevus

34.3.2. Define Melanoma

34.3.3. Describe the distinguishing features between a nevus and melanoma.

34.3.4. Enumerate the etiology of melanoma

34.3.5. Describe the risk factors of melanoma

34.3.6. Describe the pathogenesis of melanoma

34.3.7. Describe the morphology of melanoma

34.3.8. Describe the clinical features of melanoma

34.3.9. Describe the pathology of metastatic melanoma.(Optional)

PA-34.4 - Identify, distinguish and describe common tumors of the skin Covered in DOAP 8

TLM : DOAP – 2 hrs
Assessment: Skill Assessment

34.4.1. Identify Common tumours of skin

34.4.2. Distinguish the common tumors of the skin.

34.4.3. Describe the common tumors of the skin.

TOPIC: CENTRAL NERVOUS SYSTEM (PA-35)

PA-35.1 - Describe the etiology, types and pathogenesis, differentiating factors, CSF findings in meningitis.

PA 35.3 - Identify the etiology of meningitis based on given CSF parameters.

TLM : DOAP – 2 hrs
Assessment: Skill Assessment

35.1.1. Enumerate the etiology of meningitis

35.1.2. Enumerate the types of meningitis

35.1.3. Describe the pathogenesis of meningitis.

35.1.4. Describe the differentiating factors in different types of meningitis

35.1.5. Describe the CSF findings in meningitis.

35.3.1. Identify the etiology of meningitis based on given CSF parameters

PA-35.2 - Classify and describe the etiology, genetics, pathogenesis, pathology, presentation sequelae and complications of CNS Tumours.

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

35.2.1. Classify CNS tumours

35.2.2. Describe the etiopathogenesis of CNS tumours

35.2.3. Describe the genetics of CNS tumours

35.2.4. Describe the pathology of CNS tumours.

35.2.5. Describe the clinical features

35.2.6. Describe the sequelae of CNS tumour

35.2.7. Describe complications of CNS tumours.

PA- 19, 33, 34, 35 - Skin, Bone, CNS, Lymph node

TLM : Tutorial/ Formative assessment – 2 hrs
Assessment: Written, Viva voce

TOPIC: EYE (PA-36)

PA 36.1 - Describe the etiology, genetics, pathogenesis, pathology, presentation, sequelae and complications of retinoblastoma

To be covered with paediatric and genetic diseases

Assessment: Written, Viva voce

TOPICS FOR SELF DIRECTED LEARNING (SDL)

Sl.no	Competency	Topic	Hours
1.	**PA-6.4a**	Define and describe normal haemostasis	1
2.	**PA-12.1**	Enumerate and describe the pathogenesis of disorders caused by air pollution	1
3.	**PA-12.1**	Enumerate and describe the pathogenesis of disorders caused bytobacco and alcohol	1
4.	**PA-13.1**	Describe hematopoiesis and extramedullary hematopoiesis	1
5.	**PA-28.16**	Describe the etiology, genetics, pathogenesis, pathology,presenting features and progression of urothelial tumors**.**	1
6.	**PA-32.5**	Describe the etiology, genetics, pathogenesis, manifestations, laboratory and morphologic features of hyperparathyroidism.	1
7.	**PA-32.6**	Describe, etiology, pathogenesis, manifestations, laboratory, morphologic features, complications and metastases of pancreatic cancer	1
8.	**PA-32.7 PA-32.8**	Describe the etiology, pathogenesis, manifestations, laboratory, morphologic features, complications of adrenal insufficiency. Describe the etiology, pathogenesis, manifestations, laboratory, morphologic features, complications of Cushing's syndrome.	1
9.	**PA-32.9**	Describe the etiology, pathogenesis, manifestations, laboratory and morphologic features of adrenal neoplasms.	1
10.	**PA-33.4**	Classify and describe the etiology, pathogenesis, manifestations, radiologic and morphologic features andcomplications of Paget's disease of the bone.	1
11.	**PA-33.5**	Classify and describe the etiology, immunology, pathogenesis, manifestations, radiologic and laboratory features, diagnostic criteria and complications of rheumatoid arthritis.	1
12.		Study on Corona Virus	1

CERTIFIABLE COMPETENCIES

It should be certified that the student is competent to perform the below skills independently without supervision.

SI. NO	NUMBER	COMPETENCY
1	**PA-16.6**	Prepare peripheral blood smear. Identify hemolytic anaemia
2	**PA-25.6**	Interpret liver function and viral hepatitis serology panel. Distinguish obstructive from non-obstructive jaundice based on clinical features and liver function tests
3	**PA-35.3**	Identify the etiology of meningitis based on given CSF parameters

NOTE: The evaluation of charts on certifiable competencies should be completed in formative and internal assessment and duly documented in the log book.

TIME TABLE

BLOCK 1: 15 WEEKS(OCT-JAN)

8-11		11.30-12.30	12.30-1.30	2-4
Monday	Postings	PH-L	OBG-L	PH-A,CM-B
Tuesday	Postings	PH-L	FM-L	FM-A,
Wednesday	Postings	MIC-L	PA-L	PA-A, MIC-B
Thursday	Postings	CM-L	PH-SGD	PA-B, MIC-A
Friday	Postings	MIC-L	PA-L	PH-B,CM-A
Saturday	Clinical training and Skills	G.MED-L	SUR-L	FM-B,

SECOND BLOCK 15 WEEKS (FEB-MAY)

8-11		11.30-12.30	12.30-1.30	2-4
Monday	Postings	MIC-L	PA-SGD	PH-A,PA-B-SGD
Tuesday	Postings	PH-L	MIC-SGD	PH-SGD
Wednesday	Postings	PA-L	MIC-L	PA-A,MIC-B
Thursday	Postings	PH-L		PH-B,PA-A SGD
Friday	Postings	PA-L	MIC-SGD	PA-B,MIC-A
Saturday	Clinical training and Skills	AETCOM	AETCOM	

THIRD BLOCK 10 WEEKS (JUN-AUG)

8-11		11.30-12.30	12.30-1.30	2-4	4-5
Monday	Postings	**PA-L**	MIC-L	**PH-SGD**	PA-SDL
Tuesday	Postings	**PA-L**	MIC-L	**PA-A,MIC-B**	PH-SDL
Wednesday	Postings	**PH-L**		**PH-A,PA-B SGD**	MIC-SDL
Thursday	Postings	**PH-L**		PH-B,PA-A SGD	CM-SDL
Friday	Postings	**CM-L**		PA-B,MIC-A	AETCOM-SDL
Saturday	Clinical training and Skills	**SUR-L**	**OBG**	G.M-L	

	TERM-1-OCT-JAN(15 WK)			TERM-2-FEB-MAY(15 WK)			TERM-3- JUN-AUG(10 WK)			TOTAL		
	THEORY	**PRACT**	**SGT/ TUTORIAL**	**THEORY**	**PRACT**	**SGT/ TUTORIAL**	**THEORY**	**PRACT**	**SGT/ TUTORIAL**	**THEORY**	**PRACT**	**SGT/ TUTORIAL**
PATH	30	15	15	30	30	45	20	20	20	80	65	80
PHARM	30	30	15	30	30	30	20	20	20	80	80	65
MICRO	30	30	0	30	30	30	20	20	0	80	80	30
CM	15	0	30	0	0	0	10	0	0	25	0	30
FM	15	0	30	0	0	0	0	0	0	15	0	30
G.MED	15	0	0	0	0	0	10	0	0	25	0	0
G.SUR	15	0	0	0	0	0	10	0	0	25	0	0
OBG	15	0	0	0	0	0	10	0	0	25	0	0
AETCOM				**AETCOM** 30						AETCOM 30		

NOTE: To be prepared at the convenience of the respective institutions.

COMPETENCY DISTRIBUTION IN EACH BLOCK

FIRST BLOCK

SI.NO		TOPIC
LECTURES TO BE COVERED IN FIRST BLOCK		
1.	PA 1	PA1.2 Enumerate common definitions and terms used in Pathology PA1.3 Describe the history and evolution of Pathology
2.	PA 2	PA2.1 Demonstrate knowledge of the causes, mechanisms, types and effects of cell injury and their clinical significance
3.	PA 2	PA2.2 Describe the etiology of cell injury. Distinguish between reversible-irreversible injury: mechanisms; morphology of cell injury
4.	PA 2	PA2.3 Intracellular accumulation of fats, proteins, carbohydrates, pigments
5.	PA 2	PA2.4 Describe and discuss Cell death- Apoptosis and autolysis
6.	PA 2	PA2.7 Describe and discuss the mechanisms of cellular aging and apoptosis
7.	PA 4	PA4.1 Define and describe the general features of acute and chronic inflammation including stimuli, vascular events
8.	PA 4	PA4.1 Define and describe the general features of acute and chronic Inflammation including stimuli, and cellular events
9.	PA 4	PA4.2 Enumerate and describe the mediators of acute inflammation
10.	PA 4	PA4.3 Define and describe chronic inflammation including causes, types enumerate types, non-specific and granulomatous; and examples of each
11.	PA 5	PA5.1 Define and describe the process of repair and regeneration including wound healing and its types
12.	PA 6	PA6.1 Define and describe edema, its types, pathogenesis and clinical correlations
13.	PA 6	PA6.3 Define and describe shock, its pathogenesis and its stages
14.	PA 6	PA6.4 Describe the etiopathogenesis and consequences of thrombosis
15.	PA 6	PA6.5 Define and describe embolism and its causes and common types
16.	PA 7	PA7.1 Define and classify neoplasia. biologic, behaviour and spread
17.	PA 7	PA7.1 Define and classify neoplasia. biologic, behaviour and spread
18.	PA 7	PA7.2 Describe the molecular basis of cancer
19.	PA 7	PA7.2 Describe the molecular basis of cancer
20.	PA 7	PA7.3 Enumerate carcinogens and describe the process of carcinogenesis
21.	PA 7	PA7.3 Enumerate carcinogens and describe the process of carcinogenesis
22.	PA 9	PA9.3 HLA system and the immune principles. Describe the involved in transplant and mechanism of transplant rejection
23.	PA 9	PA9.4 Define autoimmunity. Enumerate autoimmune disorders
24.	PA 9	PA9.5 Define and describe the pathogenesis of Systemic Lupus Erythematosus
25.	PA 9	PA9.6 Define and describe the pathogenesis and pathology of HIV and AIDS
26.	PA 9	9.7 Define and describe the pathogenesis of other common autoimmune diseases
27.	PA 10	PA10.3 Define and describe the pathogenesis and pathology of leprosy
28.	PA 13	PA13.3 Define and classify anemia
29.	PA 13	PA13.4 Enumerate and describe the investigation of anemia
30.	PA 14	PA14.1 Describe iron metabolism PA14.2 Describe the etiology, investigations and differential diagnosis of microcytic hypochromic anemia
31.	PA 15	PA15.1 Describe the metabolism of Vitamin B12 and the etiology and pathogenesis of B12 deficiency PA15.2 Describe laboratory investigations of macrocytic anemia

		PA15.4 etiology and Written/ Viva voce General Medicine distinguishing features of megaloblastic and non-megaloblasticmacrocytic anemia
32.	PA 16	PA16.1 Define and classify hemolytic anemia PA16.2 Describe the pathogenesis and clinical features and hematologic indices of hemolytic anemia PA16.5 Describe the peripheral blood picture in different hemolytic anaemias
33.	PA 16	PA16.3 Describe the pathogenesis, features, hematologic indices and peripheral blood picture of sickle cell anaemia and thalassemia
34.	PA 16	PA16.4 Describe the etiology pathogenesis, hematologic indices and peripheral blood picture of Acquired haemolytic anaemia
35.	PA 17	PA 17.1 Enumerate the etiology, pathogenesis and findings in aplastic anemia PA17.2 Enumerate the indications and describe the findings in bone marrow aspiration and biopsy

SMALL GROUP DISCUSSION TOPICS TO BE COVERED IN FIRST BLOCK

1	PA 1.1	PA 1.1-Describe the role of a pathologist in diagnosis and management of disease
2	PA2.6	PA2.6 -Describe and discuss cellular adaptations: atrophy, Hypertrophy, hyperplasia, metaplasia, dysplasia
3	PA-3	PA 3.1-Describe the pathogenesis and pathology of amyloidosis PA 3.2-Identify and describe amyloidosis in a pathology specimen
4	PA-2	Tutorial/ Formative assessment- Cell Injury
5	PA 4	Tutorial/ Formative assessment - Inflammation
6	PA 5	Tutorial / formative assessment- Healing and repair
7	PA- 6	Tutorial/ Formative assessment – Hemodynamic Disorders
8	PA 7	PA7.4 Describe the effects of tumor on the host including paraneoplastic syndrome PA7.5 Describe immunology and the immune response to cancer
9	PA 7	Tutorial/ Formative assessment-Neoplasia.
10	PA 9.1,9.2	PA 9.1Describe the principles and mechanisms involved in immunity PA9.2 Describe the mechanism of hypersensitivity reactions
11	PA 16.4	Case based discussion of 1.Sickle cell anemia; 2. Thalassemia; 3. Hereditary spherocytosis; 4. Autoimmune hemolytic anemia

DOAP TOPICS TO BE COVERED IN FIRST BLOCK

1	PA 2.5	Degeneration Specimens-Fatty liver Slides- Fatty liver, dystrophic calcification, hyaline degeneration
2	PA 2.8	Necrosis Specimen- Gangrene Slides- Coagulative necrosis, Caseous necrosis.
3	PA 4.4	Acute Inflammation Specimen- Acute appendicitis, Lobar Pneumonia Slides- Acute appendicitis, Lobar Pneumonia
4	PA 4.4	Chronic Inflammation Specimens- TB lymph node, Madura foot Slide- Granulation tissue, TB lymph node, Actinomycosis, Rhinosporidiosis
5	PA 6.2, PA 6.7	CVC and Infarction Specimen- CVC Liver (Optional). Infarction- Spleen Slide- CVC lung, CVC liver (Optional), CVC Spleen (Optional), Infarction- Spleen
6	PA 7	Benign tumors

		Specimen - Lipoma Slide- Hemangioma, Schwannoma, Lipoma
7	PA 7	Malignant tumors Specimen- Squamous cell carcinoma, Adenocarcinoma Slide- Squamous cell carcinoma, Basal cell carcinoma, Adenocarcinoma, Transitional cell carcinoma (Optional)
8	PA 13.2 PA 13.5	Anticoagulants-Different vaccutainers OSPE-Prepare peripheral blood smear and reporting Slides- Normocytic normochromic blood picture, Eosinophilia.
9.		Revision of Slides/Specimen/Charts

Note: Optional slides/ specimens should not be part of summative evaluation.

SECOND BLOCK

SI NO		TOPIC
LECTURES TO BE COVERED IN SECOND BLOCK		
1.	PA 18	PA 18.2 Describe the etiology, genetics, pathogenesis classification, features, hematologic features of acute leukemia
2.	PA 18	PA 18.2 Describe the etiology, genetics, pathogenesis classification, features, hematologic features of chronic leukemia
3.	PA 19	PA19.4 Describe and discuss the pathogenesis, pathology and the differentiating features of Hodgkin's and non-Hodgkin's lymphoma
4.	PA 21	PA21.1 Describe normal hemostasis and etiology, pathogenesis and pathology haemophilias
5.	PA 21	PA21.2 Classify and describe the etiology, pathogenesis and pathology of vascular and platelet disorders including ITP
6.	PA 21	PA21.4 Define and describe disseminated intravascular coagulation, its laboratory findings and diagnosis of DIC PA21.5 Define and describe disseminated intravascular coagulation, its laboratory findings and diagnosis of Vitamin K def.
7.	PA 22	PA22.4 Enumerate blood components and describe their clinical uses PA22.5 Enumerate and describe infections transmitted by blood transfusion
8.	PA 22	PA22.6 Describe transfusion reactions and enumerate the steps in the investigation of a transfusion reaction PA22.7 Enumerate the indications and describe the principles and procedure of autologous transfusion
9.	PA 11	PA11.1 Describe the pathogenesis and features of common cytogenetic abnormalities and mutations in childhood with laboratory diagnosis of Genetic disorder
10.	PA 11	PA11.2 Describe the pathogenesis and pathology of tumor and tumour like conditions in infancy and childhood (Nephroblastoma, Retinoblastoma, Neuroblastoma)
11.	PA 11	PA11.3 Describe the pathogenesis of common storage disorders in infancy and childhood
12.	PA 12	PA12.2 Describe the pathogenesis of disorders caused by protein calorie malnutrition and starvation
13.	PA 12	PA12.3 Describe the pathogenesis of obesity and its consequences
14.	PA 24	PA24.1 Describe the etiology, pathogenesis, pathology and clinical features of oral cancers include salivary gland tumors

15.	PA 24	PA24.2 Describe the etiology, pathogenesis, pathology, microbiology, clinical and microscopic features of peptic ulcer disease PA24.3 Describe and identify the microscopic features of peptic ulcer
16.	PA 24	PA24.6 Describe and etiology and pathogenesis and pathologic and distinguishing features of Inflammatory bowel disease
17.	PA 24	PA24.7 Describe the etiology, pathogenesis, pathology and distinguishing features of carcinoma of the colon
18.	PA 25	PA25.2 Describe the pathophysiology and pathologic changes seen in hepatic failure and their clinical manifestations, complications and consequences PA25.3 Describe the etiology and pathogenesis of viral and toxic hepatitis: distinguish the causes of hepatitis based on the clinical and laboratory features. Describe the pathology, complications and consequences of hepatitis
19.	PA 25	PA25.4 Describe the pathophysiology, pathology and progression of alcoholic liver disease including cirrhosis PA 25.5 Describe the etiology, pathogenesis and complications of portal hypertension
20.	PA 27	PA27.1 Distinguish arteriosclerosis from atherosclerosis. Describe the pathogenesis and pathology of various causes and types
21.	PA 27	PA27.5 Describe the epidemiology, risk factors, etiology, pathophysiology, pathology, presentations, gross and microscopic features, diagnostic tests and complications of ischemic heart disease
22.	PA 26	PA26.1 Define and describe the etiology, types, pathogenesis, stages, morphology and complications of pneumonia PA26.2 Describe the etiology, gross and microscopic appearance and complications of lung abscess
23.	PA 26	PA26.3 Define and describe the etiology, types, pathogenesis, stages, morphology and complications and evaluation of Chronic Bronchitis and Emphysema
24.	PA 26	PA26.4 Define and describe the etiology, types, pathogenesis, stages, morphology microscopic appearance and complications of tuberculosis – include other organs with Tuberculosis
25.	PA 26	PA26.5 Define and describe the etiology, types, exposure, environmental influence, pathogenesis, stages, morphology, microscopic appearance and complications of Occupational lung disease
26.	PA 26	PA26.6 Define and describe the etiology, types, exposure, genetics environmental influence, pathogenesis, stages, morphology, microscopic appearance, metastases and complications of tumors of the lung and pleura PA26.7 Define and describe the etiology, types, exposure, genetics environmental influence, pathogenesis, morphology, microscopic appearance and complications of mesothelioma
SMALL GROUP DISCUSSION TOPICS TO BE COVERED IN SECOND BLOCK		
1.	PA 18	PA18.1 Enumerate and describe the causes of leucocytosis leucopenia lymphocytosis and leukemoid reactions.
2.	PA 13	Tutorials/ Formative assessment- Anaemia And Leukemia**.**
3.	PA 8	PA8.1 Describe the diagnostic role of cytology and its application in clinical care.
4.	PA 8	PA 8.2 PAP smear, body fluid cytology
5.	PA 19	PA19.1 Enumerate the causes and describe the differentiating features of lymphadenopathy. PA19.6 Enumerate and differentiate the causes of splenomegaly PA19.7 Identify and describe the gross specimen of an enlarged spleen.
6.	PA 19	PA19.2 Describe the pathogenesis and pathology of tuberculous lymphadenitis.
7.	PA 20	PA 20.1 Myeloma - CHARTS
8.	PA 21	PA21.3 Differentiate platelet from clotting disorders based on the clinical and

		hematologic features.
9.	PA 23	PA23.2 Describe abnormal findings in body fluids in various disease States- semen analysis with transudate, exudate and cytology
10.	PA 10	PA10.1 Define and describe the pathogenesis and pathology of malaria. PA10.2 Define and describe the pathogenesis and pathology of Cysticercosis
11.	PA 10	PA10.4 Define and describe the pathogenesis and pathology of common bacterial, viral, protozoal and helminthic diseases
12.	PA 10	PA10.4 Define and describe the pathogenesis and pathology of common bacterial, viral, protozoal and helminthic diseases
13.	PA 24	PA24.4 Describe and etiology and pathogenesis and pathologic features of carcinoma of the stomach
14.	PA 24	Tutorial- Gastrointestinal system
15.	PA 25	PA25.1 Describe bilirubin metabolism, enumerate the etiology and pathogenesis of jaundice, distinguish between direct andindirect hyperbilirubinemia
16.	PA 25	Tutorial / Formative assessment- Hepatobiliary System
17.	PA 27	PA27.7 Describe the etiology, pathophysiology, pathology, gross and microscopic features, diagnosis and complications ofpericarditis and pericardial effusion PA27.9 Classify and describe the etiology, types, pathophysiology, pathology, gross and microscopic features, diagnosis andcomplications of cardiomyopathies
18.	PA 27	PA27.4 Describe the etiology, pathophysiology, pathology, gross and microscopic features, criteria and complications of rheumatic fever PA27.6 Describe the etiology, pathophysiology, pathology, gross and microscopic features, diagnosis and complications of infective endocarditis
19.	PA 27	PA27.2 Describe the etiology, dynamics, pathology types and complications of aneurysms including aortic aneurysms PA27.3 Describe the etiology, types, stages pathophysiology, pathology and complications of heart failure PA27.10 Describe the etiology, pathophysiology, pathology features and complications of syphilis on the CVS.
20.	PA 27	Tutorials/ Formative assessment- Cardiovascular system
21.	PA 26	Tutorial/ Formative assessment- Respiratory System

DOAP TOPICS TO BE COVERED IN SECOND BLOCK

1.	PA 14, 15	Anaemia Slides-Microcytic hypochromic anaemia and Dimorphic anaemia
2.	PA 16.6	Hemolytic anaemia Slides- Sickle cell anaemia/ Thalassemia/ Autoimmune haemolytic anaemia
3.	PA 18	Leukemias Slides- Chronic myeloid leukemia, Chronic lymphoid leukemia. Acute leukemia (Optional)
4.	PA 19	Lymph node / spleen Specimen- Enlarged spleen, TB lymph node Slide- TB lymph node, Hodgkin's lymphoma
5.	PA 22	Blood grouping:OSPE-Forward grouping -Slide/ tube method
6.	PA 23.1	Urine examination Physical examination Chemical examination- Introduce strip methodology. Tests for Reducing substances, Protein, Blood, Ketone bodies. Bilirubin and Bile salts (Optional).
7.	PA 24.3	Gastrointestinal system Specimen- Peptic ulcer, Gastric carcinoma, Carcinoma colon. TB intestine (Optional).

		Slide- Pleomorphic adenoma, carcinoma colon. TB intestine (Optional). Gastric carcinoma (Optional).
8.	PA 25	Hepatobiliary system Specimen-Cirrhosis, Chronic cholecystitis with Gall stones Slide- Cirrhosis, Chronic cholecystitis
9.	PA 27	Cardiovascular system Specimen- Atherosclerosis, Myocardial infarction Slide- Atherosclerosis, Myocardial infarction
10.	PA- 26	Respiratory System Specimen-Pneumonia , Bronchiectasis, Emphysema, TB lung, Carcinoma lung Slide- Pneumonia, TB lung (Optional).
11.		Revision of Slides/Specimen/Charts

Note: Optional slides/ specimens should not be part of summative evaluation.

THIRD BLOCK

SI NO		TOPIC
LECTURES TO BE COVERED IN THIRD BLOCK		
1.	PA 28	PA28.1 Describe the normal histology of the kidney PA28.5 Define and classify glomerular diseases. Enumerate and describe the etiology, pathogenesis, mechanisms of glomerular injury, pathology, distinguishing features and clinical manifestations of glomerulonephritis PA28.6 Define and describe the etiology, pathogenesis, pathology, laboratory, urinary findings, progression and complications of IgA nephropathy
2.	PA 28	PA28.8 Enumerate and classify diseases affecting the tubular interstitium PA28.9 Define and describe the etiology, pathogenesis, pathology, laboratory, urinary findings, progression and complications of acute tubular necrosis PA28.10 Describe the etiology, pathogenesis, pathology, laboratory findings, distinguishing features progression and complications of acute and chronic pyelonephritis and reflux nephropathy
3.	PA 28	PA28.7 Enumerate and describe the findings in glomerular manifestations of systemic disease PA28.11 Define classify and describe the etiology, pathogenesis pathology, laboratory, urinary findings, distinguishing features progression and complications of vascular disease of the kidney PA28.15 Describe the etiology, genetics, pathogenesis, pathology, presenting features and progression of thrombotic angiopathies
4.	PA 28	PA28.14 Classify and describe the etiology, genetics, pathogenesis, pathology, presenting features, progression and spread of renal tumors
5.	PA 29	PA29.1 Classify testicular tumors and describe the pathogenesis, pathology, presenting and distinguishing features, diagnostic tests, progression and spread of testicular tumors PA29.2 Describe the pathogenesis, pathology, presenting and distinguishing features, diagnostic tests, progression and spread of carcinoma of the penis
6.	PA 29	PA29.3 Describe the pathogenesis, pathology, hormonal dependency presenting and distinguishing features, urologic findings & diagnostic tests of benign

		prostatic hyperplasia PA29.4 Describe the pathogenesis, pathology, hormonal dependency presenting and distinguishing features, diagnostic tests, progression and spread of carcinoma of the prostate PA29.5 Describe the etiology, pathogenesis, pathology and progression of prostatitis
7.	PA 30	PA30.1 Describe the epidemiology, pathogenesis, etiology, pathology, screening, diagnosis and progression of carcinoma of thecervix PA30.6 Describe the etiology and morphologic features of cervicitis
8.	PA 30	PA30.2 Describe the pathogenesis, etiology, pathology, diagnosis and progression and spread of carcinoma of the endometrium PA30.7 Describe the etiology, hormonal dependence, features and morphology of endometriosis PA30.8 Describe the etiology and morphologic features of adenomyosis PA30.9 Describe the etiology, hormonal dependence and morphology of endometrial hyperplasia
9.	PA 30	PA30.4 Classify and describe the etiology, pathogenesis, pathology, morphology, clinical course, spread and complications of ovarian tumors
10.	PA 30	PA30.5 Describe the etiology, pathogenesis, pathology, morphology, clinical course, spread and complications of gestational trophoblastic neoplasms
11.	PA 31	PA31.1 Classify and describe the types, etiology, pathogenesis, hormonal dependency of breast pathology and benign disease PA31.4 Enumerate and describe the etiology, hormonal dependency and pathogenesis of gynecomastia
12.	PA 31	PA31.2 Classify and describe the epidemiology, pathogenesis, classification, morphology, prognostic factors, hormonal dependency, staging and spread of carcinoma of the breast
13.	PA 33	PA33.1 Classify and describe the etiology, pathogenesis, manifestations, radiologic and morphologic features and complications of osteomyelitis
14.	PA 33	PA33.2 Classify and describe the etiology, pathogenesis, manifestations, radiologic and morphologic features and complications and metastases of bone tumors
15.	PA 32	PA32.1 Enumerate, classify and describe the etiology, pathogenesis, pathology and iodine dependency of thyroid swellings with Thyroid neoplasms
16.	PA 32	PA32.4 Classify and describe the epidemiology, etiology, pathogenesis, pathology, clinical laboratory features, complications and progression of diabetes mellitus
17.	PA 35	PA35.2 Classify and describe the etiology, genetics, pathogenesis, pathology, presentation sequelae and complications Of CNS tumors
18.	PA 34	PA34.1 Describe the risk factors pathogenesis, pathology and natural history of squamous cell carcinoma of the skin PA34.2 Describe the risk factors pathogenesis, pathology and natural history of basal cell carcinoma of the skin PA34.3 Describe the distinguishing features between a nevus and melanoma. Describe the etiology, pathogenesis, risk factors morphology clinical features and metastases of melanoma
SMALL GROUP DISCUSSION TOPICS TO BE COVERED IN THIRD BLOCK		
1.	PA 28	PA28.2 Define, classify and distinguish the clinical syndromes and describe the etiology, pathogenesis, pathology, morphology,clinical and laboratory and urinary findings, complications of renal failure PA28.3 Define and describe the etiology, precipitating factors, pathogenesis, pathology, laboratory urinary findings, progression and complications of acute

		renal failure – with RFT PA28.4 Define and describe the etiology, precipitating factors, pathogenesis, pathology, laboratory urinary findings progression and complications of chronic renal failure
2.	PA 28	PA28.12 Define classify and describe the genetics, inheritance, etiology, pathogenesis, pathology, laboratory, urinary findings, distinguishing features, progression and complications of cystic disease of the kidney PA28.13 Define classify and describe the etiology, pathogenesis, pathology, laboratory, urinary findings, distinguishing features progression and complications of renal stone disease and obstructive uropathy
3.	PA 28	Tutorial/ Formative assessment- Urinary System
4.	PA 29,30	Tutorial/ Formative assessment- Male Genital System And Female Genital System
5.	PA 32	PA32.2 Describe the etiology, cause, iodine dependency, pathogenesis, manifestations, laboratory and imaging features and course of thyrotoxicosis PA32.3 Describe the etiology, pathogenesis, manifestations, laboratory and imaging features and course of thyrotoxicosis/hypothyroidism with Thyroid function test.
6.	PA 32	Tutorial/ Formative assessment- Endocrine System
7.	PA 33	PA33.3 Classify and describe the etiology, pathogenesis, manifestations, radiologic and morphologic features and complications and metastases of soft tissue tumors
8.	PA 34, 33,19,35	Tutorial/ Formative assessment- Skin, Bone, CNS, Lymph Node
DOAP TOPICS TO BE COVERED IN THIRD BLOCK		
1.	PA 28	Urinary system Specimen- Chronic pyelonephritis, Renal stones with hydronephrosis, Renal cell carcinoma Slide- Chronic pyelonephritis, Renal cell carcinoma
2.	PA 29	Male genital system Specimen- Seminoma testis, Carcinoma penis Slide-Seminoma testis, Benign prostatic hyperplasia
3.	PA 30	Female genital system Specimen-Leiomyoma, Carcinoma cervix, Benign Cystic Teratoma, Serous/Mucinous Cystadenoma. Hydatidiform mole (Optional). Slides- Leiomyoma, Serous/Mucinous Cystadenoma, Hydatidiform mole. Benign Cystic Teratoma (Optional)
4.	PA 31	Breast Specimen- Fibroadenoma. Carcinoma breast (Optional) Slide- Fibroadenoma. Carcinoma breast (Optional)
5.	PA 32	Endocrine System Specimen- Multinodular goitre, Papillary carcinoma Slide- Multinodular goitre, Hashimoto's thyroiditis, Papillary carcinoma thyroid.
6.	PA 33	Bone tumors Specimen- Osteoclastoma, Osteosarcoma Slide- Osteoclastoma. Osteosarcoma (Optional)
7.	PA 35	Central nervous system Charts- Interpretation of CSF findings in various meningitis.
8.		Revision of Slides/Specimen/Charts
9.		Revision of Slides/Specimen/Charts
10.		Revision of Slides/Specimen/Charts

Note: Optional slides/ specimens should not be part of summative evaluation.

LIST OF INSTRUEMENTS, SPECIMENS, SLIDES AND CHARTS

LIST OF INSTRUMENTS

Sl .no	Instruments
1.	Lumbar Puncture Needle
2.	Liver Biopsy Needle
3.	Bone marrow Aspiration Needle
4.	Wintrobe's Tube
5.	Westergren's ESR Tube
6.	Urinometer
7.	R.B.C Pipette
8.	W.B.C Pipette
9.	Sahli's Haemoglobinometer
10.	Neubauer's Counting Chamber
11.	Hb Pipette
12.	EDTA Tube
13.	Sodium Citrate Tube
14.	Plain vaccutainer
15.	Heparin tube
16.	Blood collection bag

LIST OF SPECIMENS

Sl. No.	Gross specimens
1.	Fatty liver
2.	Gangrene
3.	Infarct spleen
4.	TB lymph node
5.	Acute appendicitis
6.	Lobar pneumonia
7.	Madura foot
8.	CVC liver
9.	Lipoma
10.	Squamous cell carcinoma
11.	Adenocarcinoma colon
12.	Enlarged spleen
13.	Peptic ulcer
14.	Gastric carcinoma
15.	Cirrhosis
16.	Gall bladder with gall stones
17.	Bronchiectasis
18.	Emphysema
19.	Carcinoma lung

20.	Atherosclerosis
21.	Myocardial infarction
22.	Renal cell carcinoma
23.	Chronic pyelonephritis
24.	Renal stones with hydronephrosis
25.	Carcinoma Penis
26.	Seminoma testis
27.	Leiomyoma
28.	Teratoma
29.	Serous/ Mucinous cystadenoma
30.	Carcinoma Cervix
31.	Fibroadenoma
32.	Multinodular goitre
33.	Papillary carcinoma thyroid
34.	Osteoclastoma
35.	Osteosarcoma

LIST OF SLIDES

SL. NO.	**Slides**
1.	Fatty liver
2.	Monckeberg medial calcific sclerosis
3.	Hyaline degeneration (leiomyoma)
4.	Coagulative necrosis
5.	Caseous necrosis
6.	Acute appendicitis
7.	Lobar pneumonia
8.	Granulation tissue
9.	TB lymph node
10.	Actinomycosis
11.	Rhinosporidiosis
12.	CVC lung
13.	Lipoma
14.	Hemangioma
15.	Schwannoma
16.	Squamous cell carcinoma
17.	Basal cell carcinoma
18.	Adenocarcinoma-colon
19.	Hodgkin’s lymphoma
20.	Pleomorphic adenoma
21.	Cirrhosis of Liver
22	Chronic cholecystitis
23	Atherosclerosis
24	Myocardial Infarction

25	Chronic pyelonephritis
26	Renal cell carcinoma
27	Seminoma
28	Benign prostatic hyperplasia
29	Leiomyoma
30	Hydatidiform mole
31	Serous cystadenoma/ Mucinous cystadenoma
32	Fibroadenoma
33	Osteoclastoma
34	Multinodular goitre
35	Hashimoto's thyroiditis
36	Papillary carcinoma thyroid
Hematology	
1.	Normocytic normochromic blood picture
2.	Eosinophilia
3.	Microcytic hypochromic anaemia
4.	Dimorphic anaemia
5.	Chronic lymphoid leukemia
6.	Chronic myeloid leukemia

LIST OF CHARTS

Sl. no	Charts
1.	Cytology: Malignant cells in Pap smear.
2.	Body fluids-Pleural/Ascitic (exudate/transudate)
3.	CSF analysis for Meningitis - Viral
4.	CSF analysis for Meningitis - Bacterial
5.	CSF analysis for Meningitis - Tubercular
6.	Viral hepatitis- Acute phase
7.	Viral hepatitis- Chronic phase
8.	Viral hepatitis- Convalescent and recovery phases
9.	Thyroid function test
10.	Renal Function test- Acute renal failure
11.	Renal Function test- Chronic renal failure
12.	Autoimmune Hemolytic anaemia
13.	Sickle cell anaemia
14.	Thalassemia
15.	Hereditary Spherocytosis
16.	Hematolymphoid malignancies- AML
17.	Hematolymphoid malignancies- ALL
18.	Hematolymphoid malignancies- Multiple Myeloma
19.	Lab diagnosis of Myocardial infarction.

TOPICS FOR INTEGRATION

	Pathology	Microbiology	Pharmacology	Forensic Medicine	Community Medicine	Concerned Clinical subjects
BLOCK 1	Immunology Anaemia Wound healing Shock	Immunology Anaemia Shock Surgical practice Infective endocarditis & Rheumatic heart disease Immunisation	Immunology Anaemia Essential medicines Shock Toxicology	Wound healing Toxicology	Essential medicines	Shock Surgical practice Toxicology Infective endocarditis & Rheumatic heart disease Immunisation
BLOCK 2	Infective endocarditis & Rheumatic heart disease (Nesting) Myocardial infarction Atherosclerosis Tuberculosis Leprosy AIDS Malaria	Tuberculosis Leprosy AIDS Malaria Enteric fever Viral hepatitis Acid peptic disease Bone & Joint infection Meningitis Encephalitis STI	Tuberculosis Leprosy AIDS Malaria Acid peptic disease		Tuberculosis Leprosy AIDS Malaria	Myocardial infarction Atherosclerosis Tuberculosis Leprosy AIDS Malaria Enteric fever Viral hepatitis Acid peptic disease Bone & Joint infection Meningitis Encephalitis STI
BLOCK 3	Diabetes mellitus Hepatitis (Sharing / Nesting)	Zoonotic disease Hospital acquired infection National health programs of communicable diseases	Diabetes mellitus Endocrines		Diabetes mellitus Zoonotic disease Hospital acquired infection National health programs of communicable diseases	Diabetes mellitus Zoonotic disease Hospital acquired infection Endocrines

NOTE - National days of importance for AIDS, Leprosy, Tuberculosis, Malaria, Mental health, Breast feeding promotion, World health day, etc. can be used to conduct full day integration sessions for students

Beyond these topics, Institutions are free to integrate topics with concerned departments, wherever feasible within the MCI stipulations.

Minimum two of the suggested topic should be covered in each block.

DISTRIBUTON OF ATTITUDE ETHICS AND COMMUNICATION SKILLS (AETCOM) MODULE

SI NO	MODULE	TOPIC	DEPARTMENT					No. of hours	Formative assessment	Summative assessment
			PA	MI	PH	CM	FM			
1	2.1	Foundation of communication				✓			✓	-
2	2.2	Foundation of bioethics					✓		-	✓
3	2.3	Health care as a right				✓			-	✓
4	2.4	Working in a health care team	✓					6	✓	-
5	2.5	Bioethics- case studies on patient autonomy and decision making (patient rights and shared responsibility in health care)			✓				✓	✓
6	2.6	Bioethics-Case studies on patient autonomy and decision making (refusal of care including do not resuscitate and withdrawal of lifeSupport)			✓				✓	✓
7	2.7	Bioethics- Case studies on patient autonomy and decision making (consent for surgical procedures)		✓					✓	✓
8	2.8	What does it mean to be a family member of sick patient					✓		✓	✓

****PA-Pathology; MI- Microbiology; PH- Pharmacology; CM- Community medicine; FM-Forensic medicine.**

EVALUATION METHODOLOGY

Summative Assessment - An assessment conducted at the end of instruction to check how much the student has learnt.

Formative Assessment - An assessment conducted during the instruction with primary purpose of providing feedback for improving learning.

Internal Assessment - Range of assessments conducted by the teachers teaching a particular subject with the purpose of knowing what is learnt. Internal assessment can have both formative and summative functions.

Note - Assessment requires specification of measurable and observable entities. This could be in the form of whole tasks that contribute to one or more competencies or assessment of a competency per se. Another approach is to break down the individual competency into learning objectives related to the domains of knowledge, skills, attitudes, communication etc. and then assess them individually.

Scheduling of Internal Assessment - Done once in three months preferably at the end of each block.

Theory IA can include: Written tests should have essay questions, short notes and creative writing experiences.

Practical IA can include: Practical tests, Objective Structured Practical Examination (OSPE), Directly Observed Procedural Skills (DOPS), records maintenance and attitudinal assessment.

Assessment of Log-book- Log book should record all activities like seminar, symposia, quizzes and other academic activities. It should be assessed regularly and submitted to the department. Up to ten(10) per cent IA Practical marks should be for Log book assessment.

Assessment of Practical Record book- Practical book should record all skills and other practical exercises done during the academic programme. It should be assessed regularly and submitted to the department. Up to ten (10) per cent IA Practical marks should be for Practical record book assessment

Assessment for AETCOM will include: - Written tests comprising of short notes and creative writing experiences only in internal assessment.

SUMMATIVE ASSESSMENT/ UNIVERSITY EXAM

THEORY

GENERAL INSTRUCTIONS

1. The topics for the two papers are distributed
2. Questions in each paper will be as per distribution
3. The SLO needs to be referred while setting the question paper
4. Repetition of questions from the same SLO to be avoided
5. The marks allotted to the different topics & sections to be adhered.
6. Questions to be covered from the different sections of Pathology

Sl no	Nature of question	Marks
1	Multiple Choice Questions	20x1=20
2	Long Essay (LE)	2x10=20
3	Short Essay (SE)	6x5=30
4	Short Answer (SA)	10x3=30

Marks distribution across different sections

Sl no	Section	Paper	Marks distribution	Total
1	General Pathology (40 - 60) Hematology + Clinical Pathology + Cytology (40 - 60)	I	100	200
2	Systemic Pathology	II	100	

TOPIC-WISE MARKS DISTRIBUTION FOR THEORY EXAMINATION

SI NO	TOPICS	MARKS DISTRIBUTION		
GENERAL PATHOLOGY		**Minimum**	**Maximum**	**Nature of question**
1.	**Introduction to pathology**	0	3	Only SA
2.	**Cell Injury and Adaptation**	3	13	LE,SE,SA
3.	**Amyloidosis**	0	5	SE,SA
4.	**Inflammation**	3	13	LE,SE,SA
5.	**Healing and repair**	0	5	SE,SA
6.	**Hemodynamic disorders**	3	13	LE,SE,SA
7.	**Neoplastic disorders**	3	13	LE,SE,SA
8.	**Basic diagnostic cytology**	3	5	SE,SA
9.	**Immunopathology and AIDS**	3	8	SE,SA
10.	**Infections and Infestations**	0	8	SE,SA
11.	**Genetic and paediatric diseases**	Non-Core		
12.	**Environmental and nutritional disease**	0	6	SE,SA
HEMATOLOGY AND CLINICAL PATHOLOGY				
13.	**Introduction to haematology**	3	10	LE,SE,SA
14.	**Microcytic anemia**	0	10	LE,SE,SA
15.	**Macrocytic anemia**	0	10	LE,SE,SA
16.	**Hemolytic anemia**	0	10	LE,SE,SA
17.	**Aplastic anemia**	Non-Core		
18.	**Leukocyte disorders**	0	10	LE,SE,SA
19.	**Lymph node and spleen**	0	6	SE,SA
20.	**Plasma cell disorders**	0	6	SE,SA
21.	**Hemorrhagic disorders**	0	10	LE,SE,SA
22.	**Blood banking and transfusion**	0	6	SE,SA
23.	**Clinical Pathology**	3	6	SE,SA
SYSTEMIC PATHOLOGY				
24.	**Gastrointestinal tract**	3	11	LE,SE,SA
25.	**Hepatobiliary system**	3	11	LE,SE,SA
26.	**Respiratory system**	3	11	LE,SE,SA
27.	**Cardiovascular system**	3	15	LE,SE,SA

28.	**Urinary Tract**	3	11	LE,SE,SA
29.	**Male Genital Tract**	0	6	SE,SA
30.	**Female Genital Tract**	0	10	LE,SE,SA
31.	**Breast**	0	10	LE,SE,SA
32.	**Endocrine system**	0	10	LE,SE,SA
33.	**Bone and soft tissue**	0	10	LE,SE,SA
34.	**Skin**	0	6	SE,SA
35.	**Central Nervous system**	0	6	SE,SA
36.	**Eye**	Non-Core		

Note: '0' signifies there is an option of not asking any question from that particular topic

SUMMATIVE ASSESSMENT/ UNIVERSITY EXAM PRACTICALS

Total Marks – 100 (Practical: 80 + Viva voce: 20)

Exercise 1- Spotters (10 x 2marks each) – 20 marks

Time allotted: 10mins
Specimens - 4
Histopathology Slides - 3
Haematology slides - 2
Instrument -1

Note: Students need to identify the spotter and write two relevant points

Exercise 2 – **OSPE (**Objective Structured Practical Examination**)** – 5 marks
Time allotted: 5mins, each will have to do either;

Blood group or **Preparation of peripheral smear**
Student needs to perform the following steps

Blood group		
Sl No	**Steps**	**Marks awarded**
1	Take 1 or 2 slides and mark the slides appropriately	0.5
2	Take anti-sera A, B and D and place according to the marking	1
3	Add a drop of blood to the anti-sera	0.5
4	Mix well	1
5	Look for the agglutination and interpret	2
Total		**5**

Preparation of peripheral smear		
Sl No	**Steps**	**Marks awarded**
1	Take a clean slide	0.5
2	Take a drop of blood and place it appropriately on the slide	0.5
3	The spreader slide is to be placed at an angle of 45^0 and moved back to make contact with the drop, spreading it evenly along the line of contact. Pull the spreader steadily to make a smear and label the slide	2
4	Smear needs to be tongue shaped and without any windows,	2
Total		**5**

Exercise 3:
Time allotted: 20mins
Urine Analysis – 15 Marks
Physical examination + Chemical examination (Detection of 2 abnormal constituents) based on history provided

Exercise 4:
Time allotted: 20mins
Histopathology slide – 15 Marks
Identify + draw a neat labeled diagram + write points in favor of identification

Exercise 5:
Time allotted: 20mins
Peripheral Smear – 15 Marks
Identify + draw a neat labeled diagram + write points in favor of identification

Exercise 6:

Time allotted: 10mins

Chart - 10 Marks, each student is given only one chart.

Interpret the chart and answer the given questions.

NOTE: The evaluation of charts on certifiable competencies should be completed in formative and internal assessment and duly documented in the log book.

Exercise 7:
Viva Voce (20 marks)

Time allotted: 20 to 30mins (5-6mins per candidate for each examiner)
Marks allotted for each examiner – 5
Subject allotted for each examiner:
1. Clinical Pathology and hematology
2. General Pathology
3. Systemic Pathology – I (CVS, RS, GIT, Hepatobiliary, Lymphoreticular and Spleen)
4. Systemic Pathology - II (Urinary system, Male and Female genital tract, Endocrines, Bone and Soft tissue, Central Nervous System,Skin)

INTERNAL ASSESSMENT

- There will be 3 internal assessment examinations in Pathology. The structure of the internal assessment examinations should be preferably similar to the structure of University examinations.

- It is mandatory for the students to appear for all the internal assessment examinations.

- First internal assessment examination will be held after 3 months, second internal assessment examination will be held after six months and third internal assessment examination will be held after 9 months of Phase II curriculum.

- Pattern of first and second Internal Assessment are left to the discretion of the individual institute. However third internal assessment has to be conducted in the same pattern of the University exam

- Additional internal assessment examination for absent students can be considered due to genuine reason after approval by the head of the department. It should be taken before the submission of internal assessment marks to the University.

- Internal assessment marks allotment for theory and practical for the first and second internal assessment are left to the discretion of the respective institutes. Marks allotted in the third (final) Internal Assessment should be preferably for 100 marks each for Theory and Practical.

- 20% of the internal assessment marks in either Theory and Practical should be from Formative Assessment

- **Feedback in Internal Assessment** - Feedback should be provided to students throughout the course so that they are aware of their performance and remedial action can be initiated well in time. The feedbacks need to be structured and the faculty and students must be sensitized to giving and receiving feedback.

- The results of IA should be displayed on notice board within two weeks of the test and an opportunity provided to the students to discuss the results and get feedback on making their performance better.

- It is also recommended that students should sign with date whenever they are shown IA records in token of having seen and discussed the marks.

- **Internal assessment marks will not be added to University examination marks and will reflect as a separate head of passing at the summative examination.**

- **Internal assessment should be based on competencies and skills.**

- **Criteria for appearing in University examination:** Learners must secure at least 50% marks of the total marks (combined in theory and practical; not less than 40 % marks in theory and practical separately) assigned for internal assessment in order to be eligible for appearing at the final University examination.

- **Average marks obtained in all three internal assessment should be calculated to 40 marks.**

- A candidate who has not secured requisite aggregate in the internal assessment may be subjected to remedial assessment by the institution. If he/ she successfully complete the same, he/she is eligible to appear for University Examination. Remedial assessment shall be completed before submitting the internal assessment marks online to the University.

PROPOSED MARKS ALLOCATION FOR PRACTICAL IA

Sl No	Assessment	Marks allotted		
		First IA	Second IA	Third (Final) IA
1	Spotters	05	05	10
2	Exercises (3)	12	12	15x3 = 45
3	OSPE	05	05	5
4	Charts	05	05	10
5	Formative Assessment	08	08	20
6	Record book	05	05	10
Total		**40**	**40**	**100**

NOTE:

1. The spotters, exercises and OSPE depends on the portion covered in the respective block.
2. Certifiable competencies/AETCOM should be completed in Formative/Internal assessment

ANNEXURES

Annexure I- Log book format

Annexure II- Model question paper

Annexure - I

SRI SIDDHARTHA ACADEMY OF HIGHER EDUCATION

(Deemed to be University, declared u/s 3 of the UGC Act, 1956)

Phase- II MBBS

LOG BOOK FORMAT

DEPARTMENT OF PATHOLOGY

Name of the Candidate :

Name of the College :

University Register Number :

Academic Year :

INDEX

SL NO	CONTENT	PAGE NO
1.	BONAFIDE CERTIFICATE	
2.	PROFORMA OF THE STUDENT	
3.	GUIDELINES FOR LOG BOOK: GENERAL INFORMATION	
4.	ATTENDANCE EXTRACT	
5.	INTERNAL ASSESSMENTS	
6.	FORMATIVE ASSESSMENT	
7.	SELF DIRECTED LEARNING FORMAT	
8.	CONFERENCE/CME/WORKSHOP ATTENDED	
9.	SCIENTIFIC PROJECT LIKE ICMR/ PRESENTATIONS/ OUTREACH ACTIVITIES	
10.	ACHIEVEMENTS/ AWARDS /ANY OTHER ACTIVITIES	
11.	EXTRACURRICULAR ACTIVITIES	

BONAFIDE CERTIFICATE

This is to certify that this log book is the bonafide record of Mr/Ms…….....whose particulars along is given above. His/ Her log of competencies acquired, are as noted in the entries in this log book in the subject of Pathology as per the Competency Based Undergraduate Medical Education Curriculum, Graduate Medical Regulation 2019, during the period …….. to……..

She / He will not be eligible / eligible to appear for the summative (University) assessment as on the date given below.

Signature with date

Head, Department of Pathology :

Signature with date

Principal/Dean :

BASIC PROFORMA OF THE STUDENT

Photo

PARTICULARS OF THE STUDENT:

Name of the student :

Date of Birth :

Father’s name :

Mother’s name :

Address :

Contact number :

Email ID :

Signature: .....

SUGGESTED GUIDELINES FOR LOG BOOK:
GENERAL INFORMATION:

1) The logbook is a record of the academic / co-curricular activities of the designated student, who would be responsible for maintaining his/her logbook.
2) The student is responsible for getting the entries in the logbook verified by the Faculty In-charge regularly.
3) Entries in the logbook will reflect the activities undertaken in the department & have to be scrutinized by the Head of the concerned department.
4) The logbook is a record of various activities by the student like:
    a. Overall participation & performance
    b. Attendance
    c. Participation in sessions
    d. Record of completion of pre-determined activities.

e. Acquisition of selected competencies

5) The logbook is the record of work done by the candidate in that department / specialty and should be verified by the college before submitting the application of the students for the University examination.

SUMMARY OF ATTENDANCE

Phase	*Percentage of classes attended*		*Eligible for University examination (Yes / No)*	*Signature of student*	*Signature of teacher*
	Theory	*Practical*			
First Block			NA		
Second Block			NA		
Third Block			NA		
Attendance at the end of MBBS Phase II					

SUMMARY OF INTERNAL ASSESSMENT (IA)

Sl. No.	*Internal Assessment*	*Date of Assessment*	*Total marks*		*Marks scored*		*Signature of student*	*Signature of teacher*
			Theory	*Practical*	*Theory*	*Practical*		
	First							
	Second							
	Third							
	Remedial							

Note: A candidate who has not secured requisite aggregate in the internal assessment may be subjected to remedial assessment by the institution. If he/ she successfully complete the same, he/she is eligible to appear for University Examination. Remedial assessment shall be completed before submitting the internal assessment marks online to the University.

COMPETENCY ASSESSMENT

CERTIFIABLE SKILLS

Sl	**Certifiabl**	**Attempt**	**Faculty decision**	**Rating**		**Signat**	**Signat**

.No.	e competency	First	Repeat	Remedial	Completed	Not Completed	Below expectations C	Meets expectations B	Exceeds expectations A	Date	ure of student	ure of faculty
1.	PA 16.6 Prepare peripheral blood smear.Identify haemolytic anaemia											

Sl. No.	Certifiable competency	Attempt			Faculty decision		Rating			Date	Signature of student	Signature of faculty
		First	Repeat	Remedial	Completed	Not Completed	Below expectations C	Meets expectations B	Exceeds expectations A			

1.	**PA-25.6 Interpret liver function and viral hepatitis serology panel. Distinguish obstructive from non-obstructive jaundice based on clinical features and function tests.**											

Sl. No.	Certifiable competency	Attempt			Faculty decision		Rating		Date	Signature of student		Signature of faculty
		First	Repeat	Remedial	Completed	Not Completed	Below expectations C	Meets expectations B	Exceeds expectations A			
3.	PA-35.3 Identify the etiology of meningitis based on given CSF parameters											

AETCOM COMPETENCY

1. Competency identified

a. AETCOM module 2.4

Working in a health care team

Competencies:

1. Demonstrate ability to work in a team of peers and superiors

2. Demonstrate respect in relationship with patients, fellow team members, superiors and other health care workers

b. Name of Activity

1. Tag along session in hospital laboratory – 2 x 2 hours = 4 hours

2. Small group discussion – 2 hours

c. Contents:

This module may be done as two interdependent sessions:

1. A "tag along" session where students spend time with health care workers including nurses, technicians and others, observe their

work, their interactions, conduct a small interview with them and write a narrative based on this interview.

2. A small group discussion which is based on the students' observations, experiences, reflections and inferences and what must be done

by them to work as an integral part of the health care team.

d. Criteria for successful completion of activity:

Active participation in

i. Assessment of reflections by mentors

ii. Numerical scoring for activity: Not required

iii. Documentation of activity in portfolio or Annexure of logbook: Required. Document reflection

iv. Recommended action when learner is unsuccessful

a. Provide feedback

b. Allow repeat and give chance to improve in subsequent sessions.

e. Any other comments Student reflections may be part of the portfolio as a record of the activity done.

AETCOM

# Competency	**Name of Activity**	**Date completed**	**Attempt at activity** First or Only (F) Repeat (R) Remedial (Re)	**Rating** Below Expectations (C) Meets Expectations (B) Exceeds Expectations (A)	**Decision of faculty** Completed Repeat Remedial	**Initial of faculty and date**	**Feedback Receive**d Initial of learner
2.4	**Working in a health care team**						

OTHER ACADEMIC ACTIVITIES

# Competency	**Name of Activity**	**Date completed**	**Rating** Below Expectations (C) Meets Expectations (B) Exceeds Expectations (A)	**Decision of faculty** Completed Repeat Remedial	**Initial of faculty and date**	**Feedback Receive**d Initial of learner

- Duplicate of this template shall be made depending on the activities planned.
- Activities may be skill sessions, seminars, tutorials, projects, etc.

Vertical Integration

Sl no	Date	Topic	Attendance	Signature of faculty

NON-CERTIFIABLE (SHOWS HOW) ACTIVITIES

# Competency	**Name of Activity**	**Date completed**	**Rating** Below Expectations (C) Meets Expectations (B) Exceeds Expectations (A)	**Decision of faculty** Completed Repeat Remedial	**Initial of faculty and date**	**Feedback Receive**d Initial of Learner

- Duplicate of this template shall be made depending on the activities planned.
- Activities may be skill sessions, seminars, tutorials, projects, etc.

<u>Format for documentation and feedback for Self-Directed Learning</u>

Sl no	Date	Topic of SDL	Feedback	Signature of faculty/mentor
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				

IX. Summary of formative assessment for the entire year

Sl. No.	*Type of Assessment*	*Total marks*	*Marks scored*	*Signature of student*	*Signature of teacher wuth date*
2	SGD/Tutorial/Seminars/ Other Activity	10			
7	Professionalism	10			
	TOTAL	20			

Rubric for assessing the professionalism

Phase	*Areas assessed*					*Signature of student*	*Signature of teacher*
	Regular for classes(5)	*Submission of records (5)*	*Behaviour in class and discipline(5)*	*Dress code and presentablility(5)*	*Total (20)*		
At the end of 1st IA							
At the end of 2nd IA							
At the end of 3rd IA							
Average score at the end of the year							

VIII. SMALL GROUP DISCUSSION/SELF DIRECTED LEARNING – ASSESSMENT AND FEEDBACK

Module #	**Name of SGD/SDL Activity**	**Date completed**	**Score**	**Initial offaculty anddate**	**Feedback Receive**d **Initial of learner**

The small group discussions will be scored based on the following criteria. Marks to be given

Score	Criteria for assessment
5	Is a proactive participant showing a balance between listening, initiating, and focusing discussion. Displays a proactive use of the whole range of discussion skills to keep discussion going and to involve everyone in the group. Understands the purpose of the discussion and keeps the discussion focused and on topic. Applies skills with confidence, showing leadership and sensitivity.
4	Is an active participant showing a balance between listening, initiating, and focusing discussion. Demonstrates all the elements of discussion skills but uses them less frequently and with less confidence than the above level. Keeps the discussion going but more as a supporter than a leader. Tries to involve everyone in the group. Demonstrates many skills but lacks the confidence to pursue them so that the group takes longer than necessary to reach consensus. Demonstrates a positive approach but is more focused on getting done than on having a positive discussion.
3	Is an active listener but defers easily to others and lacks confidence to pursue personal point of view even when it is right. Participates but doesn't use skills such as summarizing and clarifying often enough to show confidence. Limits discussion skills to asking questions, summarizing, and staying on topic. Lacks balance between discussion and analytical skills. Either displays good analysis skills and poor discussion skills or good discussion skills and poor analysis skills.
2	Is an active listener but defers easily to others and tends not pursue personal point of view, lacking confidence. Limits discussion skills to asking questions, summarizing and staying on topic. Rarely demonstrates analysis skills because doesn't understand the purpose of the discussion, and as a result, offers little evidence to support any point of view.
1	Demonstrates no participation or effort. Participates only when prompted by the teacher. Only responds to others and initiates nothing. Provides limited responses that are often off topic. Participates minimally so that it is impossible to assess analysis skills or understanding of the issues.

Other academic/non-academic activities

CONFERENCE/CME/WORKSHOP ATTENDED

SL NO	DATE	PARTICULARS	REMARKS IF ANY	SIGNATURE OF STAFF

SCIENTIFIC PROJECT PRESENTATIONS/REPORTS/ OUTREACH ACTIVITIES

SL NO	DATE	PARTICULARS	SIGNATURE OF STAFF

ACHIEVEMENTS/ AWARDS /ANY OTHER ACTIVITIES

SL NO	DATE	PARTICULARS	SIGNATURE OF FACULTY

EXTRACURRICULAR ACTIVITIES

SL NO	DATE	PARTICULARS	SIGNATURE OF FACULTY

Annexure III - Recommended books:

Subject Pathology

RECOMMENDED BOOKS:

1. Kumar.V, Abbar.A.K, Aster.J.C. Robbins and Cotran Pathologic basis of Disease.10th ed, c.
2. Walter.J.B & Talbot.I.C. General Pathology.7th ed, Elsevier; 1996
3. Rubin.R, Strayer.D.S.Rubin'sPathology. 6th ed, Wolters Kluwer, Lippincott Williams and Wilkins; 2012.
4. O'Dowd G, Bell S & Wright S. Wheater's Pathology. 6th ed, Elsevier; 2020.
5. Saxena.R, Pati.H.P, Mahapatra.M, Firkin.F, Chesterman.C & Ponington.D et.al. DeGruchy`s Clinical Haematology in Medical Practice. 6th ed, Wiley India; 2012.
6. Nayak.R & Rai.S. Essentials in Haematology and Clinical Pathology. Jaypee Brothers; 2017.
7. Carman. H. R. Handbook of Medical Laboratory Technology. Christian Medical Association of India. 2013.
8. Singh T. Atlas and Text of Hematology. 4th ed Avichal Publishing Company 2018.
9. Reid R, Roberts F & Macduffe. Pathology Illustrated. 7th ed Churchill Livingstone, Elsevier; 2011.
10. Curran R C, Jones E L. Gross Pathology- A Color Atlas. 4th ed. Harvey Miller Publishers.
11. Underwood's pathology: a clinical approach 7th ed,

REFERENCE BOOKS:

LEVEL 1:

1. McKenzie.S.B,Williams.J.L.Clinical laboratory Haematology.2ed, Pearson; 2009
2. Bain.J.B,Bates.I, Laffan.M.A.Dacie and Lewis PraticalHaematology, 12ed ,Elsevier; 2017
3. Damjanov.I,Linder.J.Anderson`s Pathology.10ed,Elsevier; 2019
4. McPherson.R.A.Henry`s Clinical Diagnosis and Management by Laboratory Methods. 23ed, Elsevier; 2016

LEVEL 2 :

1. Greer.J.P,Arber.D.A,Glader.B,List.A.F,Means.R.J,Paraskevas.F et.al. Wintrobe`s Clinical Haematology.13ed WoltersKluwer, Lippincott Williams and Wilkins, 2013
2. Rosai.J.Rosai and Ackerman`s Surgical Pathology. 11ed,Elsevier ; 2018
3. WHO Classification of Tumors Series
4. https://whobluebooks.iarc.fr/

MICROBIOLOGY

TABLE OF CONTENTS

Sl. No.	Content
1	Goal and Objectives
2	Terms and teaching guidelines
3	Minimum teaching hours
4	Specific learning Objectives
5	Teaching learning
6	Certifiable competencies
7	Time table
8	Competency distribution in each block
9	Topics for Integration
10	Distribution of AETCOM module
11	Assessment– Formative & Internal (Theory & Practical)
12	Summative assessment/University exam- Theory
13	List of slides /specimens/exercises
12	Summative assessment/University exam- Practical
	Annexure I- Log book format
	Annexure II- Model Question paper

I. GOALS AND OBJECTIVES

GOAL

- The broad goal of the teaching of undergraduate students in Microbiology is to provide an understanding of the natural history of infectious disease in order to deal with the etiology, pathogenesis, laboratory diagnosis, treatment and control of infections in the community.

OBJECTIVES

1. Competencies: The undergraduate learner demonstrate:
    a. Understanding of role of microbial agents in health and disease
    b. Understanding of the immunological mechanisms in health and disease
    c. Ability to correlate the natural history, mechanisms and clinical manifestations of infectious diseases as they relate to the properties of microbial agents
    d. Knowledge of the principles and application of infection control measures
    e. An understanding of the basis of choice of laboratory diagnostic tests and their interpretation, antimicrobial therapy, control and prevention of infectious diseases.

c) INTEGRATION

- The teaching should be aligned and integrated horizontally and vertically in organ systems with emphasis on host-microbe-environment interactions and their alterations in disease and clinical correlations so as to provide an overall understanding of the etiological agents, their laboratory diagnosis and prevention.

II. TERMS AND TEACHING GUIDELINES

1. LECTURE

Is a teaching learning method which includes traditional and interactive sessions involving a large group.

2. SMALL GROUP DISCUSSION

It is an instructional method involving small groups of students in an appropriate learning context.

3. DOAP (Demonstration- Observation - Assistance - Performance)

A practical session that allows the student to observe demonstration assists the performer, perform in a simulated environment, perform under supervision or perform independently.

4. SELF DIRECTED LEARNING

A process in which individuals take the initiative, with or without the help of others in diagnosing their learning needs, formulating learning goals, identifying human and material sources for learning , choosing and implementing appropriate learning methods.

5. SKILL ASSESSMENT

Is a session that assesses the skill of the student including those in the practical laboratory, skills lab, skills station that uses mannequins/ paper case/simulated patients/real patients as the context demands.

6. CORE

A competency that is necessary in order to complete the requirements of the subject (traditional must know)

7. NON – CORE

A competency that is optional in order to complete the requirements of the subject (traditional nice (good) to know/ desirable to know).

III. MINIMUM TEACHING HOURS

MCI No	Specific Learning Objective	Number of competencies	LECTURE	TUTORIAL /SGD	Practicals	SDL
MI1	General Microbiology and Immunity	11	16	8	15	3
MI2	CVS and Blood	7	9	9	5	1
MI3	Gastrointestinal and hepatobiliary system	8	10	4	5	0
MI4	Musculoskeletal system skin and soft tissue infections	3	10	3	5	2
MI5	Central Nervous System infections	3	6	7	3	1
MI6	Respiratory tract infections	3	6	9	7	1
MI7	Genitourinary & Sexually transmitted infections	3	5	2	4	1
MI8	Zoonotic diseases and miscellaneous	16	11	13	11	1
	TOTAL	**54**	**73**	**55**	**55**	**10**
	CBME Requirement		**70**	**110**		**10**

IV . LEARNING OBJECTIVES

Learning objectives are derived as per the competency given in MCI CBME manual

The following instructions may be followed

Topics are numbed as per MCI like MI1, MI2, MI3……..MI8

Under each topic competency are numbered as per MCI MI1.1, MI1.2 ……MI8.16

Under each competency sub competencies are numbered as MI1.1.1.MI1.1.2……..

The objectives mentioned are basic minimum to be covered under the curriculum. For students benefit covering the topic beyond the mentioned competencies is desirable

TOPIC: GENERAL BACTERIOLOGY & IMMUNOLOGY (MI1.1-1.11)

No of competencies – 11 No of procedures requiring certification – 1

MI1.1 Describe the different causative agents of Infectious diseases, the methods used in their detection, and discuss the role of microbes in health and disease

MI1.1.1 Introduction to Infectious diseases

- Define: Health, Disease, infectious agents, commensalism, parasite, pathogen and opportunistic pathogen.
- Classify types of infections, Describe chain of infection
- Enumerate various types of medically important micro-organisms - bacteria, viruses, parasites, fungi
- Differentiate between pathogen, commensals, and saprophyte.

MI1.1.2 Isolation & identification of bacteria

MI1.1.2.1 Describe the classification & morphology of bacteria.

MI1.1.2.2 Describe general pathogenesis and general lab diagnosis of bacterial infections

MI1.1.2.3 Define,classify culture media, applications of **culture media**

List out and describe different **culture methods**

MI1.1.2.4 Interpretation of various biochemical reactions

MI1.1.3 Introduction to virology

- Describe the classification & morphology of virus
- Describe general pathogenesis and general lab diagnosis of viral infections

MI1.1.4 Introduction to mycology

- Describe the classification & morphology of fungi .Describe general pathogenesis and general lab diagnosis of fungal infections.

MI1.1.5 Introduction to parasitology

- Describe the classification, morphology of parasites.
- Describe general pathogenesis and general lab diagnosis of parasitic infections

MI1.2 Perform and identify the different causative agents of Infectious

diseases by Gram Stain, ZN stain and stool routine microscopy

MI1.3 Describe the **epidemiological basis** of common infectious diseases

- Define: Epidemiology, Describe the various epidemiological patterns of infectious disease.
- Discuss the various microbial factors contributing to disease.
- Discuss the various sources and reservoirs of infections.
- Describe the various modes of transmission of infections.

MI1.4 Classify and describe the different methods of **sterilization and disinfection**. Discuss the application of the different methods in the laboratory, in clinical and surgical practice

MI1.4.1 Define: Sterilization, disinfection, asepsis, antiseptics, and decontamination.

- Classify & describe various methods of sterilization methods
- Discuss various methods of disinfection
- List out Testing of disinfectants. Discuss the application of the different methods in clinical and surgical practice.

MI1.5 Choose the most appropriate method of sterilization and disinfection to be used in specific situations in the laboratory, in clinical and surgical practice

MI1.5.1 Classify the medical devices using Spaulding's classification

- Classify disinfectants
- Define & applications of Fumigation, fogging
- Describe: Plasma sterilization
- Identify the most appropriate method of sterilization / disinfection in the given cases scenario.

MI1.6 Describe the mechanisms of **drug resistance**, and the methods of antimicrobial susceptibility testing and monitoring of antimicrobial therapy

MI1.6.1 Describe the bacterial genetic structures

- Describe bacterial variation – mutation & gene transfer
- Describe the methods of gene transfer in bacteria
- Describe gene transfer by artificial methods.
- List out mechanism of action of antimicrobial agents

MI1.6.2 Define drug resistance, List out various mechanisms of antibacterial resistance. MRSA,VRE,ESBL,MBL etc

- Define: Bacteriostatic, bactericidal, pharmacodynamics, pharmacokinetics, adverse reactions.
- List out and describe different methods of antimicrobial susceptibility testing
- Discuss MIC, broth dilution, agar dilution
- Describe principles of antibiotics selection and monitoring therapy

MI1.7 Describe the **immunological mechanisms in health**

MI1.7.1 Immunity

- Define & classify Immunity. Describe in detail all types of Immunity.
- Describe the role of vaccines in Immunity

MI1.7.2 Immune system - Describe structure and functions of immune system

MI1.7.3 Antigen & Immunoglobulins

- Define& classify Antigen. Describe characteristics of Antigens
- Define & classify Immunoglobulins
- (Antibody).
- Describe in detail all types of Antibody.

MI1.7.4 Complement system

- Describe components, general properties cascade and role of Complement system in health and disease

MI1.7.5 Antigen antibody reactions

- Define & classify antigen antibody reactions
- Discuss the principles of Ag -Ab reactions
- Describe the applications of Ag-Ab reactions in the diagnosis of diseases.
- Describe the approach to interpretation of Ag-Ab reaction in the diagnosis of diseases.

MI1.8 Describe the mechanisms of **immunity and response** of the host immune system to infections

MI1.8.1 Define & classify Immune response

- Describe humoral immune response – Primary response, Secondary response, Td response, T independent response, immunomodulators, monoclonal antibodies

MI1.8.2 Describe cell mediated immune response

- cytokines, importance of CMI
- Differentiate humoral and cell mediated immune response
- Discuss the theories of immune response of humoral immunity

MI1.9 Discuss the immunological basis of **vaccines** and describe the Universal Immunisation schedule

- Classify & describe types of immunization
- Define & classify types of Vaccines
- Discuss advantages and disadvantages among different types of vaccines
- Describe National Immunization Schedule (India)
- Importance of passive immunization

MI1.10 Describe the immunological mechanisms in **immunological disorder** (hypersensitivity, autoimmune disorders and immunodeficiency states) and discuss the laboratory methods used in detection.

MI1.10.1 Hypersensitivity

- Define& classify Hypersensitivity reactions including Gel and Coombs classification
- Describe the mechanism, clinical features, laboratory evaluation and prevention of type I hypersensitivity
- Describe the mechanism, clinical features, laboratory evaluation and prevention of type II hypersensitivity
- Describe the mechanism, clinical features, laboratory evaluation and prevention of type III hypersensitivity
- Describe the mechanism, clinical features, laboratory evaluation and prevention of type IV hypersensitivity
- Discuss tuberculin test, patch test.

MI1.10.2 Autoimmunity

- Define & Describe mechanisms of Immunological tolerance
- Define & Describe various mechanisms of autoimmunity
- Describe various clinical manifestations of common autoimmune diseases
- Describe approach for laboratory diagnosis of autoimmune diseases

MI1.10.3 Immunodeficiency

- Define & Classify immunodeficiency syndromes
- Describe various immunodeficiency syndromes.
- Discuss the laboratory methods used in detection of immunodeficiency diseases.

MI1.11 Describe the immunological mechanisms of **transplantation and tumor** immunity

Transplantation immunity

- Define & Classify transplantation,
- Define & Discuss the mechanism allograft rejection, prevention of rejection
- Histocompatibility antigens, MHC,

- Describe types of HLA typing
- Describe Graft – versus-host reaction

Tumor immunity

- Define Tumor antigen, immunological surveillance
- Describe immunosuppression.
- Describe immunotherapy in cancer

TOPIC – CVS & BLOOD(MI2.1-2.7)

No of competencies- 7 No of procedures requiring certification -NIL

MI2.1 Describe the etiologic agents in rheumatic fever and their diagnosis

Rheumatic fever

- Describe the immunological basis of rheumatic fever/ nonsuppurative diseases caused by streptococci
- Classify streptococcus
- Describe the morphology, pathogenesis, antigenic structures, toxin & virulence factors, clinical features, epidemiology of streptococcus pyogenes
- Discuss the serological test for diagnosis of rheumatic fever.
- Discuss the role of antibiotics in treatment and prevention of rheumatic fever.

MI2.2 Describe the classification etio-pathogenesis, clinical features and discuss the diagnostic modalities of **Infective endocarditis**

- Enumerate the organisms causing infective endocarditis
- Viridans Streptococcus, Coagulase negative Staph, HACEK group etc
- Describe the pathogenesis, clinical features of infective endocarditis.
- Discuss the approach to identify the causative organism.
- Discuss the importance of multiple sample collection.
- Discuss automated blood culture systems.

MI2.3 Identify the microbial agents causing Rheumatic Heart Disease & infective Endocarditis

- Identify bacteria by observing colony morphology, biochemical reactions
- Interpret antimicrobial susceptibility test.
- Define: Minimum Inhibitory concentration, minimum bactericidal concentration.
- Discuss other test that can be used for diagnosis.

MI2.3.1 Define sepsis, **septicemia,** bacteremia, fungemia, viremia, parasitemia

- Describe etiology, pathogenesis, clinical features, lab diagnosis including prognostic markers and treatment of septicemia

MI2.4 List the common microbial agents causing **anemia**. Describe the morphology, mode of infection and discuss the pathogenesis, clinical course, diagnosis and prevention and treatment of the common microbial agents causing Anemia

- List the common microbial agents causing anemia.
- Describe the morphology, of the common microbial agents causing anemia.
- Discuss the mode of infection, pathogenesis & clinical course of the common microbial agents causing anemia.
- Discuss the laboratory diagnosis of the common microbial agents Causing anemia
- Discuss the treatment & prevention of the common microbial agents causing anemia.
- infectious agents causing Iron defeciency, megaloblastic,haemolytic anaemia and anaemia of chronic infections,

MI2.5 Describe the etio- pathogenesis and discuss the clinical evolution and the laboratory diagnosis of kalaazar, malaria, filariasis and other common parasites prevalent in India

Introduction

- Classify parasites and enumerate parasites prevalent to India

MI2.5.1 Malaria

- Describe the morphology, life cycle, pathogenesis, clinical features of malarial parasite.
- Describe the treatment and prevention of malaria.

MI2.5.2 Leishmania

- Describe the morphology, life cycle, pathogenesis, clinical features of leishmania.
- Describe the laboratory diagnosis for kalaazar
- Describe the treatment and prevention for kalaazar

MI2.5.3 Trypanosoma

- Describe the morphology, life cycle, pathogenesis, clinical features of Trypanosoma.
- Describe the laboratory diagnosis for sleeping sickness.
- Describe the treatment and prevention for sleeping sickness

MI2.5.4 Filarial worm

- Describe the morphology, life cycle, pathogenesis, clinical features of filarial worm.
- Describe the laboratory diagnosis for filarial worm.
- Describe the treatment and prevention for filarial worm.

MI2.5.5 Schistosomes

- Describe the morphology, life cycle, pathogenesis, clinical features of Schistosomes.
- Describe the laboratory diagnosis for schistosomiasis.
- Describe the treatment and prevention of schistosomiasis.

MI2.6 Identify the causative agent of malaria and filariasis

MI2.7 Describe the epidemiology, the etio- pathogenesis, evolution complications, opportunistic infections, diagnosis, prevention and the principles of management of HIV

MI2.7.1 Describe morphology, epidemiology, pathogenesis of HIV

- Describe clinical features of AIDS

MI2.7.2 Opportunistic infections in AIDS

MI2.7.3 Describe the immunological abnormalities in HIV infection

- Describe various methods of laboratory diagnosis of HIV
- Discuss applications of serological tests.
- Discuss laboratory monitoring of HIV infection
- Discuss the different approaches to the treatment of AIDS

MI2.7.4 Discuss NACO guidelines, strategies, pre-test counseling, post- test counseling

- Discuss NACO guidelines for post-exposure prophylaxis

MI2.7.5 Describe various modes of transmission of HIV

MI2.7.6 Describe prophylactic measures in preventing HIV

Transmission Standard precautions, spill management etc

TOPIC: GASTROINTESTINAL & HEAPATOBILIARY SYSTEM(MI3.1-3.8)

No of competencies 8 **No of procedures requiring certification – NIL**

MI3.1. Enumerate the microbial agents causing diarrhea and dysentery. Describe the epidemiology, morphology, pathogenesis, clinical features and diagnostic modalities of these agents.

MI3.1.1-Introduction of gastrointestinal infections

- Brief structure and immunity of GIT
- Define diarrohea, dysentery
- Enumerate the various etiological agents of diarrhoea bacterial, viral ,parasitic etc.
- Classify the etiological agents in different age groups, immunocompromised, immunocompetent individuals.
- Discuss the mode of transmission, the pathogenesis, clinical manifestation and laboratory diagnosis of diarrhoea

MI3.1.2 Epidemiology, pathogenesis, laboratory diagnosis of diarrheagenic E.coli,

MI3.1.3 Epidemiology, pathogenesis, clinical features, complications, laboratory diagnosis,treatment & prophylaxis of Cholera

MI3.1.4 Antibiotic Associated Diarrhoea - Clostridium difficile

MI3.1.5 Viral gastroenteritis etiological agents, epidemiology, pathogenesis, clinical features and laboratory diagnosis - Rota, Astro, Noro

MI3.1.6 Bacillary dysentery Define dysentery etiological agents, pathogenesis, clinical features and laboratory diagnosis of bacillary dysentery -Shigella.Y.enterocolitica

MI3.1.7 Amoebic dysentery Discuss the morphology, life cycle, mode of transmission, pathogenesis, clinical features, complications and laboratory diagnosis of Amoebic dysentery difference between

amoebic and bacillary dysentery - E.histolytica

- Mention briefly about non pathogenic intestinal amoebae

MI3.1.8 Etiological agents, pathogenesis, clinical manifestations and laboratory diagnosis of Diarrhoea in immunocompromised host- Giardiasis Cryptosporidium, Cyclospora, Isospora, Giardia

MI3.1.9 Soil transmitted helminthic infections- Ascaris, Enterobius, Trichuris trichuira

MI3.2 Identify the common microbial agents causing diarrhoea and dysentery

MI3.3 Enteric fever Describe the enteric fever pathogens and discuss the evaluation of clinical course and the laboratory diagnosis of diseases caused by them

- Define, mention the etiological agents, epidemiology, pathogenesis, clinical manifestations, complications, laboratory diagnosis of enteric fever

MI3.4 Identify the different modalities for diagnosis of Enteric fever , choose the appropriate test related to the duration of illness .

MI3.5 Food poisoning Enumerate the causative agents of food poisoning and discuss the pathogenesis ,clinical course and laboratory diagnosis

- Definition, source, pathogenesis, classification of food poisoning etiological agents based on type of food and pathogenesis, clinical manifestation laboratory diagnosis treatment and prophylaxis of food poisoning – Staphylococcus, Bacillus cereus, Clostridium perfrinegens, Clostridium botulinum, Salmonella typhimurium, halophilic vibrios etc

MI 3.6 Acid Peptic disease Describe the etiopathogenesis of Acid peptic disease and the clinical course . Discus the diagnosis and management of the causative agent of Acid peptic disease .

- Etiopathogenesis,clinical features,complications laboratory diagnosis treatment and prophylaxis of Acid peptic disease - H.pylori

MI3.7 Viral hepatitis Describe the epidemiology, the etio- pathogenesis and discuss the viral markers in the evolution of viral hepatitis. Discuss the modalities in the diagnosis and prevention of viral hepatitis

MI 3.7.1 Discuss the pathogenesis, clinical manifestations, complications and laboratory diagnosis, treatment and prophylaxis of enterically transmitted viral hepatitis Hepatitis A & E

MI 3.7. 2 Discuss the pathogenesis, clinical features, laboratory diagnosis treatment and prophylaxis of parenteral transmitted viral hepatitis -Hepatitis B

MI 3.7. 3 Discuss the pathogenesis, clinical features, laboratory diagnosis treatment and prophylaxis of parenteral transmitted viral hepatitis C & D

- Note on national programme National Viral Hepatits Control & Prevention Programme(NVHCP)

TOPIC: INFECTIONS OF SKIN & MUSCULOSKELETAL SYSTEM (MI4.1-4.3)

No of competencies – 3 No of procedures requiring certification – NIL

MI4.1 - Enumerate the microbial agents causing anaerobic infections. Describe the etiopathogenesis, clinical course and discuss the laboratory diagnosis of anaerobic infections

MI4.1.1 Introduction to anaerobic infections

- List the normal anaerobic flora of human body.
- Enumerate and classify disease causing anaerobic bacteria with disease caused by them.
- Define Anaerobiasis. Describe the types of samples and collection methods for anaerobic culture. Describe the transport of specimen and culture of clinical samples for anaerobic culture. List the antibiotics used to treat anaerobic infections
- Classify Genus Clostridium. Describe the morphology of Genus Clostridium
- Discuss the etiopathogenesis, clinical features, laboratory diagnosis, treatment and prophylaxis of **Gas gangrene**.

MI4.1.2 Discuss the pathogenesis, clinical features, laboratory diagnosis, treatment and prophylaxis of **Tetanus.**

MI4.1.3 Discuss the pathogenesis, clinical features, laboratory diagnosis and treatment of **botulism.**

MI4.1.4 Discuss the etiopathogenesis, clinical features, laboratory diagnosis and treatment of **pseudomembranous colitis**.

MI4.1.5 Classification, diseases, laboratory diagnosis & treatment of infections caused by **non sporing anaerobes**

MI4.1.6 Discuss the pathogenesis, clinical features, lab diagnosis, treatment and prophylaxis of **Actinomycosis & nocardiosis**

MI4.2 – Describe the etiopathogenesis, clinical course and discuss the laboratory diagnosis of bone & joint infections

- Classify bone & joint infections
- Enumerate the microorganisms causing infections of bone & joint (infectious arthritis, osteomyelitis and orthopedic implant associated infections)
- Describe the etiopathogenesis & clinical course of bone & joint infections
- Discuss the laboratory diagnosis of bone & joint infections

MI4.3 – Describe the etiopathogenesis of infections of skin and soft tissue and discuss the clinical course and the laboratory diagnosis

MI4.3.1 Introduction to Skin & Soft Tissue Infections

- Describe the normal anatomy, innate immunity & commensals of skin

- Define folliculitis, furuncle, carbuncle, macule, papule, nodule, pustule, vesicle, scales, ulcer and bulla.
- List the various organisms causing skin and soft tissue infections - Bacteria, Viruses, Fungi, Parasites
- Describe the pathogenesis, clinical course and laboratory diagnosis of **Staphylococcus aureus**
- Enumerate the etiological agents and laboratory diagnosis of post- operative wound infections & burns wound infection

MI4.3.2

- Describe the pathogenesis, clinical course and laboratory diagnosis of **Leprosy**
- Describe the pathogenesis, clinical course and laboratory diagnosis of **Atypical mycobacterial infections**

MI4.3.3 Enumerate **viruses causing skin and soft tissue lesions**. Discuss in detail Herpes viruses,pathogenesis, clinical features, laboratory diagnosis, treatment and prophylaxis

MI4.3.3a Viral exanthematous infections - Measles, Rubella, (Coxsackie, Pox, HPV, Molluscum, Hand foot mouth Disease)

MI4.3.4 List fungi causing **superficial fungal diseases**. Describe their clinical features,laboratory diagnosis,treatment and prophylaxis - Tinea versicolor, piedra, tinea nigra, dermatophytoses, Mucocutaneous candidiasis

MI4.3.5 subcutaneous mycosis – list the fungi causing subcutaneous mycosis.Describe the clinical features, laboratory diagnosis and treatment of subcutaneous mycosis.- Sporotrichosis, Chromoblastomycoses, Rhinosporidiosis, entamophthoromycoses, mycetoma

MI4.3.6 Enumerate the tissue nematode parasites causing skin and soft tissue lesions with their clinical course and laboratory diagnosis- Filariasis, Onchocerca, Loa loa, Mansonella, Dracunculus, Trichinella and Larva migrans

MI4.3.7 Describe the pathogenesis, clinical course and laboratory diagnosis of Diabetic foot & cellulitis- Streptococcus & others

MI4.3.8 Describe the pathogenesis, clinical course and laboratory diagnosis of cutaneous Anthrax

TOPIC: CENTRAL NERVOUS SYSTEM INFECTIONS –(MI5.1-5.3)

No of competencies: (3) No of procedures that require certification: NIL

MI5.1 Describe the etiopathogenesis, clinical course and discuss the laboratory diagnosis of **meningitis**

MI5.1.1 Describe normal structure of CNS and normal protective mechanisms
MI5.1.2 Define meningitis

MI5.1.3 Classify meningitis based on age group and duration
MI5.1.4. Enumerate the causative agents of meningitis and classify them based on age group affected, duration of disease and immune status
MI5.1.5. Describe general pathogenesis and clinical features of meningitis
MI5.1.6. Discuss the general approach to diagnosis of meningitis
MI5.1.7. Describe pathogenesis, lab diagnosis, prevention and treatment of meningococcal meningitis
MI5.1.8. Describe pathogenesis, lab diagnosis, prevention and treatment of pneumococcal meningitis
MI5.1.9. Describe pathogenesis, lab diagnosis, prevention and treatment of meningitis caused by *Streptococcus agalactiae*
MI5.1.10. Describe pathogenesis, lab diagnosis, prevention and treatment of meningitis caused by *Haemophilus influenzae*
MI5.1.11. Describe pathogenesis, lab diagnosis, prevention and treatment of Listeria meningitis
MI5.1.12. Describe pathogenesis, lab diagnosis, prevention and treatment of gram negative bacterial meningitis
MI5.1.13. Describe pathogenesis, lab diagnosis, prevention and treatment of tubercular meningitis
MI5.1.14. Describe pathogenesis, lab diagnosis, prevention and treatment of meningitis caused by spirochetes
MI5.1.15. Describe pathogenesis, lab diagnosis, prevention and treatment of viral meningitis caused by *Herpes viruses, Enteroviruses, Mumpsvirus*, etc
MI5.1.16. Describe pathogenesis, lab diagnosis, prevention and treatment of meningitis caused by fungi - *Cryptococcus neoformans, Candida Spp., Coccidioides, Histoplasma, etc*

MI5.2 Describe the etiopathogenesis, clinical course and discuss the laboratory diagnosis of **encephalitis**

MI5.2.1. Define: Encephalitis

MI5.2.2. Classify Encephalitis

MI5.2.3. Enumerate the causative agents of Encephalitis

MI5.2.4. Describe general pathogenesis of encephalitis

MI5.2.5. Describe the clinical presentation of Encephalitis

MI5.2.6. Discuss the approach to diagnosis of viral Encephalitis

MI5.2.7. Describe morphology of polio virus. Describe pathogenesis, clinical features, lab diagnosis and prevention of poliomyelitis

MI5.2.8. Describe morphology of rabies virus. Describe pathogenesis, clinical features, lab diagnosis and prevention of rabies

MI5.2.9. Describe etiology, pathogenesis, clinical features, lab diagnosis and prevention of slow viral infections

MI5.2.10. Discuss the etiopathogenesis, clinical features and approach to diagnosis of parasitic meningitis and Encephalitis

MI5.2.11. Discuss the etiopathogenesis, clinical features and approach to diagnosis of brain abscess

MI5.2.12. Discuss the etiopathogenesis, clinical features and approach to diagnosis of cystic brain lesion- neurocysticercosis, hydatid disease of brain

MI5.3 Identify the microbial agents causing meningitis

MI5.3.1. Analyse clinical features, interpret laboratory test results provided to diagnose the clinical condition and identify the causative microorganism.

MI5.3.2 Describe normal ranges of common CSF parameters

MI5.3.3. Interpret abnormal results of CSF analysis report provided.

MI5.3.4 Demonstrate CSF collection in a mannequin

TOPIC: RESPIRATORY TRACT INFECTIONS MI6.1-6.3

No of Competency-3 No of procedures require Certification-2

Competency MI6.1 Describe the etio-pathogenesis, laboratory diagnosis and prevention of Infections of upper and lower respiratory tract

- **MI6.1.1** Describe the structure respiratory system and role of immunity in respiratory system
- **MI6.1.2** Discuss the etiological agents, pathogenesis, epidemiology clinical features,complications and laboratory diagnosis of rhinitis
- **MI6.1.3** Discuss the classification, etiological agents, pathogenesis, epidemiology clinical features, complications and laboratory diagnosis of otitis
- **MI6.1.4** Discuss the etiological agents, pathogenesis, epidemiology clinical features, complications and laboratory diagnosis of sinusitis
- **MI6.1.5** Discuss the etiological agents, pathogenesis, epidemiology clinical features, complications and laboratory diagnosis of pharyngitis, tonsillitis
- **MI6.1.6** Discuss the etiological agents, pathogenesis, epidemiology clinical features, complications and laboratory diagnosis of laryngitis, bronchitis, bronchiolitis
- **MI6.1.7** Define & classify pneumonia. Enumerate the etiological agents of pneumonia general laboratory diagnosis and prophylaxis of pneumonia
- **MI6.1.8** Discuss pathogenesis, epidemiology clinical features, complications and laboratory diagnosis of community acquired pneumonia- pneumococci
- **MI6.1.9** Enumerate the etiological agents, pathogenesis, epidemiology clinical features, complications and laboratory diagnosis of hospital acquired pneumonia-Klebsiella, Staphylococci, Legionella
- **MI6.1.10** Enumerate the etiological agents, pathogenesis, epidemiology clinical features, complications and laboratory diagnosis treatment and prophylaxis of ventilator associated pneumonia- Acinetobacter
- **MI6.1.11** Enumerate the etiological agents, pathogenesis, epidemiology clinical features, complications and laboratory diagnosis of atypical pneumonia- Mycoplasma, Chlamydia
- **MI6.1.12** Enumerate the etiological agents, pathogenesis, epidemiology clinical features, complications and laboratory diagnosis of viral respiratory infections – Adeno, RSV, EBV
- **MI6.1.13** Enumerate the etiological agents, pathogenesis, epidemiology clinical features, complications and laboratory diagnosis of viral pneumonia – Influenza virus, SARS -corona

- **MI6.1.14** Enumerate the etiological agents, pathogenesis, epidemiology clinical features, complications and laboratory diagnosis of pneumonia in immunocompromised host-Pneumocystis jirovecii, CMV
- **MI6.1.15** Describe the epidemiology, mode of transmission, pathogenesis, clinical features complications, laboratory diagnosis, treatment and prophylaxis of pulmonary tuberculosis
- **MI6.1.16** Discuss the importance of MDR TB, RNTCP HIV TB co-infection
- **MI6.1.17** Define and classify the atypical mycobacteria discuss the pathogenesis, clinical features, complications and treatment of pulmonary atypical mycobacterial infection
- **MI6.1.18** Discuss the general characters of dimorphic fungi. Discuss the mode of transmission, pathogenesis, clinical features, complications and laboratory diagnosis of pulmonary mycosis-Histoplasma, coccidioides, Blastomyces, Paracoccidiodies
- **MI6.1.19** Discuss mode of transmission, pathogenesis, clinical features laboratory diagnosis of aspergillosis
- **MI6.1.20** Parasites affecting lung – Paragonimus westermanii (non core), Loefflers syndrome, amoebic lung abscess
- **MI6.1.21** Discuss the immunoprophylaxis for respiratory tract infections

MI6.2 Identify the common etiologic agents of upper respiratory tract infections (Gram Stain)

- **MI 6.2.1** Describe the method of sample collection and transportation
- **MI 6.2.2** Explain the steps of gram's staining procedure
- **MI 6.2.3** Do the grams staining procedure
- **MI 6.2.4** Observe the stained smear
- **MI 6.2.5** Interpret and Report the staining results

MI6.3 Identify the common etiologic agents of lower respiratory tract infections (Gram Stain & Acid fast stain)

- **MI 6.3.1** Enumerate the organisms causing LRTI
- **MI 6.3.2** Describe the method of sample collection
- **MI 6.3.3** Recap the Gram's staining procedure and repetition
- **MI 6.3.4** Explain the Acidfast staining procedure
- **MI 6.3.5** Perform the Acid fast staining procedure
- **MI 6.3.6** Interpret and Report the staining results

Topic: - Genitourinary & sexually transmitted infections (MI7.1-7.3)

No of competencies – 3 No of procedures requiring certification – NIL

MI 7.1 - Describe the etiopathogenesis and discuss the laboratory diagnosis of infections of genitourinary system

MI 7.1.1 Describe the normal anatomy and innate defense mechanisms in the male and female genital tract

MI 7.1.2 Enumerate the various infections of genitourinary tract

MI 7.1.3 Describe the etiology and pathogenesis of Genitourinary tract infections in general

MI 7.1.4 Discuss the clinical features, sample collection and laboratory diagnosis of genitourinary infections in general

MI 7.1.5 Discuss the effect/ complications of genitourinary infections in pregnancy (Maternal & fetal)

MI 7.2 – Describe the etiopathogenesis and discuss the laboratory diagnosis of **Sexually Transmitted Infections**. Recommend preventive measures

MI 7.2.1 Enumerate the bacterial, viral, fungal and parasitic agents causing Sexually Transmitted infections

MI 7.2.2 Describe the pathogenesis, clinical features, laboratory diagnosis and treatment of pathogens causing ulcerative lesions in the genital tract (Syphilis, Haemophilus ducreyi, LGV, Calymmatobacterium granulomatis, Herpes Virus)

MI 7.2.3 Describe the pathogenesis, clinical features, laboratory diagnosis and treatment of pathogens causing Urethral syndrome/ white discharge per vagina (Gonococci, Candida spp, Trichomonas vaginalis, Bacterial vaginosis)

MI 7.2.4 Describe the pathogenesis, clinical features, laboratory diagnosis and treatment of Mycoplasma spp

MI 7.2.5 Describe non gonococcal urethritis. Enumerate the agents causing the same

MI 7.2.6 Differentiate between bacterial vaginosis & bacterial vaginitis

MI 7.2.7 Discuss the various measure for prevention of Sexually Transmitted infections

MI 7.2.8 Discuss the importance of confidentiality in reporting Sexually transmitted diseases

MI 7.2.9 Discuss the role of counselling in management of Sexually transmitted diseases

MI 7.2.10 Enumerate the pathogens causing congenital infections. Discuss the pathogenesis, lab diagnosis, prophylaxis, prevention and treatment of these infections.

MI 7.3 – Describe the etiopathogenesis, clinical features, the appropriate method for specimen collection and discuss the laboratory diagnosis of **Urinary tract infections**

MI 7.3.1 Describe the normal anatomy, physiology and Innate defense mechanisms of the urinary tract

MI 7.3.2 Mention the types of Urinary tract infections (upper and lower)

MI 7.3.3 Mention the causative agents of urinary tract infection

MI 7.3.4 Enumerate the predisposing factors in Urinary Tract infections

MI 7.3.5 Discuss the pathogenesis of urinary tract infection

MI 7.3.6 Discuss the clinical features of Urinary tract infections (Difference between upper and lower urinary tract infections)

MI 7.3.7 Describe the methods of collection of urine from infant, adult men/women, and catheterized patients

MI 7.3.8 Discuss the concept of significant bacteriuria

MI 7.3.9 Discuss about asymptomatic bacteriuria & conditions these are seen

MI 7.3.10 Describe about sterile pyuria and enumerate the disease causing sterile pyuria

MI 7.3.11 Define Catheter associated urinary tract infection. Enumerate the predisposing factors, prevention, diagnosis and treatment of CAUTI

MI 7.3.12 Discuss the laboratory diagnosis and treatment of Urinary tract infections

TOPIC- ZOONOTIC DISEASES & MISCELLANEOUS (MI8.1-8.16)

No of competencies -16 No of procedures require certification-1

MI8.1 Enumerate the microbial agents and their vectors causing **Zoonotic diseases**. Describe the morphology, mode of transmission, pathogenesis and discuss the clinical course laboratory diagnosis and prevention

Introduction -Define zoonotic infections. Enumerate organisms causing zoonotic infections in man and the mode of transmission/vectors transmitting them

MI8.1.1 Anthrax-Describe the morphology, mode of transmission, pathogenesis and discuss the clinical course laboratory diagnosis and prevention of Anthrax

MI8.1.2 Plague- Describe the morphology, mode of transmission, pathogenesis and discuss the clinical course laboratory diagnosis and prevention plague

MI8.1.3 Brucellosis-Describe the morphology, mode of transmission, pathogenesis and discuss the clinical course laboratory diagnosis and prevention brucellosis

MI8.1.4 Leptospirosis-Describe the morphology, mode of transmission, pathogenesis and discuss the clinical course laboratory diagnosis and prevention leptospirosis

MI 8.1.5 Rickettsia- Describe the morphology, mode of transmission, pathogenesis and discuss the clinical course laboratory diagnosis and prevention Rickettsial and miscellaneous zoonoses

MI8.1.6 Arboviral-Describe the morphology, mode of transmission, pathogenesis and discuss the clinical course laboratory diagnosis and prevention of Arboviral infections-Dengue,chikungunya,KFD

MI8.1.7 Toxoplasma & Balantidium-Describe the morphology, mode of transmission, pathogenesis and discuss the clinical course laboratory diagnosis and prevention of toxoplasmosis & balantidiasis

MI1.8.8Taeniasis-Describe the morphology, mode of transmission, pathogenesis and discuss the clinical course laboratory diagnosis and prevention of taeniasis

MI1.8.9 Hydatid disease-Describe the morphology, mode of transmission, pathogenesis and discuss the clinical course laboratory diagnosis and prevention of hydatid cyst disease

MI1.8.10 Rabies-Describe morphology of Rabies virus. Describe pathogenesis, clinical features, lab diagnosis and prevention of rabies

MI8.2 Describe the etio-pathogenesis of **Opportunistic Infections** (OI) and

discuss the factors contributing to the occurrence of OI, and the

laboratory diagnosis

•Define opportunistic infections
• Enumerate organisms causing opportunistic infections
• Discuss factors contributing to development of opportunistic infections

Viral agents

• Describe pathogenesis, clinical features, laboratory diagnosis and prevention of viral opportunistic infections - Herpse group, human papilloma virus,

Fungal OI

• Describe pathogenesis, clinical features, laboratory diagnosis and prevention of candidiasis
• Describe pathogenesis, clinical features, laboratory diagnosis and prevention of Cryptococcosis
•Describe pathogenesis, clinical features, laboratory diagnosis and prevention of mucormycosis

Parasitic OI

•Describe pathogenesis, clinical features, laboratory diagnosis and prevention of opportunistic parasitic infections - coccidian intestinal parasitic infections, strongyloidiasis

MI8.3 Describe the role of **oncogenic viruses** in the evolution of virus

associated malignancy

- Define oncogenic viruses
- Enumerate oncogenic viruses
- Describe pathogenesis of viral oncogenesis
- Describe laboratory diagnosis of oncogenic viral infections
- Describe methods of prevention of oncogenic viral infections

MI8.4 Describe the etiologic agents of **Emerging Infectious diseases.**

- Discuss the clinical course and diagnosis
- Define emerging infectious agents.
- Enumerate agents causing emerging infections
- Describe factors contributing to emerging infections.
- Discuss clinical course and laboratory diagnosis of emerging infections
- Describe the Indian scenario of emerging infectious agents

MI8.5 Define **Healthcare Associated Infections (HAI)** and enumerate the types. Discuss the factors that contribute to the development of HAI and the methods for prevention

- Define Healthcare Associated Infections (HAI)
- Enumerate the types of HAI
- Discuss the factors that contribute to the development of and methods to prevent catheter associated urinary tract infection (CAUTI)
- Discuss the factors that contribute to the development of and methods to prevent central line associated blood stream infection (CLABSI)
- Discuss the factors that contribute to the development of and methods to prevent ventilator associated pneumonia (VAP)
- Discuss the factors that contribute to the development of and methods to prevent surgical site infection (SSI)
- Describe principles and application of antibiotic stewardship

MI8.6 Describe the basics of **PANDEMIC MANAGEMENT (Infection control)**

- Define Standard precautions
- List the components of Standard precautions
- Describe the various transmission-based precautions.
- Describe the constitution and functions of HICC.
- Define Biomedical waste
    - Classify biomedical waste and describe methods of segregation, decontamination and disposal of each type as per Biomedical waste management rule
    - Describe appropriate management of needle stick injury in healthcare setting
    - Manage bio-spill
    - Describe vaccines that are useful in healthcare workers

MI8.7 Demonstrate Pandemic management (Infection control) practices and use of **Personal Protective Equipment (PPE)**

MI8.8 Describe the methods used and significance of assessing the microbial contamination of food, water and air

- Describe the methods used and significance of assessing the microbial contamination of food.
- Describe the methods used and significance of assessing the microbial contamination of water.
- Describe the methods used and significance of assessing the microbial contamination of air.

MI8.9 Discuss the appropriate method of **collection of samples** in the performance of laboratory tests in the detection of microbial agents causing Pandemic (infectious diseases)

- Discuss methods of sample collection for laboratory diagnosis of upper respiratory infections
- Discuss methods of sample collection for laboratory diagnosis of lower respiratory infections
- Discuss methods of sample collection for laboratory diagnosis of CVS and blood stream infections
- Discuss methods of sample collection for laboratory diagnosis of CNS infections

- Discuss methods of sample collection for laboratory diagnosis of gastrointestinal infections
- Discuss methods of sample collection for laboratory diagnosis of infections of skin and soft tissues
- Discuss methods of sample collection for laboratory diagnosis of musculoskeletal infections
- Discuss methods of sample collection for laboratory diagnosis of infections eye, nose and ear
- Discuss methods of sample collection for laboratory diagnosis of genitourinary infections

MI8.10 Demonstrate the appropriate method of collection of samples in the performance of laboratory tests in the detection of microbial agents causing Pandemic (Infectious diseases)

MI8.11 Demonstrate respect for patient samples sent to the laboratory for performance of laboratory tests in the detection of microbial agents causing Infectious diseases

MI8.12 Discuss confidentiality pertaining to patient identity in laboratory results

- Discuss the rights and responsibility of patients
- Discuss the rights and responsibility of laboratory with respect to confidentiality of laboratory results
- Discuss the ethical issues involved in confidentiality pertaining to patient identity.
- Discuss the medicolegal consequences of breach in confidentiality

MI8.13 Choose the appropriate laboratory test in the diagnosis of the infectious disease

- Identify the clinical condition based on the history provided.
- Choose the appropriate laboratory tests in the diagnosis of given infectious disease.
- Justify why a particular laboratory test was chosen to diagnose a given infectious disease

MI8.14 Demonstrate **confidentiality** pertaining to patient identity in laboratory results

- Demonstrate the understanding of importance of confidentiality with respect to patient's laboratory test results
- Identify situations where confidentiality needs to be maintained regarding patient's laboratory test results and where it can be bypassed
- Demonstrate confidentiality pertaining to patient identity in laboratory results.
- Counsel the patient about the test results in simulated setting

MI8.15 Choose and **Interpret the results** of the laboratory tests used in diagnosis of the infectious diseases

- Choose appropriate laboratory test(s) in the diagnosis of the infectious disease based on the case scenario and the order in which they need to be performed, if applicable
- Interpret the results of the laboratory tests used in diagnosis of the given infectious disease scenario

MI8.16 Describe the **National Health Programs** in the prevention of common infectious disease (for information purpose only as taught in CM)

- Enumerate all the National Health Programs regarding common infectious diseases in India
- Describe the goals of the various National Health Programs in the prevention of common infectious disease.
- Describe laboratory diagnostic tools used in the National Programs related to infectious diseases
- Describe general immunoprphylactic and chemoprophylactic measures used in the National Programs related to infectious diseases

V. TEACHING & LEARNING METHODS

TOPIC- GENERAL BACTERIOLOGY & IMMUNOLOGY

MI 1.1-1.11

Sl.no	LECTURES (10)	TUTORIALS/SGD (8)	SDL (3)	PRACTICAL (15)
1	**MI1.1.1** Introduction to infectious diseases a nd History	Microscopy - Types of microscopes, principles and applications of each	**MI1.7.2** immune system	Simple stain exercise and hanging frop demonstration
2	**MI1.1.2** Morphology &Physiology of Bacteria	**MI1.1.2.3** Culture Media	**MI1.7.3** Antigen & immunoglobulins	**MI1.1.2.3** Culture media and methods (including anaerobic)
3	**MI1.1.3** Introduction to virology	**MI1.1.2.4** Principles of lab diagnosis of infectious diseases – identification of bacteria (including biochemical tests)	**MI1.10.4** Immunodeficiency	Identification of bacteria based on Biochemical tests
4	**MI1.1.4** Introduction to mycology	**MI1.3** Epidemiology & pathogenesis of Infectious diseases		**MI1.1.3** Demonstration of Viral Diagnostic methods - microscopy /culture/immunological/molecular
5	**MI1.1.5** Introduction to parasitology	Visit to CSSD		**MI1.1.4** Demonstration of Diagnostic methods used in Fungal infections -

				microscopy/culture/immunological/molecular
6	**MI1.4.1**Sterilization & Disinfection - Physical methods	**MI1.5.1** Sterilization & Disinfection, Spaulding's classification, chemical methods		**MI1.1.5** Demonstration of Diagnostic methods used in parasitic infections - microscopy/culture/immunological/molecular; stool examination Exercise (1)
7	**MI1.6.1** Bacterial genetics (Bacteriophage)	**MI1.6.2** Principles and types of antibiotic susceptibility testing (Introduce MRSA, ESBL, MBL, VRE)		**MI1.2** Gram staining (1)
8	**MI1.7.1** Immunity	**MI1.9** Immunological basis of vaccine & Universal Immunization Schedule		**MI1.2** Gram staining (2)
9	**MI1.7.4** Complement system			**MI1.2** Acid fast staining (1)
10	**MI1.7.5** Antigen-Antibody reactions			**MI1.2** Acid fast staining (2)
11	**MI1.8.1**Immune response - Humoral			**MI1.2** Stool examination (2)
12	**MI1.8.2** Immune response - cell mediated			**MI1.5** Physical methods of sterilization - Demo
13	**MI1.10.1** Hypersensitivity -1			**MI1.5** Identify the most appropriate method of sterilization / disinfection in the given case scenarios. Discuss the reason for choosing the method of sterilization / disinfection.
14	**MI1.10.2** Hypersensitivity - 2			**MI1.6.2** Antimicrobial susceptibility testing and interpretation – Disk diffusion Demo
15	**MI1.10.3** Autoimmunity			**MI1.7.5** Demonstration of types of Antigen Antibody reactions
16	**MI1.11** Immunology of transplantation & tumour immunity			

TOPIC – CVS & BLOOD MI 2.1-2.7

SL.NO	LECTURE-9	TUTORIALS/SGD-9	SDL-2	PRACTICAL (5)
1	**MI2.1** Rheumatic fever -Microbial agent and pathogenesis, Lab diagnosis and management - Streptococcus pyogenes	**MI2.4** Anaemia(1)	Diphyllobothrium latum and Mansonella	**MI2.1 AE** Rheumatic fever - Streptococci - ASLO
2	**MI2.2** Infective endocarditis	Case discussion- Hookworms,pathogenesis, clinical course,lab diagnosis, treatment and prevention	**MI2.5.4** Filarial worm	**MI2.3.1 AE** Sepsis markers - CRP, Procalcitonin - Applied exercise
3	**MI2.3.1** Septicemia	Case discussion- Malaria with complication and reinforce life cycle, Babesiosis		**MI2.2 AE** Infective endocarditis- (Viridans Streptococci, Coagulase negative Staphylococci)
4	**MI2.5** Parasites endemic to India- Classification, distribution and	**MI2.5.3** Trypanasomes		**MI2.4** stool examination (3)

	diseases burden			(Hookworm)
5	**MI2.5.1** Malaria, mode of infection, pathogenesis, clinical course, lab diagnosis, treatment and prevention	**MI2.5.5** Schistosomes		**MI2.6 Demonstration** of blood parasites - Plasmodia, Microfilaria (smear)
6	**MI2.5.2** Leishmania pathogenesis, clinical course, lab diagnosis, treatment and prevention	**MI2.7.2** Opportunistic infections - relevant to HIV/AIDS		**MI2.5.2,3 Demonstration** of blood parasites - Leishmania, Trypanosomes (smear/picture
7	**MI2.7.1** HIV I	**MI2.7.4** NACO guidelines, strategies, pre-test counseling, post- test counseling		**MI2.7.3 AE** Serological diagnosis of HIV - ICT, ELISA, PCR
8	**MI2.7.3** HIV 2	**MI2.7.5** Modes of transmission,prevention		**MI2.7.3** Pre & Posttest counselling, Confidentaility (AETCOM - OSPE)

TOPIC: GASTROINTESTINAL & HEAPATOBILIARY SYSTEM

MI3.1-3.8

SL.NO	LECTURES (10)	TUTORIALS/SGD (4)	SDL(0)	PRACTICAL (6)
1	**MI3.1.1** Introduction to gastrointestinal infections	**MI3.1.2** Diarrheagenic E.coli	**MI3.1.4** Antibiotic associated diarrohea	**MI3.1.2 ,3,5 AE** -3 Diarrheagenic E.coli, cholera, food poisoning Hanging drop preperation
2	**MI3.1.3** Cholera	**MI3.1.5** Viral diarhhea		**MI3.1.7 ,8,9** DOAP: Stool examination (3,4,5); Demonstration -

				Enatamoeba Giardia,Coccidia
3	**MI3.1.6** Bacillary dysentery	**MI3.1.9** Soil transmitted helminthic infections		**MI3.1.6 AE** Bacillary dysentery
4	**MI3.1.7** Parasitic dysentery E.histolytica Balantidium coli	**MI 3.6** Overview of Acid peptic disorder		**MI3.4 AE** – Lab diagnosis of Enteric fever 1st week- blood culture 2^{nd} week widal test
5	**MI3.1.8**Parasitic Diarrhea in immunocompetent and immunocompromised			**MI3.7 AE** Seromarkers of Hepatitis B, Hepatitis C
6	**MI3.3** Enteric fever			Applied bacteriology, virology and parasitology exercises in GIT
7	**MI3.5** Food poisoning			
8	**MI 3.7. 1** Enterically transmitted Viral hepatitis - Hepatitis A and E			
9	**MI 3.7. 2** - Hepatitis B			
10	**MI 3.7. 3** Hepatitis C and D			

TOPIC: INFECTIONS OF SKIN & MUSCULOSKELETAL SYSTEM MI 4.1-4.3

SL.NO	LECTURE (10)	TUTORIAL/SGD (3)	SDL (1)	PRACTICAL (4)
1	**MI4.1.1** Introduction to anaerobic infections	**MI4.1.6** Actinomycosis, Nocardia	**MI4.3.3a** Pox virus	**MI4.3.1** Gram stain exercise Gram stain of Cl.tetaniDemo) Demonstration of sample collection – (collection of pus)

				AE 3- 1.Cellulitis (Streptococcus pyogenes), 2.Surgical site infection, 3.Burns wound infection (Pseudomonas**)**
2	**MI4.1.2** Tetanus	**MI4.3.7** Cellulitis including diabetic foot		**MI4.2** AE 1.Osteomyelitis 2. Infective arthritis
3	**MI4.1.5** Infections of Nonsporing anaerobes	**MI4.3.6** Tissue nematode infections of skin and soft-tissue		**MI4.3.2** ZN staining - Demonstration of slides of 1. M Leprae, preparation of Slit Skin Smear demo (video)
4	**MI4.2** Bone & joint infections			**MI4.3.4,5** **AE** Dermatophytoses & Mycetoma collection of sample KOH mount, culture, Side culture; LPCB mount
5	**MI4.3** Introduction to skin and soft tissue infections			**MI4.3.3** AE - Viral exanthematous fever
6	**MI4.3.2** Leprosy, (Atypical mycobacteria affecting skin			
7	**MI4.3.3-** Herpes viruses			
8	**MI4.3.3a** Viral exanthematous infections			
9	**MI4.3.4** Superficial mycoses			
10	**MI4.3.5** Subcutaneous			

	mycoses			

TOPIC: CENTRAL NERVOUS SYSTEM INFECTIONS
MI5.1-5.3

SL.NO	LECTURES (6)	TUTORIALS/SGD (7)	SDL (2)	PRACTICAL (3)
1	**MI5.1.1** Introduction to CNS infections	**MI5.1.2a** Pyogenic meningitis	Prevention of Polio and rabies	**MI5.2.7,8** Spotter - Polio vaccine,hydatid cyst **MI5.2.8** AE 1.Rabies - using Negri body slide/photograph **MI5.2.12** 2.- hydatid cyst, 3.Neurocysticercosis (specimen/CT scan picture) 4.cerebral malaria - peripheral smear- Pl.falciparum or ICT
2	**MI5.1.2** Pyogenic meningitis	**MI5.1.3** Chronic meningitis		**MI5.1.8,9,10** **AE.Pyogenic meningitis-** Sample collection - CSF (Manequin) 1.Meningococcus, H.influenzae 2. Neonatal meningitis - Streptococcus agalctiae
3	**MI5.1.5** Fungal meningitis	**MI5.1.4** Aseptic meningitis - Viral causes		**MI5.1.13** **AE-** 3.Tubercular meningitis **MI5.1.16. AE** 4.Cryptococcal meningitis **MI5.2.11** **AE - cerebral**

				abscess - Anaerobes/ Staphylococcus/ Nocardia/
4	**MI5.2.1** Viral encephalitis	**MI5.2.4** Slow viral infections		
5	**MI5.2.2** Polio	**MI5.2.5** Parasitic meningitis and encephalitis Toxoplasmosis, cerebral malaria		
6	**MI5.2.3** Rabies	**MI5.2.5** Parasitic meningitis and encephalitis Primary amoebic encephalitis		
7		**MI5.2.6** Infectious space occupying lesions of CNS		

TOPIC: RESPIRATORY TRACT INFECTIONS
MI6.1-6.3

Sl.no	LECTURE (6)	TUTORIALS/SGD (9)	SDL (1)	PRACTICAL (7)
1	**MI6.1-6.4** Introduction to URTI - normal structure & protective mechanisms, etiology, pathogenesis, general lab diagnosis, treatment	**MI6.1.7&8** Community acquired pneumonia - Pneumococcus, H.influenzae	**MI6.1.9** HAP- staph, Legionella	**MI6.1.3 &4** **AE** otitis Proteus, Aspergillus
2	**MI6.1.5** Diphtheria	**MI6.1.6** Whooping cough and croup B.pertusis, Parainfluenza		**MI6.1.5** **AE**-white patch in oral cavity - Albert stain,
3	**MI6.1.13** Viral pneumonia - Influenza viruses	**MI6.1.12** Viral lower respiratory infections - Adeno, RSV, EBV		**AE-** **CAP** S.pneumo,

	(Corona)			H.influenzae, K.pneumoniae **VAP** Acinetobacter
4	**MI6.1.15** Mycobacterium tuberculosis- class 1	**MI6.1.11** Atypical Pneumonia - Mycoplasma, Chlamydia, viral		**MI 6.2** AE Gram's staining - with history - otitis media, sinusitis
5	**MI6.1.16** Mycobacterium tuberculosis- class 2	Tb- lab diagnosis with diagnostic algorithm and treatment - integrated with Path, Pharmac		**MI 6.3.1,2,3 AE** Gram's staining - sputum (pneumococcus, Klebsiella, quality of sample)
6	**MI6.1.18 & 19** Fungal infections of lower respiratory tract	**MI6.1.17** Atypical Myco bacteria		**MI6.3.4** Acid fast staining (4)
7		**MI6.1.21** Immunoprophylaxis of Respiratory infection		**MI6.3.4** Acid fast staining (5)
8		**MI6.1.20** General diagnosis of pulmonary parasitic infections- Lung flukes, Paragonimus		
9		**MI6.1.14** Pneumonia in immunocompromised		

TOPIC: GENITOURINARY & SEXUALLY TRANSMITTED INFECTIONS (MI7.1-7.3)

Sl.no	LECTURE (5)	TUTORIALS/SGD (2)	SDL (1)	PRACTICAL (4)
1	**MI 7.1** Normal anatomy & infections of Genito urinary system- pathogenesis, general lab diagnosis	**MI 7.2.7** Prevention measures in STD	**MI 7.2.4** Nongonococcal urethritis including mycoplasma, Ureaplasma, Chlamydia	**MI 7.2.3 AE** Discharge per vagina (differnce between bacterial vaginosis& bacterial vaginitis),

				Urethral syndrome
2	**MI 7.2.1& 2.2** Pathogens causing ulcerative Lesions in the genital tract 1- Syphilis	**MI 7.2.10** Congenital infections		**MI 7.2.2** **AE-**ulcerative lesions in the external genitalia
3	**MI 7.2.2** Pathogens causing ulcerative Lesions in the genital tract 2 (Haemophilus ducreyi, LGV Calymmatobacterium granulomatis, Herpes Virus)			**MI 7.3** **AE** - UTI sample collection
4	**MI 7.2.3** Pathogens causing urethral discharge/ white discharge per vagina (Gonnorhoea, Candida, Trichomonas vaginalis, Bacterial vaginosis)			**MI 7.3.11** **AE** CAUTI
5	**MI 7.3** Urinary tract infections - E.coli, Klebsiella, Proteus, Enterococcus, others			

TOPIC- ZOONOTIC DISEASES & MISCELLANEOUS (MI8.1-8.16)

SL.NO	LECTURE (6)	TUTORIALS/SGD (9)	SDL (1)	PRACTICAL (11)
1	**MI8.1&1.1** Introduction to zoonotic infections, Anthrax	**MI8.1.2** Plague	Zoonotic TB,cat scratch disease, rat bite fever	**MI 8.1.3,4,5** **AE- PUO** Brucellosis leptospirosis **SEROLOGY** Brucella Agg Leptospirosis Weil Felix
2	**MI8.1.3** Brucellosis	**MI8.1.6** Viral hemorrhagic fevers - Yellow fever,		**MI8.1.6** **AE-**Lab diagnosis of dengue,

		Ebola, Roboviruses (Hanta, Arena), Lassa, Marburg		chikungunya
3	**MI8.1.4** Leptospirosis , Borreliosis	**MI8.1.8** Taeniasis, (Cysticercosis, partly covered in CNS) and (Hymenolepiasis)		**Mi8.1.8&9 Stool Examination** (5)-larva of Strongyloides **Demonstration** of specimen Taenia adult worms,hydatid cyst & slide of hydatid cyst
4	**MI8.1.5** Rickettsial infections, Other zoonoses (Nontyphoidal Salmonellosis, Prions, Zoonotic mycoses)	**MI8.2** Introduction to opportunistic infections & viral opportunistic infections, candidiasis (Also covered in HIV-CVS MI2.7)		**MI8.2 AE** Candidiasis Mucromycosis
5	**MI8.1.6** Arboviral infections-Classification, Spotted fever group, Dengue, Chukungunya, KFD, Gen Lab diagnosis; (Zikavirus)	**MI8.2** Opportunistic Intestinal parasitic infections - Cystisosporiasis, Cryptosporidiasis, Cyclosporiasis, Microsporidiasis and Strongyloidiasis, Giardia - (covered in GIT 3.3)		**MI8.7** Donning & doffing of PPE for a given situation - 1
6	**MI8.1.9** Hydatid cyst disease	**MI8.4** Emerging infections and bioterrorism		**MI8.7** Donning & doffing of PPE for a given situation - 2
7	**MI8.2** Zygomycosis	**MI8.5** Hospital Associated Infections (seminar)		**MI8.7** Donning & doffing of PPE for a given situation - 3
8	**MI8.3** Oncogenic viruses -HPV, HTLV (HBV, HDV,,EBV etc)	**MI8.6** Biomedical waste management		**MI8.6** 1.How to **manage bio-spill** in a

				simulated setting (AETCOM) 2.Advice a **HCW with needle stick** injury in complete and correct sequence in a simulated setting AETCOM 3.Segregate **biomedical waste** as per BMW2016 rules
9	**MI8.6** Antibiotic stewardship	**MI8.8** Food, water and air microbiology		**MI8.9** Collection of throat swab, nasopharyngeal swab peripheral venous blood for culture in simulated situation
10	**MI8.6** Infection control in hospitals- Principles, components and application; surveillance - standard & transmission based precautions, HICC	**MI8.9,10&11** Sample collection and transportation - (T/L opportunities - General micro/Individual systems/Together at the end as applied Micro practical classes)		**MI8.9** collection of wound swab and pus sample in simulated situation Instruct sample collection procedure (sputum, urine, stool,for culture)
11	**MI8.16** National health programs on infectious diseases - Integrated with PSM	**MI8.12** Discuss with help of case scenarios or role plays or videos : a. Request form or container with incomplete or wrong information		**MI8.9** skin scraping, hair clippings and nail samples) collection procedure independently

		b. Lost CSF sample c. Contaminated blood for culture d. Delayed submission of urine sample for culture e. Salivary sample for ZN stain		in a simulated setting (covered in skin) Demonstrating respect to patient samples -OSPE (AETCOM)
12		**MI8.14** Interaction with ICTC staff - AETCOM		
13		**MI8.15** Case based discussion - reflection confidentiality- Pt identity, lab results) - AETCOM		

VI. CERTIFIABLE COMPETENCIES

It should be certified that the student is competent to perform the below skills independently without supervision.

SI. NO	NUMBER	COMPETENCY	Number required to certify
1	MI1.2	Perform and identify the different causative agents of Infectious diseases by Gram Stain, ZN stain and stool routine microscopy	**5**

2	MI6.2	Identify the common etiologic agents of upper respiratory tract infections (Gram Stain)	**3**
3	MI6.3	Identify the common etiologic agents of lower respiratory tract infections (Gram Stain & Acid fast stain)	**3**
4	MI8.7	Demonstrate Infection control practices and use of Personal Protective Equipment (PPE)	**3 each in (Hand hygiene & PPE)**

VII. TIME TABLE

BLOCK 1: 15 WEEKS (OCT-JAN)

	8-11	11.30-12.30	12.30-1.30	2-4
Monday	Postings	**PH-L**	**OBG-L**	PH-A,CM-B
Tuesday	Postings	**PH-L**	**FM-L**	FM-A,
Wednesday	Postings	**MIC-L**	**PA-L**	PA-A, MIC-B
Thursday	Postings	**CM-L**	PH-SGD	PA-B, MIC-A
Friday	Postings	**MIC-L**	**PA-L**	PH-B,CM-A
Saturday	Clinical training and Skills	G.MED-L	SUR-L	FM-B,

SECOND BLOCK 15 WEEKS (FEB-MAY)

	8-11	11.30-12.30	12.30-1.30	2-4

Monday	Postings	**MIC-L**	**PA-SGD**	**PH-A, PA-B-SGD**
Tuesday	Postings	**PH-L**	**MIC-SGD**	**PH-SGD**
Wednesday	Postings	**PA-L**	**MIC-L**	**PA-A, MIC-B**
Thursday	Postings	PH-L		PH-B, PA-A SGD
Friday	Postings	**PA-L**	**MIC-SGD**	**PA-B, MIC-A**
Saturday	Clinical training and Skills	AETCOM	AETCOM	

THIRD BLOCK 10 WEEKS (JUN-AUG)

	8-11	**11.30-12.30**	**12.30-1.30**	**2-4**	**4-5**
Monday	Postings	**PA-L**	MIC-L	**PH-SGD**	**PA-SDL**
Tuesday	Postings	**PA-L**	MIC-L	**PA-A,MIC-B**	**PH-SDL**
Wednesday	Postings	**PH-L**		**PH-A,PA-B SGD**	**MIC-SDL**
Thursday	Postings	**PH-L**		PH-B,PA-A SGD	**CM-SDL**
Friday	Postings	**CM-L**		PA-B,MIC-A	**AETCOM-SDL**
Saturday	Clinical training and Skills	**SUR-L**	**OBG**	G.M-L	

VIII. COMP ETENCY DISTRIBUTION IN EACH BLOCK

MCI No	BLOCK WISE COURSE	Competencies	LECTURE	TUTORIAL/SGD	Practical	SDL
MI1	IST BLOCK	General Microbiology and Immunoly	16	8	15	3

MI2	**OCT 2020 to JAN 2021**	**CVS and Blood**	**9**	**9**	**5**	**1**
MI3	**IInd BLOCK FEB 2021 to MAY 2021**	**Gastrointestinal and hepatobiliary system**	**10**	**4**	**5**	**0**
MI4		**Musculoskeletal system skin and soft tissue infections**	**10**	**3**	**5**	**2**
MI5		**Central Nervous System infections**	**6**	**7**	**3**	**1**
MI6		**Respiratory tract infections**	**6**	**9**	**7**	**1**
MI7		**Genitourinary & Sexually transmitted infections**	**5**	**2**	**4**	**1**
MI8	**IIIrd BLOCK JUN 2021 to AUG 2021**	**Zoonotic diseases and miscellaneous**	**11**	**13**	**11**	**1**
			73	**55**	**55**	**10**
		CBME Requirement	**70**	**110**		**10**

IX. TOPICS FOR INTEGRATION

	Pathology	**Microbiology**	**Pharmacology**	**Forensic Medicine**	**Community Medicine**	**Concerned Clinical subjects**
BLOCK 1	Immunology Anaemia Wound healing Shock	Immunology Anaemia Shock Surgical practice Infective endocarditis & Rheumatic heart disease Immunisation	Immunology Anaemia Essential medicines Shock Toxicology	Wound healing Toxicology	Essential medicines	Shock Surgical practice Toxicology Infective endocarditis & Rheumatic heart disease Immunisation
BLOCK 2	Infective endocarditis & Rheumatic heart disease (Nesting) Myocardial infarction Atherosclerosis Tuberculosis Leprosy AIDS Malaria	Tuberculosis Leprosy AIDS Malaria Enteric fever Viral hepatitis Acid peptic disease Bone & Joint infection Meningitis Encephalitis STI	Tuberculosis Leprosy AIDS Malaria Acid peptic disease		Tuberculosis Leprosy AIDS Malaria	Myocardial infarction Atherosclerosis Tuberculosis Leprosy AIDS Malaria Enteric fever Viral hepatitis Acid peptic disease Bone & Joint infection Meningitis Encephalitis STI

BLOCK 3	Diabetes mellitus Hepatitis (Sharing / Nesting)	Zoonotic disease Hospital acquired infection National health programs of communicable diseases	Diabetes mellitus Endocrines		Diabetes mellitus Zoonotic disease Hospital acquired infection National health programs of communicable diseases	Diabetes mellitus Zoonotic disease Hospital acquired infection Endocrines

Beyond these topics, Institutions are free to integrate topics with concerned departments, wherever feasible

Minimum two of the suggested topics should be covered in each block

X. DISTRIBUTON OF ATTITUDE ETHICS AND COMMUNICATION SKILLS (AETCOM) MODULE

SI NO	MODULE	TOPIC	DEPARTMENT					No. of hours	Formative assessment	Summative assessment
			PA	MI	PH	CM	FM			
1	2.1	Foundation of communication				✓		5	✓	-
2	2.2	Foundation of bioethics					✓	2	-	✓
3	2.3	Health care as a right				✓		2	-	✓
4	2.4	Working in a health care team	✓					6	✓	-
5	2.5	Bioethics- case studies on patient autonomy and decision making (patient rights and shared responsibility in health care)			✓			6	✓	✓
6	2.6	Bioethics-Case studies on patient autonomy and decision making (refusal of care including do not resuscitate and withdrawal of lifeSupport)			✓			5	✓	✓
7	2.7	Bioethics- Case studies on patient		✓				5	✓	✓

		autonomy and decision making (consent for surgical procedures)								
8	2.8	What does it mean to be a family member of sick patient					✓	6	✓	✓

ASSESSMENT

Three types of assessment to be carried out

1. **FORMATIVE ASSESSMENT** - continuous assessment during the tutorials/SGD/SDL and practical classes. AETCOM punctuality etc to be considered for evaluation .this needs to be done at the end of each competency .Assessment method to be adopted can be MCQ/written/oral examination the part of the marks scored will be considered for Internal assessment

2.**INTERNAL ASSESSMENT** - at the end of each block and assessment pattern is mentioned in the table below

3. **SUMMATIVE ASSESSMENT**- conducted by university at the end of the course both in theory and practical. The distribution of marks for the different topics are mentioned in the table

FORMATIVE ASSESSMENT and INTERNAL ASSESSMENT

Internal Assessment-

- There will be 3 internal assessment examinations in Microbiology. The structure of the internal assessment examinations should be preferably similar to the structure of University examinations.
- It is mandatory for the students to appear for all the internal assessment examinations.
- First internal assessment examination will be held after 3 months, second internal assessment examination will be held after six months and third internal assessment examination will be held after 9 months of Phase II curriculum.

- Pattern of first and second Internal Assessment are left to the discretion of the individual institute. However third internal assessment has to be conducted in the same pattern of the University exam

- Additional internal assessment examination for absent students can be considered due to genuine reason after approval by the head of the department. It should be taken before the submission of internal assessment marks to the University.

- Internal assessment marks allotment for theory and practical for the first and second internal assessment are left to the discretion of the respective institutes. Marks allotted in the third (final) Internal Assessment should be preferably for 100 marks each for Theory and Practical.

- 20% of the internal assessment marks in either Theory and Practical should be from Formative Assessment

- **Feedback in Internal Assessment** - Feedback should be provided to students throughout the course so that they are aware of their performance and remedial action can be initiated well in time. The feedbacks need to be structured and the faculty and students must be sensitized to giving and receiving feedback.

- The results of IA should be displayed on notice board within two weeks of the test and an opportunity provided to the students to discuss the results and get feedback on making their performance better.

- It is also recommended that students should sign with date whenever they are shown IA records in token of having seen and discussed the marks.

- **Internal assessment marks will not be added to University examination marks and will reflect as a separate head of passing at the summative examination.**

- **Internal assessment should be based on competencies and skills.**

- **Criteria for appearing in University examination:** Learners must secure at least 50% marks of the total marks (combined in theory and practical; not less than 40 % marks in theory and practical separately) assigned for internal assessment in order to be eligible for appearing at the final University examination.

- **Average marks obtained in all three internal assessment should be calculated to 40 marks.**

- A candidate who has not secured requisite aggregate in the internal assessment may be subjected to remedial assessment by the institution. If he/ she successfully complete the same, he/she is eligible to appear for University Examination. Remedial assessment shall be completed before submitting the internal assessment marks online to the University.

THEORY

Sl. No.	Assessment	Schedule	Tools used	Feedback	Whether added to internal marks	Weightage, added to the internal marks
1	MCQs based Quiz	End of each month	Online MCQs	Feed back at the end of the quiz	Yes	10 marks
2	Class test	Once in 3 months. (No MCQ based quiz during that month)	Written exam for 30 marks (1MQ, 1SE,5 SA) 1 hr	Feedback will be provided by assigned faculty mentor after evaluation	Yes	10 marks
3	Internal theory exams	3 in the year	Long Essays, Short essays and short answers	Feedback will be provided by assigned faculty mentor after the internal examination	Yes	80 marks
					TOTAL	**100 marks**

PRACTICAL

Sl. No.	Assessment	Schedule	Tools used	Feedback	Whether added to internal marks	Weightage, added to the internal marks
1	Internal practical examinations	3 in the year	Spotters, Staining Exercises, Case history-based exercises, Stool examination, viva-voce, OSPE.	Group feedback provided to entire class after the internal examination	Yes	80 marks
2	Small group discussions and record books/log books during practical sessions	Every such session	Rubric for SGD (case based discussion) and record books	At the end of each session	Yes	10 marks
3	Professionalism	Students will be observed throughout the semester Scores will be	Professionalism rubric	Feedback will be provided by assigned faculty mentor after the internal examination	Yes	10 marks

		assigned during every small group discussion.				
					TOTAL	**100 marks**

NOTE:

- The spotters, exercises and OSPE depends on the portion covered in the respective block.
- Certifiable competencies/AETCOM should be completed in Formative/Internal assessment

SUMMATIVE ASSESSMENT OR UNIVERSITY EXAMS

THEORY

GENERAL INSTRUCTIONS

1. The topics for the two papers are distributed
2. Questions in each paper will be as per distribution
3. The SLO needs to be referred while setting the question paper
4. Repetition of questions from the same SLO to be avoided
5. The marks allotted to the different topics & sections to be adhered.
6. Questions to be covered from the different sections of Microbiology
7. Main question needs to be structured questions with clinical history with marks allotted to each
8. As far as possible clinically oriented application-based questions to be framed

DISTRIBUTION OF TOPICS IN DIFFERENT PAPERS

Theory	Topics	Questions	Marks allotment
PAPER I	1.General microbiology & Immunology 2.CVS & Blood 3.Gastrointestinal & hepatobiliary system 4.Musculoskeletal system, Skin & soft tissue infections	Multiple Choice Questions Main Questions Short Notes Short Answers Total	20x1=20 2x10=20 6x5=30 10x3=30 100
PAPER II	5.Central Nervous system 6.Respiratory System 7.Genitourinary & Sexually Transmitted infections 8.Zoonotic diseases and Miscellaneous	Multiple Choice Questions Main Questions Short Notes Short Answers Total	20x1=20 2x10=20 6x5=30 10x3=30 100

PAPER 1

DISTRIBUTION OF MARKS FOR THE DIFFERENT TOPICS

Topics	**MQ**	**SN**	**SA**
General microbiology	-	✓	✓
Immunology	-	✓	✓
CVS & Blood	✓	✓	✓
GIT& hepatobiliary	✓	✓	✓
Skin & soft tissue	✓	✓	✓

DISTRIBUTION FOR THE SECTIONS IN PAPER I

Topic	Main Question	Short Notes	Short Answers	Total marks
General microbiology	-	✓	✓	✓
Immunology	-	✓	✓	✓
Bacteriology	✓	✓	✓	✓
Virology	✓	✓	✓	✓
Parasitology	✓	✓	✓	✓
Mycology	-	✓	✓	✓

PAPER II

DISTRIBUTION OF MARKS FOR THE DIFFERENT TOPICS II

Topics	MQ	SN	SA
CNS 6.1-6.3	✓	✓	✓
Respiratory system 7.1-7.3	✓	✓	✓
Genito Urinary Tract 7.1-7.3	✓	✓	✓
Zoonotic 8.1	✓	✓	✓
Miscellaneous 8.2 – 8.6	--	✓	✓

DISTRIBUTION OF MARKS FOR DIFFERENT SECTIONS IN PAPER II

Topic	Main Question	Short Notes	Short Answers
Bacteriology	✓	✓	✓
Virology	✓	✓	✓
Parasitology	--	✓	✓
Mycology	--	✓	✓

PRACTICAL ASSESSMENT

LIST OF INSTRUMENTS, SPECIMENS, SLIDES AND CHARTS

A .**SLIDES**

a. BACTERIOLOGY

1. Staphylococci
2. Streptococci
3. Pneumococci
4. Gonococci
5. Corynebacterium diphtheriae
6. Bacillus
7. Clostridium tetani
8. Mycobacterium tuberculosis
9. Mycobacterium leprae
10. Actinomyces

b. PARASITOLOGY

1. Plasmodium – ring form
2. Plasmodium – gametocyte form
3. Leishmania
4. Scolex of tape worm
5. Egg of tape worm
6. Egg of Ascaris
7. Egg of Ancylostoma
8. Larva of Strongyloides
9. Adult worm Enterobius vermicularis
10. Microfilaria
11. Hydatid cyst

c. MYCOLOGY

1. Candida
2. Cryptococcus
3. Aspergillus
4. Penicillium
5. Rhizopus /mucor
6. Dermatophytes
7. Mycetoma
8. Rhinosporidiosis

d. **VIROLOGY**

1. Polio vaccine
2. Negri body

B. MEDIA

1. Nutrient agar
2. Mac conkey agar
3. Blood agar
4. Chocolate agar
5. LJ media
6. Loefflers serum slope
7. Potassium tellurite
8. TCBS
9. Wilson & Blair
10. Urease test
11. Indole test
12. Citrate test
13. Antibiotic susceptibility test - KB method
14. RCMB
15. Thioglycollate

C. INSTRUMENT

1. Anaerobic jar
2. Sterile swab
3. Filters

D. SPECIMENS

1. Round worm
2. Hook worm
3. Taenia
4. Hydatid cyst

E. CLINICAL MICROBIOLOGY (Charts with case scenarios)

CASE SCENARIO- GENERAL INSTRUCTIONS

- The exercise should be associated with clinical history
- It should be designed and evaluated in such a way that the student will be able to discuss about the sample collection, interpretation of results & management of cases
- The organism needs to be emphasized in the particular exercise to be decided after referring the **SLO** table
- Case related slides, culture, AST, serological tests, photos, specimens should be displayed in the particular exercise so that student will have comprehensive approach to the clinical case

1. **TOPIC- CVS & BLOOD**

- Rheumatic fever
- Sepsis – role of sepsis markers
- Infective endocarditis
- HIV - serodiagnosis

2. **TOPIC- GIT & HEPATOBILIARY**

- Diarrhoeal disease – cholera,diarroheogenic E.coli,diarrhoea in immunocmpromised host, Food poisoning
- Dysentery – bacillary
- Viral gastro enteritis
- Lab diagnosis of Enteric fever (pathogen isolation)
- Lab diagnosis of Enteric fever (serological diagnosis)
- Virology exercise Seromarkers of Hepatitis B, Hepatitis C

3.TOPIC – SKIN & SOFT TISSUE INFECTIONS

- Cellulitis (Streptococcus pyogenes)

- Surgical site infection
- Burns wound infection (Pseudomonas)
- Osteomyelitis & Infective arthritis
- Dermatophytoses - tineacorporis, tineacapitis, onchycomycosis
- Viral exanthematous fever
- Mycetoma

4.TOPIC-CNS INFECTIONS

- Rabies
- Hydatid cyst, Neurocysticercosis
- Cerebral malaria
- Meningitis -.

    i)Pyogenic meningitis

    ii) Neonatal meningitis

    iii)Tubercular meningitis

    iv) Cryptococcal meningitis

- Cerebral abscess

5.TOPIC- RESPIRATORY SYSTEM INFECTIONS

- Otitis media -Proteus, aspergillus
- White patch in oral cavity
- Influenza
- Pul. Aspergillosis
- Pneumonia –

    i. Community Acquired Pneumonia
    ii. Hospital Acquired pneumonia
    iii. Ventilator Associated Pneumonia

6. TOPIC-GENITO URINARY SYSTEM INFECTIONS

- **STI**

    i. Ulcerative lesions in the external genitalia

    ii. Discharge per vagina

- **UTI**
- **CAUTI**

7. TOPIC- ZOONOTIC & MISCELLANEOUS

- PUO – serological diagnosis
    i. Brucellosis
    ii. Leptospirosis
    iii. Typhus fever
- Dengue, Chikungunya
- Candidiasis
- Mucromycosis

8. OSPE

- Hand hygiene and selection; Donning & doffing of PPE for a given 3 different situation (thrice)
- Segregate biomedical waste as per BMW2016 rules
- Collection of throat swab, nasopharyngeal swab in simulated situation
- Collection of peripheral venous blood for culture in simulated situation
- Collection of wound swab and pus sample in simulated situation
- Instruct sample collection procedure (sputum, urine, stool,for culture)
- skin scraping, hair clippings and nail samples) collection procedure independently in a simulated setting

AETCOM

- Demonstrating respect to patient samples -OSPE (AETCOM)
- Advice a HCW with needle stick injury in complete and correct sequence in a simulated setting - AETCOM
- Instruct a wardboy - how to manage bio-spill in a simulated setting (AETCOM)

PRACTICAL ASSESSMENT

As per MCI 100 marks with viva

- Practical – 80
- Viva – 20

DISTRIBUTION OF MARKS FOR DIFFERENT EXERCISES

Exercise	Number	Marks
Spotters	10	10
Gram's stain	1	10
ZN/Alberts stain	1	10
Stool examination	1	10
Case scenario	1 Bacteriology/ Virology	15
	1 Parasitology/Mycology	15

OSPE & AETCOM	1+1	10
VIVA		20
TOTAL		**100**

SPOTTERS DISTRIBUTION

Section	Number
General microbiology	2
Immunology	1
Bacteriology	2
Virology	1
parasitology	2
Mycology	2
TOTAL	10

II. **STAINING**

1. Gram's

2. ZN/Alberts

3. Stool examination

III. **CLINICAL BACTERIOLOGY/VIROLOGY**

CASE SCENARIO- GENERAL INSTRUCTIONS

- The exercise should be associated with clinical history
- The history should be provided with relevant tests which will help the student to arrive at diagnosis
- It should be designed and evaluated in such a way that the student will be able to discuss about the sample collection, interpretation of results & management of cases

BACTERIOLOGY	**VIROLOGY**
Cardio vascular system & blood Rheumatic fever,endocarditis,sepsis	HIV
GIT & HB Diarrhoea- cholera, food poisoning Dysentery – bacillary Enteric fever- culture based, serological	Hepatitis A, Hepatitis B, hepatitis C
Skin & soft tissue infections-cellutitis,SSI, burns wound infection, bone and joint infection	Viral exanthematous fever- Measles, Zoster, Dengue, chikungunya

CNS- meningitis- pyogenic, tubercular, neonatal Cerebral abcess	Rabies,
RS- otitis media,white patch in the oral cavity Pneumonia- community acquired,hospital acquired	Inflenza.corona
UTI & genitourinary STI- ulcerative , discharge UTI- community Acquired, Catheter associated	HSV, HPV
Zoonotic – PUO- brucella,Leptospira,Rickettssia	

MYCOLOGY & PARASITOLOGY

Mycology	**Parasitology**
Dermatophytosis-corporis, capitis, onychomycosis	Amoebic dysentery
Candida- mucocutaneous/systemic	Malaria – vivax,falciparum
Cryptococcus-meningitis	Intestinal helminthiasis- Ascaris,Ancyloastoma,Enterobius etc
Mycetoma	Intestinal protozoan – diarrohea in immunocompromised
Pulmonary aspergillosis	Neurocysticercosis
Mucoromycosis	Filariasis
Pneumocystis pneumonia	

IV .OSPE

- Hand hygiene and selection; Donning & doffing of PPE for a given 3 different situations
- Segregate biomedical waste as per BMW2016 rules
- Collection of throat swab, nasopharyngeal swab in simulated situation
- Collection of peripheral venous blood for culture in simulated situation
- Collection of wound swab and pus sample in simulated situation
- Instruct sample collection procedure (sputum, urine, stool,for culture)
- Skin scraping, hair clippings and nail samples) collection procedure independently in a simulated setting

AETCOM

- Demonstrating respect to patient samples -OSPE (AETCOM)
- Advice a HCW with needle stick injury in complete and correct sequence in a simulated setting (Remove from HIV, CVS) - AETCOM
- Instruct a wardboy - how to manage bio-spill in a simulated setting (AETCOM)

LOG BOOK- MICROBIOLOGY

The following document is only a format/ guideline for the Log book to be prepared by each institution

It includes the assessment for certifiable skills and the ones which are marked as 'SH(Shows how)' and 'P(Performs)' competencies as mandated by MCI.

All the practical class exercises which form a part of teaching learning methods in the curriculum/ syllabus are not included here and may be added if considered necessary by individual institutions.

The points included for assessments are not exhaustive and could be modified as considered necessary by individual institutions..

SRI SIDDHARTHA
ACADEMY OF HIGHER EDUCATION

(Deemed to be University, declared u/s 3 of the UGC Act, 1956)

Phase II MBBS

LOG BOOK FORMAT

DEPARTMENT OF MICROBIOLOGY

Name of the Candidate :

Name of the College :

University Register Number :

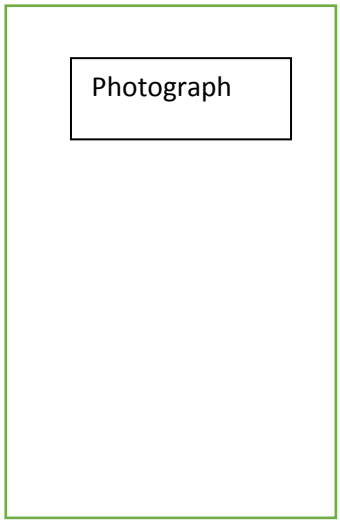
Academic Year :

I. INDEX

SL NO	CONTENT	PAGE NO
I	Index	
II	STUDENT PARTICULARS	
III	LOGBOOK CERTIFICATE	
IV	GENERAL INSTRUCTIONS	
V	SUMMARY OF ATTENDANCE	
VI	FORMATIVE ASSESSMENTS- Scheme of Formative assessments	
VII	FEEDBACK FOR THE ASSESSMENT	
VIII	SMALL GROUP DISCUSSION/SELF DIRECTED LEARNING – ASSESSMENT AND FEEDBACK	
IX	SUMMARY OF FORMATIVE ASSESSMENT FOR THE ENTIRE YEAR	
X	COMPETENCY ASSESSMENT – CERTIFIABLE SKILLS	
XI	COMPETENCY ASSESSMENT – NON CERTIFIABLE SKILLS	
XII	AETCOM MODULE – ASSESSMENT AND FEEDBACK	
XIII	CONFERENCE/CME/WORKSHOP ATTENDED	
XIV	SCIENTIFIC PROJECT LIKE ICMR/ PRESENTATIONS/ OUTREACH ACTIVITIES	
XV	ACHIEVEMENTS/ AWARDS /ANY OTHER ACTIVITIES	
XVI	EXTRACURRICULAR ACTIVITIES	

II. NAME OF THE COLLEGE WITH EMBLEM

STUDENT PARTICULARS
Name of the student: Date of admission to MBBS Course: Date of beginning of the current Phase: Reg: No. (College ID) Reg. No. (University ID) Permanent Address: E mail ID: (optional) Mobile Number: (optional)



III. LOGBOOK CERTIFICATE

This is to certify that the candidate Mr/ Ms ……,Univ. Reg No. ……., admitted in the year ……in ---------- Medical College, ---------- has/has not satisfactorily completed assignments /requirements mentioned in this logbook for second year MBBBS course in the subject(s) of Microbiology/ AETCOM during the period from …… to…… . She / He, is / is not eligible to appear for the summative (University) assessment as on the date given below.

Signature of Faculty

Name and Designation

Countersigned by Head of the Department

Principal/Dean of the College

Place:

Date:

IV. GENERAL INSTRUCTIONS

1) The logbook is a record of the academic / co-curricular activities of the designated student, who would be responsible for maintaining his/her logbook.

2) The student is responsible for getting the entries in the logbook verified by the Faculty in charge regularly.

3) Entries in the logbook will reflect the activities undertaken in the department & have to be scrutinized by the Head of the concerned department.

4) The logbook is a record of various activities by the student like:

- Overall participation & performance
- Attendance
- Participation in sessions
- Record of completion of pre-determined activities.
- Acquisition of selected competencies

5) The logbook is the record of work done by the candidate in that department / specialty and should be verified by the college before submitting the application of the students for the University examination.

V. SUMMARY OF ATTENDANCE

Phase	*Percentage of classes attended*		*Eligible for University examination (Yes / No)*	*Signature of student*	*Signature of teacher*
	Theory	*Practical*			
Attendance at the end of 1st IA			Not applicable		
Attendance at the end of 2nd IA			Not applicable		
Attendance at the end of 3rd IA			Not applicable		
Cumulative attendance for the year					

VI. FORMATIVE ASSESSMENT

Scheme of Formative assessments

THEORY						
Sl. No.	**Assessment**	**Schedule**	**Tools used**	**Feedback**	**Whether added to internal marks**	**Weightage, added to the internal marks**
1	MCQs based Quiz	End of each month	Online MCQs	Feed back at the end of the quiz	Yes	10 marks
2	Class test	Once in 3 months. (No MCQ based quiz during that month)	Written exam for 30 marks (1long essay, 1short essays,5 short answers) 1 hr	Feedback will be provided by assigned faculty mentor after evaluation	Yes	10 marks
4	Internal theory exams	3 in the year	Long Essays, Short essays and short answers	Feedback will be provided by assigned faculty mentor after the internal examination	Yes	80 marks
	TOTAL					100 marks
PRACTICALS						
Sl. No.	**Assessment**	**Schedule**	**Tools used**	**Feedback**	**Whether added to internal marks**	**Weightage, if added to the internal marks**
1	Internal practical	3 in the year	Spotters, Staining	Group feedback provided to	Yes	80 marks

	examinations		Exercises, Case history based exercises, Stool examination,viva-voce, OSPE.	entire class after the internal examination		
2	Small group discussions and record books/log books during practical sessions	Every such session	Rubric for SGD (case based discussion) and record books	At the end of each session	Yes	10 marks
3	Professionalism	Students will be observed throughout the semester Scores will be assigned during every small group discussion.	Professionalism rubric	Feedback will be provided by assigned faculty mentor after the internal examination	Yes	10 marks
	TOTAL					100 marks

VII a. FEEDBACK for Class tests and MCQ/Quiz

Assessment	Marks scored	Total marks	Student's signature	Faculty signature
CLASS TESTS				
1				
2				
3				
MCQ/QUIZ				
1				
2				
4				
5				
6				
7				
8				
9				

10				

VII b. FEEDBACK FOR INTERNAL ASSESSMENT

Assessment	Percentage Marks	*Feedback Given by the students	**Rating			Problem areas identified and comments for improvement by the faculty	Student's signature	Faculty signature
			B	M	E			
		First internal assessmnet						
Theory								
Practical								
		Second internal assessment						
Theory								
Practical								
		Third internal assessment						
Theory								
Practical								

*The feedback given by the student will be the actual feedback regarding the Internal assessment evaluation, whether doubts clarified, problems faced for understanding particular topics, language problem, availability of the faculty for discussions.

****Rating**
Below expectation(B)
Expectations(M);
Exceed Expectations(E)

VIII. SMALL GROUP DISCUSSION/SELF DIRECTED LEARNING – ASSESSMENT AND FEEDBACK

Module #	**Name of SGD/SDL Activity**	**Date completed**	Score	**Initial offaculty anddate**	**Feedback Receive**d Initial of learner

The small group discussions will be scored based on the following criteria. Marks to be given

Score	Criteria for assessment
5	Is a proactive participant showing a balance between listening, initiating, and focusing discussion. Displays a proactive use of the whole range of discussion skills to keep discussion going and to involve everyone in the group. Understands the purpose of the discussion and keeps the discussion focused and on topic. Applies skills with confidence, showing leadership and sensitivity.
4	Is an active participant showing a balance between listening, initiating, and focusing discussion. Demonstrates all the elements of discussion skills but uses them less frequently and with less confidence than the above level. Keeps the discussion going but more as a supporter than a leader. Tries to involve everyone in the group. Demonstrates many skills but lacks the confidence to pursue them so that the group takes longer than necessary to reach consensus. Demonstrates a positive approach but is more focused on getting done than on having a positive discussion.
3	Is an active listener but defers easily to others and lacks confidence to pursue personal point of view even when it is right. Participates but doesn't use skills such as summarizing and clarifying often enough to show confidence. Limits discussion skills to asking questions, summarizing, and staying on topic. Lacks balance between discussion and analytical skills. Either displays good analysis skills and poor discussion skills or good discussion skills and poor analysis skills.
2	Is an active listener but defers easily to others and tends not pursue personal point of view, lacking confidence. Limits discussion skills to asking questions, summarizing and staying on topic. Rarely demonstrates analysis skills because doesn't understand the purpose of the discussion, and as a result, offers little evidence to support any point of view.
1	Demonstrates no participation or effort. Participates only when prompted by the teacher. Only responds to others and initiates nothing. Provides limited responses that are often off topic. Participates minimally so that it is impossible to assess analysis skills or understanding of the issues.

IX. Summary of formative assessment for the entire year

Sl. No.	*Type of Assessment*	*Total marks*	*Marks scored*	*Signature of student*	*Signature of teacher wuth date*
1	Internal assessment marks theory (average)	80			
2	MCQ Quiz test (average)	10			
3	Class tests (average)	10			
4	TOTAL	100			
5	Internal assessment marks (Practicals)	80			
6	Small group discussions and Records	10			
7	Professionalism	10			
	TOTAL	100			

Note: Learners must secure at least 50% marks of the total marks (combined in theory and practical / clinical; not less than 40 % marks in theory and practical separately) assigned for internal assessment in a particular subject in order to be eligible for appearing at the final University examination of that subject. Internal assessment marks will reflect as separate head of passing at the summative examination.

Rubric for assessing the professionalism

Phase	*Areas assessed*					*Signature of student*	*Signature of teacher*
	Regular for classes (5)	*Submission of records (5)*	*Behaviour in class and discipline (5)*	*Dress code and preventability (5)*	*Total (20)*		
At the end of 1st IA							
At the end of 2nd IA							
At the end of 3rd IA							
Average score at the end of the year							

X. COMPETENCY ASSESSMENT – CERTIFIABLE SKILLS

All these skills are to be "PERFORMED" by the student

Competency number	Name of the competency	Number of times to perform required to certify
MI 1.2 (a)	Perform and identify the different causative agents of Infectious diseases by Gram Stain	5
MI 1.2 (b)	Perform and identify the different causative agents of Infectious diseases by ZN stain	5
MI 1.2 (c)	Perform and identify the different causative agents of Infectious diseases by stool routine Microscopy	5
MI 6.2	Identify the common etiologic agents of upper respiratory tract infections (Gram Stain)	3
MI 6.3 (a)	Identify the common etiologic agents of lower respiratory tract infections by Gram Stain	3
MI 6.3 (b)	Identify the common etiologic agents of lower respiratory tract infections by acid fast stain	3
MI 8.7 (a)	Demonstrate Infection control practices Hand hygiene	3
MI 8.7 (b)	Use of Personal Protective Equipments (PPE)	3

The staining procedures could be assessed during different practical classes when the students perform the procedure.

ASSESSMENT OF INDIVIDUAL COMPETENCIES:
(To be done similarly for each competency)

1) Competency identified**: MI 1.2 (a)**

2) Name of the activity: **Perform and identify the different causative agents of Infectious diseases by Gram Stain**

3) Components of the activity:

a) Practical session to demonstrate the procedure for stain.
b) Performing the procedure by the student and focussing the slide.
c) Recording the observation and the inference with a neat labelled diagram.
d) Feedback given on the session.

4) Criteria for successful completion: The student has to perform the activity 5 times and score more than 5/10 in each attempt

Attempt Number	Date of performing the activity	**Marks scored out of 10**	**Rating** BelowExpectations(B); Meets Expectations(M); Exceeds Expectations(E)	Signature of faculty	Signature of student
1					
2					
3					
4					
5					

5) Numerical scoring :

The steps of the staining procedure and interpretation are scored as follows

Step performed	Marks allotted
Performing the stain following all the steps (1 mark each) -Primary stain -Decolourisation -Secondary stain	3
Focusing the stained slide with appropriate adjustments of the Microscope	2
Identifying the structures under the Microscope/Observation and inference	3
Diagram and writing the report	2
Total	10

6) Documentation of activity (diagram and observation and inference) – to be written in the Record book.

7) Recommended action when unsuccessful : Repeat after discussion

8) Any other comments

Module #	**Name of Activity**	**Date completed**	**Rating** BelowExpectations(B); Meets Expectations (M); Exceeds Expectations (E)	**Initial Of faculty And date**	**Feedback Receive**d Initial of learner

XI. COMPETENCY ASSESSMENT – NON CERTIFIABLE SKILLS

These skills are to be "SHOWS HOW".

Competency number	Name of the competency	Method
MI 2.3 (a)	Identify the microbial agents causing Rheumatic Heart Disease	Case based exercise or OSPE
MI 2.3 (b)	Identify the microbial agents causing infective Endocarditis	Case based exercise or OSPE
MI 2.6 (a)	Identify the causative agent of malaria	Case based exercise/Peripheral blood smear examination
MI 2.6 (b)	Identify the causative agent of filariasis	Case based exercise/Peripheral blood smear examination
MI 3.2 (a)	Identify the common etiologic agents of diarrhea	Case based exercise (Bacterial agents) or Hanging drop examination/OSPE
MI 3.2 (b)	Identify the common etiologic agents of dysentery	Case based exercise (Bacterial agents) or Stool examination for ova and cysts/OSPE
MI 5.3	Identify the microbial agents causing meningitis	Case based exercise or OSPE
MI 8.10	Demonstrate the appropriate method of collection of samples in the performance of laboratory tests in the detection of microbial agents causing Infectious diseases	OSPE – collection of pus swab, throat swab, dermatology samples
MI 8.11	Demonstrate respect for patient samples sent to the laboratory for performance of laboratory tests in the detection of microbial agents causing Infectious diseases	Case based OSPE
MI 8.15	Choose and Interpret the results of the laboratory tests used in diagnosis of the infectious disease	Case based exercises to interpret

MI 2.3 (a)	Identify the microbial agents causing Rheumatic Heart Disease				
MI 2.3 (b)	Identify the microbial agents causing infective Endocarditis				
MI 2.6(a)	Identify the causative agent of malaria				
MI 2.6(b)	Identify the causative agent of filariasis				
MI 3.2 (a)	Identify the common etiologic agents of diarrhea				
MI 3.2 (b)	Identify the common etiologic agents of dysentery				
MI 5.3	Identify the microbial agents causing meningitis				
MI 8.10	Demonstrate the appropriate method of collection of samples in the performance of laboratory tests in the detection of microbial agents causing Infectious diseases				
MI 8.11	Demonstrate respect for patient samples sent to the laboratory for performance of laboratory tests in the detection of microbial agents causing Infectious diseases				
MI 8.15	Choose and Interpret the results of the laboratory tests used in diagnosis of the infectious disease				

XII. AETCOM MODULE– ASSESSMENT AND FEEDBACK

Module #	**Name of AETCOM Activity**	**Date completed**	**Attempt atactivity** First (F); Repeat (R); Remedial (Re)	**Rating** BelowExpectations(B); Meets Expectations(M); Exceeds Expectations(E)	**Decision of faculty** Completed (C); Repeat (R); Remedial (Re)	**Initial Of faculty And date**	**Feedback Received** Initial of learner
MI 8.14	Demonstrate confidentiality pertaining to patient identity in laboratory results						

AETCOM FORMAT:

Competency identified: MI 8.14

Name of the activity: Demonstrate confidentiality pertaining to patient identity in laboratory results.

Counsel patient with HIV/ STD before or after the test in simulated setting.

Components of the activity:

a. Small group discussion with the faculty member regarding the pre and post test counselling for HIV. Interpretation of test report, confidentiality to be maintained and counselling.
b. Students will be paired in teams of two and one asked to be the doctor and the other the patient. The counselling session is enacted out and assessed by the faculty.
c. Feedback given on the session – discussion about the do's and dont's.

Criteria for successful completion: Active participation and assessment of reflections.

Numerical scoring : Not required

Documentation of activity in the log book : Reflections to be done by the student

XIII. CONFERENCE/CME/WORKSHOP ATTENDED

Sl no	Date	Particulars	Signature of the faculty

XIV. SCIENTIFIC PROJECTS/PRESENTATIONS/OUTREACH ACTIVITIES

Sl no	Date	Particulars	Signature of the faculty

XV. ACHIEVEMENTS/ AWARDS /ANY OTHER ACTIVITIES

Sl no	Date	Particulars	Signature of the faculty

XVI. EXTRACURRICULAR ACTIVITIES

Sl no	Date	Particulars	Signature of the faculty

LIST OF BOOKS

1. Apurba Sastry and Sandhya Bhat; Essentials of Medical Microbiology,3rd Edition,2021
2. Lippincott Illustrated Reviews Microbiology,South Asian Edition by Cynthia Nau Cornelissen ,Marcia Metzgar Hobbs SAE editors Sumathi Muralidharan & Rohith Chawla As per CBME
3. Ananthnaryan & Panikar's Text Book of Microbiology 11th Edition. edited by Reba Kanungo
4. Basic Medical Microbiology Patric R Murray
5. Roitt's Essential Immunology Peter J ,Delves Seamus J. Martin Dennis R Burton Ivan M Roitt
6. Apurba Sastry and Sandhya Bhat; Essentials of Practical Microbiology,3rd Edition,2021
7. K D Chatterjee Parasitology Protoazoology and Helminthology 13th edition 2019
8. C K Jayaram Panicker Panicker's text Book of Medical Parasitology 8Th edition
9. Text book of Medical parasitology by Subhash Chandra Parija

REFERENCE BOOKS

1. Apurba Sastry and Sandhya Bhat; Essentials of hospital infection control 1st Edition,2019
2. Mandell, Douglas,and Bennett's Principles and practice of Infectious diseases
3. Harrison's principles of internal Medicine
4. Essentials of clinical infectious diseases William F Wright

APIC text book of Infection Control and Epidemiolog

PHARMACOLOGY

Preamble:

Pharmacology is about treating the patients with the required medications, at the right dose, for the right duration and at an appropriate cost. The knowledge of the molecular basis of drug action, the adverse effects caused by the medications, its prevention and treatment and the effects of administering two or more drugs to a patient will be learnt in the context of its clinical application and not just as facts. The emphasis is on clinical relevance of pharmacological knowledge.

INDEX

Serial number	Contents
1	Preamble - Goals and Objectives
2	Terms and suggested teaching guidelines
3	Minimum teaching hours- Theory & Practicals
4	Model Time table
5	Competencies & Specific learning Objectives –Theory & Practicals
6	AETCOM module
7	Certifiable competencies
8	Competency distribution in each block
9	Integration topics- Horizontal & Vertical
10	Evaluation Methodology
11	Assessment In Pharmacology- Summative Assessment & University Examination- Theory & Practical
12	Proposed Marks for Practical Internal Assessment
13	Blue Print & Assessment methods – Theory
14	Blue Print & Assessment methods – Practical
15	Model Question paper
16	Check List for Practical Exercises
17	Books – Reference & Recommendations

Goals and Departmental objectives for the undergraduate MBBS curriculum in Pharmacology

Goals:

The broad goal of Pharmacology curriculum is to equip the Indian Medical Graduate (IMG) with the knowledge of scientific basis of therapeutics and the skills of rational prescribing during the second year of MBBS.

Objectives:

Knowledge:

At the end of the course the student should be able to:

1. Describe the pharmacokinetics and Pharmacodynamics of essential and commonly used drugs
2. Apply the knowledge of indications, contraindications, interactions and adverse reactions of commonly used drugs in therapeutics
3. Describe the principles of prescribing and calculate the dosage in special medical situations such as pregnancy, lactation, children, elderly and patients with renal dysfunction
4. Describe the basis of Evidence Based Medicine
5. Apply the concept of rational drug therapy and P drugs in clinical pharmacology
6. Describe the clinical presentation, diagnosis and management of common poisonings, insecticides, common sting and bites
7. Describe drugs of abuse and the process of de-addiction
8. Describe the phases and the regulations involved in the development and introduction of new drugs
9. Explain the concepts and clinical relevance of Essential medicines, Fixed dose combinations, Over the counter drugs, Herbal medicines, dietary supplements and nutraceuticals
10. Describe occupational and environmental pesticides, food adulterants, pollutants and insect repellents

Skills:

At the end of the course the student should be able to:

1. Write a rational prescription for a given condition and communicate the same to the patient
2. Recognise and report an adverse drug reaction of commonly used medications
3. Demonstrate the effects of drugs on blood pressure through computer aided learning and interpret the graph
4. Perform a critical evaluation of the drug promotional literature
5. Administer drugs through various routes in a simulated environment

Ethics, Attitude and communication:

At the end of the course the student should be able to:

1. Communicate effectively with the patient with regards storage and use of common medications
2. Explain to the patients the right way to use the various drug formulations
3. Communicate the importance of adherence to medications and motivate the patients
4. Demonstrate an understanding of the legal and regulatory aspects of prescribing medications.
5. Understand and follow the ethical principles involved in prescribing medications.

EXPLANATION OF TERMS USED IN THE MANUAL

LECTURE

Any instructional large group method including traditional lecture and interactive lecture.

SMALL GROUP DISCUSSION

Any instructional method involving small groups of students in an appropriate learning context.

DOAP (Demonstration- Observation - Assistance - Performance)

A practical session that allows the student to observe a demonstration, assist the performer, perform in a simulated environment, perform under supervision or perform independently.

SELF DIRECTED LEARNING

A process in which individuals take the initiative, with or without the help of others in diagnosing their learning needs, formulating learning goals, identifying human and material sources for

learning, choosing and implementing appropriate learning methods.

SKILL ASSESSMENT

A session that assesses the skill of the student including those in the practical laboratory, skills lab, skills station that uses mannequins/ paper case/simulated patients/real patients as the context demands.

CORE

A competency that is necessary in order to complete the requirements of the subject (traditional must know)

NON – CORE

A competency that is optional in order to complete the requirements of the subject (traditional nice (good) to know/ desirable to know

SUGGESTED GUIDELINES FOR THE TEACHING AND LEARNING METHODS

LECTURE: Suggested topics for didactic and interactive lectures have been included along with specific learning objectives linked to each competency. Lectures should cover the core competencies with appropriate pictures, charts or diagrams.

SMALL GROUP DISCUSSION: Topics for small group discussion have suggested. These topics included are those where more intensive and interactive learning sessions are required.

SELF DIRECTED LEARNING: Non-core competencies are suggested to be taken as topics for self-directed learning. At the end of the session, the teacher moderates the discussion and the learning is recorded in the log book.

DOAP (Demonstration- Observation - Assistance - Performance)

Practicals are in the form of Demonstration- Observation – Assistance - Performance)

All sessions will have specific learning objectives which are linked to the relevant competencies and are assessed as described in the

Assessment module.

All sessions will be done with the faculty as facilitator.

The students will be encouraged to observe the demonstrations and perform the requisite skills either independently or with assistance as required.

Emphasis will be on acquiring clinically relevant skills. Thus, case-based learning and discussions will be encouraged.

MINIMUM TEACHING HOURS

Lectures: 80hrs

Small group learning (tutorials/seminars): 138hours- **Practical**: 80 hours & **SGD**: 58 hours

Self-directed learning: 12 hours

Total: 230 hours

THEORY:

Sl no	Topic	Competency	Theory	SGD	SDL	Procedures requiring certification
1	General Pharmacology Toxicology Clinical Pharmacology and rational drug use	PH 1.1 to PH 1.12	6	0		Nil
2	Autonomic Nervous System	PH 1.13 to PH1.14	9	2	0	Nil
3	Autacoids	PH1.16	3	2	1	Nil
4	Drugs in anaesthetic practice	PH 1.15, PH1.17 to PH 1.18	4	0	0	Nil
5	Central Nervous System	PH 1.19 to PH 1.23	8	4	0	Nil
6	Diuretics	PH 1.24	3	1	1	Nil
7	Drugs affecting blood and blood formation	PH 1.25, PH 1.35	3	2	2	Nil
8	Cardiovascular System	PH 1.26 to PH 1.31	9	2	3	Nil
9	Respiratory System:	PH 1.32 to PH 1.33	2	1	0	Nil
10	Gastrointestinal System	PH 1.34	1	2	1	Nil
11	Endocrine System	PH 1.36 to PH 1.41	8	4	1	Nil
12	Chemotherapy	PH 1.42 to PH 1.49	17	5	0	Nil
13	Miscellaneous	PH 1.50 to PH 1.64	3	5	3	Nil
	CBME requirement		**80 hours**	**36 hours**	**12 hours**	Nil

PRACTICAL					
Topic	**Competency**	**Description**	**Practical hours**	**Competencies**	**Certification**
Clinical Pharmacy	PH 2.1	Demonstrate understanding of the use of various dosage forms **(oral/local/parenteral; solid/liquid)**	14 hours		
	PH 2.2	Prepare oral rehydration solution from ORS packet and explain its use	4 hours		
	PH 2.3	Demonstrate the appropriate setting up of an intravenous drip in a simulated environment.	4 hours		
	PH 2.4	Demonstrate the correct method of calculation of drug dosage in patients including those used in special situations	4 hours		
Clinical Pharmacology	PH 3.1-**C**	Write a rational, correct and legible generic prescription for a given condition and communicate the same to the patient	6 hours	5	Certification
	PH 3.2-**C**	Perform and interpret a critical appraisal (audit) of a given prescription	6 hours	3	Log book & Certification
	PH 3.3-**C**	Perform a critical evaluation of the drug promotional literature	6 hours	3	Log book & Certification
	PH 3.4- **L**	To recognise and report an adverse drug reaction	4 hours		Log book
	PH 3.5-**C**	To prepare and explain a list of P-drugs for a given case/condition	6 hours	3	Log book & Certification
	PH 3.6-**L**	Demonstrate how to optimize interaction with pharmaceutical representative to get authentic information on drugs	2 hours		Log book
	PH 3.7-**L**	Prepare a list of essential medicines for a healthcare facility	4 hours		Log book
	PH 3.8	Communicate effectively with a patient on the proper use of prescribed medication	4 hours		

Experimental Pharmacology	PH 4.1	Administer drugs through various routes in a simulated environment using mannequins	10 hours		
	PH4.2	Demonstrate the effects of drugs on blood pressure (vasopressor and vaso-depressors with appropriate blockers) using CAL	6 hours		
Communication	PH5.1	Communicate with the patient with empathy and ethics on all aspects of drug use	SGD 2 hours		
	PH5.2	Communicate with the patient regarding optimal use of a) drug therapy, b) devices and c) storage of medicines	SGD 4 hours		
	PH5.3	Motivate patients with chronic diseases to adhere to the prescribed management by the health care provider	SGD 4 hours		
	PH5.4	Explain to the patient the relationship between cost of treatment and patient compliance	SGD 2 hours		
	PH5.5	Demonstrate an understanding of the caution in prescribing drugs likely to produce dependence and recommend the line of management	SGD 4 hours		
	PH5.6	Demonstrate ability to educate public & patients about various aspects of drug use including drug dependence and OTC drugs	SGD 4 hours		
	PH5.7	Demonstrate an understanding of the legal and ethical aspects of prescribing drugs	SGD 2 hours		
CBME requirement			**Practicals -80 hours SGD-22 hours**		

C- Needs certification- 4 no

L- Needs Maintenance of a log book- 3 no.

Note: Spotters can be done concomitantly during the teaching hours.

Model Time table for Phase II MBBS

TIME TABLE

BLOCK 1: 15 WEEKS (OCT-JAN)

	8-11	11.30-12.30	12.30-1.30	2-4
Monday	Postings	**PH-L**	**OBG-L**	PH-A,CM-B
Tuesday	Postings	**PH-L**	**FM-L**	FM-A,
Wednesday	Postings	**MIC-L**	**PA-L**	PA-A, MIC-B
Thursday	Postings	**CM-L**	PH-SGD	PA-B, MIC-A
Friday	Postings	**MIC-L**	**PA-L**	PH-B,CM-A
Saturday	Clinical training and Skills	G.MED-L	SUR-L	FM-B,

SECOND BLOCK 15 WEEKS (FEB-MAY)

	8-11	11.30-12.30	12.30-1.30	2-4
Monday	Postings	**MIC-L**	**PA-SGD**	**PH-A,PA-B-SGD**
Tuesday	Postings	**PH-L**	**MIC-SGD**	**PH-SGD**
Wednesday	Postings	**PA-L**	**MIC-L**	**PA-A,MIC-B**
Thursday	Postings	PH-L		PH-B,PA-A SGD
Friday	Postings	**PA-L**	**MIC-SGD**	**PA-B,MIC-A**
Saturday	Clinical training and Skills	AETCOM	AETCOM	

THIRD BLOCK 10 WEEKS (JUN-AUG)

	8-11	11.30-12.30	12.30-1.30	2-4	4-5
Monday	Postings	**PA-L**	MIC-L	**PH-SGD**	PA-SDL
Tuesday	Postings	**PA-L**	MIC-L	**PA-A,MIC-B**	PH-SDL
Wednesday	Postings	**PH-L**		**PH-A,PA-B SGD**	MIC-SDL
Thursday	Postings	**PH-L**		PH-B,PA-A SGD	CM-SDL
Friday	Postings	**CM-L**		PA-B,MIC-A	AETCOM-SDL
Saturday	Clinical training and Skills	**SUR-L**	**OBG**	G.M-L	

	TERM-1-OCT-JAN(15 WK)			TERM-2-FEB-MAY(15 WK)			TERM-3- JUN-AUG(10 WK)			TOTAL		
	THEORY	**PRACT**	**SGT/ TUTORIAL**	**THEORY**	**PRACT**	**SGT/ TUTORIAL**	**THEORY**	**PRACT**	**SGT/ TUTORIAL**	**THEORY**	**PRACT**	**SGT/ TUTORIAL**
PATH	30	15	15	30	30	45	20	20	20	80	65	80
PHARM	30	30	15	30	30	30	20	20	20	80	80	65
MICRO	30	30	0	30	30	30	20	20	0	80	80	30
CM	15	0	30	0	0	0	10	0	0	25	0	30
FM	15	0	30	0	0	0	0	0	0	15	0	30
G.MED	15	0	0	0	0	0	10	0	0	25	0	0
G.SUR	15	0	0	0	0	0	10	0	0	25	0	0
OBG	15	0	0	0	0	0	10	0	0	25	0	0
AETCOM				**AETCOM** 30						AETCOM	30	

NOTE: To be prepared at the convenience of the respective institutions.

1.

THEORY

(Competency no-1.1 to 1.64)

General pharmacological Principles

Lecture - 1 Hour

Assessment: Written, Viva voce

PH 1.1 Define and describe the principles of pharmacology and pharmacotherapeutics

1.1.1 Define a drug
1.1.2 Explain the terms Pharmacology, clinical pharmacology & therapeutics
1.1.3 Enlist and explain about various branches of Pharmacology
1.1.4 List out sources of drugs with examples
1.1.5 List out sources of drug information &Explain each source briefly
1.1.6 Recognize the importance of Clinical pharmacology towards rational approach to prescribing medicine
1.1.7 Explain the evolution of Pharmacology from medieval to contemporary times

SGD - 1 Hour
Assessment: Written, Viva voce

PH 1.2 Describe the basis of Evidence based medicine and Therapeutic

drug monitoring Evidence based Medicine

1.2.1 Identify reliable sources for research evidence
1.2.2 Understand research study designs and the hierarchy for research evidence
1.2.3 Ascertain strength of evidence for treatments and understand guidelines in different therapeutic areas
1.2.4 Explain the importance of keeping prescribing practice up to date with advances in medical knowledge

Therapeutic Drug Monitoring

1.2.5 Understand the purpose of TDM
1.2.6 Explain the methods in therapeutic drug monitoring
1.2.7 Enlist the drugs that require TDM
1.2.8 Understand the purpose for and methods in therapeutic drug monitoring
*TDM to be covered after PK/PD

SGD/Practical - 1 Hour
Assessment: Written, Viva voce

PH 1.3 Enumerate and identify drug formulations and drug delivery systems

1.3.1 Define dosage form, formulation and excipient
1.3.2 List out different drug formulations with an example of each.
1.3.3 Choose appropriate formulation based on clinical need
1.3.4 Explain the advantages and disadvantages of different drug delivery systems
1.3.5 Enlist the new drug delivery system and discuss their utility

Lecture - 5 Hours

Assessment: Written, Viva voce

PH 1.4 Describe absorption, distribution, metabolism & excretion of drugs

Pharmacokinetics (PK)

1.4.1 Explain the term Pharmacokinetics
1.4.2 Explain the four phases of PK
1.4.3 Explain why the understanding of PK is relevant to prescribers

Drug Absorption

1.4.4 Explain the principles involved in drug absorption
1.4.5 Explain the concept of bioavailability and describe the factors affecting bioavailability
1.4.6 Describe the importance of bioequivalence

Drug Distribution

1.4.7 Explain the distribution of drugs across body compartments
1.4.8 Define apparent volume of distribution
1.4.9 Explain the clinical significance of drug distribution
1.4.10 Explain the clinical significance of plasma protein binding of drugs
1.4.11 Describe redistribution of drugs with clinical application

Biotransformation

1.4.12 Define biotransformation
1.4.13 Describe first pass metabolism and its importance
1.4.14 Describe phase 1 and phase 2 reactions
1.4.15 Explain factors affecting biotransformation
1.4.16 Explain the clinical significance of enzyme induction and inhibition

Drug Excretion

1.4.17 Describe the various routes of excretion of drugs
1.4.18 Explain factors affecting renal excretion
1.4.19 Explain plasma half-life and its clinical significance
1.4.20 Explain steady state concentration and its significance
1.4.21 Explain the different kinetics of elimination and their clinical significance
1.4.22 Apply the knowledge of clearance, loading dose and maintenance dose in calculating the dose for a patient
1.4.23 Explain various methods of prolonging drug action
1.4.24 Explain the PK factors that determine the choice of dose, route, and frequency of Drug administration.

Lecture/SGD - 4 Hours
Assessment: Written, Viva voce

PH 1.5 Describe general principles of mechanism of

drug action Pharmacodynamics

1.5.1 State different mechanisms by which a drug acts giving an example of each
1.5.2 Enlist different types of receptors giving examples of drugs acting through them
1.5.3 Explain the terms – 'up regulation' and 'down regulation' of receptors
1.5.4 Explain the terms –affinity, efficacy, intrinsic activity & potency
1.5.5 Define the terms –agonist, antagonist, partial agonist & inverse agonist. Give examples of drugs for each
1.5.6 Describe dose-response relationship and interpret dose- response curves
1.5.7 Explain drug synergism with examples
1.5.8 Describe the different types of drug antagonism with examples
1.5.9 Describe factors modifying drug action and its clinical implications
1.5.10 Explain therapeutic index and therapeutic range with clinical significance

SGD/ Practical - 1 Hour
Assessment: Written, Viva voce

PH 1.6 Describe principles of Pharmacovigilance & ADR reporting systems

1.6.1 Define the basic terminologies (ADR, Serious ADR, AE, Toxicity, Pharmacovigilance and Causality assessment)
1.6.2 Explain the history, need and principles of pharmacovigilance
1.6.3 Discuss various methods/systems of ADR reporting
1.6.4 Discuss Pharmacovigilance program of India
1.6.5 Report ADRs to a Pharmacovigilance Centre by filling the ADR reporting form
1.6.6 Discuss the importance of prescriber's responsibility in Pharmacovigilance

SGD - 1 Hour
Assessment: Written, Viva voce

PH 1.7 Define, identify and describe the management of adverse drug reactions (ADR)

1.7.1 Define an ADR
1.7.2 Explain the frequency of ADRs and their impact on public health
1.7.3 Describe the common classification of ADRs with examples
1.7.4 Describe the management of ADRs.
1.7.5 Describe the important risk factors that predict susceptibility to ADRs.
1.7.6 Explain the importance of monitoring in prevention of ADRs.

SGD - 1 Hour
Assessment: Written, Viva voce

PH 1.8 Identify and describe the management of drug interactions

1.8.1 Define Drug interactions.
1.8.2 Describe the types of Drug interactions as In vivo, In vitro & PK and

PD with suitable examples

1.8.3 Describe the useful and harmful drug interactions with suitable examples

1.8.4 Describe Drug–drug; drug-food; Drug-alcohol; drug–tobacco; Drug- complementary/alternative medicine interactions with examples

1.8.5 Explain how to predict and avoid harmful drug interactions in clinical practice

1.8.6 Management of DI.

1.8.7 Identify the sources of information about DI to inform prescribing

☐ _____ SGD - 1 Hour

☐ Assessment: Written, Viva voce

PH 1.9 Describe nomenclature of drugs i.e. generic, branded drugs

1.9.1 Describe the chemical name, non-proprietary and Proprietary name of a drug

1.9.2 Discuss the importance of using non-proprietary name in prescribing.

☐ _____ SGD - 1 Hour

☐ Assessment: Written, Viva voce

PH 1.10 Describe parts of a correct, complete and legible generic prescription. Identify errors in prescription and correct appropriately

1.10.1 Define a prescription along with the importance of each part of prescription

1.10.2 Describe the format of prescription as per MCI model.

1.10.3 Write an unambiguous, legible, complete and legally valid prescription

1.10.4 Identify and correct prescription writing errors

1.10.5 Describe the importance of maintaining records of prescriptions.

☐ _____ SGD - 1 Hour

☐ Assessment: Written, Viva voce

PH 1.11 Describe various routes of drug administration, eg: oral, SC, IV, IM, SL

1.11.1 List the various routes of drug administration-oral, parenteral and topical with examples

1.11.2 Describe the merits and de-merits of each route

1.11.3 Choose the correct route of drug administration in a given clinical scenario

☐ _____ SGD/Practical - 1 Hour

☐ Assessment: Written, Viva voce

PH 1.12 Calculate the dosage of drugs using appropriate formulae for an individual patient, including children, elderly and patient with renal dysfunction

1.12.1 Calculate appropriate doses for individual patients based on age, body weight, and surface area.

1.12.2 Calculate the dose of drug using appropriate formulae in a given clinical case in children

1.12.3 Calculate the dose of drug using appropriate formulae in a given clinical case in elderly

1.12.4 Calculate the dose of drug using appropriate formulae in a given clinical case

in patients with renal dysfunction and other pathological conditions like CCF, Liver disease.

Drugs acting on Autonomic Nervous system

- Lecture/SGD- 6/3 Hours
- Assessment: Written, Viva voce

PH 1.13 Describe mechanism of action, types, doses, side effects, indications and contraindications of adrenergic and anti- adrenergic drugs

1.13.1 Describe the organization of autonomic nervous system
1.13.2 Describe the steps involved in neurotransmission
1.13.3 Describe the synthesis, storage, release and fate of adrenergic transmitters
1.13.4 Classify adrenergic receptors with respect to their structure, localization and second messenger system

Adrenergic drugs

1.13.5 Classify adrenergic agonists based on their therapeutic uses and actions.
1.13.6 Describe the pharmacological effects of adrenaline and correlate the effects of their therapeutic uses and adverse effects
1.13.7 State the salient Pharmaco-kinetic features of adrenaline
1.13.8 Differentiate between adrenaline, nor-adrenaline, isoprenaline and dopamine with respect to pharmacological effects, adverse effects and therapeutic uses. (Enumerate the Adverse effects, therapeutic uses and contraindication of most commonly used Adrenergic Drugs in therapy.)
1.13.9 Compare and contrast directly and indirectly acting sympathomimetics with examples
1.13.10 State the therapeutic uses and ADRs of indirectly acting sympathomimetics
1.13.11 State the precautions and contraindications of sympathomimetics

Antiadrenergic drugs

1.13.12 Classify alpha-adrenergic receptor antagonists, and compare and contrast selective alpha1 antagonists with non-selective alpha antagonists
1.13.13 Describe the pharmacological effects and applied pharmacokinetics, ADRs, precautions and therapeutic uses of prazosin
1.13.14 State the advantages of other selective alpha1 antagonists over prazosin, co-relating the same with their therapeutic use
1.13.15 Classify beta-adrenergic receptor antagonists with examples
1.13.16 Describe the pharmacological effects, pharmacokinetics, ADRs, precautions and contra- indications of beta-adrenergic receptor antagonists
1.13.17 State the therapeutic uses of beta- blockers giving pharmacological basis for their use
1.13.18 State the advantages of selective beta1 antagonists over non selective beta antagonists corelating the same with their therapeutic uses and ADRs
1.13.19 Mention the beta blockers with (ISA) intrinsic sympathomimetic activity giving their advantages and indications
1.13.20 Mention the beta blocker of choice with rationale for the following clinical

conditions- Glaucoma, CHF, angina, hypertension, thyrotoxicosis, pheochromocytoma, arrhythmias

1.13.21 List the various preparations of beta blockers with their routes of administration. (State the beta-blockers that can be given by IV route)

- Lecture - 3 Hours
- Assessment: Written, Viva voce

PH 1.14 Describe mechanism of action, types, doses, side effects, indications and contraindications of cholinergic and anticholinergic drugs

Cholinergic transmission and Cholinergic drugs

1.14.1 Describe the synthesis, storage, release and fate of cholinergic transmitters
1.14.2 List the sites where acetylcholine is released
1.14.3 Classify cholinergic receptors with their structure, localization and second messenger system
1.14.4 Classify cholinomimetic drugs
1.14.5 Describe the pharmacological effects of directly acting cholinomimetic drugs
1.14.6 Compare the effects of muscarinic agonists on the basis of selectivity and therapeutic uses, adverse effects and contraindications
1.14.7 Describe the metabolism of acetyl choline
1.14.8 Classify anti-cholinesterase agents
1.14.9 Compare the various reversible anti-cholinesterases with respect to their pharmacological properties and therapeutic uses
1.14.10 Outline the management of myasthenia gravis
1.14.11 State the signs and symptoms of organophosphate compound poisoning
1.14.12 Outline the treatment of organophosphorus poisoning with rationale
1.14.13 Explain the term enzyme aging and its clinical significance
1.14.14 Explain how the treatment of organochlorine compound poisoning differs from that of organophosphate compound poisoning

Anticholinergic drugs

1.14.15 Classify cholinergic receptor antagonists giving examples of muscarinic and nicotinic (Nn: ganglion, Nm: Neuromuscular) blockers
1.14.16 List the anticholinergic side effects
1.14.17 Compare and contrast atropine and hyoscine
1.14.18 State the salient pharmacokinetic features of atropine and its Substitutes
1.14.19 List the adverse drug reactions of anticholinergic drugs
1.14.20 List the contraindications to anticholinergic drugs
1.14.21 State the advantages of atropine substitutes over atropine and state their clinical uses giving suitable examples
1.14.22 List the major clinical indications of atropine

Skeletal Muscle Relaxants

- Lecture - 1 Hour
- Assessment: Written / Viva voce

PH 1.15 Describe mechanism/ s of action, types, doses, side effects, indications and contraindications of skeletal muscle relaxants

1.15.1 Define skeletal muscle relaxant.
1.15.2 Classify skeletal muscle relaxants.
1.15.3 Explain mechanisms of action of skeletal muscle relaxants
1.15.4 Compare and contrast (competitive) non-depolarizing blockers and persistent depolarizing blockers.
1.15.5 Describe the pharmacokinetics of skeletal muscle relaxants.
1.15.6 Uses of skeletal muscle relaxants.
1.15.7 Describe the important drug interactions and adverse effects that occur with skeletal muscle relaxants.
1.15.8 Discuss the advantages of newer neuromuscular blockers over the older ones.
1.15.9 Compare centrally and peripherally acting skeletal muscle relaxants.

Autocoids and related Drugs

- Lecture/SGD/SDL - 3/4/1 Hour
- Assessment: Written / Viva voce

PH 1.16 Describe mechanism/ s of action, types, doses, side effects, indications and contraindications of the drugs which act by modulating autacoids, including: anti-histaminic, 5-HT modulating drugs, NSAIDs, drugs for gout, anti-rheumatic drugs, drugs for migraine

Histamine and Antihistaminics

1.16.1 Understand the role of histamine and bradykinin in various physiological and pathophysiological processes.
1.16.2 Understand the mechanisms of action of drugs that act as antagonists of the H1 receptor.
1.16.3 Know the therapeutic utility of H1-receptor antagonists, alone and in combination with other agents.
1.16.4 Know the important adverse effects of H1-receptor antagonists, and the difference between first- and second-generation H1 antihistamines with regard to adverse effects.
1.16.5 Outline the treatment of Vertigo.

5-Hydroxytryptamine, its Antagonists and Drug Therapy of Migraine

1.16.6 Describe the synthesis, storage and destruction of 5-Hydoxytryptamine.
1.16.7 Name and describe the salient features of important 5-HT receptor sub types.
1.16.8 Describe the pharmacological actions and pathophysiological roles of 5-Hydroxytryptamine
1.16.9 Describe drugs affecting 5HT system.
1.16.10 Describe mechanism of action, therapeutic uses and side effects of 5HT modulating drugs.
1.16.11 Understand the pathophysiology of migraine.
1.16.12 Describe the mechanism of action, adverse effects, contraindications and important drug interactions of anti-migraine drugs
1.16.13 Describe the management of migraine and the drugs used for prophylaxis of migraine

NonsteroidalAntiinflammatory Drugs and Antipyretic-Analgesics

1.16.14 Classify Non-steroidal Anti-inflammatory drugs based on selectivity of COX enzyme.
1.16.15 Explain mechanisms of action of NSAIDs.
1.16.16 Compare and contrast features of nonselective COX inhibitors and selective COX -2 inhibitors and enumerate the concerns with selective COX 2 inhibitors.
1.16.17 Describe pharmacokinetics and pharmacological actions of NSAIDs.
1.16.18 Describe the therapeutic uses of NSAIDs and enumerate doses of most commonly used NSAIDs.
1.16.19 List out the adverse effects, drug interactions and necessary precautions and contraindications to be followed with NSAIDs.
1.16.20 Outline the management of Salicylate poisoning and Paracetamol poisoning.
1.16.21 Describe guidelines for choice of non-steroidal anti-inflammatory drugs.
1.16.22 Enumerate the analgesic combinations in common use and discuss about topical NSAIDS.
1.16.23 Discuss the rationality of analgesic combinations and topical NSAIDs.

Antirheumatoid and Antigout Drugs

1.16.24 Explain pathophysiology of rheumatoid arthritis and understand the goals of drug therapy in rheumatoid arthritis.
1.16.25 Classify drugs used in rheumatoid arthritis.
1.16.26 Describe the mechanism of action and pharmacological actions of antirheumatic drugs
1.16.27 Describe the adverse effects of antirheumatic drugs and enumerate the doses of commonly used antirheumatic drugs.
1.16.28 Explain the pathophysiology of Gout.
1.16.29 Classify drugs used for Gout.
1.16.30 Describe mechanism of action and pharmacological actions of drugs used for Gout.
1.16.31 Describe the therapeutic uses of drugs used for Gout and enumerate the doses of commonly used drugs for Gout.
1.16.32 Discuss the adverse effects, precautions and contraindications of drugs used for Gout.
1.16.33 Explain the management of Gout.

Local Anaesthetics

- Lecture - 1 Hour
- Assessment: Written / Viva voce

PH 1.17 Describe the mechanism/ s of action, types, doses, side effects, indications and contraindications of local anesthetics

1.17.1 Define local anaesthetics.
1.17.2 Classify local anaesthetics.
1.17.3 Distinguish between the comparative features of general and local anaesthesia.
1.17.4 Compare features of amide linked local anaesthetics and ester linked local anaesthetics.
1.17.5 Describe mechanism of action, local and systemic actions of local anaesthetics.
1.17.6 Describe pharmacokinetics and enumerate the doses of commonly used local anaesthetics.
1.17.7 Describe the adverse effects, precautions and drug interactions with local anaesthetics.

1.17.8 Describe the indications for local anaesthetics and various dosage forms of lignocaine.
1.17.9 Describe the techniques of administration of local anaesthetics and their relevance in clinical practice.
1.17.10 Explain the complications of spinal anaesthesia.
1.17.11 Explain rationale of combining local anesthetics with adrenaline and clinical significance

General Anaesthetics

- Lecture - 2 Hours
- Assessment: Written / Viva voce

PH 1.18 Describe the mechanism/ s of action, types, doses, side effects, indications and contraindications of general anesthetics, and pre-anesthetic medications

1.18.1 Define general anaesthesia and explain stages of General Anaesthesia.
1.18.2 Describe the mechanisms of action of general anaesthetics.
1.18.3 Enumerate the properties of ideal general anaesthetics
1.18.4 Classify general anaesthetics
1.18.5 Explain the pharmacokinetics of general anaesthetics.
1.18.6 Describe the pharmacological actions and important adverse effects of general anaesthetics.
1.18.7 Enumerate the complications and the important drug interactions with general anaesthetics.
1.18.8 Define preanesthetic medication with the aims of preanesthetic medication and rationality of use of drugs as preanesthetic medication.
1.18.9 What is balanced anaesthesia and components
1.18.10 Compare and contrast nitrous oxide and halothane
1.18.11 Enumerate intravenous anaesthetic agents

Central Nervous System

- Lecture/SGD: 8/1 Hours
- Assessment: Written / Viva voce

PH 1.19 Describe the mechanism/ s of action, types, doses, side effects, indications and contraindications of the drugs which act on CNS, (including anxiolytics, sedatives & hypnotics, anti- psychotic, anti- depressant drugs, anti- manic, opioid agonists and antagonists, drugs used for neurodegenerative disorders, anti-epileptics drugs)

Sedatives – hypnotics/ Anxiolytic drugs

1.19.1 Define Sedatives and Hypnotics.
1.19.2 Describe the different phases of Sleep.
1.19.3 Classify Sedative and Hypnotics.
1.19.4 Describe the mechanism of action, pharmacokinetics and pharmacological actions of Sedative hypnotics.
1.19.5 Describe adverse effects and precautions with long term use and important drug interactions with Sedative and Hypnotics.
1.19.6 Describe therapeutic uses of Sedative and Hypnotics.

1.19.7 Describe the management of different types of Insomnia.
1.19.8 Describe the management of Sedative and Hypnotic overdose.
1.19.9 Discuss the use of melatonin for disturbed biorhythms and sleep disorders.
1.19.10 Define Anxiety and Anxiolytics.
1.19.11 Classify Anxiolytics.
1.19.12 Describe pharmacological actions of Anxiolytics.
1.19.13 Describe the management of Anxiety
1.19.14 Enumerate doses of commonly used sedative hypnotics & anxiolytics.

Antipsychotic drugs

1.19.15 Define Psychosis. And enumerate the different types of Psychiatric illness.
1.19.16 Explain the pathophysiology of Psychoses.
1.19.17 Classify Psychotropic drugs and Antipsychotic drugs.
1.19.18 Describe the pharmacokinetics, mechanism of action and pharmacological actions of Antipsychotic drugs.
1.19.19 Describe the adverse effects and drug interactions of Antipsychotic drugs.
1.19.20 Describe the therapeutic uses of Antipsychotic drugs.
1.19.21 Explain the advantages of second-generation Antipsychotics over conventional drugs.

Anti-depressants and Antimanic Drugs

1.19.22 Define Depression.
1.19.23 Explain the pathophysiology of Depression.
1.19.24 Classify Antidepressant drugs.
1.19.25 Describe the mechanism of Antidepressant action.
1.19.26 Describe the pharmacokinetics and pharmacological actions of Antidepressants.
1.19.27 Describe the adverse effects and drug interactions with Antidepressants.
1.19.28 Outline the management of acute poisoning with tricyclic antidepressants.
1.19.29 Describe therapeutic uses of Antidepressants including those other than depression.
1.19.30 Define Mania.
1.19.31 Explain the pathophysiology of Mania.
1.19.32 Classify Antimanic drugs.
1.19.33 Describe mechanisms of action of Lithium.
1.19.34 Describe the pharmacokinetics and pharmacological actions of Lithium.
1.19.35 Describe the adverse effects and drug interactionsof Lithium.
1.19.36 Describe the therapeutic uses of Lithium and newer drugs used for mania with their status in management of mania
1.19.37 Describe Psychotomimetic drugs.

Opioid Analgesics and Antagonists

1.19.38 Define Algesia (Pain). classify pain, Explain the pain pathway and WHO pain ladder.
1.19.39 Define and Classify Analgesics.
1.19.40 Classify Opioid Agonists and Antagonists.
1.19.41 Describe mechanism of action of Opioid Analgesics.
1.19.42 Describe pharmacokinetics and pharmacological actions of Opioid Analgesics.
1.19.43 Describe adverse effects, precautions and contraindications with Opioid analgesics.
1.19.44 Describe types of Opioid receptors.
1.19.45 Explain about complex action Opioids-Nalorphine, Pentazocine, Butorphanol, Nalbuphine, Buprenorphine.

1.19.46 Describe pure Opioid antagonists and their therapeutics uses.
1.19.47 Enumerate endogenous Opioid peptides.
1.19.48 Discuss opioid deaddiction
1.19.49 Explain treatment of morphine poisoning

Anti-epileptic drugs

1.19.50 Describe Epilepsy and the types of Epilepsy.
1.19.51 Classify Antiepileptic drugs.
1.19.52 Explain the pathophysiology of Epilepsy.
1.19.53 Describe mechanism of action and pharmacological actions of Antiepileptic drugs.
1.19.54 Describe the adverse effects and important drug interactions of Antiepileptic drugs.
1.19.55 Explain the management of different types of Epilepsy including Status Epilepticus.
1.19.56 Enumerate the doses of commonly used Antiepileptic drugs.
1.19.57 Mention the non-epileptic uses of anti-epileptic drugs

Drugs for Neurodegenerative disorders – Antiparkinsonian drugs and Cognition enhancers

1.19.58 Describe Parkinsonism and its pathophysiology.
1.19.59 Classify Antiparkinsonian drugs.
1.19.60 Describe mechanism of action of Antiparkinsonian drugs.
1.19.61 Describe pharmacokinetics and pharmacological actions of Antiparkinsonian drugs.
1.19.62 Describe the adverse effects and their management, important drug interactions of Levodopa
1.19.63 Describe Alzheimer's disease and its pathophysiology.
1.19.64 Classify Cognition enhancers.
1.19.65 Describe drugs used in Alzheimer's disease

Alcohol

 _____ SGD - 1 Hour
 Assessment: Written / Viva voce

PH 1.20 Describe the effects of acute and chronic ethanol intake

1.20.1 Classify alcoholic beverages based on their alcohol content
1.20.2 Describe pharmacological effects of acute and chronic ethanol intake.
1.20.3 Describe the pharmacokinetics of ethanol.
1.20.4 Describe the important drug interactions with ethanol principles of alcohol de addiction.
1.20.5 Describe drugs used in alcohol deaddiction
1.20.6 Explain the therapeutic uses of alcohol.

Methanol and Ethanol poisoning

 _____ SGD - 1 Hour
 Assessment: Written / Viva voce

PH 1.21 Describe the symptoms and management of methanol and ethanol poisonings

1.21.1 Describe the symptoms of methanol poisoning.
1.21.2 Explain the mechanism of methanol poisoning.

1.21.3 Describe the management of methanol poisoning.
1.21.4 Describe the symptoms of ethanol poisoning.
1.21.5 Explain the mechanism of ethanol poisoning.
1.21.6 Describe the management of ethanol poisoning.

Drugs of Abuse

SGD - 1 Hour
Assessment: Written / Viva voce

PH 1.22 Describe drugs of abuse (dependence, addiction, stimulants, depressants, psychedelics, drugs used for criminal offences)

1.22.1 Define drug addiction and drug dependence.
1.22.2 List the pharmacological classes of drugs of abuse.
1.22.3 Classify the drugs of abuse based on the CNS effects (stimulants, depressants, hallucinogens) with examples.
1.22.4 Give examples of hallucinogens.
1.22.5 Describe the source, pharmacological effects. withdrawal symptoms and the management of cocaine addiction.
1.22.6 Describe the source, pharmacological effects. withdrawal symptoms and the management of barbiturate addiction.
1.22.7 Describe the source, signs and symptoms and withdrawal symptoms of morphine addiction and its management.
1.22.8 Describe the source, signs and symptoms of addiction to and withdrawal symptoms and management of cannabis addiction.
1.22.9 Enumerate the drugs of abuse associated with criminal offences.
1.22.10 Enumerate club drugs, the signs and symptoms of their addiction, withdrawal symptoms and management of their addiction.

SGD - 1 Hour

Assessment: Written / Viva voce

PH 1.23 Describe the process and mechanism of drug deaddiction

1.23.1 Outline the general principles and steps in the management of drug deaddiction
1.23.2 Explain the mechanism of action of the drugs used in drug deaddiction.

Drugs acting on Kidney

Lecture/ SDL – 3/1 Hours
Assessment: Written, Viva voce

PH 1.24 Describe the mechanism/ s of action, types, doses, side effects, indications and contraindications of the drugs affecting renal systems including diuretics, antidiuretic s- vasopressin and analogues

1.24.1 Explain the transport of electrolytes at proximal convoluted tubule, loop of Henle, distal convoluted tubule and the collecting duct.
1.24.2 Classify diuretics based on their efficacy with examples.

1.24.3 Indicate the site of action of all classes of diuretics.
1.24.4 Explain the mechanism of action, pharmacological actions and adverse effects of Thiazide diuretics.
1.24.5 Explain the mechanism of action, pharmacological actions and adverse effects of Loop diuretics
1.24.6 Explain the mechanism of action and pharmacological actions and adverse effects of potassium sparing diuretics.
1.24.7 Explain the mechanism of action and pharmacological actions and adverse effects of osmotic diuretics.
1.24.8 Describe the therapeutic uses of diuretics with their rationale.

1.24.9 Briefly describe the carbonic anhydrase inhibitors and their current uses.
1.24.10 Enumerate doses, routes of administration and preparations of hydrochlorothiazide, furosemide, amiloride, eplerenone, triamterene
1.24.11 Classify vasopressin receptors
1.24.12 Describe the physiological actions of Vasopressin
1.24.13 Classify anti-diuretic drugs
1.24.14 Enumerate the vasopressin analogues
1.24.15 Describe the adverse effects of Vasopressin.
1.24.16 Describe the therapeutic uses of Vasopressin and its analogues explaining the rationale behind their use
1.24.17 Mention vasopressin antagonist and its clinical uses

Drugs affecting Blood

- Lecture/ SDL – 3/ 1 Hours
- Assessment: Written, Viva voce

PH 1.25 Describe the mechanism/ s of action, types, doses, side effects, indications and contraindications of the drugs acting on blood, like anticoagulants, antiplatelets, fibrinolytics, plasma expanders

Coagulants and Anti-coagulants

1.25.1 Describe the coagulation cascade
1.25.2 Define the role of coagulants with examples
1.25.3 Enumerate the coagulants used clinically
1.25.4 Explain the mechanism of anti-coagulant action, adverse effects and therapeutic uses of Vitamin K.
1.25.5 Classify anti-coagulants based on their mechanism of action with examples.
1.25.6 Describe the pharmacological actions, pharmacokinetics and adverse effects of Heparin
1.25.7 Explain the therapeutic uses and contraindications to Heparin.
1.25.8 Describe the advantages and disadvantages of low molecular weight heparin.
1.25.9 Enumerate the preparations, routes and dose of Heparin.
1.25.10 Describe the treatment of Heparin overdose
1.25.11 Compare the anticoagulant actions of Heparin with fondaparinux.
1.25.12 Describe the mechanism of action, pharmacokinetics and actions of Warfarin
1.25.13 Describe the adverse effects and therapeutic uses of Warfarin.
1.25.14 Explain the dose regulation and monitoring of patients while on anti-coagulants with reference to parameters such as INR and APTT.
1.25.15 Explain the Drug interactions of warfarin

1.25.16 Give examples of Direct factor Xa inhibitor and explain their advantages over Warfarin.
1.25.17 Explain the advantages and disadvantages of dabigatran over warfarin as anti-coagulant
1.25.18 Describe how anticoagulant therapy is monitored

Fibrinolytic and Antifibrinolytic drugs

1.25.19 Define fibrinolysis and its mechanisms
1.25.20 Enumerate fibrinolytics
1.25.21 Describe the actions, adverse effects and advantages of alteplase over streptokinase
1.25.22 Describe the therapeutic uses of fibrinolytics
1.25.23 Describe the contra-indications to fibrinolytics
1.25.24 Describe antifibrinolytics and its application
1.25.25 Explain the mechanism of action, indications and therapeutic uses of Tranexamic acid

Antiplatelets

1.25.26 Define the functions of platelets in cardiovascular diseases
1.25.27 Classify anti-platelet drugs based on their mechanisms of action with examples
1.25.28 Compare aspirin, dipyridamole and clopidogrel as anti-platelet agents
1.25.29 Describe the therapeutic uses of anti-platelet agents with the rationale for their use in the conditions mentioned
1.25.30 Describe the indications for the use of newer antiplatelet agents
1.25.31 Compare the newer anti-platelet drugs with aspirin

Plasma Expanders

1.25.32 Define plasma expanders
1.25.33 Classify plasma expanders with examples
1.25.34 Describe the mechanism of actions of crystalloids and colloids
1.25.35 Explain the detailed composition of crystalloids
1.25.36 Compare crystalloids and colloids
1.25.37 Describe the adverse effects and precautions while using plasma expanders
1.25.38 Describe the therapeutic uses of plasma expanders

Drugs affecting Renin Angiotension and Aldosterone system

- Lecture/ SDL – 1/ 2 Hours
- Assessment: Written, Viva voce

PH 1.26 Describe mechanism of action, types, doses, side effects, indications and contraindications of the drugs modulating the renin- angiotensin and aldosterone system

1.26.1 Explain the physiology of renin angiotensin system
1.26.2 Describe the patho-physiological actions of Angiotensin-II with reference to the location of its receptors
1.26.3 Enumerate the drugs that modulate Renin angiotensin system
1.26.4 Enumerate the Angiotensin converting enzyme inhibitors (ACEIs)
1.26.5 Describe the mechanism of action and pharmacological actions of Angiotensin converting enzyme inhibitors

1.26.6 Describe the adverse effects and therapeutic uses of ACE inhibitors explaining the rationale for their uses
1.26.7 Indicate the route, dose and preparations of enalapril, Lisinopril
1.26.8 Enumerate Angiotensin receptor blockers (ARBs) used clinically
1.26.9 Describe the pharmacological actions, adverse effects, and therapeutic uses of ARBs
1.26.10 Describe the advantages of ARBs over ACEIs
1.26.11 Explain the mechanism of action, pharmacokinetics therapeutic uses and adverse effects of Aliskiren

Antihypertensive Drugs and drugs used in Shock

- Lecture/ SGD – 1/ 2 Hours
- Assessment: Written, Viva voce

PH 1.27 Describe the mechanism s of action, types, doses, side effects, indications and contraindications of antihypertensive drugs and drugs used in shock

1.27.1 Define the categories of hypertension as per JNC 7 and JNC 8 criteria
1.27.2 Describe the pathophysiology of hypertension
1.27.3 Classify anti-hypertensives with examples
1.27.4 Describe the mechanism of antihypertensive action, anti-hypertensive effects, adverse effects and drug interactions dose, routes of administration and uses of Diuretics in hypertension
1.27.5 Describe the mechanism of antihypertensive action, anti-hypertensive effects, adverse effects, drug interactions, dose, routes of administration and uses of ACE inhibitors in hypertension
1.27.6 Describe the mechanism of antihypertensive action, anti-hypertensive effects, adverse effects, drug interactions, dose routes of administration and uses of calcium channel blockers in hypertension
1.27.7 Describe the mechanism of antihypertensive action, anti-hypertensive effects, adverse effects, drug interactions, dose routes of administration and uses of beta blockers in hypertension
1.27.8 Enumerate the sympatholytic used in the management of hypertension
1.27.9 Explain the mechanism of action, adverse effects and indications for the use of sympatholytic.
1.27.10 Explain the management of hypertensive crisis
1.27.11 Describe the mechanism of antihypertensive action, anti-hypertensive effects, adverse effects, drug interactions, and use of alpha blockers in hypertension.
1.27.12 Describe the mechanism of antihypertensive action, anti-hypertensive effects, adverse effects, drug interactions, dose routes and uses of Vasodilators in hypertension
1.27.13 Discuss which drugs are used in combination in the management of Hypertension.
1.27.14 Describe which drugs are most effective in treating individual hypertensive patients with specific comorbidities, including diabetes mellitus, congestive heart failure, and renal disease.
1.27.15 Pharmacotherapy of Pulmonary Hypertension and Orthostatic hypotension.
1.27.16 Management of Hypertension during pregnancy.

Pharmacotherapy of Shock

1.27.17 Define shock
1.27.18 Enumerate the types of shock
1.27.19 Explain the pathophysiology of shock
1.27.20 Describe the pharmacological management of anaphylacticshock explaining the rationale for the use of drugs used in the management
1.27.21 Describe the pharmacological management of hypovolemic shock explaining the rationale for the use of drugs used in the management
1.27.22 Describe the pharmacological management of cardiogenic shock explaining the rationale for the use of drugs used in the management.

Pharmacotherapy of Angina pectoris, Acute MI and PVD

- Lecture/ SGD – 2/ 1 Hours
- Assessment: Written, Viva voce

PH 1.28 Describe the mechanism s of action, types, doses, side effects, indications and contraindications of the drugs used in ischemic heart disease (stable, unstable angina and myocardial infarction), peripheral vascular disease

1.28.1 Define angina pectoris
1.28.2 Explain the various types of angina pectoris describing their underlying pathology
1.28.3 Classify anti-anginal drugs
1.28.4 Describe the mechanism of action, pharmacological actions, adverse effects and therapeutic uses of nitrates
1.28.5 Describe the routes of administration, doses and preparations of Nitrates
1.28.6 Classify Calcium channel blockers.
1.28.7 Describe the mechanism of action, pharmacological actions, adverse effects and therapeutic uses of calcium channel blockers
1.28.8 Mention the routes of administration, doses and preparations of Nifedipine and amlodipine
1.28.9 Mention the unique features of Felodipine, Nitrendipine, Cilnidipine, Nicardipine and Nimodipine
1.28.10 Compare Dihydropyridines with Phenylalkylamines
1.28.11 Describe the anti-anginal actions, adverse effects and contra-indications to beta blockers
1.28.12 Describe the mechanism of action, anti-anginal actions, adverse effects and the indication for the use of potassium channel openers (nicorandil) in angina pectoris
1.28.13 Describe the anti-anginal actions and indications for the use of Trimetazidine in angina pectoris
1.28.14 Describe the anti-anginal actions and indications for the use of Ranolazine in angina pectoris
1.28.15 Describe the anti-anginal actions and indications for the use of Ivabradine in angina pectoris
1.28.16 Explain the pathophysiology of myocardial infarction
1.28.17 Explain the steps in the use of drugs in myocardial infarction with the rationale for using them
1.28.18 Describe the pathophysiology of peripheral vascular disease (PVD)
1.28.19 Classify the drugs used in PVD
1.28.20 Describe the mechanism of action, pharmacological actions, adverse effects, dose and uses of Pentoxyphylline.
1.28.21 Describe the mechanism of action,pharmacological actions,adverse effects, dose and uses of Cilostazol.

Pharmacotherapy of Heart Failure

- Lecture – 1 Hour
- Assessment: Written, Viva voce

PH 1.29 Describe the mechanism s of action, types, doses, side effects, indications and contraindications of the drugs used in congestive heart failure

1.29.1 Describe the stages of heart failure and the treatments that are recommended at each stage.
1.29.2 Describe the rationale for the use of drugs that prevent and slow the progression of heart failure
1.29.3 Describe the mechanism of action of inotropic drugs and how they are used to maintain left ventricular function.
1.29.4 Identify the major side effects and adverse drug reactions of the drugs used to treat heart failure.
1.29.5 Describe the Management of Digitalis Toxicity

Pharmacotherapy of Cardiac Arrhythmias (Non Core)

- SDL/ Lecture – 1/ 1 Hour
- Assessment: Written, Viva voce

PH 1.30 Describe the mechanism s of action, types, doses, side effects, indications and contraindications of the antiarrhythmics

1.30.1 Describe the principles of cardiac electrophysiology especially the ion channels, exchangers, and pumps that are targets of antiarrhythmic drugs.
1.30.2 Describe the mechanisms that cause cardiac arrhythmias.
1.30.3 Describe the common and important tachyarrhythmias and their mechanisms.
1.30.4 Describe the mechanisms and classification of antiarrhythmic drugs.
1.30.5 Describe the principles of antiarrhythmic drug pharmacotherapy
1.30.6 Describe the pharmacological, pharmacokinetic, and adverse effects of specific antiarrhythmic agents.

Hypolipdaemic drugs

- Lecture / SDL– 1/ 1 Hour
- Assessment: Written, Viva voce

PH 1.31 Describe the mechanism s of action, types, doses, side effects, indications and contraindications of the drugs used in the management of dyslipidemias

1.31.1 Describe lipid metabolism, different classes of lipoproteins and their formation
1.31.2 Describe the pathophysiology of primary and secondary hyperlipidaemias
1.31.3 Mention the classification of hypolipidemic drugs based on mechanism of action
1.31.4 Describe the mechanism of action, pleiotropic effects, indications adverse effects, drug interactions of statins
1.31.5 Compare the features of all statins
1.31.6 Describe the mechanism of action, indications adverse effects, drug interactions of Resins, ezetimibe, niacin, fibric acid derivatives
1.31.7 Describe the combination therapy in dyslipidaemia
1.31.8 Discuss which patients with dyslipidaemias should be treated and when

treatment should be initiated.

1.31.9 Discuss which drugs are most effective in treating patients with different dyslipidaemias.

1.31.10 Describe the non-pharmacological treatment including natural agents

Drugs used in Bronchial Asthma and COPD

Lecture - 2 Hours

Assessment: Written, Viva voce

PH- 1.32 Describe the mechanism/ s of action, types, doses, side effects, indications and contraindications of drugs used in bronchial asthma and COPD

1.32.1 Describe the patho-physiology of Bronchial Asthma and COPD

1.32.2 Classification of anti-asthmatic drugs

1.32.3 Discuss the mechanism of action, pharmacokinetics, Adverse effects, status, merits and demerits of beta2 agonists, methyl xanthines, corticosteroids, anti-cholinergics, mast cell stabilizers, leukotriene antagonists, anti IgE antibodies in asthma.

1.32.4 Discuss inhaled medication in bronchial asthma

1.32.5 Describe the step wise management of Bronchial asthma (GINA guidelines)

1.32.6 Describe the management of acute severe asthma with the help of a case scenario

1.32.7 Enumerate the various inhalational devices available in India

1.32.8 Describe the advantages and disadvantages of MDI, rotahaler, use of spacer, nebulizer

Pharmacotherapy of cough

SGD - 1 Hour

Assessment: Written/ Viva voce

PH- 1.33 Describe the mechanism of action, types, doses, side effects, indications and contraindications of the drugs used in cough (antitussive s, expectorant s/ mucolytics)

1.33.1 Explain the cough pathway.

1.33.2 Enumerate various causes of cough

1.33.3 State the various causes of cough

1.33.4 Classify the drugs used in cough

1.33.5 Explain the mechanism of action, indications and adverse effects of pharyngeal demulcents, expectorants, mucolytics and anti-tussive with examples

1.33.6 List the drugs that induce cough and bronchospasm

1.33.7 Comment on the preparations available in Indian market for cough

Drugs used in Disorders of Gastrointestinal Tract

Lecture/ SGD/ SDL - 1/ 3/1 Hours

Assessment: Written/ Viva voce

PH- 1.34- Describe the mechanism/s of action, types, doses, side effects, indications and contraindications of the drugs used as below:

1. Acid- peptic disease and GERD
2. **Antiemetics and prokinetics**
3. Antidiarrhoeals
4. **Laxatives**

5. Inflammatory Bowel Disease
6. **Irritable Bowel disorders, Biliary and Pancreatic disorders.**

1.34.1 Explain the physiology of vomiting and role of various neurotransmitters
1.34.2 Classification of anti-emetics based on mechanism of action
1.34.3 Describe the mechanism of action, pharmacological effects, adverse effects and indications of antidopaminergics, antihistaminic, anticholinergics, 5HT3 antagonists, NK1 antagonists, cannabinoid receptor antagonists, steroids which are used as antiemetics
1.34.4 Enumerate the drug of choice for various clinical scenarios, such as post-operative vomiting, cancer chemotherapy induced vomiting etc
1.34.5 Enumerate drugs used in vomiting during pregnancy
1.34.6 Enumerate the drugs that cause emesis.
1.34.7 Compare and contrast Metoclopramide and Domperidone
1.34.8 Pathophysiology of gastric acid secretion
1.34.9 Identify the sites in the gastric parietal cell where drugs act to suppress acid secretion.
1.34.10 Describe the mechanism of action of proton pump inhibitors, H2 receptor antagonists, and prostaglandin analogs to suppress gastric acid secretion.
1.34.11 Describe the limitations to the use of H2 receptor antagonists in chronic acid suppression.
1.34.12 Identify potential drug interactions with proton pump inhibitors and H2 receptor antagonists
1.34.13 Describe the mechanism of action of drugs that enhance gastric cytoprotection.
1.34.14 Describe the recommendations for therapy of gastroesophageal reflux disease (GERD)
1.34.15 Explain the pathophysiology of constipation
1.34.16 Classify laxatives/purgatives
1.34.17 Explain the mechanism of action, indications, contra-indications and adverse effects of bulk laxatives, stool softener, stimulant purgative, osmotic purgative and 5HT4 agonists
1.34.18 Mention the laxative of choice in bedridden patients, pregnancy, post-operative, functional constipation
1.34.19 Classify antidiarrheal agents.
1.34.20 Enumerate the principles of management of Diarrhea with rationale for its composition
1.34.21 Discuss the advantages of New formula WHO-ORS versus the older composition.
1.34.22 Explain the role of Zinc in pediatric diarrhea
1.34.23 Explain the mechanism of action, indications, contra-indications and adverse effects of opioids, anticholinergics, PG inhibitors, chloride channel inhibitor, racecadotril and probiotics
1.34.24 Explain the pathophysiology and pharmacotherapy of Irritable bowel syndrome
1.34.25 Explain the pathophysiology and pharmacotherapy of Inflammatory bowel disorder, Acute pancreatitis
1.34.26 Explain the pancreatic enzyme replacements and drugs that inhibit formation of gall stones

Drugs affecting Blood Formation

- SDL/ SGD - 1/2 Hours
- Assessment: Written/ Viva voce

PH 1.35 - Describe the mechanism/ s of action, types, doses, side effects, indications and contraindications of drugs used in hematological disorders like:

1. Drugs used in anemias
2. **Colony Stimulating factors**

1.35.1 Define anaemias and describe the types and causes of anaemia

1.35.2 State the role of iron, its sources, requirements, iron absorption, factors that reduce and enhance iron absorption
1.35.3 List the oral and parenteral iron preparations with merits and demerits and specific indications
1.35.4 Define megaloblastic anaemia
1.35.5 State the role of vitamin B12, Folic acid, along with sources and daily requirements
1.35.6 State the vitamin B12 preparations
1.35.7 State the indications for use of erythropoietin
1.35.8 Describe the various types of colony stimulating factors with their approved indications (Cancer chemotherapy)

Drugs used in Endocrine Disorders

- Lecture/ SDL/ SGD - 3/1/1 Hours

Assessment: Written/ Viva voce

PH 1.36 - Describe the mechanism of action, types, doses, side effects indications and contraindications of drugs used in endocrine disorders (diabetes mellitus, thyroid disorders and osteoporosis)

Diabetes Mellitus

1.36.1 Describe the mechanisms of action of insulin and the oral antidiabetic drugs.
1.36.2 Describe the components for management of the diabetic patient including the goals of therapy.
1.36.3 Describe the pharmacotherapeutic options for the treatment of patients with type 1 or type 2 diabetes.
1.36.4 Describe the adverse effects of insulin and the oral antidiabetic drugs.
1.36.5 Describe the treatment of hypoglycemia.
1.36.6 Discuss the management of diabetic ketoacidosis and hyperosmolar (nonketotic) coma

Thyroid disorders

1.36.7 Discuss the principles of thyroid hormone regulation.
1.36.8 Describe the diagnosis and treatment of hypothyroidism and hyperthyroidism, including during pregnancy.
1.36.9 Describe the treatment options for well-differentiated thyroid cancer.

Osteoporosis

1.36.10 Describe calcium and phosphorous homeostasis.
1.36.11 Describe the roles of PTH, calcitonin, and vitamin D in calcium homeostasis.
1.36.12 Understand the concept of bone resorption and bone formation.
1.36.13 Describe the mechanism of action and untoward effects of bisphosphonates.
1.36.14 Describe the role of bisphosphonates in the prevention and treatment of osteoporosis.
1.36.15 Describe the pharmacological management of hypocalcemia and hypercalcemia.

- Lecture/SGD- 2/2 hours
- Assessment: Written/ Viva voce

PH 1.37 Describe the mechanism s of action, types, doses, side effects, indications and contraindications of the drugs used as sex hormones, their analogues and anterior Pituitary hormones

Pituitary Hormones

1.37.1 Describe the functioning of the hypothalamic-pituitary axis
1.37.2 Describe the pharmacotherapy of GH excess and GH deficiency.
1.37.3 Develop knowledge of the clinical uses of gonadotropin-releasing hormone (GnRH) and its analogs.

Androgens and antiandrogens

1.37.4 Describe physiological secretion and regulation of androgens (natural and synthetic)
1.37.5 Describe mechanism of action, uses and adverse effects of different preparations of testosterone
1.37.6 Explain mechanism of action, uses and adverse effects of anabolic steroids and anti-androgens
1.37.7 Describe drug therapy of erectile dysfunction

Estrogens and Progestins

1.37.8 Describe physiological secretion and regulation of estrogen and progesterone
1.37.9 Describe the therapeutic uses and ADRs of postmenopausal hormonal replacement therapy
1.37.10 Describe mechanism of action, uses and adverse effects of selective estrogen receptor modulators, anti-estrogens and aromatase inhibitors
1.37.11 Describe mechanism of action, uses, adverse effects and contraindications of anti progestins
1.37.12 Explain various drugs used in treatment of infertility

Lecture - 1 Hour

Assessment: Written/ Viva voce

PH 1.38 Describe the mechanism of action, types, doses, side effects, indications and contraindications of corticosteroids

1.38.1 Explain physiology of biosynthesis, actions, hypo and hyper secretion of corticosteroids
1.38.2 Classify corticosteroid preparations
1.38.3 Describe distinctive features, uses, adverse effects and contraindications of various corticosteroid preparations
1.38.4 Understand the effect of abrupt cessation of glucocorticoid therapy.

SGD - 2 Hours

 Assessment: Written/ Viva voce

PH 1.39 Describe mechanism of action, types, doses, side effects, indications and contraindications the drugs used for contraception

1.39.1 Classify female contraceptives preparations
1.39.2 Explain all types with mechanism of action, uses adverse effects, contraindications and practical considerations of female contraceptives.

 Lecture – 2 Hours
 Assessment: Written/ Viva voce

PH 1.40 Describe mechanism of action, types, doses, side effects, indications and contraindications of

1. Drugs used in the treatment of infertility, and
2. **Drugs used in erectile dysfunction**

1.40.1 Describe the causes of infertility
1.40.2 Enumerate drugs used in the treatment of infertility
1.40.3 Describe the mechanism of action of drugs used in the treatment of infertility
1.40.4 Describe the therapeutic uses of drugs used in the treatment of infertility
1.40.5 Describe the precautions and contraindications of drugs used in the treatment of infertility
1.40.6 Describe the adverse effects of drugs used in the treatment of infertility
1.40.7 Describe the drug interactions of drugs used in the treatment of infertility
1.40.8 Describe the causes of erectile dysfunction
1.40.9 Enumerate drugs used in erectile dysfunction
1.40.10 Describe the mechanism of action of drugs used in erectile dysfunction
1.40.11 Describe the therapeutic uses of drugs used in erectile dysfunction

 SGD - 1 Hour
 Assessment: Written/ Viva voce

PH 1.41 Describe the mechanisms of action, types, doses, side effects, indications and contraindications of uterine relaxants and stimulants

1.41.1 Classify uterine stimulants
1.41.2 Explain mechanism of action, uses, adverse effects and contraindications of each group
1.41.3 Classify uterine relaxants.
1.41.4 Explain mechanism of action, uses, adverse effects and contraindications of each group

Chemotherapy

 Lecture/SGD- 2/2 hours
 Assessment: Written/ Viva voce

PH 1.42 Describe general principles of chemotherapy

General Principals

1.

1.42.1 Classify the chemotherapeutic agents based on chemical structure, mechanism of action, source
1.42.2 Describe common problems encountered with use of chemotherapeutic agents
1.42.3 Describe anti-microbial resistance and discuss monitoring of antimicrobial therapy
1.42.4 Enumerate the factors to be considered for choosing an antimicrobial agent
1.42.5 Mention the advantages and disadvantages of antimicrobial combination with examples

Sulfonamides & Quinolones

1.42.6 Explain the mechanism of action of sulfonamides drugs.
1.42.7 Explain the various sulfonamide drugs and categorize them according to their absorption from the gastrointestinal (GI) tract.
1.42.8 Explain the therapeutic uses and untoward effects of sulfonamide drugs including trimethoprim-sulfamethoxazole.
1.42.9 Describe the therapeutic uses, mechanisms of action, and toxicities of quinolone antibiotic drugs.

Beta lactams

1.42.10 Explain the mechanisms of action of the penicillins, cephalosporins, and other β-lactam antibiotics.
1.42.11 Explain the mechanisms of resistance of the penicillins, cephalosporins, and other β-lactam antibiotics.
1.42.12 Describe the therapeutic effects of the penicillins, cephalosporins, and other β-lactam antibiotics.
1.42.13 Describe the untoward effects and contraindications of the penicillins, cephalosporins, and other β-lactam antibiotics.

Aminoglycosides

1.42.14 Explain aminoglycoside mechanisms of action and resistance.
1.42.15 Describe the advantages and disadvantages of multiple daily dosing versus once daily extended-interval dosing regimens for aminoglycosides.
1.42.16 Describe the rationale and the methods of plasma concentration monitoring of aminoglycoside therapy.
1.42.17 Describe the causes and clinical signs of aminoglycoside ototoxicity and nephrotoxicity and the best means of monitoring therapy to avoid these serious toxicities.
1.42.18 Explain the unique clinical differences among the aminoglycosides.

1.42.19 Describe the mechanisms of action and resistance of tetracyclines, macrolides, vancomycin, linezolid, daptomycin, and quinupristin/dalfopristin
1.42.20 Describe the unique toxicities of antibiotics that are inhibitors of bacterial protein synthesis
1.42.21 Describe the uses and untoward reactions of vancomycin
1.42.22 Explain the drug–drug interactions that occur with some of these antibiotics
1.42.23 Explain how linezolid, daptomycin, and quinupristin/dalfopristin are used to

treat methicillin- resistant and vancomycin-resistant organisms

□ _____ SGD – 4 Hour
□ Assessment: Written, Viva voce

PH 1.43 - Describe and discuss the rational use of antimicrobials including antibiotic stewardship program

1.43.1 Enumerate the factors influencing the antimicrobial selection, duration and dose
1.43.2 Define appropriate empiric antimicrobial prescribing
1.43.3 Highlight mechanisms by which microorganisms develop antimicrobial resistance
1.43.4 Understand the impact of pharmacodynamics, pharmacokinetics, bioavailability on development of antimicrobial resistance with examples
1.43.5 Understand the principles of antimicrobial selection for a specific infectious condition
1.43.6 Enumerate basic steps of prevention of antimicrobial resistance

□ Lecture – 1 Hour
□ Assessment: Written, Viva voce

PH 1.44 - Describe the first line anti tubercular dugs, their mechanisms of action, side effects and doses

1.44.1 Discuss pathophysiology of tuberculosis.
1.44.2 Enumerate various anti- tubercular drugs.
1.44.3 Describe the mechanism of action and resistance to anti tubercular drugs.
1.44.4 Describe the adverse effects and drug interactions commonly associated with anti-TB drugs.
1.44.5 Understand the rationale for combination drug therapy in the treatment of tuberculosis
1.44.6 Describe and discuss the salient features, diagnostic criteria and guidelines for treatment of tuberculosis under NTEP

□ Lecture – 1 Hour
□ Assessment: Written, Viva voce

PH 1.45 - Describe the drugs used in MDR and XDR Tuberculosis

1.45.1 Define MDR and XDR TB
1.45.2 List drugs, mechanism of action, indications, contraindications and adverse effects of drugs used in MDR and XDR Tuberculosis.
1.45.3 Explain the regimen for MDR and XDR tuberculosis

□ Lecture – 1 Hour
□ Assessment: Written, Viva voce

PH 1.46 - Describe the mechanisms of action, types, doses, side effects, indications and contraindications of antileprotic drugs

1.46.1 Describe the principles of anti-leprosy therapy.
1.46.2 Describe the mechanism of action, ADE, DI of antileprotic drugs
1.46.3 Discuss the management of leprosy and treatment of Lepra reactions

- Lecture/ SGD – 4/2 Hours
- Assessment: Written, Viva voce

PH 1.47 - Describe the mechanisms of action, types, doses, side effects, indications and contraindications of the drugs used in malaria, KALA-AZAR, amebiasis and intestinal helminthiasis

1.47.1 Describe the stages of the malaria parasite in the human body.
1.47.2 Classify antimalarial drugs into those that are effective against only the blood stages of the parasite, those that are effective against both the blood and liver stages, and those that are effective against only the liver stages of the parasite.
1.47.3 Explain the use of antimalarial drugs in clinical context, particularly with regard to their mechanism of action, therapeutic uses, and toxicities.
1.47.4 Describe the principles and guidelines for the chemoprophylaxis and treatment of malaria.
1.47.5 Define KALA-AZAR
1.47.6 Discuss pathophysiology of KALA-AZAR
1.47.7 Enumerate drugs used in KALA-AZAR
1.47.8 Describe the mechanism of action of drugs used in KALA-AZAR
1.47.9 Describe the therapeutic uses of drugs used in KALA-AZAR
1.47.10 Describe the precautions and contraindications of drugs used in KALA-AZAR
1.47.11 Describe the adverse effects of drugs used in KALA-AZAR
1.47.12 Describe the drug interactions of drugs used in KALA-AZAR
1.47.13 Describe the management of KALA-AZAR
1.47.14 Define amoebiasis
1.47.15 Discuss pathophysiology of amoebiasis
1.47.16 Enumerate drugs used for amoebiasis
1.47.17 Describe the mechanism of action of drugs used for amoebiasis
1.47.18 Describe the therapeutic uses of drugs used for amoebiasis
1.47.19 Describe the precautions and contraindications of drugs used for amoebiasis
1.47.20 Describe the adverse effects of drugs used for amoebiasis
1.47.21 Describe the drug interactions of drugs used for amoebiasis
1.47.22 Describe the management of amoebiasis
1.47.23 Describe the common helminth infections, the clinical symptoms, and the mainstays of therapy.
1.47.24 Describe the therapeutic uses of anthelmintic drugs.
1.47.25 Explain the mechanisms of actions of anthelmintic drugs.
1.47.26 Describe the toxicities and contraindications of anthelmintic drugs

- Lecture/ SGD – 3/2 Hours
- Assessment: Written, Viva voce

PH 1.48 - Describe the mechanisms of action, types, doses, side effects, indications and contraindications of the drugs used in UTI/ STD and viral diseases including HIV &Antifungal drugs

1.48.1 Define UTI
1.48.2 Discuss pathophysiology of UTI
1.48.3 Enumerate drugs used for UTI
1.48.4 Describe the mechanism of action of drugs used for UTI
1.48.5 Describe the therapeutic uses of drugs used for UTI
1.48.6 Describe the precautions and contraindications of drugs used for UTI
1.48.7 Describe the adverse effects of drugs used for UTI
1.48.8 Describe the drug interactions of drugs used for UTI
1.48.9 Describe the management of UTI
1.48.10 Define STD
1.48.11 Enumerate common STDs
1.48.12 Enumerate drugs used in STDs
1.48.13 Describe the mechanism of action of drugs used in STD
1.48.14 Describe the precautions and contraindications of drugs used in STD
1.48.15 Describe the adverse effects of drugs used in STD
1.48.16 Describe the drug interactions of drugs used in STD
1.48.17 Describe the management of STD
1.48.18 Describe the mechanisms of action and resistance of antifungal agents.
1.48.19 Describe the therapeutic uses of antifungal agents in the context of treatment for fungal diseases
1.48.20 Develop knowledge of the common and unique toxicities of antifungal agents.
1.48.21 Explain the drug–drug interactions that can occur with the use of azole antifungal agents
1.48.22 Explain the treatment of herpes virus infections and the use of anti-herpes drugs
1.48.23 Discuss the treatment strategies for chronic hepatitis B and C infections
1.48.24 Explain the mechanisms of action and resistance, and the therapeutic use of the anti-influenza agents
1.48.25 Discuss the principles of HIV chemotherapy as per National guidelines including HAART regimen
1.48.26 Describe the mechanisms of action and resistance, the untoward effects and the therapeutic uses of the drugs used to treat HIV infections

Anticancer drugs

- Lecture – 2 Hours
- Assessment: Written, Viva voce

PH 1.49 Describe mechanism of action, classes, side effects, indications and contraindications of anticancer drug

1.49.1 Discuss the general principles in chemotherapy of Cancer
1.49.2 Classify anticancer drugs
1.49.3 Describe the mechanism of action of Anticancer drugs
1.49.4 Describe the mechanisms of toxicity of cytotoxic antineoplastic agents on normal cells and strategies for reducing toxic effects
1.49.5 Enumerate the classes of agents are typically used in treating specific cancers

Immunomomodulators

- Lecture – 1 Hour
- Assessment: Written, Viva voce

PH 1.50 Describe mechanisms of action, types, doses, side effects, indications and contraindications of immunomodulators and management of organ transplant rejection

1.50.1 Differentiate between Immuno-suppressants and immuno-stimulants
1.50.2 Define immunosuppressants & Classify immuno-suppressants
1.50.3 Describe the mechanisms of action of Calcineurin inhibitors
1.50.4 Enlist m-Tor inhibitors and antiproliferative agents used as immunosuppressants
1.50.5 Enlist Biological agents used as immunosuppressants
1.50.6 Enumerate the adverse effects of immunosuppressants
1.50.7 Enlist clinical uses of immunosuppressants

Occupational and Environmental Pesticides, Food Adulterants, Pollutants and Insect Repellents

SDL – 1 Hour
Assessment: Written, Viva voce

PH- 1.51 Describe occupational and environmental pesticides, food adulterants, pollutants and insect repellents

1.51.1 Define the various toxicology terms
1.51.2 Define occupational pesticides and enlist them
1.51.3 Explain environmental pesticide and its management
1.51.4 Enlist food adulterants
1.51.5 Enlist insect repellents

Pharmacotherapy of Poisoning

Lecture – 1 Hour
Assessment: Written, Viva voce

PH 1.52- Describe management of common poisoning, insecticides, common sting and bites

1.52.1 Explain the general management of common poisoning
1.52.2 Enlist the specific antidotes used in treatment of common poisons
1.52.3 Explain the method of enhancing elimination of toxin using examples
1.52.4 Explain the management of Bee sting bite, Scorpion bite and Snake bite

Chelating agents

SGD – 1 Hour

Assessment: Written, Viva voce

PH 1.53 - Describe heavy metal poisoning and chelating agents

1.53.1 Define Chelating agents and enlist Chelating agents used in Heavy metal poisoning
1.53.2 Describe the mechanism of action of Chelating agents
1.53.3 Name the Chelating agents used in the management of Iron, Lead, Copper, and Arsenic intoxication
1.53.4 Enlist the clinical uses of penicillamine

Vaccines and Antisera

SGD – 1 Hour
Assessment: Written, Viva voce

PH 1.54 - Describe vaccines and their uses

1.54.1 Define Vaccines and classify vaccines
1.54.2 Enlist the bacterial vaccines
1.54.3 Enlist the viral vaccines
1.54.4 Enlist Toxoids and Mixed Toxoids
1.54.5 Enlist antisera and immunoglobulins
1.54.6 Discuss the routine immunization schedule for infants and children as per IAP guidelines

National Health Programme

SGD – 2 Hours
Assessment: Written, Viva voce

PH 1.55 - Describe and discuss the following National Health Programme including Immunization, Tuberculosis, Leprosy, Malaria, HIV, Filaria, Kala Azar, Diarrhoeal diseases, Anaemia& nutritional disorders, Blindness, Non-communicable diseases, cancer and Iodine deficiency

1.55.1 Explain the universal immunization programme in India
1.55.2 Explain Revised National Tuberculosis Elimination Programme
1.55.3 Explain National Leprosy Eradication Programme
1.55.4 Enlist National Vector Borne Disease Control Programmes
1.55.5 Explain National AIDS Control Programme
1.55.6 Describe National programme for prevention and control of cancer, diabetes, cardiovascular diseases and stroke
1.55.7 Describe National Programme for Control of Blindness & Visual Impairment
1.55.8 Describe National Programme For Prevention and Control Of cancer
1.55.9 Discuss about the Diarrhoeal Disease Control Programme
1.55.10 Describe iodine deficiency disorders control programme

Geriatric and Pediatric pharmacology

- Lecture – 1 Hour
- Assessment: Written, Viva voce

PH 1.56 - Describe basic aspects of Geriatric and Pediatric pharmacology

1.56.1 Describe physiological changes in Children and Elderly patients that influence the pharmacokinetic and Pharmacodynamic parameters of medications.
1.56.2 Discuss the common drugs to which children/elderly are likely to respond differently
1.56.3 Explain the principles that underlie the prescribing in children/elderly

Pharmacotherapy of Skin disorder

- SDL – 1 hr
- Assessment: Written, Viva voce

PH 1.57- Describe drugs used in skin disorders

1.57.1 Discuss how drugs are absorbed through the skin.
1.57.2 Define demulcents, emollients, adsorbents& protectants, astringents, irritantsand counter irritants and keratolytic, Melanising agents with examples, their uses and adverse reactions.
1.57.3 Describe the mechanism of action, therapeutic uses, and toxicities of topical and systemic drugs used to treat common dermatological disorders like seborrheic dermatitis, Vitiligo, Psoriasis and Acne vulgaris.
1.57.4 Discuss the science behind use of sunscreen agents.
1.57.5 List the topical glucocorticoids, explain the rationale for use of glucocorticoids in skin disorders and their adverse effects.

Ocular Pharmacology

- SGD – 1 Hour
- Assessment: Written, Viva voce

PH 1.58 - Describe drugs used in Ocular disorders

1.58.1 Understand the principles of using drugs to treat ophthalmic disorders.
1.58.2 Describe the ocular toxicities of systemic drugs.
1.58.3 Explain the mechanisms of action, clinical uses, and toxicities of ophthalmic drugs.
1.58.4 Describe how ophthalmic drugs administered topically can cause systemic sideeffects.
1.58.5 Understand the pathophysiology of glaucoma and the role of pharmacotherapy in its management.

Essential medicines, Fixed dose combinations, Over the counter drugs, Herbal medicines

 _____ SGD– 2 Hours
 Assessment: Written, Viva voce

PH 1.59- Describe and discuss the following: Essential medicines, Fixed dose combinations, Over the counter drugs, Herbal medicines

1.59.1 Define Essential medicines concept.
1.59.2 Discuss the criteria to prepare list of essential medicines for your community PHC.
1.59.3 Define fixed dose combination, advantages and disadvantages of FDC.
1.59.4 Describe the pharmacokinetic and pharmacodynamics parameters to be considered to combine two drugs in a FDC.
1.59.5 Discuss Rational and irrational prescribing drugs with examples.
1.59.6 Define over the counter medicines and prescription medicines.
1.59.7 Enumerate the similarities and differences between OTC medicines and prescription medicines.
1.59.8 Summarize how to responsibly use OTC medicines and prevent misuse.
1.59.9 List 10 Herbal medicines used in allopathic practice.
1.59.10 Enumerate advantages and disadvantages of Herbal medicines

Pharmacogenomics and Pharmacoeconomics

 _____ SGD - 1 Hour
 Assessment: Written, Viva voce

PH 1.60- Describe and discuss Pharmacogenomics and Pharmacoeconomics

1.60.1 Define Pharmacogenomics and Pharmacogenetics and Pharmacoeconomics with examples
1.60.2 Describe different types of pharmacoeconomic models with examples
1.60.3 Discuss the role of Pharmacogenomics and Pharmacoeconomics in modern therapeutics.

Dietary Supplements and Nutraceuticals

 SDL – 1 Hours
 Assessment: Written, Viva voce

PH 1.61 - Describe and discuss dietary supplements and nutraceuticals

1.61.1 Describe the role of common vitamins and minerals in normal physiology and diseases.
1.61.2 Identify the potential toxic effects of vitamins and minerals.
1.61.3 List the fat soluble and water-soluble vitamins, and identify examples of how solubility affects the absorption, transport, storage and excretion of each type.
1.61.4 Describe how B vitamins assist with energy metabolism

1.61.5 Justify the statement "It is better to get vitamins from food than from supplements"
1.61.6 Enumerate anti-oxidant vitamins, list the food source and their functions
1.61.7 Analyze from the below list, valid reasons that some individuals require vitamin supplements
   a. women in childbearing age
   b. Pregnant and lactating women
   c. Vitamins of AIDS or other wasting illness
   d. Addicted to drugs or alcohol
   e. Strict vegetarians
   f. Eecovering from surgery, burns and injury.

Antiseptics and Disinfectants

SGD – 2 Hours

Assessment: Written, Viva voce

PH 1.62 Describe and discuss antiseptics and disinfectants

1.62.1 Describe antiseptics and their use in wound care with examples
1.62.2 Describe disinfectants and their use in infection control with examples
1.62.3 Summarize the adverse effects of antiseptics and disinfectants
1.62.4 Describe Ecto-parasiticides with examples, use and adverse effects
1.62.5 Discuss hand hygiene using soap as per WHO guidelines
1.62.6 Information on hand sanitizers

Drug Regulation

SGD – 1 hr
Assessment: Written, Viva voce

PH 1.63 Describe Drug Regulations, acts and other legal aspects

1.63.1 Explain why drugs needs to be regulated
1.63.2 Identify the major regulatory authorities in India
1.63.3 Describe the approval process for New Drugs in simple terms.
1.63.4 Discuss the major legislation pertaining to drugs

Drug development and GCP

SGD – 1hrs
Assessment: Written, Viva voce

PH 1.64 - Describe overview of drug development, Phases of clinical trials and Good Clinical Practice

1.64.1 Enlist the stages in new drug development
1.64.2 Explain the approaches to drug discovery /invention
1.64.3 Discuss about the preclinical studies
1.64.4 Describe the phases of clinical trials
1.64.5 Describe the Principles Good Clinical Practice

PANDEMIC MODULE 2.5

Therapeutic strategies including new drug development

 Theory – 1 hour **Assessmen**t: Written, Viva voce

PH 2.5 - Describe stages of new drug development and clinical trial during a pandemic.

 Enlist the stages in new drug development during a pandemic.

 Describe drug repurposing with its importance and benefits.

 What is off-label drug use? Risks, benefits and implications examples

 Describe the clinical trial conduct during a pandemic.

 SGD – 2 hours **Assessmen**t: Written, Viva voce

 New drug development – Challenges and solutions

 Urgency in procedures

 Need for monitoring – Pharmacovigilance activities of drugs approved for emergency use/clinical trials during Pandemic

PRACTICAL

Specific Learning Objectives in Pharmacology

(Skills and communication: Competency no-2.1 to 5.7)

Practical DOAP – 14 Hours Assessment: Skill Assessment

PH 2.1Demonstrate understanding of the use of various dosage forms (oral/ local/ parenteral; solid/liquid)

2.1.1 Identify various dosage forms – solid, liquid, topical dosage forms
2.1.2 Describe the various types of solid dosage form in the given samples with merits and demerits of each
2.1.3 Describe the various types of liquid dosage form in the given samples with merits and demerits of each
2.1.4 Describe the various types of topical dosage form in the given samples with merits and demerits of each
2.1.5 Describe all the components of commercial label of the given dosage form and its importance

 Practical DOAP – 4Hours

Assessment: Skill Assessment

PH 2.2 Prepare oral rehydration solution from ORS packet and explain its use

2.2.1 Define and enumerate causes of dehydration
2.2.2 Describe the clinical assessment of dehydration
2.2.3 Enumerate the different types of ORS along with their composition with actions of each ingredient
2.2.4 Choose the appropriate type of ORS for a given condition/patient
2.2.5 Calculate the quantity of ORS required to correct / prevent dehydration
2.2.6 Demonstrate preparation of ORS from sachet
2.2.7 Enumerate non-diarrheal uses of ORS

 Practical DOAP – 4 Hours

Assessment: Skill Assessment

PH 2.3 Demonstrate the appropriate setting up of an intravenous drip in a simulated environment

2.3.1 Open the infusion set following aseptic technique
2.3.2 Appropriately position the patient and select a vein.
2.3.3 Prepare the overlying skin with aseptic care.
2.3.4 Demonstrate correct IV injection technique and strap the cannula in place.
2.3.5 Identify any visible impurities if present in the IV fluids.
2.3.6 Adjust the flow rate according to the requirement
2.3.7 Routinely check patient's ID, drug name, date of expiry etc before injecting.
2.3.8 Monitor a patient on an IV drip and identify any reactions to it.

 Practical DOAP – 4 Hours

Assessment: Skill Assessment

PH 2.4 Demonstrate the correct method of calculation of drug dosage in patients including those used in special situations (integratation with General medicine, Paediatrics)

2.4.1 Calculate appropriate doses for individual patients based on age, body weight, and surface area
2.4.2 Demonstrate the correct method of calculation of drug dosage in paediatric patients
2.4.3 Demonstrate the iv drip rate calculation & infusion time
2.4.4 Demonstrate the correct method of calculation of drug dosage in patient suffering from renal disease
2.4.5 Demonstrate the correct method of calculation of drug dosage in patient suffering from hepatic disease

□ _____ Skill station – 6 Hours
□ Assessment: Skill Assessment and Certification

PH 3.1Write a rational, correct and legible generic prescription for a given condition and communicate the same to the patient (integratation with General medicine)

3.1.1 Establish therapeutic goal/s, based on a diagnosis following standard treatment guidelines (STG)
3.1.2 Choose the appropriate drug/s for the given clinical condition
3.1.3 Choose the appropriate dose, route, frequency and duration of therapy for the chosen drug/s
3.1.4 Write a legible prescription as per MCI format
3.1.5 Provide appropriate information to the patient regarding the prescription
3.1.6 Review/alter prescription in the light of further investigation
3.1.7 Explain the legality (legal implications) of prescriptions.

Examples of 5 Exercises
1. Iron deficiency anemia due to hook worm infestation
2. Acute attack of Migraine
3. Newly diagnosed obese type 2 DM with Hypertension
4. UTI in pregnancy
5. Typhoid fever in a child

□ _____ Skill Lab – 6 Hours

□ Assessment: Skill Assessment and Certification

PH 3.2 Perform and interpret a critical appraisal (audit) of a given prescription – 3 no.s

3.2.1 Demonstrate the understanding of importance of completeness of prescription
3.2.2 Demonstrate the understanding of clinical diagnosis for which drugs are prescribed
3.2.3 Demonstrate the understanding of MCI format of prescription
3.2.4 Identify and comment on any discrepancies in the completeness and legibility of the prescription
3.2.5 Identify and comment on any discrepancies in the selection of drug, drug form, dose, frequency, duration of the treatment, instructions according to STG
3.2.6 Re-Write the prescription correcting all the discrepancies identified

□ _____ Skill Lab – 6 Hours

□ Assessment: Skill Assessment and Certification

PH 3.3 Perform a critical evaluation of the drug promotional Literature - Brainstorming followed by demonstration – 3 no.s (integratation with General medicine)

3.3.1 Discuss the various types of sources of drug information
3.3.2 Demonstrate understanding of importance of critical evaluation of drug promotional liliterature
3.3.3 Critically evaluate the given drug promotional literature based on WHO criteria
a. Appropriateness of illustration
b. Relevance of references cited
c. Content of scientific information

□ _____ Skill station – 4 Hours

Assessment: Skill Assessment – Log book

PH 3.4 To recognize and report an adverse drug reaction

3.4.1 Recognise an adverse drug reaction (ADR) in the given case
3.4.2 Perform causality assessment of the identified ADR using WHO & Naranjo's Scale
3.4.3 Fill the ADR reporting form (CDSCO from)
3.4.4 Explain the management of the ADR
3.4.5 Explain the methods to prevent the occurrence of the ADR
3.4.6 Report the ADR to the pharmacovigilance centre
3.4.7 Describe the Importance of reporting ADRs
3.4.8 Describe the various levels of reporting ADRs national and international centres
Example of 3 cases:
1. Warfarin induced Bleeding
2. Aspirin (NSAID) induced Peptic Ulcer
3. Carbamazepine induced Steven Johnson Syndrome

□ _____ Skill Station – 6 Hours

□ Assessment: Skill Assessment and Certification

PH 3.5 To prepare and explain a list of P- drugs for a given case/ condition – 3 no.s (integratation with General medicine)

3.5.1 Define the diagnosis
3.5.2 Specify the therapeutic objective
3.5.3 Make an inventory of effective groups of drugs
3.5.4 Choose an effective group of drug according to efficacy, safety and suitability criteria
3.5.5 Choose the P-Drug for the given clinical condition

Example of 3 Exercises
1. Angina Pectoris
2. Amoebic Dysentry
3. Anxiety

□ Skill Station – 2 Hours

□ Assessment: Skill Assessment – Log book

PH 3.6 Demonstrate how to optimize interaction with pharmaceutical representative to get authentic information on drugs

3.6.1 Enumerate the key elements in the WHO guidelines on Ethical criteria for medicinal drug promotion.
3.6.2 Direct the discussion with pharmaceutical representative so as to get the information he needs about the drug effectively.
3.6.3 Collect a copy of data sheet of the product under discussion.
3.6.4 Compare the verbal statements with those in the official text during presentation effectively.
3.6.5 Perform a prior literature search and check quality of research methodology of the drug under discussion including cost comparison.
3.6.6 Decide effectively whether to include the drug in personal formulary with regard to efficacy, safety and cost-effectiveness of medicines

□ Skill Station – 4 Hours

Assessment: Skill Assessment – Log book

PH 3.7 Prepare a list of essential medicine for a health care facility

3.7.1 Understand the concept of Essential Medicines List for the nation/state/ health care facility
3.7.2 Identify the factors that determine the choice of drugs in an Essential Medicines List.
3.7.3 Prepare a list of essential medicines for a healthcare facility, with justification in a given scenario

□ Skill Lab – 4 Hours

Assessment: Skill Assessment

PH 3.8 Communicate effectively with a patient on proper use of prescribe medication

1. **Insulins**
2. Proton pump inhibitors
3. **Statins**
4. Ferrous sulphate tablets
5. **Co-Amoxiclav or Cotrimoxazole**

3.8.1 Communicate about the effects of the prescribed drug with regards to the following
   a. Why the drug is needed
   b. Which symptoms will disappear, and which will not
   c. When the effect is expected to start
   d. When the effect is expected to start
3.8.2 Communicate about the adverse effects of the prescribed drug with regards to the following
   a. Which side effects may occur
   b. How to recognize them
   c. How long they will continue
   d. How serious they are
   e. What action to take
3.8.3 Communicate about the instructions of drug use as following:
   a. How the drug should be taken

b. When it should be taken
c. How long the treatment should continue
d. How the drug should be stored
e. What to do with left-over drugs

3.8.4 Communicate about the warnings of the prescribed drug with regards to the following
a. When the drug should not be taken
b. What is the maximum dose
c. Why the full treatment course should be taken

3.8.5 Communicate about the future consultations with regards to the following:
a. When to come back (or not)
b. In what circumstances to come earlier
c. What information the doctor will need at the next appointment

3.8.6 Conclude the consultation by asking the following questions:
a. Ask the patient whether everything is understood
b. Ask the patient to repeat the most important information
c. Ask whether the patient has any more questions

DOAP sessions – 10 Hours Assessment: Skill Assessment

PH 4.1 Administer drugs through various routes in a simulated environment using mannequins

USE CHECKLIST FOR ASSESSMENT (refer WHO prescribing book)

Enteral

Oral route

4.1.1 Identify the different dosage forms administered through the Oral route and instructions given to the patient for administering it.
4.1.2 Present the merits and demerits of Oral route of drug administration.
4.1.3 Demonstrate the administration of the drugs through oral route.
4.1.4 Identify the different equipment required for Nasogastric tube (NGT) insertion
4.1.5 Demonstrate the Nasogastric tube insertion and present the purpose.
4.1.6 Demonstrate the positioning of the patient during NGT insertion.
4.1.7 Demonstrate the preparation of the feeds for NG feeding.

Sublingual/ Buccal

4.1.8 Demonstrate the administration of the drugs through Sublingual and Buccal route.
4.1.9 Present the instructions for administering the same and how to terminate the action of the drug.
4.1.10 Present the different examples with dosage forms for the same.

Transrectal

4.1.11 Identify the devices used to administer dosage forms through transrectal route.
4.1.12 Present the instructions to the patient before administering dosage forms through transcutaneous route.
4.1.13 Demonstrate the administration of suppositories by rectal route.
4.1.14 Demonstrate the administration of enema (Evacuant/ Retention) by rectal route.

Transvaginal

4.1.15 Identify the devices used to administer dosage forms through transvaginal route.
4.1.16 Present the instructions to the patient before administering dosage forms through transvaginal route.
4.1.17 Demonstrate the administration of pessary, creams and foams by vaginal route.
4.1.18 Demonstrate the administration of douche by vaginal route.
4.1.19 Identify different types of Intrauterine contraception
4.1.20 Present the instructions/counseling to the patients on intrauterine contraception.
4.1.21 Demonstrate the placement of intrauterine contraception using the stimulation setting

Parenteral

Intra Muscular injection

4.1.22 Identify the devices required for IM injection
4.1.23 Demonstrate the prerequisite preparations for injection along with aseptic precautions.
4.1.24 Present instructions to the patient about the injection procedure.
4.1.25 Identify the sites of IM injection on mannequin and present merits and demerits of each site.
4.1.26 Demonstrate the proper technique for IM injection.

Intravenous injection

4.1.27 Identify the devices required for IV injection
4.1.28 Demonstrate the prerequisite preparations for injection along with aseptic precautions
4.1.29 Present instructions to the patient about the injection procedure.
4.1.30 Identify the sites of IV injection on mannequin
4.1.31 Demonstrate the proper technique for IV injection.

Subcutaneous injection

4.1.32 Identify the devices required for SC injection.
4.1.33 Demonstrate the prerequisite preparations for injection along with aseptic precautions.
4.1.34 Present instructions to the patient about the injection procedure.
4.1.35 Identify the sites of SC injection on mannequin.
4.1.36 Demonstrate the proper technique for SC injection.

Intradermal injection

4.1.37 Identify the devices required for Intradermal injection.
4.1.38 Demonstrate the prerequisite preparations for injection along with aseptic precautions.
4.1.39 Present instructions to the patient about the injection procedure.
4.1.40 Demonstrate the proper technique for Intradermal injection.

Intracardiac injection

4.1.41 Demonstrate a proper technique for Intracardiac injection.
4.1.42 Demonstrate the prerequisite preparations for injection along with aseptic precautions.

Local/ Topical application

Transcutaneous – Iontophoresis, Inunction, Jet Injection, Transdermal delivery system

4.1.43 Identify the devices used to administer dosage forms through transcutaneous route.
4.1.44 Present the instructions to the patient before administering dosage forms through transcutaneous route.
4.1.45 Demonstrate the administration of dosage forms by Iontophoresis method.
4.1.46 Demonstrate the administration of dosage forms by Inunction method.
4.1.47 Demonstrate the administration of dosage forms by Jet Injection method.
4.1.48 Demonstrate the administration of Transdermal patches.

Transmucosal/ Inhalational

4.1.49 Document the inhalational devices used to administer inhalational dosage forms.
4.1.50 Present the merits and demerits of inhalational devices over one another
4.1.51 Present the instructions to the patient before using inhalational devices.
4.1.52 Demonstrate the administration of inhalational dosage forms.
4.1.53 Identify the different types of airway masks and intubation tubes. Present a method for selection of intubation tubes.
4.1.54 Demonstrate the administration of anesthetic/ therapeutic gases through airway masks and intubation tubes

Transnasal

4.1.55 Identify dosage forms administered transnasally.
4.1.56 Identify the devices used for administering dosage forms transnasally.
4.1.57 Present the merits and demerits of Transnasal route of drug administration.
4.1.58 Present the instructions to the patient before administering dosage forms by transnasal route.

Ophthalmic/ Ear route

4.1.59 Identify dosage forms administered by ophthalmic/ ear route.
4.1.60 Present the instructions to the patient before administering dosage forms by ophthalmic/ ear route.

Skill Lab – 6 Hours
Assessment: Skill Assessment

PH 4.2 Demonstrate the effects of drugs on blood pressure (vasopressor and vasodepressors with appropriate blockers) using computer aided learning

4.2.1 Choose the appropriate animal experiment to study the effects of drugs on blood pressure
4.2.2 Explain the differences in actions of different vasopressor (adrenaline, noradrenaline)
4.2.3 Explain the differences in actions of different vasodepressors (ACh, alpha blockers, histamine)
4.2.4 Analyse and interpret the graph obtained accurately on application of various drugs
4.2.5 Enumerate the therapeutic uses of vasopressors and vasodepressors

 SGD – 2 Hours **Assessment: Skill Assessment**

PH 5.1 Communicate with the patient with empathy and ethics on all aspects of drug use (integration with General medicine)

5.1.1 Describe what information should be given to patients to allow them to make informed decisions
5.1.2 Communicate treatment plan and instructions to patient, at a suitable level of information
5.1.3 Engage in shared decision making where appropriate

 _____ SGD – 4 Hours

 Assessment: Skill Assessment

PH 5.2 Communicate with the patient regarding optimal use of

1. Drug therapy
2. **Devices**
3. Storage

s Drug

Therapy

5.2.1 Communicate about the effects of the prescribed drug with regards to the following:
i. Why the drug is needed
ii. Which symptoms will disappear, and which will not?
iii. When the effect is expected to start
iv. What will happen if the drug is taken incorrectly or not at all

5.2.2 Communicate about the adverse effects of the prescribed drug with regards to the following:
i. Which side effects may occur?
ii. How to recognize them
iii. How long they will continue
iv. How serious they are
v. What action to take

5.2.3 Communicate about the instructions of drug use as following:
i. How the drug should be taken
ii. When it should be taken
iii. How long the treatment should continue
iv. How the drug should be stored
v. What to do with left-over drugs

5.2.4 Communicate about the warnings of the prescribed drug with regards to the following:

1.

i. When the drug should not be taken
ii. What is the maximum dose?
iii. Why the full treatment course should be taken?

5.2.5 Communicate about the future consultations with regards to the following:

i. When to come back (or not)
ii. In what circumstances to come earlier
iii. What information the doctor will need at the next appointment

5.2.6 Conclude the consultation by asking the following questions:

i. Ask the patient whether everything is understood
ii. Ask the patient to repeat the most important information

Devices

5.2.7 The student should be able to communicate to patients on

i. Step wise points or instructions on use of device
ii. Communicate list of do's and don'ts on the device
iii. Demonstrate the proper use of device and ask the patient to show the same.
iv. Methods on handling, cleaning and storage of device
v. Dangers of use of device on other persons, without the prescription of doctor
vi. Importance of keeping the device away from reach of the children
vii. Contact number of manufacturers to be communicated on trouble shooting

Storage of Medicines

5.2.8 The student should be able to communicate to patients on

i. Ideal storage condition of a pharmaceutical product as per product label
ii. Ideal storage condition of a pharmaceutical product as per product label
iii. Effect of storage condition on potency and efficacy of the drug
iv. ill effects of improper storage condition on human consumption
v. Factors to be taken in to consideration for drug storage like sanitation, temperature, light, moisture, ventilation and segregation.
vi. Importance of storage of medicines away from reach of the children
vii. Disposal of expired drugs

SGD – 4 Hours Assessment: Skill Assessment/ Short note

PH 5.3 Motivate patients with chronic diseases to adhere to the prescribed management by health care provider

5.3.1 Explain the term medication adherence
5.3.2 Explain the consequences of non-adherence in chronic diseases
5.3.3 Explain the methods to measure the medication adherence
5.3.4 Elicit the barriers affecting medication adherence
5.3.5 Explains the measures to be taken to motivate the patient to adhere to medications in chronic diseases

SGD – 2 Hours Assessment: Shortnote/ Viva Voce

PH 5.4 Explain to the patient the relationship between cost of treatment and patient compliance

5.4.1 Assess the cost of the treatment

5.4.2 Enumerate various factors influencing patient compliance (patient related, disease condition related, therapy related and health system related factors).
5.4.3 Explain the consequences of medication non-compliance in terms of cost to the patient
5.4.4 Communicate clearly to the patient about relationship between cost of treatment and compliance

SGD – 4 Hours
Assessment: Short Note, Viva voce

PH 5.5 Demonstrate an understanding of the caution in prescribing drugs likely to produce dependence and recommend the line of management (integrate with Psychiatry)

5.5.1 Describe the term drug dependence
5.5.2 Enumerate the drugs that produce dependence
5.5.3 Describe the Legality involved in prescribing drugs likely to produce dependence (Drugs and Cosmetics Act, 1940; Pharmacy Act, 1948; Narcotic Drugs and Psychotropic substances Act, 1985)
5.5.4 Describe the clinical including psychosocial assessment of the patient before prescribing
5.5.5 Describe the importance of documentation of prescribing process
5.5.6 Describe the importance of periodic review of prescriptions
5.5.7 7. Describe the basic treatment regimens for various addictions and withdrawal states along with psycho-social rehabilitation

SGD – 4 hrs (Practical)
Assessment: Short notice, Viva voce

PH 5.6- Demonstrate ability to educate public & patients about various aspects of drug use including drug dependence and OTC drugs (integrate with Psychiatry)

5.6.1 The importance of complying with the doctor's instructions
5.6.2 The demerits of self-prescription
5.6.3 The importance of identifying and reporting ADRs to concerned authorities
5.6.4 Caution be taken while using drugs causing dependence
5.6.5 Safe use of OTC

SGD – 2 Hours
Assessment: Short notice, Viva voce

PH 5.7 Demonstrate an understanding of the legal and ethical aspects of prescribing drugs (integrate with Forensic Medicine)

Legal aspects

5.7.1 Explain who is entitled to prescribe medicines and the legal requirements involved
5.7.2 Describe the legal requirements associated with prescribing controlled drugs
5.7.3 Describe the legal implications of irrational prescription that could endanger the life of patients

Ethical aspects

5.7.4 Describe the importance of rational prescription
5.7.5 Explain the responsibilities of prescribing in a resource limited setting
5.7.6 Describe what information should be given to patients to allow them to make informed decisions
5.7.7 Explain why it is important to recognize limits of competence and to ask for help when needed
5.7.8 Explain the responsibility of all prescribers to update knowledge
5.7.9 Describe the importance of following clinical guidelines, protocols and formularies are appropriate

PANDEMIC MODULE 2.5

Therapeutic strategies including new drug development
 SGD – 2 Hours Assessment: Short notice, Viva voce

PH 5.8 Demonstrate the use of drugs during a pandemic. (Integrate with General Medicine)
 Prepare a plan for evaluation of off-label use of a drug – repurposing
 Emergency use authorization – Compliance with regulatory authorities
 CDSCO/DCGI and US FDA
 Pharmacovigilance during a pandemic
 Ethical aspects of clinical trials in pandemic
 Visit to a pharmaceutical firm/ pharmacy lab to show various stages of drug development or an
ADR monitoring exercise in clinical wards

DISTRIBUTON OF ATTITUDE ETHICS AND COMMUNICATION SKILLS (AETCOM) MODULE

SI NO	MODULE	TOPIC	DEPARTMENT					No. of hours	Formative assessment	Summative assessment
			PA	MI	PH	CM	FM			
1	2.1	Foundation of communication				□		5	□	-
2	2.2	Foundation of bioethics					□	2	-	□
3	2.3	Health care as a right				□		2	-	□
4	2.4	Working in a health care team	□					6	□	-
5	2.5	Bioethics- case studies on patient autonomy and decision making (patient rights and shared responsibility in health care)			□			6	□ □	
6	2.6	Bioethics- Case studies on patient autonomy and decision making (refusal of care including do not resuscitate and			□			5	□ □	

		withdrawal of life Support)								
7	**2.7**	**Bioethics- Case studies on patient autonomy and decision making (consent for surgical procedures)**		□				**5**	□ □	
8	**2.8**	**What does it mean to be a family member of sick patient**					□	**6**	□ □	

****PA-Pathology; MI- Microbiology; PH- Pharmacology; CM- Community medicine; FM- Forensic medicine.**

1.

CERTIFIABLE COMPETENCIES

Competencies in knowledge domain

Sl no	Topic	Competency
1	General Pharmacology Toxicology Clinical Pharmacology and rational drug use	PH 1.1 to PH 1.12
2	Autonomic Nervous System	PH 1.13 to PH 1.14
3	Autacoids	PH1.16
4	Drugs in anaesthetic practice:	PH 1.15, PH1.17 to PH 1.18
5	Central Nervous System	PH 1.19 to PH 1.23
6	Diuretics	PH 1.24
7	Drugs affecting blood and blood formation	PH 1.25, PH 1.35
8	Cardiovascular System	PH 1.26 to PH 1.31
9	Respiratory System:	PH 1.32 to PH 1.33
10	Gastrointestinal System	PH 1.34
11	Endocrine System	PH 1.36 to PH 1.41
12	Chemotherapy	PH 1.42 to PH 1.49
13	Miscellaneous	PH 1.50 to PH 1.64

Competencies in Skills:

There are **21** competencies in this domain. These include clinical pharmacy (04), Clinical Pharmacology (8), Experimental Pharmacology (2) and Communication (7) as given below.

Topic	Competency	Description
Clinical Pharmacy	PH 2.1	Demonstrate understanding of the use of various dosage forms **(oral/local/parenteral; solid/liquid)**
	PH 2.2	Prepare oral rehydration solution from ORS packet and explain its use
	PH 2.3	Demonstrate the appropriate setting up of an intravenous drip in a simulated environment.
	PH 2.4	Demonstrate the correct method of calculation of drug dosage in patients including those used in special situations
Clinical Pharmacology	PH 3.1-**C**	Write a rational, correct and legible generic prescription for a given condition and communicate the same to the patient
	PH 3.2-**C**	Perform and interpret a critical appraisal (audit) of a given prescription
	PH 3.3-**C**	Perform a critical evaluation of the drug promotional literature
	PH 3.4- **L**	To recognise and report an adverse drug reaction
	PH 3.5-**C**	To prepare and explain a list of P-drugs for a given case/condition
	PH 3.6-**L**	Demonstrate how to optimize interaction with pharmaceutical representative to get authentic information on drugs
	PH 3.7-**L**	Prepare a list of essential medicines for a healthcare facility
	PH 3.8	Communicate effectively with a patient on the proper use of prescribed medication
Experimental Pharmacology	PH 4.1	Administer drugs through various routes in a simulated environment using mannequins
	PH4.2	Demonstrate the effects of drugs on blood pressure (vasopressor and vaso- depressors with appropriate blockers) using CAL
Communication	PH5.1	Communicate with the patient with empathy and ethics on all aspects of drug use
	PH5.2	Communicate with the patient regarding optimal use of a) drug therapy, b) devices and c) storage of medicines
	PH5.3	Motivate patients with chronic diseases to adhere to the prescribed management by the health care provider
	PH5.4	Explain to the patient the relationship between cost of treatment and patient compliance
	H5.5	Demonstrate an understanding of the caution in prescribing drugs likely to produce dependence and recommend the line of management
	PH5.6	Demonstrate ability to educate public & patients about various aspects of drug use including drug dependence and OTC drugs
	PH5.7	Demonstrate an understanding of the legal and ethical aspects of prescribing drugs

C- Needs certification: 4 no.

L Needs Maintenance of a log book: 3 no.

CERTIFIABLE SKILLS

Certifiable skill - 1

Skill: PH 3.1 Write a rational, correct and legible generic prescription for a given condition and communicate the same to the patient. Student has to perform this activity 5 times to be certified

Certifiable skill - 2

Skill: PH 3.2 Perform and interpret a critical appraisal (audit) of a given prescription. Student has to perform this activity 3 times to be certified

Certifiable skill - 3

Skill: PH 3.3 Perform a critical evaluation of the drug promotional literature. Student has to perform this activity 3 times to be certified

Certifiable skill - 4

Skill: PH 3.5 To prepare and explain a list of P-drugs for a given case/condition. Student has to perform this activity 3 times to be certified

EXAMINATION SCHEDULE

<table>
<tr><th>Jan</th><th>Feb</th><th>Mar</th><th>Apr</th><th>May</th><th>Jun</th><th>Jul</th><th>Aug</th><th>Sep</th><th>Oct</th><th>Nov</th><th>Dec</th></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>Foundation Course</td><td colspan="5">I MBBS</td></tr>
<tr><td colspan="8">I MBBS</td><td>Exam I MBBS</td><td colspan="3">II MBBS</td></tr>
<tr><td colspan="8">II MBBS</td><td>Exam II MBBS</td><td colspan="3">III MBBS</td></tr>
<tr><td colspan="9">III MBBS Part I</td><td>Exam III MBBS Part I</td><td colspan="2">Electives & Skills</td></tr>
<tr><td colspan="12">III MBBS Part II</td></tr>
<tr><td>Exam III MBBS Part II</td><td></td><td colspan="10">Internship</td></tr>
<tr><td colspan="2">Internship</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
</table>

Competencies to be covered in each block

BLOCK I		BLOCK II		BLOCK III	
Competency	**Topics**	**Competency**	**Topics**	**Competency**	**Topics**
PH 1.1-1.12, 1.52, 1.59, 1.60, 1.64	General Pharmacology Clinical Pharmacology And Toxicology	PH 1.26 - 1.31	Cardiovascular System	PH 1.36 – 1.41	Endocrine
PH 1.13-1.14	Autonomic Nervous System	PH 1.24	Diuretics	PH 1.42 - 1.48	Chemotherapy
PH 1.18-1.23	Central Nervous System	PH 1.32 - 1.33	Respiratory System	PH 1.49	Anti-Cancer Drugs
PH 1.15, 1.17	Peripheral Nervous System	PH 1.34	Gastrointestinal Tract	PH 1.50	Immunomodulators
PH 1.16	Autacoids	PH 1.57, 1.58	Drugs Used In Skin Diseases & Ocular Diseases		
PH 1.25 & 1.35	Blood And Blood Products & Anaemia	PH 1.51,1.53, 1.54,1.55, 1.62, 1.63	Miscellaneous (Vaccines Etc..,)		

TOPICS FOR HORIZONTAL INTEGRATION

	Pathology	Microbiology	Pharmacology	Forensic Medicine	Commnity Medicine	Concerned Clinical subjects
BLOCK 1	Immunology Anaemia Wound healing Shock	Immunology Anaemia Shock Surgical practice Infective endocarditis & Rheumatic heart disease Immunisation	Immunology Anaemia & anticoagulants Essential medicines Shock Toxicology Drugs of abuse (FM) ANTIBIOTIC STEWARDSHIP PROG (Micro+ Gen med+ Paed)	Wound healing Toxicology	Essential medicines	Shock Surgical practice Toxicology Infective endocarditis & Rheumatic heart disease Immunisation
BLOCK 2	Infective endocarditis & Rheumatic heart disease (Nesting) Myocardial infarction Atherosclerosis Tuberculosis Leprosy AIDS Malaria	Tuberculosis Leprosy AIDS Malaria Enteric fever Viral hepatitis Acid peptic disease Bone & Joint infection Meningitis Encephalitis STI	IHD (Path + Gen med) CHF (Path) Br Asthma COPD (Path+Pul med) PUD- (Physio + Gen med +Path) IBD &IBS (Path) Tuberculosis Leprosy (Micro + Dermat) AIDS Malaria		Tuberculosis Leprosy AIDS Malaria	Myocardial infarction Atherosclerosis Tuberculosis Leprosy AIDS Malaria Enteric fever Viral hepatitis Acid peptic disease Bone & Joint infection Meningitis Encephalitis STI

BLOCK 3	Diabetes mellitus Hepatitis (Sharing / Nesting)	Zoonotic disease Hospital acquired infection National health programs of communicable diseases	Endocrines Thyroid, DM, Osteoporosis (Path) Malaria, Kala azar, Ameobiasis, Helminthiasis (Gen Med+Micro) HIV, UTI, STD (Micro) NHP (CM)		Diabetes mellitus Zoonotic disease Hospital acquired infection National health programs of communicable diseases	Diabetes mellitus Zoonotic disease Hospital acquired infection Endocrines

NOTE - National days of importance for AIDS, Leprosy, Tuberculosis, Malaria, Mental health, Breast feeding promotion, World health day, etc. can be used to conduct full day integration sessions for students

Beyond these topics, Institutions are free to integrate topics with concerned departments, wherever feasible within the MCI stipulations.

Minimum two of the suggested topics should be covered in each block.

TOPICS FOR VERTICAL INTEGRATION

	COMPETENCY	
Number	**The student should be able to**	**Vertical Integration**
PH 1.15	Describe mechanism/s of action, types, doses, side effects, indications and contraindications of skeletal muscle relaxants	Anesthesiology, Physiology
PH 1.16	Describe mechanism/s of action, types, doses, side effects, indications and contraindications of the drugs which act by modulating autacoids, including: anti-histaminic, 5-HT modulating drugs, NSAIDs, drugs for gout, anti-rheumatic drugs, drugs for migraine	General Medicine
PH 1.17	Describe the mechanism/s of action, types, doses, side effects, indications and contraindications of local anesthetics	Anesthesiology
PH1.18	Describe the mechanism/s of action, types, doses, side effects, indications and contraindications of general anaesthetics, and pre- anesthetic medications	Anesthesiology
PH1.19	Describe the mechanism/s of action, types, doses, side effects, indications and contraindications of the drugs which act on CNS, (including anxiolytics, sedatives & hypnotics, anti-psychotic, anti- depressant drugs, anti-maniacs, opioid agonists and antagonists, drugs used for neurodegenerative disorders, anti-epileptics drugs)	Psychiatry, Physiology
PH1.20	Describe the effects of acute and chronic ethanol intake	Psychiatry
PH1.21	Describe the symptoms and management of methanol and ethanol poisonings	General Medicine
PH1.22	Describe drugs of abuse (dependence, addiction, stimulants, depressants, psychedelics, drugs used for criminal offences)	Psychiatry
PH1.23	Describe the process and mechanism of drug deaddiction	Psychiatry
PH1.25	Describe the mechanism/s of action, types, doses, side effects, indications and contraindications of the drugs acting on blood, like anticoagulants, antiplatelets, fibrinolytics, plasma expanders	Physiology, General Medicine

PH1.26	Describe mechanisms of action, types, doses, side effects, indications and contraindications of the drugs modulating the renin- angiotensin and aldosterone system	Physiology, General Medicine
PH1.27	Describe the mechanisms of action, types, doses, side effects, indications and contraindications of antihypertensive drugs and drugs used in shock	General Medicine
PH1.28	Describe the mechanisms of action, types, doses, side effects, indications and contraindications of the drugs used in ischemic heart disease (stable, unstable angina and myocardial infarction), peripheral vascular disease	General Medicine
PH1.29	Describe the mechanisms of action, types, doses, side effects, indications and contraindications of the drugs used in congestive heart failure	General Medicine
PH1.30	Describe the mechanisms of action, types, doses, side effects, indications and contraindications of the antiarrhythmics	General Medicine
PH1.31	Describe the mechanisms of action, types, doses, side effects, indications and contraindications of the drugs used in the management of dyslipidemias	General Medicine
PH1.32	Describe the mechanism/s of action, types, doses, side effects, indications and contraindications of drugs used in bronchial asthma and COPD	Respiratory Medicine

PH1.33	Describe the mechanism of action, types, doses, side effects, indications and contraindications of the drugs used in cough (antitussives, expectorants/ mucolytics)	Respiratory Medicine
PH1.34	Describe the mechanism/s of action, types, doses, side effects, indications and contraindications of the drugs used as below:	General Medicine
	1. Acid-peptic disease and GERD	
	2. Antiemetics and prokinetics	
	3. Antidiarrhoeals	
	4. Laxatives	
	5. Inflammatory Bowel Disease	
	6. Irritable Bowel Disorders, biliary and pancreatic diseases	
PH1.35	Describe the mechanism/s of action, types, doses, side effects, indications and contraindications of drugs used in hematological disorders like:	General Medicine, Physiology
	1. Drugs used in anemias	
	2. Colony Stimulating factors	
PH1.36	Describe the mechanism of action, types, doses, side effects, indications and contraindications of drugs used in endocrine disorders (diabetes mellitus, thyroid disorders and osteoporosis)	General Medicine
PH1.39	Describe mechanism of action, types, doses, side effects, indications and contraindications the drugs used for contraception	Obstetrics & Gynaecology

PH1.40	Describe mechanism of action, types, doses, side effects, indications and contraindications of 1. Drugs used in the treatment of infertility, and 2. Drugs used in erectile dysfunction	Obstetrics & Gynaecology
PH1.41	Describe the mechanisms of action, types, doses, side effects, indications and contraindications of uterine relaxants and stimulants	Obstetrics & Gynaecology
PH1.43	Describe and discuss the rational use of antimicrobials including antibiotic stewardship program	General Medicine, Pediatrics
PH1.44	Describe the first line antitubercular dugs, their mechanisms of action, side effects and doses.	Respiratory Medicine
PH1.45	Describe the drugs used in MDR and XDR Tuberculosis	Respiratory Medicine
PH1.46	Describe the mechanisms of action, types, doses, side effects, indications and contraindications of antileprotic drugs	Dermatology, Venereology & Leprosy
PH1.47	Describe the mechanisms of action, types, doses, side effects, indications and contraindications of the drugs used in malaria, KALA- AZAR, amebiasis and intestinal helminthiasis	General Medicine
PH1.52	Describe management of common poisoning, insecticides, common sting and bites	General Medicine
PH1.56	Describe basic aspects of Geriatric and Pediatric pharmacology	Pediatrics
PH1.57	Describe drugs used in skin disorders	Dermatology, Venereology & Leprosy
PH1.58	Describe drugs used in Ocular disorders	Ophthalmology

PH2.4	Demonstrate the correct method of calculation of drug dosage in patients including those used in special situations	Pediatrics, General Medicine
PH3.1	Write a rational, correct and legible generic prescription for a given condition and communicate the same to the patient	General Medicine
PH3.3	Perform a critical evaluation of the drug promotional literature	General Medicine
PH3.5	To prepare and explain a list of P-drugs for a given case/condition	General Medicine
PH5.1	Communicate with the patient with empathy and ethics on all aspects of drug use	General Medicine
PH5.4	Explain to the patient the relationship between cost of treatment and patient compliance	General Medicine
PH5.5	Demonstrate an understanding of the caution in prescribing drugs likely to produce dependence and recommend the line of management	Psychiatry
PH5.6	Demonstrate ability to educate public & patients about various aspects of drug use including drug dependence and OTC drugs	Psychiatry

Column C: K- Knowledge, S – Skill, A - Attitude / professionalism, C-Communication.

Column D: K – Knows, KH - Knows How, SH - Shows how, P- performs independently,

Column F: DOAP session – Demonstrate, Observe, Assess, Perform.

Column H: If entry is P: indicate how many procedures must be done independently for certification/ graduation

EVALUATION METHODOLOGY

Summative Assessment - An assessment conducted at the end of instruction to check how much the student has learnt.

Formative Assessment - An assessment conducted during the instruction with primary purpose of providing feedback for improving learning.

Internal Assessment - Range of assessments conducted by the teachers teaching a particular subject with the purpose of knowing what is learnt. Internal assessment can have both formative and summative functions.

Note - Assessment requires specification of measurable and observable entities. This could be in the form of whole tasks that contribute to one or more competencies or assessment of a competency per se. Another approach is to break down the individual competency into learning objectives related to the domains of knowledge, skills, attitudes, communication etc. and then assess them individually.

Scheduling of Internal Assessment - Done once in three months preferably at the end of each block.

Theory IA can include: Written tests should have essay questions, short notes and creative writing experiences.

Practical IA can include: Practical tests, Objective Structured Practical Examination (OSPE), Directly Observed Procedural Skills (DOPS), records maintenance and attitudinal assessment.

Assessment of Log-book- Log book should record all activities like seminar, symposia, quizzes and other academic activities. It should be assessed regularly and submitted to the department. Up to ten (10) per cent IA Practical marks should be for Log book assessment.

Assessment of Practical Record book- Practical book should record all skills and other practical exercises done during the academic programme. It should be assessed regularly and submitted to the department. Up to ten (10) per cent IA Practical marks should be for Practical record book assessment0

Assessment for AETCOM will include: - Written tests comprising of short notes and creative writing experiences only in internal assessment.

INTERNAL ASSESSMENT

1. There will be 3 internal assessment examinations in Pharmacology. The structure of the internal assessment examinations should be preferably similar to the structure of University examinations.

2. It is mandatory for the students to appear for all the internal assessment examinations.

3. First internal assessment examination will be held after 3 months, second internal assessment examination will be held after six months and third internal assessment examination will be held after 9 months of Phase II curriculum.

4. Pattern of first and second Internal Assessment are left to the discretion of the individual institute. However, third internal assessment has to be conducted in the same pattern of the University exam

5. Additional internal assessment examination for absent students can be considered due to genuine reason after approval by the head of the department. It should be taken before the submission of internal assessment marks to the University.

6. Internal assessment marks allotment for theory and practical for the first and second internal assessment are left to the discretion of the respective institutes. Marks allotted in the third (final) Internal Assessment should be preferably for 100 marks each for Theory and Practical.

7. 20% of the internal assessment marks should be from Formative Assessment in both Theory and Practical

8. Feedback in Internal Assessment - Feedback should be provided to students throughout the course so that they are aware of their performance and remedial action can be initiated well in time. The feedbacks need to be structured and the faculty and students must be sensitized to giving and receiving feedback.

9. The results of IA should be displayed on notice board within two weeks of the test and an opportunity provided to the students to discuss the results and get feedback on making their performance better.

10. It is also recommended that students should sign with date whenever they are shown IA records in token of having seen and discussed the marks.

11. Internal assessment marks will not be added to University examination marks and will reflect as a separate head of passing at the summative examination.

12. Internal assessment should be based on competencies and skills.

13. Criteria for appearing in University examination: Learners must secure at least 50% marks of the total marks (combined in theory and practical; not less than 40 % marks in theory and practical separately) assigned for internal

1.

assessment in order to be eligible for appearing at the final University examination.

14. **Average marks obtained in all three internal assessments should be calculated to 40 marks**.

15. A candidate who has not secured requisite aggregate in the internal assessment may be subjected to remedial assessment by the institution. If he/ she successfully complete the same, he/she is eligible to appear for University Examination. Remedial assessment shall be completed before submitting the internal assessment marks online to the University.

1.

SUMMATIVE ASSESSMENT/ UNIVERSITY EXAM

THEORY

GENERAL INSTRUCTIONS

1. The topics for the two papers are distributed
2. Questions in each paper will be as per distribution
3. The SLO needs to be referred while setting the question paper
4. Repetition of questions from the same SLO to be avoided
5. The marks allotted to the different topics & sections to be adhered
6. Questions to be covered from the different sections of Pharmacology

THEORY EXAMINATION-2 PAPERS OF 100 MARKS EACH
Distribution of marks:

Sl no.	*Type of questions*	*Marks per question*	*Number of questions*	*Total marks*
1	**Multiple Choice Questions**	**1**	**20**	**20**
2	**Long Essay (LE)**	**10**	**2**	**20**
3	**Short Essay (SE)**	**5**	**6**	**30**
4	**Short Answer (SA)**	**3**	**10**	**30**

Long essay

The question should pose a clinical/practical problem to the students and require them to apply knowledge and integrate it with disciplines. Avoid giving one liners as questions. The question stem should be structured and marking distribution should be provided. Use action verbs from higher domains as given in this document. Please avoid simple recall based questions. What is asked in the examination generally sets the agenda of what and how the students learn.

Short essay: These provide opportunity to sample a wider content, albeit in a short time. The questions should be task oriented rather than Write a short note on xxx
Short answer: Question based on applied aspect

SUMMATIVE ASSESSMENT/ UNIVERSITY EXAM

PRACTICALS

Total Marks – 100 (Practical: 80 + Viva voce: 20)

Sl. No.	Competency	Topics	Teaching hours	For university exams	Max. marks in exams
1	PH 2.1	Dosage forms	14 hours	TABLE VIVA	10 marks
2	PH 2.2	ORS	4 hours	Correction only	10 marks
3	PH 2.3	I.V Drip	4 hours	DEMO only	
4	PH 2.4	Drug Dose Calculation	4 hours	Correction only	10marks
5	PH 3.1	Prescription Writing	6 hours	Correction only	10 marks
6	PH 3.2	Prescription Audit / CCR	6 hours	LOG BOOK	
7	PH 3.3	Drug Promotional Literature(DPL)	6 hours	TABLE VIVA with 2.2	Alternate with ORS for 10 marks
8	PH 3.4	ADR	4 hours	TABLE VIVA	10 marks
9	PH 3.5	P Drugs	6hours	LOG BOOK	
10	PH 3.6	Interaction with Pharma Representative	2 hours	Role play, LOG BOOK	
11	PH 3.7	Essential Medicines	4 hours	LOG BOOK	
12	PH 3.8	Drug Counseling	4 hours	TABLE VIVA	10marks
13	PH 4.1	Routes in Manequins	10 hours	DEMO only	
14	PH 4.2	Computer Aided Learning CAL	6 hours	Correction / TABLE VIVA	10 marks
15	PH 5.1	Empathy, ethics	SGD 2 hours	TABLE VIVA with 3.8	10 marks
16	PH 5.2	Drug therapy storage	SGD 4 hours	TABLE VIVA with 3.8	10 marks
17	PH 5.3	Adherence	SGD 4 hours	Short note-theory	
18	PH 5.4	Cost & compliance	SGD 2 hours	Short note-theory	
19	PH 5.5	Dependence	SGD 4 hours	Short note-theory	

20	PH 5.6	OTC	SGD 4 hours	TABLE VIVA Along with 3.4	10 marks
21	PH 5.7	Legal, ethical aspects	SGD 2 hours	Short note-theory	
		Total hours	Practical 80 hours + SGD 22 hours		

University exams (total 80 marks) Each exercise 10 marks

Examiner	1st	2nd	3rd	4th
Correction only	Drug dose calculation 2.4/ OTC 5.6 **10 marks**	ORS/ DPL 2.2/3.3 **10 marks**	Prescription 3.1 **10 marks**	Spotters **10 marks**
Table Viva	Dosage form 2.1 **10 marks**	CAL Graph 4.2 **10 marks**	ADR 3.4 **10 marks**	Drug counselling 3.8 / Drug therapy & storage 5.2 / Empathy & ethics 5.1 **10 marks**

PROPOSED MARKS ALLOCATION FOR PRACTICAL INTERNAL ASSESSMENT

Sl No	Assessment	Marks allotted		
		First IA	**Second IA**	**Third (Final) IA**
1	Spotters	**10 Marks**	**10 Marks**	**10 Marks**
2	Exercises - Writing	**10 Marks** • ORS 2.2 / Drug promotional literature 3.3 (5 marks) • Drug dose calculation2.4/OTC 5.6 (5 marks)	**10 Marks** Prescription writing 3.1	**10x3 = 30 Marks** • Drug dose calculation 2.4/ OTC 5.6 (10 marks) • ORS 2.2/ Drug promotional literature 3.3 (10 marks) • Prescription writing 3.1 (10 marks)

3	OSPE-Table viva	**15 Marks** Dosage form 2.1 (10 marks) Graph-CAL 4.2 (5marks)	**15 Marks** ADR 3.4 (10 marks) Drug therapy/Empathy/ Counselling 3.8, 5.1, 5.2 (5Marks)	**10x4= 40 Marks** • Dosage form 2.1 **(10 marks)** • CAL Graph 4.2 **(10marks)** • ADR 3.4 **(10 marks)** • Drug counselling 3.8 / Drug therapy & storage 5.2 / Empathy & ethics 5.1 **(10marks)**
4	Record Assessment	**05 Marks 05 Marks 20**	**Marks**	
Total		**40**	**40**	**100**

Note: Certifiable competencies/AETCOM should be completed in Formative/Internal assessment

BLUE- PRINT FOR THEORY PAPER – PHARMACOLOGY

Weightage matrix determines the weightage given to a particular topic. The weightage was calculated based on Perceived impact / importance of a topic - impact on health (I) and frequency (F) of occurrence of a particular disease or health problem.

Overall weight for a topic/system is the product of Impact and

Frequency (I x F) t = Total weights

Weightage for each topic: W = I x F/t

Number of marks allocated in exams N = W

x T Where T is the total marks in university

examination.

Sl no.	PAPER I- Topics	Competencies	Impact	Frequency	Weightage	Marks	Nature of Questions
1	General Pharmacology- Sources, Routes, PK, PD, ADR+ Clinical pharmacology- TDM, Factors	PH 1.1 TO PH 1.12.	2	2	0.18 18		LE, SE, SA

2	Autonomic nervous system- Adrenergic, cholinergics and their agonists & Antagonists	PH 1.13 TO PH 1.14	2 2 0.1	8 18			LE, SE, SA
3	Central nervous system- GA, including substances of abuse &Opioids	PH 1.18 TO PH 1.23	2 3 0.2	7 27			LE, SE, SA
4	Peripheral nervous system (Local anaesthetics, skeletal muscle relaxants)	PH 1.15, PH 1.17					SE, SA
5	Autacoids (Prostaglandins, histamine and antihistamines, Treatment of migraine) & NSAIDS & Drugs used in the treatment of gout and rheumatoid arthritis	PH 1.16	1 2 0.0	9 9			SE, SA
6	Respiratory system	PH 1.32, PH 1.33	1 2 0.0	9 9			SE, SA
7	Gastrointestinal system	PH 1.34	1 2 0.0	9 9			SE, SA

8	Occupational and environmental pesticides, food adulterants, Pollutants & insect repellents, Common poisoning, insecticides, stings & bites, **Chelating agents**, EDL, FDC, OTC, Herbal medicines, Pharmacogenomics, Pharmacoeconomics, Drug therapy in special population, Geriatric &Pediatric pharmacology, Drug regulations, Phases of clinical trial, GCP, Drug development Pharmacovigilance	PH 1.51, PH 1.52, **PH 1.53,** PH 1.59, PH 1.60, PH 1.56, PH 1.63, PH 1.64	2 1 0.0	9 9			SE, SA
	Total				**99**		

∑I X F = 22 = t

Justification:

- **General pharmacology** deals with the principles of drug action. It explains the pharmacological basis for the use of a specific drug in a disease condition. The student should be assessed with regards to the various concepts in general pharmacology and its clinical application. Hence 20 marks is allocated to this topic.

- **Autonomic nervous system:** There are a number of drugs acting through this system with clinical application in diseases affecting different organ systems. Hence 20 marks is allocated to this system.

- **Central nervous system:** 9.2% of 55.4% Disability Adjusted Life Years (DALY) for non- communicable diseases was from neurological, mental and substance abuse related disorders a s per a study in 2016 [1]. Hence 25 marks is allocated to CNS and peripheral nervous system.

- **Autacoids, drugs for rheumatoid arthritis and gout:** Around 4% of the patients had arthritis/joint pain as diagnosed by primary health care (PHC) physicians in India [2]. Hence 10 marks has been allocated to this topic.

- **Gastrointestinal system:** Gastrointestinal symptoms were the second most common cause of a visit to a health-care practitioner 25% in Poseidon study [2].

- **Respiratory system:** Symptoms related to respiratory system were the main cause of a visit to a health-care practitioner (50.6%) in Poseidon study[2]. Hence 10 marks allocated to assess this system.

- **Miscellaneous topics** have been allocated 5 marks

1.

BLUE- PRINT FOR THEORY PAPER – II

Sl no.	PAPER II- Topics	Competencies	Fact Fr	frequency Weigh	tage Marks		Nature of questions
1	Endocrines including Hormonal contraceptives+ **Drugs acting on uterus**	PH 1.36 To PH1.41	2	3	0.24	24	LE, SE, SA
2	Drugs acting on blood-Anticoagulants, Antiplatelets, Fibrinolytics, Plasma expanders, Anemia, CSF	PH 1.25, PH 1.35	3	3	0.36	36	SE, SA
3	Diuretics and antidiuretics	PH 1.24					SE, SA
4	Cardiovascular system + treatment of shock Dyslipidemia	PH1.42 To PH 1.48, PH 1.50					LE, SE, SA
5	Chemotherapy	PH 1.49	32	0.24	24		LE,SE, SA
6	Anti cancer agents& Immunomodulators	PH 1.26 To PH1.31	21	0.08	8		SE, SA
7	Drugs to treat skin disorders, Drugs to treat ocular diseases,	PH 1.57, PH 1.58,	11	0.04	4		SE, SA
8	Vitamins, Vaccines, NHP, Nutraceuticals, Antiseptics and disinfectants,	PH 1.54, PH 1.55, PH 1.61, PH 1.62	11	0.04	4		SE, SA
	Total					**100**	

Justification:

- **Endocrines:** Diabetes and hypothyroidism are common endocrine conditions that a PHC physician will encounter. Approximately 9% of the patients who came to PHC were found to be diabetic [2]. Hence 25 marks is allocated to endocrinology.

1.

- **Cardiovascular system including blood and diuretics:** Incidence of non-communicable diseases are on the rise in India. Cardiovascular diseases contributed to 14% of the DALYs [1] and hypertension, ischemic heart disease, cardiac failure, obesity and cerebrovascular accidents together contributed to around 20% of the patients seen by a PHC physician [2]. The student needs to be assessed in all these topics and hence 30 marks have been allocated.
- **Chemotherapy:** Antibiotics form the main stay of treatment for infectious diseases. Infections like tuberculosis (TB) and malaria being endemic in India, assessing its treatment becomes important. Also, with antibiotic resistance emerging as a major health care problem, knowledge about the indications, adverse drug reactions and rational use of antibiotics is imperative. Hence 30 marks have been allocated to this topic.

- **Immunomodulators, anti-cancer agents, vaccines, vitamins etc.:** The student should be aware of these drugs and have basic knowledge about these topics. Hence 15 marks have been allocated to these topics.

References:

1. Indian Council of Medical Research, Public Health Foundation of India, and Institute for Health Metrics and Evaluation. India: Health of the Nation's States — The India State-Level Disease Burden Initiative. New Delhi, India: ICMR, PHFI, and IHME; 2017.
2. Sundeep Salvi, Komalkirti Apte, Sapna Madas, Monica Barne, Sushmeeta Chhowala, Tavpritesh Sethi, Kunal Aggarwal, Anurag Agrawal, Jaideep Gogtay. Symptoms and medical conditions in 204 912 patientsvisiting primary health-care practitioners in India: a 1-daypoint prevalence study (the POSEIDON study) Lancet Glob Health 2015;3: e776–84

1.

PRACTICAL EXAMINATION- BLUE PRINT- Final University exams

Exercise 1: Drug dose calculation or OTC- Marks: 10, Duration: 15

minutes

Student will be given a problem statement and asked to calculate the appropriate

dose of drug/s. OR Student will be given a set of questions to evaluate the

understanding of OTC Drugs

Evaluation is by the correction of the problem and OTC questions.

Exercise 2: Oral rehydration solution or critical evaluation of drug promotional literature Marks: 10, Duration: 30 minutes

ORS: A clinical scenario will be given to the student and asked to answer a set of questions related to scenario OR

DPL: Hard copy of one drug promotional literature will be given to the student and asked to evaluate according to the WHO criteria

Evaluation based on checklist.

Exercise 3: Prescription writing, Marks: 10, Duration: 15 minutes

A clinical case scenario is given to the student and asked to write appropriate prescription for the given clinical scenario.

Evaluation will be based on the checklist.

Exercise 4: Spotters, Marks: 10, Duration: 15 minutes

Questions based on all practical exercises, one mark each, one minute for each question, total of 10 questions will be given

Evaluation based on correction.

Exercise 5: Dosage form, Marks: 10, Duration: 30 minutes (Competency 2.1)

A clinical scenario is given to the student. The student will be asked to answer a set of questions related to scenario.

Evaluation based on checklist.

Exercise 6: Graph interpretation based on computer assisted learning, Marks: 10, Duration: 15 minutes

A graph will be given to the student.

The student will be asked to interpret and draw inference

from the graph Evaluation based on checklist.

Exercise 7: Adverse drug reactions, Marks: 10, Duration: 30 minutes

A clinical scenario will be given to the student. The student will be asked to answer a set of questions related to ADR scenario.

Evaluation based on checklist.

Exercise 8: Drug counselling and communication, & Drug therapy & storage Empathy & ethics - Marks: 10, Duration: 30 minutes

A clinical scenario will be given to the student. The student will be asked to answer a set of questions related to scenario.

Evaluation based on checklist

PRACTICAL BLUE PRINT-University exams (Total 80 marks) Each exercise 10 marks

Examiner	**1st**	**2nd**	**3rd**	**4th**
For Correction	Drug dose calculation 2.4/ OTC 5.6 **10 marks**	ORS 2.2/ DPL 3.3 **10 marks**	Prescription 3.1 **10 marks**	Spotters **10 marks**
For OSCE/Table Viva	Dosage form 2.1 **10 marks**	CAL Graph 4.2 **10 marks**	ADR 3.4 **10 marks**	Drug counselling 3.8 / Drug therapy & storage 5.2 / Empathy & ethics 5.1 **10 marks**

Competenies for Skill Communication (No. 2.1 to 5.7)

PH 2.1	Demonstrate understanding of the use of various dosage forms	Marks
1	Chooses the appropriate dosage form for given clinical scenario	1
2	Describes the reason for choosing the particular dosage form	2
3	Provides the appropriate instructions to be followed for administering the chosen dosage form	4
4	Describes the merits and demerits of the given dosage form	1
5	Explains the components of the commercial label	2
	Total	**10**

PH 2.2	Prepare oral rehydration solution from ORS packet and explain its use	Marks
1	Describes the causes and clinical assessment of dehydration	1
2	Enumerate the different types of ORS along with their composition with actions of each ingredient	2
3	Choose the appropriate type of ORS for a given condition/patient	1
4	Calculate the quantity of ORS required to correct / prevent dehydration	1
5	Demonstrate preparation of ORS from sachet	4
6	Enumerate non-diarrheal uses of ORS	1
	Total	**10**

PH 3.1	Check list for Prescription writing	Marks
1	Particulars of Prescriber: Name, qualification, registration number, address, contact details	0.5
2	Date	0.5
3	Particulars of patient: Name, Address, age, gender, height, weight, LMP if applicable	1
4	Clinical details: Chief complaints, history, examination/lab diagnosis, Diagnosis	1
5	Generic name with capital	1
6	Drug form	1
7	Dose	1
8	Frequency	1
9	Duration	1
10	Label: instructions, warnings	1
11	Signature of prescriber	1
	TOTAL	**10 MARKS**

PH 3.3	Perform a critical evaluation of the drug promotional	Mar

	Literature	**ks**
1	Discuss the various types of sources of drug information	2
2	Demonstrate understanding of importance of critical evaluation of drug promotional literature	2
3	Critically evaluate the given drug promotional literature based on WHO criteria	
	▫ Appropriateness of illustration	2
	▫ Relevance of references cited	2
	▫ Content of scientific information	2
	TOTAL	**10**

PH 3.4	**To recognize and report an adverse drug reaction**	**Marks**
1	Describes the drug therapy of the given case and explains the rationality of prescription	1
2	Recognise an adverse drug reaction (ADR) in the given case	1
3	Perform causality assessment of the identified ADR using WHO & Naranjo's Scale	2
4	Fill the ADR reporting form (CDSCO from)	2
5	Explain the management of the ADR	1
6	Explain the methods to prevent the occurrence of the ADR	1
7	Report the ADR to the pharmacovigilance centre	1
8	Describe the Importance of reporting ADRs and pharmacovigilance	1
	Total	**10**

PH 4.2	**Graph interpretation from CAL**	**Marks**
1	Describes the Graph (Observation)	2
2	Interprets the graph (Pharmacological actions, receptors, any phenomenon etc)	4
3	Describes the inference drawn from graph	2
4	Implication of the graph	2
	Total	**10**

PH 3.8, 5.1, 5.2, 5.6	**Communicate with the patient on all aspects of drug use**	**Marks**
1	Describes and comment appropriately on the drug therapy	2
2	Demonstrates effective clinical communication skills	4
3	Describes the ethical/ legal considerations around the case appropriately	2
4	Demonstrates empathy effectively	2
	Total	**10**

Linker cases:

Case 1: Drugs used for criminal offences (Pharmacology

+ Forensic medicine) Case 2: Bronchial asthma

(Pharmacology+ Respiratory medicine)

Case 3: Antibiotic stewardship programme (Pharmacology+ Microbiology+ General medicine+ Paediatrics)

Case 4: Renin angiotensin system

(Pharmacology+ Physiology) Case 5: Oral

contraceptive pills (Pharmacology+ OBG)

Case 6: Anaemia (Pharmacology+ Physiology+ Pathology+ General

medicine+ Paediatrics) Case 7: National programmes of TB,

Malaria etc (Pharmacology+PSM)

BOOKS

Recommended Books: (Latest editions are recommended)

- Basic references

1. KD Tripathi, Essentials of Medical Pharmacology, 8 th Edition.
2. Padmaja Udaykumar, Medical Pharmacology, 6 th (CBME) Edition
3. HL Sharma and KK Sharma, Principles of Pharmacology, 3 rd Edition.
4. RS Satoskar, Nirmala N Rege, Raakhi K Tripathi, S D Bhandarkar. Pharmacology and Pharmacotherapeutics, 25th Edition.

Reference Books: (Latest editions -recommended)

- Advanced references (may also include journals/ web/ other electronic sources).

1. Goodman & Gilman's -The Pharmacological Basis of Therapeutics, ed. Laurence L Brunton, Bruce A. Chabner, Bjorn Knollman.13th Edition.
2. Lippincott Illustrated Reviews: Pharmacology ed. Karen Whalen
3. Bertram G. Katzung and Anthony J. Trevor, Basic and Clinical Pharmacology,14 th Edition
4. David E Golan, Ehrin J Armstrong, April W Armstrong, Principles of Pharmacology – The Pathophysiologic basis of Drug therapy,4th Edition.
5. Indian Journal of Pharmacology
6. Indian journal of physiology and pharmacology

SRI SIDDHARTHA ACADEMY OF HIGHER EDUCATION

(Deemed to be University, declared u/s 3 of the UGC Act, 1956)

PHARMACOLOGY

LOGBOOK

FOR PHASE-II MBBS

AS PER

COMPETENCY- BASED MEDICAL EDUCATION CURRICULUM

College Emblem

Stamp size photo

Name and address of the college

Pharmacology

Logbook

Name of the student:

Contact Number:

Email id:

Date of admission to MBBS course:

Date of beginning of the current phase:

Reg. No. (College ID):

Reg. No. (University ID):

INDEX

Sl NO.	CONTENT	PAGE NUMBER
1	**BONAFIDE CERTIFICATE**	
2	**PREFACE**	
3	**GENERAL INSTRUCTIONS**	
3	**ATTENDANCE EXTRACT**	
4	**INTERNAL ASSESSMENT (IA)**	
5.	**SECTION- 1** CBME CURRICULUM IN PHARMACOLOGY 1.A COMPETENCIES IN KNOWLEDGE DOMAIN 1.B COMPETENCIES IN SKILL DOMAIN	
5	**SECTION-2** AETCOM MODULES	
6	**SECTION-3** FORMATIVE ASSESSMENTS 3. A SCHEME OF FORMATIVE ASSESSMENT 3. B SUMMARY OF FORMATIVE ASSESSMENT	
7	**SECTION-4** CERTIFIABLE AND NON-CERTIFIABLE SKILLS	
8	**SECTION-5** **FEEDBACK** 5.1 ACADEMIC PERFORMANCE 5.2 AETCOM ACTIVITIES 5.3 SELF DIRECTED LEARNING	
9	**SECTION-6** **ADDITIONAL ACTIVITIES** 6.1 COCURRICULAR ACTIVITIES 6.2 EXTRACURRICULAR ACTIVITIES 6.3 ACHIEVEMENTS AND AWARDS	

BONAFIDE CERTIFICATE

(INDIVIDUAL COLLEGE NAME)

This is to certify that the candidate ……

Reg No……..... has satisfactorily completed all requirements mentioned in this Logbook for Phase II MBBS in PHARMACOLOGY including related AETCOM modules as per the Competency-Based Undergraduate Medical Education Curriculum, Graduate Medical Regulation 2019 during the period from ……... …….to ……...

He/ She is eligible to appear for the summative (University) assessment.

Faculty Mentor: **Head of Department:**

Name: **Name:**

Signature: **Signature:**

Place:

Date:

PREFACE

This logbook is designed to follow and record your academic journey through the Pharmacology course. The skills you acquire in order to be a clinician will be certified and documented in this book. The logbook has **six sections**.

Section1 contains the **CBME Pharmacology curriculum**. It includes the topics that would be covered during the course.

Section 2 provides your participation in **Attitude, Ethics and Communication (AETCOM)** modules related to Pharmacology.

Section 3 consists of the **scheme and summary of formative assessments** in Pharmacology, including the internal assessments.

Section 4 documents (4.1) the **procedures that require certification** and (4.2) **those do not require certification** but **only the maintenance of a logbook**. These skills that require certification include prescribing medications, ability to identify and prescribe P drugs and critically evaluate a drug promotional literature etc.

Section 5 is the documentation of the periodic **feedback** that you have received through the course.

Section 6 documents **additional-curricular activities** (Seminars, conference, workshops attended, scientific project presentations, outreach activities, etc.) and **extracurricular activities.**

We hope that this logbook serves as a guide and facilitates your progress through the year.

GENERAL INSTRUCTIONS

1. This logbook is a record of the academic/co-curricular activities in Pharmacology of the designated student.
2. The student is responsible for getting the entries in the logbook verified by the faculty in-charge regularly
3. Entries in the Logbook will reflect the activities undertaken in the department of Pharmacology during your course
4. The student has to get this logbook verified by the mentor and the Head of the department before submitting the application of the University examination.

SUMMARY OF ATTENDANCE

Block/Phase	*Percentage of classes attended*		*Eligible for University examination* *(Yes / No)*	*Signature of student*	*Signature of teacher*
	Theory	*Practical*			
First Block			NA		
Second Block			NA		
Third Block			NA		
Attendance at the end of MBBS Phase II					

SUMMARY OF INTERNAL ASSESSMENT (IA)

Sl. No.	*Internal Assessment*	*Date of Assessment*	*Total marks*		*Marks scored*		*Signature of student*	*Signature of teacher*
			Theory	*Practical*	*Theory*	*Practical*		
	First							
	Second							
	Third							
	Remedial							

Note: A candidate who has not secured requisite aggregate in the internal assessment may be subjected to remedial assessment by the institution. If he/she successfully completes the same, he/she is eligible to appear for University Examinations. The remedial assessment shall be completed before submitting the internal assessment marks online to the University.

SECTION: 1

Competencies in Pharmacology

Competency-Based Medical Education (CBME) curriculum in Pharmacology

Pharmacology provides the backbone of therapeutics. Undergraduate (MBBS) students completing the course in Pharmacology should be able to understand the general principles of drug action and handling of the drug by the body. They should be able to select and prescribe the right drug according to the patient's need for prevention, diagnosis and treatment of common diseases and be able to recognize the side effects and adverse effects of the commonly used drugs.

Competencies in Pharmacology:

There are **85** competencies in Pharmacology that have been listed in the CBME curriculum by the MCI. They can be categorized into knowledge and skills domains as given below.

There are **64** competencies in the knowledge domain

1.A Competencies in the knowledge domain

Sl no	Topic	Competency
1	General Pharmacology Toxicology Clinical Pharmacology and rational drug use	PH 1.1 to PH 1.12
2	Autonomic Nervous System	PH 1.13 to PH 1.14
3	Autocoids	PH1.16
4	Drugs in anaesthetic practise:	PH 1.15, PH1.17 to PH 1.18
5	Central Nervous System	PH 1.19 to PH 1.23
6	Diuretics	PH 1.24
7	Drugs affecting blood and blood formation	PH 1.25, PH 1.35
8	Cardiovascular System	PH 1.26 to PH 1.31
9	Respiratory System:	PH 1.32 to PH 1.33
10	Gastrointestinal System	PH 1.34

11	Endocrine System	PH 1.36 to PH 1.41
12	Chemotherapy	PH 1.42 to PH 1.49
13	Miscellaneous	PH 1.50 to PH 1.64

Competencies in Skills: There are **21** competencies in this domain. These include clinical pharmacy
(04), Clinical Pharmacology (08), Experimental Pharmacology (02) and Communication (07) as given below.

1.B Competencies in Skills

Topic	Competency	Description
Clinical Pharmacy	PH 2.1	Demonstrate an understanding of the use of various dosage forms (oral/local/parenteral; solid/liquid)
	PH 2.2	Prepare oral rehydration solution from ORS packet and explain its use
	PH 2.3	Demonstrate the appropriate setting up of an intravenous drip in a simulated environment.
	PH 2.4	Demonstrate the correct method of calculation of drug dosage in patients including those used in special situations
Clinical Pharmacology	PH 3.1-**C**	Write a rational, correct and legible generic prescription for a given condition and communicate the same to the patient
	PH 3.2-**C**	Perform and interpret a critical appraisal (audit) of a given prescription
	PH 3.3-**C**	Perform a critical evaluation of the drug promotional literature
	PH 3.4- **L**	To recognize and report an adverse drug reaction
	PH 3.5-**C**	To prepare and explain a list of P-drugs for a given case/condition
	PH 3.6-**L**	Demonstrate how to optimize interaction with a pharmaceutical representative to get authentic information on drugs
	PH 3.7-**L**	Prepare a list of essential medicines for a healthcare facility
	PH 3.8	Communicate effectively with a patient on the proper use of prescribed medication
Experimental Pharmacology	PH 4.1	Administer drugs through various routes in a simulated environment using mannequins
	PH4.2	Demonstrate the effects of drugs on blood pressure (vasopressor and vaso-depressors with appropriate blockers) using CAL
	PH5.1	Communicate with the patient with empathy and ethics on all aspects of drug use
	PH5.2	Communicate with the patient regarding optimal use of a) drug therapy, b) devices and c) storage of medicines

Communication	PH5.3	Motivate patients with chronic diseases to adhere to the prescribed management by the health care provider
	PH5.4	Explain to the patient the relationship between the cost of treatment and patient compliance
	H5.5	Demonstrate an understanding of the caution in prescribing drugs likely to produce dependence and recommend the line of management
	PH5.6	Demonstrate ability to educate public & patients about various aspects of drug use including drug dependence and OTC drugs
	PH5.7	Demonstrate an understanding of the legal and ethical aspects of prescribing drugs

C- Needs certification: L Needs Maintenance of a logbook

SECTION 2:

FORMAT OF AETCOM Modules

AETCOM Module Number:

Date:

Topic:

Competencies:

1.

2

3.

Reflections (100 words):

1. What did you learn from this AETCOM session based on the objectives?
2. What change did this session make in your learning?
3. How will you apply this knowledge in future?

Remarks by Facilitator

Signature by facilitator

Module #	**Name of AETCOM Activity**	**Date completed**	**Attempt at activity** First or Only (F); Repeat (R); Remedial (Re)	**Rating** Below Expectations (B); Meets Expectations (M); Exceeds Expectations (E)	**Decision of faculty** Completed (C); Repeat (R); Remedial (Re)	**Initial of faculty and date**	**Feedback Receive**d Initial of learner

SECTION: 3

Formative Assessment

3.A Scheme of Formative assessments

Formative assessment Theory	**Marks**	**Formative assessment Practical**	**Marks**
Internal assessments (3)	30	Internal assessments (3)	35
Tests (3)	10	Practical record	05
Total	40	Total	40

3.B summary of formative assessment

Sl. No.	***Type of Assessment***	***Date of Assessment***	***Total marks***	***Marks scored***	***Signature of student***	***Signature of teacher***

Rubric for assessing the professionalism

Phase	*Areas assessed*					*Signature of student*	*Signature of teacher*
	Regular for classes (5marks)	*Submission of records (5marks)*	*Behaviour in class and discipline (5marks)*	*Dress code and presentation (5marks)*	*Total (20 marks)*		
At the end of 1st IA							
At the end of 2nd IA							
At the end of 3rd IA							
Average score at the end of the year							

Note: Parameters will be assessed at the Departmental level to consider eligibility (Minimum of 50% at the end of the year) of the candidate to appear for the university examination. Not considered for internal assessment marks.

Section 4

Certifiable skills

&

Non-certifiable skills requiring log book maintenance

Attempt at activity	First or Only (F) Repeat (R) Remedial (Re)
Rating	Below (B) expectations Meets (M) expectations Exceeds (E) expectations

4.1 Certifiable skills

Certifiable skill- 1

Skill: PH 3.1 Write a rational, correct and legible **generic prescription** for a given condition and communicate the same to the patient

Domain: Skills
Level of competency: Perform
Core: Yes

The student has to perform this activity **five** times to be certified

Exercise name	Date	Attempt			Faculty decision		Rating		
		First F	Repeat R	Remedial Re	Completed	Not Completed	Below expectations B	Meets expectations M	Exceeds expectations E

Overall remarks:

HOD signature:

Certifiable skill- 2

Skill: PH 3.2 Perform and interpret a **critical appraisal (audit)** of a given prescription

Domain: Skills
Level of competency: Perform
Core: Yes

The student has to perform this activity **three** times to be certified

Exercise name	**Date**	**Attempt**			**Faculty decision**		**Rating**		
		First F	**Repeat R**	**Remedial Re**	**Completed**	**Not Completed**	**Below expectations B**	**Meets expectations M**	**Exceeds expectations E**

Overall remarks:

HOD signature:

Certifiable skill- 3

Skill: PH 3.3 Perform a **critical evaluation of the drug promotional literature**

Domain: Skills
Level of competency: Perform
Core: Yes

The student has to perform this activity **three** times to be certified

Exercise name	Date	Attempt			Faculty decision		Rating		
		First F	Repeat R	Remedial Re	Completed	Not Completed	Below expectations B	Meets expectations M	Exceeds expectations E

Overall remarks:

HOD signature:

Certifiable skill- 4

Skill: PH 3.5 To prepare and explain a list of **P-drug**s for a given case/condition

Domain: Skills
Level of competency: Perform
Core: Yes

The student has to perform this activity **three** times to be certified

Exercise name	**Date**	**Attempt**			**Faculty decision**		**Rating**		
		First F	**Repeat R**	**Remedial Re**	**Completed**	**Not Completed**	**Below expectations B**	**Meets expectations M**	**Exceeds expectations E**

Overall remarks:

HOD signature:

4.2 Non-certifiable Skills requiring maintenance of a logbook

Non-certifiable Skill-1

Skill: PH: 3.4 To recognize and report an **adverse drug reaction**

Domain: Skills
Level of competency: Perform
Core: Yes

The student has to recognize and report 3 cases of ADR based on the SLOs

Exercise name	Date	Attempt			Faculty decision		Rating		
		First F	Repeat R	Remedial Re	Completed	Not Completed	Below expectations B	Meets expectations M	Exceeds expectations E

Overall Remarks:

Signature of HOD

Non-certifiable Skill-2

Skill: PH: 3.6 Demonstrate how to optimize **interaction with a pharmaceutical representative** to get authentic information on drugs

Exercise name	Date	Attempt			Faculty decision		Rating		
		First F	Repeat R	Remedial Re	Completed	Not Completed	Below expectations B	Meets expectations M	Exceeds expectations E

Domain: Skills
Level of competency: Perform
Core: Yes

The student has to perform this exercise on three products based on the SLOs

Overall Remarks:

Signature of HOD

Non-certifiable Skill-3

Skill: PH: 3.7 Prepare a list **of essential medicine** for a health care facility.

Domain: Skills
Level of competency: Perform
Core: Yes

The student has to perform the exercise once as per the SLOs

Exercise name	**Date**	**Attempt**			**Faculty decision**		**Rating**		
		First F	**Repeat R**	**Remedial Re**	**Completed**	**Not Completed**	**Below expectations B**	**Meets expectations M**	**Exceeds expectations E**

Overall Remarks:

Signature of HOD

Section 5: Feedback

5.1 Academic performance and feedback provided
5.2 Feedback on AETCOM activity
5.3 Feedback on self-directed learning (SDL)

Section 5: Feedback

5.1 Academic performance and feedback provided

Assessment	Marks	Feedback		Student's signature	Faculty signature
I test		**Should retain**	**Could improve**		
I Internal Assessment Theory					
I Internal assessment Practicals					
II Test					
II Internal Assessment Theory					
II Internal Assessment Practicals					
III Test					
III Internal Assessment Theory					
III Internal Assessment Practicals					

5.2 Feedback on AETCOM activity

Module #	**Name of AETCOM Activity**	**Date completed**	**Attempt at activity** First (F); Repeat (R); Remedial (Re)	**Rating** Below Expectations(B); Meets Expectations(M); Exceeds Expectations(E)	**Decision of faculty** Completed (C); Repeat(R); Remedial(Re)	**Initial of faculty and date**	**Feedback Receive**d Initial of learner

5.3 Feedback on self-directed learning (SDL)- 12 hours

Sl no.	**Date**	Topic of SDL	**Feedback**	**Signature of faculty/mentor**
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				

Section 6: Additional Curricular and extracurricular Activities

6.1 Additional curricular activities

(Seminar, conferences, outreach activities, Workshops etc.)

Sl no	Date	Particulars	Signature of the faculty

6.2 Extracurricular activities

Sl no	Date	Particulars	Signature of the faculty

6.3 Achievements/awards

Sl no	Date	Particulars	Signature of the faculty

Final Summary

Sl no.	Description	Dates		Attendance in percentage	Status *	Signature of the teacher
		From	To			
1	Certifiable skills					
2	Non certifiable skills					
3	AETCOM Modules					
4	Internal assessment Marks					

* Status: Complete/Incomplete: For skills and AETCOM modules

Eligible/Ineligible: For Internal marks

FORENSIC MEDICINE &TOXICOLOGY

GOAL:

The aim of teaching the undergraduate student in Forensic Medicine is to impart such knowledge and skills that may enable him to manage common medico-legal problems in day to day practice. He/she shall acquire competence for post mortem diagnosis based on history, physical examination and relevant observations during autopsy.

COMPETENCIES:

Period of Training – Phase II MBBS & Phase III part 1 MBBS

The learner must demonstrate:

- Understanding of medico-legal responsibilities of physicians in primary and secondary care settings,
- Understanding of the rational approach to the investigation of crime, based on scientific and legal principles,
- Ability to manage medical and legal issues in cases of poisoning / overdose,
- Understanding the medico-legal framework of medical practice and medical negligence,
- Understanding of codes of conduct and medical ethics.

Period of Training – Internship

A. An intern must perform or assist in:

- Identifying and documenting medico-legal problems in a hospital and general practice,
- Identifying the medico-legal responsibilities of a medical practitioner in various hospital situations,
- Diagnosing and managing with competence basic poisoning conditions in the community,
- Diagnosing and managing with competence and documentation in cases of Rape /Sexual assault,
- Preparing medico-legal reports in various medico legal situations.

B. An intern must have observed or preferably assisted at the following operations/ procedures:

- Various medico legal / post-mortem procedures and formalities during their performance by police.

Certifiable Procedural skills desirable of Indian Medical Graduate in Forensic Medicine & Toxicology

- Documentation and certification of trauma (I)
- Diagnosis and certification of death (D)

- Legal documentation related to emergency cases (D)
- Certification of medico-legal cases e.g. Age estimation, Sexual Violence etc. (D)
- Establishing communication in medico-legal cases with police, public health authorities, other concerned departments, etc (D)

I- Independently performed on patients,
O- Observed in patients or on simulations,
D- Demonstration on patients or simulations and performance under supervision in patients

Competencies in Phase II MBBS and Phase III part 1 MBBS			
No.	**Topic**	**Competencies**	**Procedures requiring certification**
1	General information	11	Nil
2	Forensic Pathology	35	Nil
3	Clinical Forensic Medicine	33	Nil
4	Medical jurisprudence (Medical Law & Ethics)	30	Nil
5	Forensic Psychiatry	06	Nil
6	Forensic laboratory investigation in medicolegal practice	03	Nil
7	Emerging technologies in Forensic Medicine	01	Nil
8	General Toxicology	10	Nil
9	Chemical Toxicology	06	Nil
10	Pharmaceutical Toxicology	01	Nil
11	Biotoxicology	01	Nil
12	Sociomedical Toxicology	01	Nil
13	Environmental Toxicology	02	Nil
14	Skills in Forensic Medicine & Toxicology	22	Nil
	TOTAL	**162**	**Nil**

Competencies in Internship			
Sl no	**Topic**	**Competencies**	**Procedures requiring certification**
1	Documentation and certification of trauma (I)	**1**	**1**
2	Diagnosis and certification of death (D)	**1**	**1**
3	Legal documentation related to emergency cases (D)	**1**	**1**
4	Certification of medico-legal cases e.g. Age estimation, Sexual Violence etc. (D)	**3**	**3**
5	Establishing communication in medico-legal cases with police, public health authorities, other concerned departments, etc (D)	**3**	**3**
	Total	**9**	**9**

Minimum Teaching Hours in MBBS Phase II & Phase III part 1

Forensic Medicine & Toxicology	**Lectures (hours)**	**Small group learning (Tutorials / Seminars) /Integrated learning (hours)**	**Self - Directed Learning (hours)**	**Total (hours)**
Phase II	15	30	05	50
Phase III part 1	25	45	05	75
Total	**40**	**75**	**10**	**125**
AETCOM	**Lectures (hours)**	**Small group learning (Tutorials / Seminars) /Integrated learning (hours)**	**Self - Directed Learning (hours)**	**Total (hours)**
Phase II	00	29	08	37
Phase III part 1	00	19	06	25
Total	**00**	**48**	**14**	**62**

Minimum Teaching Hours in Internship

Subject	**Period of posting**
Forensic Medicine & Toxicology	**7 days**

Model Time table for Phase II MBBS

BLOCK 1 : 15 WEEKS(OCT-JAN)

8-11		11.30-12.30	12.30-1.30	2-4
Monday	Postings	PH-L	OBG-L	PH-A,CM-B
Tuesday	Postings	PH-L	FM-L	FM-A,
Wednesday	Postings	MIC-L	PA-L	PA-A, MIC-B
Thursday	Postings	CM-L	PH-SGD	PA-B, MIC-A
Friday	Postings	MIC-L	PA-L	PH-B,CM-A
Saturday	Clinical training and Skills	G.MED-L	SUR-L	FM-B,

2ND BLOCK 15 WEEKS(FEB-MAY)

8-11		11.30-12.30	12.30-1.30	2-4
Monday	Postings	MIC-L	PA-SGD	PH-A,PA-B-SGD
Tuesday	Postings	PH-L	MIC-SGD	PH-SGD
Wednesday	Postings	PA-L	MIC-L	PA-A,MIC-B
Thursday	Postings	PH-L		PH-B,PA-A SGD
Friday	Postings	PA-L	MIC-SGD	PA-B,MIC-A
Saturday	Clinical training and Skills	AETCOM	AETCOM	

3RD BLOCK 10 WEEKS (JUN-AUG)

8-11		11.30-12.30	12.30-1.30	2-4	4-5
Monday	Postings	PA-L	MIC-L	PH-SGD	PA-SDL
Tuesday	Postings	PA-L	MIC-L	PA-A,MIC-B	PH-SDL
Wednesday	Postings	PH-L		PH-A,PA-B SGD	MIC-SDL
Thursday	Postings	PH-L		PH-B,PA-A SGD	CM-SDL
Friday	Postings	CM-L		PA-B,MIC-A	AETCOM-SDL
Saturday	Clinical training and Skills	SUR-L	OBG	G.M-L	

	TERM-1-OCT-JAN(15 WK)			TERM-2-FEB-MAY(15 WK)			TERM-3- JUN-AUG(10 WK)			TOTAL		
	THEORY	**PRACT**	**SGT/ TUTORIAL**	**THEORY**	**PRACT**	**SGT/ TUTORIAL**	**THEORY**	**PRACT**	**SGT/ TUTORIAL**	**THEORY**	**PRACT**	**SGT/ TUTORIAL**
PATH	30	30	0	30	30	45	20	20	20	80	80	65
PHARM	30	30	15	30	30	30	20	20	20	80	80	65
MICRO	30	30	0	30	30	30	20	20	0	80	80	30
CM	15	0	30	0	0	0	10	0	0	25	0	30
FM	15	0	30	0	0	0	0	0	0	15	0	30
G.MED	15	0	0	0	0	0	10	0	0	25	0	0
G.SUR	15	0	0	0	0	0	10	0	0	25	0	0
OBG	15	0	0	0	0	0	10	0	0	25	0	0
AETCOM				**AETCOM** 30						AETCOM		30

List of Competencies and SLOs to be covered in Phase II MBBS

General Information

- **Lecture – 1 hr (Orientation class)**
- **Assessment:** No assessment

FM1.1 - Demonstrate knowledge of basics of Forensic Medicine like definitions of Forensic medicine, Clinical Forensic Medicine, Forensic Pathology, State Medicine, Legal Medicine and Medical Jurisprudence

1.1.1: Define Forensic Medicine and Medical Jurisprudence.
1.1.2: Describe different branches of Forensic medicine like Clinical Forensic Medicine, Forensic Pathology, Forensic Odontology and Forensic Psychiatry.
1.1.3: Discuss on Forensic Medicine practice in different parts of the world.

FM1.2 -Describe history of Forensic Medicine

1.2.1: Describe the etymology of Forensic Medicine.
1.2.2: Describe how knowledge of medicine was applied to aid in the administration of justice from ancient time and its evolution to the recent times.
1.2.3: Enumerate the important people and events related to Forensic Medicine.

Forensic Pathology

- **Lecture – 1 hr (Interactive)** **Assessment:** Written, Viva voce

FM2.1 - Define, describe and discuss death and its types including somatic/clinical/cellular, molecular and brain-death, Cortical Death and Brainstem Death

2.1.1: Define death.
2.1.2: Describe the types of death (somatic, molecular, brain-death, cortical death and brainstem death).
2.1.3: Describe the procedure of declaring death with specific reference to brain stem death.

FM2.2 - Describe and discuss natural and unnatural deaths

2.2.1: Describe the manner of death and cause of death

FM2.3 - Describe and discuss issues related to sudden natural deaths

2.3.1: Define sudden natural death.
2.3.2: Enumerate the causes for sudden natural death.
2.3.3: Describe the medicolegal importance of sudden natural death.
2.3.4: Discuss the autopsy procedure in case of sudden natural death.

- **SDL – 1 hr (Followed by reflective writing)** **Assessment:** Written, Viva voce

FM2.4 - Describe salient features of the Organ Transplantation and The Human Organ Transplant (Amendment) Act 2011 and discuss ethical issues regarding organ donation

2.4.1: Discuss the ethical and legal issues related to organ donation and transplantation.
2.4.2: Describe the salient features of The Human Organ Transplant Act, 1994 with amendments till date.

- **Lecture – 1 hr (Interactive)** **Assessment:** Written, Viva voce

FM2.5 - Discuss moment of death, modes of death - coma, asphyxia and syncope

2.5.1: Describe the modes of death (coma, syncope, asphyxia).

FM2.6 - Discuss presumption of death and survivorship

2.6.1: Discuss the importance of presumption of death (Sec. 107 & 108 IEA).

FM2.7 - Describe and discuss suspended animation

2.7.1: Define suspended animation.
2.7.2: Enumerate the causes for suspended animation.
2.7.3: Discuss the medicolegal importance of suspended animation.

- **SGD – 2 hrs** **Assessment:** Written, Viva voce

FM2.10 - Discuss estimation of time since death

2.10.1: Enumerate the various factors which help in determination of time since death.
2.10.2: Discuss on Forensic entomology.

FM2.8 - Describe and discuss postmortem changes including signs of death, cooling of body, post-mortem lividity, rigor mortis, cadaveric spasm, cold stiffening and heat stiffening

2.8.1: Classify post-mortem changes (immediate, early, late).
2.8.2: Describe postmortem cooling and its medicolegal importance.
2.8.3: Define postmortem lividity.
2.8.4: Describe postmortem lividity and its medico legal importance.
2.8.5: Define rigor mortis.
2.8.6: Describe rigor mortis and its medico legal importance.
2.8.7: Enumerate the conditions simulating rigor mortis.
2.8.8: Define cadaveric spasm.
2.8.9: Differentiate between cadaveric spasm and rigor mortis.
2.8.10: Discuss on cold stiffening, heat stiffening, chemical stiffening and gas stiffening.

- **SGD – 1 hr** **Assessment:** Written, Viva voce

FM2.9 - Describe putrefaction, mummification, adipocere and maceration

2.9.1: Describe the various changes seen in the body due to putrefaction.
2.9.2: Define adipocere.
2.9.3: Describe adipocere and its medico legal importance.
2.9.4: Define mummification.
2.9.5: Describe mummification and its medico legal importance.

- **Lecture – 1 hr** **Assessment:** Written, Viva voce

FM2.11 - Describe and discuss autopsy procedures including post-mortem examination, different types of autopsies, aims and objectives of post-mortem examination

2.11.1: Describe the types of autopsy.
2.11.2: Enumerate the objectives of medicolegal autopsy.
2.11.3: Enumerate the objectives of foetal autopsy.
2.11.4: Enumerate the objectives of skeletal remains examination.

FM2.14 - Describe and discuss examination of clothing, preservation of viscera on post-mortem examination for chemical analysis and other medico-legal purposes, post-mortem artefacts

2.14.1: Describe the method of preservation and dispatch of viscera and body fluids for chemical analysis.
2.14.2: Describe the method of preservation and dispatch of viscera and body fluids for histopathology and microbiological investigations.
2.14.3: Describe the method of preservation and dispatch of clothes in a medicolegal case.

2.14.4: Discuss on postmortem artefacts and their medicolegal importance

***FM8.5 - Describe Medico-legal autopsy in cases of poisoning including preservation and dispatch of viscera for chemical analysis**

8.5.1: Explain the procedure of medico-legal autopsy in a suspected case of poisoning.
8.5.2: Describe the method of preserving the various viscera in a case of poisoning.
8.5.3: Describe the procedure for dispatch of viscera for chemical analysis in a case of poisoning.

***FM8.9 - Describe the procedure of intimation of suspicious cases or actual cases of foul play to the police, maintenance of records, preservation and dispatch of relevant samples for laboratory analysis.**

8.9.1: Describe the procedure of intimation of suspicious cases or actual cases of foul play to the police

- S. 39 CrPC, S. 40 CrPC, S. 175 CrPC.
- S. 166 (B) IPC, S. 176 IPC, S. 177 IPC, S. 201 IPC, S. 202 IPC.

8.9.2: Describe the procedure of record maintenance in a case of poisoning.
8.9.3: Describe the procedure of collection and dispatch of viscera for chemical analysis in a case of poisoning.

- **Lecture – 1 hr** **Assessment:** Written, Viva voce

FM2.12 - Describe the legal requirements to conduct post-mortem examination and procedures to conduct medico-legal post-mortem examination

2.12.1: Describe the rules for conducting medicolegal autopsy.
2.12.2: Enumerate the skin incisions in medicolegal autopsy.
2.12.3: Enumerate the methods of evisceration in medicolegal autopsy.
2.12.4: Describe the external and internal examination in medicolegal autopsy.
2.12.5: Explain the special techniques used in medicolegal autopsy (demonstration of pneumothorax, air embolism, etc).

FM2.13 - Describe and discuss obscure autopsy

2.13.1: Discuss on obscure autopsy with examples.
2.13.2: Discuss on negative autopsy with examples.

FM2.17 - Describe and discuss exhumation

2.17.1: Define exhumation.
2.17.2: Enumerate the objectives of exhumation.
2.17.3: Describe the rules and procedure of exhumation.

- **SGD – 4 hrs (Practical)** **Assessment:** Written, Viva voce, OSPE, Practical book, Log book

FM2.16 - Describe and discuss examination of mutilated bodies or fragments, charred bones and bundle of bones

2.16.1: Describe the procedure of examination of mutilated bodies / fragments.
2.16.2: Describe the procedure of examination of skeletal remains (including charred bones).

***FM14.9 - Demonstrate examination of & present an opinion after examination of skeletal remains in a simulated/ supervised environment**

14.9.1: Enumerate the objectives of skeletal remains examination.
14.9.2: Demonstrate the procedure of examination of skeletal remains in a simulated/ supervised environment.
14.9.3: Draft a medicolegal report and opinion after examination of skeletal remains.

- **SGD – 1 hr** **Assessment:** Written, Viva voce

FM2.18 - Crime Scene Investigation: -

Describe and discuss the objectives of crime scene visit, the duties & responsibilities of doctors on crime scene and the reconstruction of sequence of events after crime scene investigation

2.18.1: Enumerate the objectives of crime scene visit by an autopsy surgeon.
2.18.2: Describe the procedure of examination of crime scene and preservation of evidentiary material.
2.18.3: Explain the reconstruction of a case after the crime scene visit.

- **SGD – 1 hr** **Assessment:** Viva voce

FM2.31 - Demonstrate ability to work in a team for conduction of medico-legal autopsies in cases of death following alleged medical negligence, dowry death, death in custody or following violation of human rights as per National Human Rights Commission Guidelines on exhumation

2.31.1: Demonstrate the benefit of team work in a medicolegal autopsy of alleged medical negligence.
2.31.2: Demonstrate the benefit of team work in a medicolegal autopsy of alleged dowry death.
2.31.3: Demonstrate the benefit of team work in a medicolegal autopsy of alleged custodial death.
2.31.4: Demonstrate the benefit of team work in a medicolegal autopsy of death due to violation of human rights.
2.31.5: Demonstrate the benefit of team work in exhumation.

- **SDL – 1 hr** **Assessment:** Written, Viva voce

FM2.19 - Investigation of anaesthetic, operative deaths: Describe and discuss special protocols for conduction of autopsy and for collection, preservation and dispatch of related material evidences
2.19.1: Explain the significance of autopsy in operative deaths.
2.19.2: Describe the procedure of autopsy in operative deaths.
2.19.3: Describe the procedure of preservation and dispatch of evidentiary material for investigation in deaths associated with anaesthesia and surgery

- **SDL – 1 hr** **Assessment:** Written, Viva voce

FM2.15 - Describe special protocols for conduction of medico-legal autopsies in cases of death in custody or following violation of human rights as per National Human Rights Commission Guidelines

2.15.1: Describe the National Human Rights Commission guidelines for conduction of medicolegal autopsy in cases of death in custody or violation of human rights.

- **SGD – 1 hr** **Assessment:** OSPE, Written, Viva voce

FM2.32 - Demonstrate ability to exchange information by verbal or nonverbal communication to the peers, family members, law enforcing agency and judiciary

2.32.1: Demonstrate the skills of communication by a doctor with the peers.
2.32.2: Demonstrate the skills of communication by a doctor with the patient's family members in MLC works at casualty.
2.32.3: Demonstrate the skills of communication by a doctor with the deceased family members during medicolegal autopsy.
2.32.4: Demonstrate the skills of communication by a doctor with the law enforcing agency/ judiciary in medicolegal practices.

FM2.33 & FM2.34 - Demonstrate ability to use local resources whenever required like in mass disaster situations

2.33.1: Define Mass disaster
2.33.2: Enumerate the types of Mass disaster.
2.33.3: List the objectives of forensic investigation in mass disasters.
2.33.4: Describe the procedure of examination at disaster site and autopsy.
2.33.5: Describe the evidentiary materials to be preserved in mass disasters.
2.33.6: Demonstrate the importance of team work in Mass Disasters.

FM2.35 - Demonstrate professionalism while conducting autopsy in medicolegal situations, interpretation of findings and making inference/opinion, collection, preservation and dispatch of biological or trace evidences

2.35.1: Demonstrate the professionalism of a doctor during conduction of medicolegal autopsies (such as interaction with investigating officer/relatives of deceased, receiving inquest form, maintaining confidentiality, etc).
2.35.2: Demonstrate the professionalism in preservation and dispatching evidentiary materials to FSL (such as proper method of preservation and dispatch of materials with necessary forms and maintaining confidentiality).
2.35.3: Demonstrate the professionalism in preservation and dispatching evidentiary materials to histopathology and microbiology investigations (such as proper method of preservation and dispatch of materials with necessary forms and maintaining confidentiality).
2.35.4: Demonstrate the professionalism while giving opinion in medicolegal cases (such as honesty with unbiased inferences).

Clinical Forensic Medicine

- **SGD – 2 hrs** **Assessment:** Written, Viva voce

FM3.1 - IDENTIFICATION

Define and describe Corpus Delicti, establishment of identity of living persons including race, Sex, religion, complexion, Stature, age determination using morphology, teeth-eruption, decay, bite marks, bones-ossification centres, medicolegal aspects of age

3.1.1: Define Corpus delicti
3.1.2: Describe the importance of corpus delicti in establishing the crime.
3.1.3: List the various means of identification in living and dead persons.
3.1.4: Explain the role of hand writing analysis, gait, speech, photography and facial description as a tool of identification.
3.1.5: Describe the methods of determination of race.
3.1.6: Describe the methods of sex determination in a living person.
3.1.7: Describe the methods of sex determination in a dead person.
3.1.8: Define intersex.
3.1.9: Describe the types of intersex and its medicolegal importance.
3.1.10: Describe the methods of age determination in a living person.
3.1.11: Describe the methods of age determination in a dead person.
3.1.12: Explain the method of age estimation using Gustafson's technique.
3.1.13: Discuss the forensic aspects related to teeth.
3.1.14: Describe the methods of determination of stature.

- **SGD – 1 hr** **Assessment:** Written, Viva voce

FM3.2 - IDENTIFICATION

Describe and discuss identification of criminals, unknown persons, dead bodies from the remains-hairs, fibres, teeth, anthropometry, dactylography, foot prints, scars, tattoos, poroscopy & superimposition

3.2.1: Explain the role of hair in the identification of an individual.
3.2.2: Describe the medicolegal importance of hair.
3.2.3: Describe the dyes used, methods of erasure and medicolegal importance of a tattoo.
3.2.4: Describe the medicolegal importance of the scar.
3.2.5: Define anthropometry.
3.2.6: Describe various data included in anthropometry and its importance in identification.
3.2.7: Define dactylography.
3.2.8: Describe the types, method of collection and medicolegal importance of dactylography.
3.2.9: Discuss the role of poroscopy, cheiloscopy and rugoscopy in identification.
3.2.10: Describe the role of foot prints in establishing the identity.
3.2.11: Describe the role of facial reconstruction in establishing the identity.
3.2.12: Discuss the role of superimposition in establishing the identity.

- **SGD – 2 hrs (Practical)** **Assessment:** OSPE, Practical book, Log book

***FM14.6 - Demonstrate and interpret medico-legal aspects from examination of hair (human & animal) fibre, semen & other biological fluids**

14.6.1: Identify hair (human/ animal), other fibres by physical and microscopic examination and describe its medicolegal importance.

14.6.2: Identify the **semen** by physical and microscopic examination and describe its medicolegal importance**.**

***FM14.7 - Demonstrate & identify that a particular stain is blood and identify the species of its origin**

14.7.1: Identify the blood by physical and microscopic examination.

14.7.2: Explain the various medicolegal conclusions by examining the blood stains.

14.7.3: Explain the method of identifying the species of origin of the blood stain.

***FM14.8 - Demonstrate the correct technique to perform and identify ABO & RH blood group of a person**

14.8.1: Perform the technique of identifying the ABO blood group of a person.

14.8.2: Perform the technique of identifying the Rh blood group of a person.

Toxicology: General Toxicology

- **SDL – 1 hr** **Assessment:** Written, Viva Voce

FM8.1 - Describe the history of Toxicology

8.1.1: Describe the history of Toxicology.

- **Lecture – 1 hr** **Assessment:** Written, Viva Voce

FM8.2 - Define the terms Toxicology, Forensic Toxicology, Clinical Toxicology and poison

8.2.1: Define Toxicology, Forensic Toxicology, Clinical Toxicology and Poison

FM8.3 - Describe the various types of poisons, Toxicokinetics, and Toxicodynamics and diagnosis of poisoning in living and dead

8.3.1: Classify poisons in respect to mode of action and mode of usage.

8.3.2: Describe pharmacokinetics & pharmacodynamics of the poisons.

8.3.3: Explain the diagnosis of poisoning in the living individual.

8.3.4: Explain the diagnosis of poisoning in the dead individual

FM8.4 - Describe the Laws in relations to poisons including NDPS Act, Medico-legal aspects of poisons

8.4.1: Describe the legal sections related to poisoning in India.

- ✓ S. 85 IPC, S. 86 IPC, S. 274 IPC, S. 284 IPC, S. 299 IPC, S. 300 IPC, S. 304 (A) IPC, S. 375 IPC
- ✓ S. 324 IPC, S. 325 IPC, S. 326 IPC, S. 326A IPC, S. 326B IPC, S. 328 IPC
- ✓ S. 357C CrPC
- ✓ S. 185 IMV Act, S. 203 IMV Act, S. 204 IMV Act

8.4.2: Describe Narcotic Drugs and Psychotropic Substances Act, 1985.

8.4.3: Describe Karnataka Poisons (Possession and Sale) Rules, 2015.

8.4.4: Describe the legal responsibilities of a doctor in a case of poisoning

FM8.6 - Describe the general symptoms, principles of diagnosis and management of common poisons encountered in India

8.6.1: Describe the general symptoms and signs of the common poisons encountered in India.
8.6.2: Describe the general principles of diagnosis of the common poisons encountered in India.
8.6.3: Enumerate the line of management of the common poisons encountered in India.

- **Lecture – 1 hr** **Assessment:** Written, Viva Voce

FM8.8 - Describe basic methodologies in treatment of poisoning: decontamination, supportive therapy, antidote therapy, procedures of enhanced elimination

8.8.1: List the general treatment procedure in case of poisoning.
8.8.2: Explain the procedure of Gastric lavage.
8.8.3: Enumerate the indications and contraindications for Gastric lavage.
8.8.4: Define antidote.
8.8.5: Describe the various types of antidotes.
8.8.6: Explain Chelation therapy.
8.8.7: Describe the methods for hastening elimination of absorbed poison.

- **Lecture – 1 hr** **Assessment:** Written, Viva Voce

FM8.10 - Describe the general principles of Analytical Toxicology and give a brief description of analytical methods available for toxicological analysis: Chromatography – Thin Layer Chromatography, Gas Chromatography, Liquid Chromatography and Atomic Absorption Spectroscopy

8.10.1: List the various analytical methods used in Toxicology.
8.10.2: Describe the general principle of Thin Layer Chromatography.
8.10.3: Describe the basic principle and uses of Gas Chromatography.
8.10.4: Describe the basic principle and uses of Liquid Chromatography.
8.10.5: Describe the basic principle and uses of Atomic Absorption Spectroscopy.
8.10.6: Describe the basic principle and uses of Mass Spectrometry.
8.10.7: Describe the basic principle and uses of Radioimmuno Assay

- **SGD – 2 hrs (Practical/ Skills lab)** **Assessment:** OSPE, Written, Viva Voce

***FM14.2 - Demonstrate the correct technique of clinical examination in a suspected case of poisoning & prepare medico-legal report in a simulated/ supervised environment**

14.2.1: Take an informed consent from the Patient / Guardian after explaining the importance of MLC registration in Poisoning cases.
14.2.2: Perform the clinical examination (history taking, general physical examination, systemic examination, laboratory investigations, differential diagnosis) in poisoning cases in a simulated/ supervised environment.
14.2.3: Prepare the medicolegal certificate after documenting the clinical findings.
14.2.4: Prepare the police intimation.

***FM14.3 - Assist and demonstrate the proper technique in collecting, preserving and dispatch of the exhibits in a suspected case of poisoning, along with clinical examination**

14.3.1: Demonstrate the process of collecting, preserving and dispatch of the materials/ exhibits in a suspected case of **ingested poisoning**.

14.3.2: Demonstrate the process of collecting, preserving and dispatch of the materials/ exhibits in a suspected case of **inhalation poisoning** along with clinical examination.

14.3.3: Demonstrate the process of collecting, preserving and dispatch of the materials/ exhibits in a suspected case of **injected poisoning** along with clinical examination.

FM8.7 - Describe simple Bedside clinic tests to detect poison/drug in a patient's body fluids

8.7.1: Describe the bedside clinic tests for Hydrochloric acid poisoning (Ammonia test, Litmus paper test, Silver nitrate test).

8.7.2: Describe the bedside clinic tests for Nitric acid poisoning (Ferrous Sulphate test).

8.7.3: Describe the bedside clinic tests for Sulphuric acid poisoning (Litmus paper test).

8.7.4: Describe the bedside clinic tests for Oxalic acid poisoning (Barium nitrate test).

8.7.5: Describe the bedside clinic tests for Caustic alkalis poisoning (Litmus paper test).

8.7.6: Describe the bedside clinic tests for Phenol (Folin Ciocaltaeu reagent test).

8.7.7: Describe the bedside clinic tests for Salicylates (Trinder's reagent test).

Toxicology : Chemical Toxicology

- **SGD – 2 hrs** **Assessment:** Written, Viva voce

FM9.1 - Describe General Principles and basic methodologies in treatment of poisoning: decontamination, supportive therapy, antidote therapy, procedures of enhanced elimination with regard to: Caustics Inorganic – sulphuric, nitric, and hydrochloric acids; Organic-Carbolic Acid (phenol), Oxalic and acetylsalicylic acids

9.1.1: Describe the characteristics, mechanism of action, fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegal aspects of Sulphuric acid poisoning.

9.1.2: Describe the characteristics, mechanism of action, fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegal aspects of Nitric acid poisoning.

9.1.3: Describe the characteristics, mechanism of action, fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegal aspects of Hydrochloric acid poisoning.

9.1.4: Discuss on Vitriolage.

9.1.5: Describe the characteristics, pharmacokinetics, mechanism of action, fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegal aspects of Carbolic acid poisoning.

9.1.6: Discuss on Carboluria.

9.1.7: Describe the characteristics, pharmacokinetics, mechanism of action, fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegal aspects of Oxalic acid poisoning.

9.1.8: Discuss on Oxaluria.

9.1.9: Describe the characteristics, pharmacokinetics, mechanism of action, fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegal aspects of Acetylsalicylic acid poisoning.

- **Lecture – 1 hr** **Assessment:** Written, Viva voce

FM9.2 - Describe General Principles and basic methodologies in treatment of poisoning: decontamination, supportive therapy, antidote therapy, procedures of enhanced elimination with regard to Phosphorus, Iodine, Barium

9.2.1: Describe the characteristics, mechanism of action, fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegal aspects of Phosphorus poisoning.
9.2.2: Discuss on Phossy jaw.
9.2.3: Describe the characteristics, mechanism of action, fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegal aspects of Iodine poisoning.
9.2.4: Describe the characteristics, mechanism of action, fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegal aspects of Barium poisoning.

- **Lecture – 2 hrs** **Assessment:** Written, Viva voce

FM9.3 - Describe General Principles and basic methodologies in treatment of poisoning: decontamination, supportive therapy, antidote therapy, procedures of enhanced elimination with regard to Arsenic, lead, mercury, copper, iron, cadmium and thallium

9.3.1: Describe the characteristics, mechanism of action, fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegal aspects of Arsenic poisoning.
9.3.2: Describe the characteristics, mechanism of action, fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegal aspects of Lead poisoning.
9.3.3: Describe the characteristics, mechanism of action, fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegal aspects of Mercury poisoning.
9.3.4: Describe the characteristics, mechanism of action, fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegal aspects of Copper poisoning.
9.3.5: Describe the characteristics, mechanism of action, fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegal aspects of Iron poisoning.
9.3.6: Describe the characteristics, mechanism of action, fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegal aspects of Thallium poisoning.
9.3.7: Describe the characteristics, mechanism of action, fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegal aspects of Cadmium poisoning.
9.3.8: Describe the causes, clinical features and treatment of Metallic fume fever.

- **Lecture – 2 hrs** **Assessment:** Written, Viva voce

FM9.4 - Describe General Principles and basic methodologies in treatment of poisoning: decontamination, supportive therapy, antidote therapy, procedures of enhanced elimination with regard to Ethanol, methanol, ethylene glycol

9.4.1: Describe physical/chemical characteristics, pharmacokinetics, mechanism of action, fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegal aspects of ethanol intoxication.
9.4.2: Define drunkenness.
9.4.3: Describe the methods of detection of drunken person in legal situations.
9.4.4: Describe clinical features, treatment and medicolegal aspects of chronic alcoholism.

9.4.5: Describe physical/chemical characteristics, pharmacokinetics, mechanism of action, fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegal aspects in a case of methanol poisoning.
9.4.6: Describe physical/chemical characteristics, pharmacokinetics, mechanism of action, fatal dose, fatal period, clinical features, treatment and medicolegal aspects of ethylene glycol poisoning.

- **SGD – 2 hrs (Integration – Pharmacology)** **Assessment:** Written, Viva Voce

FM9.5 - Describe General Principles and basic methodologies in treatment of poisoning: decontamination, supportive therapy, antidote therapy, procedures of enhanced elimination with regard to Organophosphates, Carbamates, Organochlorines, Pyrethroids, Paraquat, Aluminium and Zinc phosphide

9.5.1: Classify agricultural poisons.
9.5.2: Describe physical/chemical characteristics, pharmacokinetics, mechanism of action, fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegal aspects of Organo-phosphorous poisoning.
9.5.3: Describe physical/chemical characteristics, pharmacokinetics, mechanism of action, fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegal aspects of Carbamate poisoning.
9.5.4: Describe physical/chemical characteristics, pharmacokinetics, mechanism of action, fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegal aspects of Organo-chlorine poisoning.
9.5.5: Describe physical/chemical characteristics, pharmacokinetics, mechanism of action, fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegal aspects of Paraquat poisoning.
9.5.6: Describe physical/chemical characteristics, pharmacokinetics, mechanism of action, fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegal aspects of Pyrethroid poisoning.
9.5.7: Describe physical/chemical characteristics, pharmacokinetics, mechanism of action, fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegal aspects of Aluminum and Zinc phosphide poisoning.

- **SGD – 1 hr** **Assessment:** Written, Viva Voce

FM9.6 - Describe General Principles and basic methodologies in treatment of poisoning: decontamination, supportive therapy, antidote therapy, procedures of enhanced elimination with regard to Ammonia, carbon monoxide, hydrogen cyanide & derivatives, methyl isocyanate, tear (riot control) gases

9.6.1: Describe physical/chemical characteristics, pharmacokinetics, mechanism of action, fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegal aspects of Ammonia poisoning.
9.6.2: Describe physical/chemical characteristics, pharmacokinetics, mechanism of action, fatal dose, fatal period, clinical features, treatment, postmortem findings & medicolegal aspects of Carbon monoxide poisoning.

9.6.3: Describe physical/chemical characteristics, pharmacokinetics, mechanism of action, fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegal aspects of Cyanide poisoning.
9.6.4: Describe physical/chemical characteristics, mechanism of action, clinical features, treatment, postmortem findings and medicolegal aspects of Methyl Isocyanate poisoning.
9.6.5: Describe clinical features, treatment and medicolegal aspects of exposure to tear gas (in riot control).

Toxicology : Pharmaceutical Toxicology

- **SDL – 1 hr (Integration – Pharmacology)**
  Assessment: Written, Viva Voce

FM10.1 - Describe General Principles and basic methodologies in treatment of poisoning: decontamination, supportive therapy, antidote therapy, procedures of enhanced elimination with regard to:

i. **Antipyretics – Paracetamol, Salicylates**
ii. **Anti-Infectives (Common antibiotics – an overview)**
iii. **Neuropsychotoxicology Barbiturates, benzodiazepins, phenytoin, lithium, haloperidol, neuroleptics, tricyclics**
iv. **Narcotic Analgesics, Anaesthetics, and Muscle Relaxants**
v. **Gastro-Intestinal and Endocrinal Drugs – Insulin**

10.1.1: Describe clinical features, treatment and medico-legal aspects of poisoning due to Antipyretics (such as Paracetamol and Salicylates).
10.1.2: Describe clinical features, treatment and medico-legal aspects of poisoning due to Anti-Infective overdose (common antibiotics).
10.1.3: Describe clinical features, treatment, post-mortem findings and medico-legal aspects of Barbiturate poisoning.
10.1.4: Describe clinical features, treatment and medico-legal aspects of Benzodiazepine poisoning.
10.1.5: Describe clinical features, treatment, post-mortem findings and medico-legal aspects of opium and its alkaloids.
10.1.6: Describe clinical features, treatment, post-mortem findings and medico-legal aspects of poisoning due to Gastro-Intestinal and Endocrinal Drugs (e.g., Insulin).

- **Lecture – 1 hr** **Assessment:** Written, Viva voce

FM10.1 vi - Cardiovascular Toxicology Cardiotoxic plants – oleander, odollam, aconite, digitalis

10.1.7: Enumerate the cardiotoxic plants.
10.1.8: Describe the active principles, mechanism of action, fatal dose, fatal period, clinical features, treatment, post-mortem findings and medico-legal aspects of poisoning due to cardiotoxic plants.

Toxicology : Biotoxicology

- **SGD – 2 hrs** **Assessment:** Written, Viva Voce

FM11.1 - Describe features and management of Snake bite, scorpion sting, bee and wasp sting and spider bite

11.1.1: Differentiate poisonous and non-poisonous snakes.

11.1.2: Classify poisonous snakes.

11.1.3: Identify the common poisonous and non-poisonous snakes in India.

11.1.4: Describe mechanism of action, clinical features, management, postmortem findings and medicolegal aspects of snake bite (Ophitoxaemia).

11.1.5: Identify the common scorpions seen in India.

11.1.6: Describe mechanism of action, clinical features, management, postmortem findings and medicolegal aspects of scorpion sting.

11.1.7: Describe mechanism of action, clinical features, management, postmortem findings and medicolegal aspects of bee and wasp sting, and spider bite.

Toxicology : Environmental Toxicology

- **Lecture – 1 hr** **Assessment:** Written, Viva voce

FM13.1 - Describe toxic pollution of environment, its medico-legal aspects & toxic hazards of occupation and industry

13.1.1: Enumerate the causes for environmental pollution.

13.1.2: Describe the health effects of environmental pollution due to toxic substances.

13.1.3: Describe the medico-legal aspects of toxic hazards on employees of an industry

FM13.2 - Describe medico-legal aspects of poisoning in Workman's Compensation Act

13.2.1: Describe the medico-legal issues arising out of effects of poisoning due to occupational exposure as per Workman's Compensation Act.

13.2.2: Discuss the role of physician in cases of poisoning due to occupational exposure.

Toxicology : Sociomedical Toxicology

- **Lecture – 2 hrs** **Assessment:** Written, Viva voce

FM12.1 - Describe features and management of abuse/ poisoning with following chemicals: Tobacco, cannabis, amphetamines, cocaine, hallucinogens, designer drugs & solvent

12.1.1: Define drug abuse, drug addiction, drug habituation and drug dependence.

12.1.2: List the drugs of abuse.

12.1.3: Describe clinical features, treatment, post-mortem findings and medico-legal aspects of acute and chronic tobacco poisoning.

12.1.4: Enumerate the active principles and various preparations of cannabis.

12.1.5: Describe clinical features, treatment, post-mortem findings and medico-legal aspects of acute and chronic cannabis poisoning.

12.1.6: Describe clinical features, treatment, post-mortem findings and medico-legal aspects of acute and chronic cocaine poisoning.

12.1.7: Describe clinical features, treatment, post-mortem findings and medico-legal aspects of amphetamine poisoning.

12.1.8: Enlist hallucinogenic substances.

12.1.9: Describe clinical features, treatment, post-mortem findings and medico-legal aspects of Lysergic acid diethylamide poisoning.

12.1.10: Define 'Designer drug'.

12.1.11: Describe the clinical features and management of common designer drugs.
12.1.12: Define 'Solvent abuse'.
12.1.13: Describe clinical features, treatment, post-mortem findings and medico-legal aspects of Solvent abuse.
12.1.14: Discuss on Body packer's syndrome.

Skills in Forensic Medicine & Toxicology

- **SGD – 2 hrs (Practical)** **Assessment:** OSPE, Practical book, Log book, Viva Voce

FM14.17 - To identify & draw medico-legal inference from common poisons e.g. dhatura, castor, cannabis, opium, aconite copper sulphate, pesticides compounds, marking nut, oleander, Nux vomica, abrus seeds, Snakes, capsicum, calotropis, lead compounds & tobacco.
14.17.1: Identify with physical and /or chemical characteristics of the common poisons e.g. dhatura, castor, cannabis, opium, aconite, copper sulphate, pesticide compounds, marking nut, oleander, Nux vomica, abrus seeds, snakes, capsicum, calotropis, lead compounds & tobacco. *(regional / local poisons)*
14.17.2: Draw the medico-legal inferences with the use of the common poisons.

- **SGD – 5 hrs (Practical – 5 cases)** **Assessment:** OSPE, Practical book, Log book, Viva Voce

FM14.5 - Conduct & prepare post-mortem examination report of varied aetiologies (at least 15) in a simulated/ supervised environment
14.5.1: Describe the techniques of conducting a medicolegal autopsy.
14.5.2: Describe the postmortem findings (external and internal) in a medicolegal autopsy.
14.5.3: Enumerate the ancillary investigations required (along with appropriate materials for such investigations) in a medicolegal autopsy.
14.5.4: Draft the postmortem report after a medicolegal autopsy.
Medicolegal autopsies may be a case of unnatural death, natural death, custodial death, alleged medical negligence, decomposed body, mutilated body.

- **SGD – 1 hr (Practical) Integration Pathology** **Assessment:** OSPE, Practical book, Log book, Viva Voce

FM14.19* - To identify & prepare medico-legal inference from histo-pathological slides of Myocardial Infarction, pneumonitis, tuberculosis, brain infarct, liver cirrhosis, Pulmonary oedema, *(remaining slides will be covered in phase 3 MBBS)*
14.19.1: List the microscopic identifying features after examining the histopathological slides of myocardial Infarction, pneumonitis, tuberculosis, brain infarct, liver cirrhosis, pulmonary oedema.
14.19.2: Describe the medico-legal inferences after examining the above-mentioned histopathological slides.

Summary of TL methods and list of competencies to be covered in Phase II MBBS and Assessment methods

Sl. No.	Teaching hours and type	Competency numbers	Assessment methods
1.	Lecture – 1 hr (Orientation class)	1.1, 1.2	No assessment
2.	Lecture – 1 hr (Interactive)	2.1, 2.2, 2.3	Written, Viva voce
3.	SDL – 1 hr (Followed by reflective writing)	2.4	Written, Viva voce
4.	Lecture – 1 hr (Interactive)	2.5, 2.6, 2.7	Written, Viva voce
5.	SGD – 2 hrs	2.10, 2.8	Written, Viva voce
6.	SGD – 1 hr	2.9	Written, Viva voce
7.	Lecture – 1 hr	2.11, 2,14, 8.5, 8.9	Written, Viva voce
8.	Lecture – 1 hr	2.12, 2.13, 2.17	Written, Viva voce
9.	SGD – 4 hrs (Practical)	2.16, 14.9	Written, Viva voce, OSPE, Practical book, Log book
10.	SGD – 1 hr	2.18	Written, Viva voce
11.	SGD – 1 hr	2.31	Viva voce
12.	SDL – 1 hr	2.19	Written, Viva voce
13.	SDL – 1 hr	2.15	Written, Viva voce
14.	SGD – 1 hr	2.32, 2.33, 2.34, 2.35	OSPE, Written, Viva voce
15.	SGD – 2 hrs	3.1	Written, Viva voce
16.	SGD – 1 hr	3.2	Written, Viva voce
17.	SGD – 2 hrs (Practical)	14.6. 14.7, 14.8	OSPE, Practical book, Log book
18.	SDL – 1 hr	8.1	Written, Viva voce
19.	Lecture – 1 hr	8.2, 8.3, 8.4, 8.6	Written, Viva voce
20.	Lecture – 1 hr	8.8	Written, Viva voce
21.	Lecture – 1 hr	8.10	Written, Viva voce
22.	SGD – 2 hrs (Practical/ Skills lab)	14.2, 14.3, 8.7	OSPE, Written, Viva Voce
23.	SGD – 2 hrs	9.1	Written, Viva voce
24.	Lecture – 1 hr	9.2	Written, Viva voce
25.	Lecture – 2 hrs	9.3	Written, Viva voce
26.	Lecture – 2 hrs	9.4	Written, Viva voce
27.	SGD – 2 hrs (Integration – Pharmacology)	9.5	Written, Viva voce
28.	SGD – 1 hr	9.6	Written, Viva voce
29.	SDL – 1 hr (Integration – Pharmacology)	10.1 (i-v)	Written, Viva voce
30.	Lecture – 1 hr	10.1 (vi)	Written, Viva voce
31.	SGD – 2 hrs	11.1	Written, Viva voce
32.	Lecture – 1 hr	13.1, 13.2	Written, Viva voce

33.	Lecture – 2 hrs	12.1	Written, Viva voce
34.	SGD – 2 hrs (Practical)	14.17	OSPE, Practical book, Log book, Viva Voce
35.	SGD – 5 hrs (5 cases)	14.5	OSPE, Practical book, Log book, Viva Voce
36.	SGD – 1 hr (Practical) Integration Pathology	14.19	OSPE, Practical book, Log book, Viva Voce

Assessment in Forensic Medicine & Toxicology

Summative Assessment - An assessment conducted at the end of instruction to check how much the student has learnt.

Formative Assessment - An assessment conducted during the instruction with primary purpose of providing feedback for improving learning.

Internal Assessment - Range of assessments conducted by the teachers teaching a particular subject with the purpose of knowing what is learnt and how it is learnt. Internal assessment can have both formative and summative functions.

Note - Assessment requires specification of measurable and observable entities. This could be in the form of whole tasks that contribute to one or more competencies or assessment of a competency per se. Another approach is to break down the individual competency into learning objectives related to the domains of knowledge, skills, attitudes, communication etc. and then assess them individually.

Scheduling of Internal Assessment - In Phase II MBBS there will be ONE Internal assessment in theory and practicals. -
In Phase III part 1 MBBS there will be two Internal assessments in theory and practicals. One of the test should be prelim or similar to university examination.

Theory IA can include: Theory tests, seminars, quizzes, interest in subject, scientific attitude etc. Written tests should have essay questions, short notes and creative writing experiences.

Practical IA can include: practical tests, Objective Structured Practical Examination (OSPE), Directly Observed Procedural Skills (DOPS), records maintenance and attitudinal assessment.

Assessment of Log-book- Log book should record all activities like seminar, symposia, quizzes and other academic activities. It should be assessed regularly and submitted to the department. Up to twenty per cent IA Theory marks should be for Log book assessment.

Assessment of Practical Record book- Practical book should record all skills and other practical exercises done during the academic programme. It should be assessed regularly and submitted to the department. Up to twenty per cent IA Practical marks should be for Log book assessment

Internal Assessment for AETCOM will include: - Written tests comprising of short notes and creative writing experiences.

- OSCE based clinical scenarios and/or viva voce. Skill competencies acquired during the Professional Development Programme (AETCOM) must be tested during the practical and viva voce.

Feedback in Internal Assessment - Feedback should be provided to students throughout the course so that they are aware of their performance and remedial action can be initiated well in time. The feedbacks need to be structured and the faculty and students must be sensitized to giving and receiving feedback.

The results of IA should be displayed on notice board within two weeks of the test and an opportunity provided to the students to discuss the results and get feedback on making their performance better.

It is also recommended that students should sign with date whenever they are shown IA records in token of having seen and discussed the marks.

Internal assessment marks will not be added to University examination marks and will reflect as a separate head of passing at the summative examination.

Internal assessment should be based on competencies and skills.

Criteria for appearing in University examination: Learners must secure at least 50% marks of the total marks (combined in theory and practical; not less than 40 % marks in theory and practical separately) assigned for internal assessment in order to be eligible for appearing at the final University examination

SCHEME OF EXAMINATION

Internal assessment

TABLE SHOWING SCHEME FOR CALCULATION OF INTERNAL EXAMINATION MARKS

Theory (Maximum marks)		Practical (Maximum marks)	
Theory papers	30*	Practical exercises	30**
Professionalism	5	Level of participation in AETCOM activities	5
Part completion tests	5	Practical record book	5
TOTAL	40	TOTAL	40

Please note:

· *the marks for each of the three internal examination theory assessments must be calculated out of 30 marks, regardless of the maximum marks.

· ** the marks for each of the three internal examination practical assessments must be calculated out of 30 marks, regardless of the maximum marks.

· Only the final marks out of 40 (as in the table) needs to be submitted to the University, separately for theory and practical for each internal assessment.

 Internal assessment should be based on competencies and skills.
 Regular periodic examinations shall be conducted throughout the course. There shall be three internal assessment examinations
 An average of the marks scored in the three internal assessment examinations will be considered as the final internal assessment marks.
 At least 50% marks of the total marks combined in theory and practicals /clinical assigned for internal assessment is to be obtained in a particular subject to be eligible to appear for university examinations. A candidate who has not secured requisite aggregate in the internal assessment may be permitted to appear for another internal examination as a remedial measure. If he/she successfully completes the remediation measures prescribed by the Institution / University as the case may be, only then he/she is eligible to appear for University Examination.
 Students must secure at least 50% marks of the total marks (combined in theory and practical) assigned for internal assessment to be declared successful at the final university examination of that subject.
 The third internal examination is the examination to be conducted on the lines of the university examination.
 The students should be made aware of the results of internal assessment.
 Internal assessment marks will reflect as a separate head of passing at the university examination.
 The internal examination marks for the 1st, 2^{nd} & 3^{rd} internal examinations shall be submitted to the University on or before dates mentioned in University calendar.
 Professionalism (punctuality, respect for teachers, communication with peers, timely completion and submission of record books and participation / presents in SGD) must be assessed and form a component of the marks given for internal assessment as shown in the table above.
 A suggested format for assessing professionalism is shown below
 A proportion of marks from part completion tests must be added to the internal assessment marks as shown in the table above.
 Practical records must be assessed and contribute to the internal assessment marks as shown in the table above.
 Level of participation in AETCOM Activities must be assessed and contribute to the practical component as shown in the table above.
 The scheme for calculation of the internal examination marks is given the table above.
 A clear record of all components that add to the internal assessment marks needs to be maintained by the institution and retained by them for at least 2 years after completion of the examination. Institutions may be asked to provide these details by the University as and when required.
 The internal and formative assessments provide ideal opportunities for students and teachers to identify learning gaps. Teachers should provide high quality feedback to each student to enable them to bridge these learning gaps.
 Formative assessments also enable the early identification of students who are struggling to achieve the intended learning outcomes. Early and appropriate targeted remediation must be planned for such students.
 Internal assessment marks (theory/practicals) will contribute for the eligibility criteria for university exam. However, it will not contribute for the pass criteria in university exam. Internal assessment marks will reflect under separate head in the marks card of the university examination.

- The results of IA should be displayed on notice board within two weeks of the test and an opportunity provided to the students to discuss the results and get feedback on making their performance better.

- A candidate who has not secured requisite aggregate in the internal assessment may be subjected to remedial assessment by the institution. If he/ she successfully complete the same, he/she is eligible to appear for University Examination. Remedial assessment shall be completed before submitting the internal assessment marks online to the University.

Suggested format for assessing professionalism

Semester	Overall Attendance (5)	Timely submission of record books (5)	Takes the Trouble to Complete the Record book well (5)	Behaves respectfully with peers and teachers (5)	Participation in SGD (5)	Total (25)	Date	Signature of student	Signature of Teacher
1									
2									
3									
4									

Guidelines for scoring (to be shown to the student and discussed with them)
Attendance – 95-100% - 5; 90-94% - 4; 85-89% - 3; 80-84% - 2; 79-75% - 1
Timely submission of records – Always submits the record on time – 5; Often submits the record on time – 4; Sometimes submits the record on time – 3; Rarely submits the record on time – 2; Never submits the record on time – 1
Puts the efforts to complete the record well – Diagrams are neatly drawn with complete labelling &/or excellent writing of exercises – 5; Diagrams are of above average quality with nearly complete labelling &/or good writing of exercises – 4; Diagrams are of average quality with partial labelling &/or complete writing of exercises - 3; Diagrams are of below average quality with inadequate labelling &/or incomplete writing of exercises – 2; Diagrams are of unacceptable standard with grossly inadequate labelling &/or poor writing of exercises – 1
Behaves respectfully with peers and teachers – Always speaks politely and demonstrates the appropriate body language with peers and teachers – 5; Often speaks politely and demonstrates the appropriate body language with peers and teachers – 4; Sometimes speaks politely and demonstrates the appropriate body language with peers and teachers – 3; Rarely speaks politely and demonstrates the appropriate body language with peers and teachers – 2; Never speaks politely & demonstrates the appropriate body language with peers & teachers -1

Participation in SGD (Small Group Discussion)- Always participates / presents in SGD -5; Often participates / presents in SGD -4; Sometimes participates / presents in SGD -3; Rarely participates / presents in SGD -2; Never participates / presents in SGD -1

Annexure

Teaching Learning Methods

Teaching Learning Methods

- Didactic lectures should be made more interactive by encouraging the more involvement of the students. In the present digital era, student's involvement is more with usage of technology. For examples, many polling sessions, quizzes etc can be done using google slides and other apps like Kahoot, Socrative, menti.com etc.
- Small group discussion (SGD) should be planned properly and discussed among the faculty members before taking the class. As for as possible, uniformity should be maintained in the SGD by various facilitators. Case based learning (CBL) and problem-based learning (PBL) may be used to make the learner understand and learn about the various aspects in order to achieve the particular competency.
- Encourage the students learn themselves through self-directed learning (SDL). SDL sessions may be planned with objectives in order to cover the particular competency. These sessions may be conducted by providing learning material (research articles, public news, videos, etc) by a teacher and ask the students to search on a particular topic. Students should learn themselves by going through available resources and come back to classes allotted for SDL sessions where teacher able to connect the learning of students in order to achieve the competency.
- Integrated classes should be planned in order to cover the competency involving the topics from different subjects. These classes can be taken using Nesting, Temporal Coordination or Sharing. Case linkers may be used to link the topic/subject area among different subjects/ departments.
- Skills should be taught using the clinical cases at hospital wards/casualty/EMD, simulation in skills labs and/or departmental demonstration rooms. Case scenarios may be developed while teaching at skills lab and/or demonstration rooms.

Example for teaching the clinical examination in poisoning:

- **Case scenario:** A farmer working in a field was brought with history of breathlessness, vomiting, excessive sweating and muscle twitching. On examination, the pupils were constricted and heart rate was decreased. He had defecated in his cloths. Smell of kerosene was present in his breath. Even the cloths were soiled smelling kerosene.
- **Demonstration of clinical examination:** Mannequins or standardised patients in the skills lab may be used for examination and recording of vital parameters like pulse, BP, RR, SPO2 and state of pupils. Also, response to treatment can be.
- **Diagnosis and management:** Discuss the differential diagnosis, investigations and definitive diagnosis. Discuss the various treatment modalities. The response to drugs used for treatment can be demonstrated using high fidelity mannequins.

- **Medicolegal responsibilities:** The medicolegal responsibilities such as preservation of gastric lavage material, medicolegal documentation, and police intimation should be demonstrated in a simulated environment and using standard formats.

Example for teaching the topic Injuries/ Trauma with integration:

Linker Case: A 30-year-old male while travelling in a motor bike met with an accident with a car coming from opposite side. As a result of this, he sustained multiple injuries (can be displayed in the form of photographs). He was brought by his friend to the hospital. On reaching the hospital, patient was in semiconscious state with difficulty in breathing.

Subjects for integration: Forensic Medicine, General Surgery.

- Forensic Medicine: Topics covered in this subject include different types of mechanical injuries possible in such accidents and other relevant topics related to mechanical injuries. [Competencies to be covered: FM 3.3, 3.4, 3.8]
- General Surgery: First aid treatment, Basic life support, Transportation of patient, Basic management of injuries at hospital. [Competencies to be covered: SU 17.1, 17.2, 17.3]

Type of Integration:

- Horizontal: Temporal coordination can be done if is done in the same phase.
- Vertical: Nesting can be used if it is done in two different phases.

Additional details to case scenario:

- In addition to linker case, case details need to be added by respective departments depending on the progression of the class (such as clinical features, internal injuries, postmortem findings etc).
- Case details may be introduced step by step in order to involve students in discussion.

Example for teaching the topic Drugs / Substances of abuse with integration:

Linker Case: A 15-year-old student was brought by his parents to the hospital with a history of addiction to drugs and behavioral changes since 6 months. On examination, the patient was anxious, restless and was hesitant to talk.

Subjects for integration: Pharmacology, Forensic Medicine, Psychiatry.

- Pharmacology: Topics covered in this subject include Definitions, List of drugs of abuse, Mechanism of drug addiction. [Competencies to be covered: PH 1.22, 1.23]
- Forensic Medicine: Description of features and management of drugs/substances of abuse. [Competencies to be covered: FM 12.1]
- Psychiatry: Etiology, clinical features, treatment of drugs/substances of abuse. [Competencies to be covered: PS 4.1, 4.2, 4.3, 4.4, 4.6, 4.7]

Type of Integration:

- Horizontal: Temporal coordination/ Sharing can be done if is done in the same phase.
- Vertical: Nesting can be used if it is done in two different phases.

Additional details to case scenario:

- In addition to linker case, case details need to be added by respective departments depending on the progression of the class (such as clinical features, behavioral changes, complications, legal problems etc).
- Case details may be introduced step by step in order to involve students in discussion.

Annexure

Integration topics

Integration: The teaching should be aligned and integrated horizontally and vertically recognizing the importance of medico-legal, ethical and toxicological issues as they relate to the practice of medicine.

Integration of Forensic Medicine with Other departments:

The suggested topics, competencies and the subjects/departments for integrated teaching are shown in below table.

Sl. No.	*Topic for integration*	*Subject [Competencies]*
1	Wound healing	General Surgery [SU 5.1, 5.2, 5.3, 5.4] Pathology [PA 5.1] **Forensic Medicine [FM 3.6]**
2	General toxicology	**Forensic Medicine [FM 8.1, 8.2, 8.3, 8.4, 8.5, 8.6, 8.7, 8.8]** Pharmacology [PH 1.4, 1.5, 1.11] General Medicine [IM 21.1, 21.5, 21.6, 21.7, 21.8]
3	Insecticides	**Forensic Medicine [FM 8.6]** Pharmacology [PH 1.52] Community Medicine [CM 3.8]
4	Corrosives	**Forensic Medicine [FM 9.1]** General Medicine [IM 21.3]
5	Heavy metal poisoning	**Forensic Medicine [FM 9.2, 9.3**] Pharmacology [PH 1.53]
6	Plant poisons	General Medicine [IM 21.2] **Forensic Medicine [FM 10.1]**
7	Snake, scorpion, insect bites	**Forensic Medicine [FM 11.1]** General Medicine [IM 20.1, 20.2, 20.3, 20.4, 20.5, 20.6, 20.7, 20.8, 20.9]
8	Alcohol disorders	Pharmacology [PH 1.20, 1.21] Pathology [PA 12.1, 25.4] General Medicine [IM 5.5] **Forensic Medicine [FM 9.4]**
9	Drugs of abuse	Pharmacology [PH 1.22, 1.23] **Forensic Medicine [FM 12.1]** Psychiatry [PS 4.1, 4.2, 4.3, 4.4, 4.6, 4.7]

Annexure

Reference Books and Journals

Suggested references (as per Vancouver style): (Specification mentioned such as edition – subject to change with newer edition)

- **Basic references**

1) Reddy KSN, Murthy OP. The Essentials of Forensic Medicine and Toxicology. 34th edition, 2017. Jaypee Brothers Medical Publishers, New Delhi.
2) Pillay VV. Textbook of Forensic Medicine and Toxicology, 19th edition, 2019, Paras Medical Publishers, Hyderabad.
3) Karmakar RN. Forensic Medicine and Toxicology: Theory, Oral and Practical, 5th edition, 2015. Academic Publishers, Kolkata.
4) Nandy A. Principles of Forensic Medicine including Toxicology, 3rd edition, 2010, New Central Book Agency.
5) Subrahmanyam BV. Parikh's Textbook of Medical Jurisprudence, Forensic Medicine and Toxicology, 8th edition, 2019, CBS Publishers.
6) Guharaj PV, Gupta SK. Forensic Medicine and Toxicology, 3rd edition, 2019, Universities Press (India) Private Ltd., Hyderabad.
7) Bardale R. Principles of Forensic Medicine & Toxicology, 2nd edition, 2016, Jaypee Brothers Medical Publishers, New Delhi.
8) Biswas G. Review of Forensic Medicine & Toxicology, 3rd edition, 2015, Jaypee Brothers Medical Publishers, New Delhi.
9) Vij K. Textbook of Forensic Medicine and Toxicology: Principles and Practice, 6th edition, 2014, Elsevier Ltd.
10) Ignatius PC. Forensic Medicine and Toxicology, 4th edition, 2019, Elsevier India.
11) Pillay VV. NACPFMT's Practical Medicolegal Manual: Medical Ethics, Clinical Forensics & Toxicology, 1st edition, 2019, Paras Medical Publishers, Hyderabad.
12) Bakkannavar SM. Forensic Medicine and Toxicology: Practical manual, 1st edition, 2018, Elsevier India.
13) Borah. Medical Ethics for Students and Doctors, 1st edition, 2014, Ahuja Publishers.

- **Advanced references (may also include journals/ web/ other electronic sources).**

1) Kannan K. Modi's Medical Jurisprudence and Toxicology, 26th edition, 2019, LexisNexis.
2) Karmakar RN. JB Mukherjee's Forensic Medicine and Toxicology, 2007, Academic Publishers.
3) Dogra TD, Rudra A. Lyon's Medical Jurisprudence and Toxicology. 11th edition (reprint), 2018. Delhi Law House, Delhi.

4) Saukko P, Knight B. Knight's Forensic Pathology. 4th edition. 2015, CRC Press
5) Pillay VV. Modern Medical Toxicology, 4th edition, 2013, Jaypee Brothers Medical Publishers Ltd., New Delhi.
6) Journal of Karnataka Medico-Legal Society.
7) Journal of South India Medico-Legal Association.
8) Journal of Indian Academy of Forensic Medicine.
9) Journal of Indian Society of Toxicology
10) Journal of Forensic and Legal Medicine
11) Journal of Forensic Sciences
12) Indian Journal of Medical Ethics

Annexure

Log Book Format

SRI SIDDHARTHA
ACADEMY OF HIGHER EDUCATION

(Deemed to be University, declared u/s 3 of the UGC Act, 1956)

PHASE-II MBBS, PHASE-III MBBS PART-1 & INTERNSHIP

LOG BOOK FORMAT

DEPARTMENT OF FORENSIC MEDICINE AND TOXICOLOGY

Name of the Candidate :

Name of the College :

University Register Number :

Academic Year :

INDEX

SL NO	CONTENT	PAGE NO
12.	BONAFIDE CERTIFICATE	
13.	PROFORMA OF THE STUDENT	
14.	GUIDELINES FOR LOG BOOK: GENERAL INFORMATION	
15.	ATTENDANCE EXTRACT / FORMATIVE ASSESSMENTS	
16.	INTERNAL ASSESSMENTS	
17.	COMPETENCY ASSESSMENT	
18.	SELF DIRECTED LEARNING FORMAT	
19.	AETCOM MODULE FORMAT	
20.	AUTOPSY CASE ATTENDANCE FORMAT	
21.	COMPETENCY ASSESSMENT IN INTERNSHIIP	
22.	CONFERENCE/CME/WORKSHOP ATTENDED	
23.	SCIENTIFIC PROJECT LIKE ICMR/ PRESENTATIONS/ OUTREACH ACTIVITIES	
24.	ACHIEVEMENTS/ AWARDS /ANY OTHER ACTIVITIES	
25.	EXTRACURRICULAR ACTIVITIES	

BONAFIDE CERTIFICATE

This is to certify that this log book is the bonafide record of Mr./Ms…….....whose particulars along is given above. His/ Her log of competencies acquired, are as noted in the entries in this log book in the subject of Forensic Medicine and Toxicology including related AETCOM modules as per the Competency Based Undergraduate Medical Education Curriculum, Graduate Medical Regulation 2019, during the period …….. to……..

She / He is not eligible / eligible to appear for the summative (University) assessment as on the date given below.

Signature with date

Head, Department of Forensic Medicine and Toxicology :

Signature with date

Principal/Dean :

BASIC PROFORMA OF THE STUDENT

Photo

PARTICULARS OF THE STUDENT:

Name of the student :

Date of Birth :

Father's name :

Mother's name :

Address :

Contact no s :

Email id :

Signature: .....

SUGGESTED GUIDELINES FOR LOG BOOK:
GENERAL INFORMATION:

6) The logbook is a record of the academic / co-curricular activities of the designated student, who would be responsible for maintaining his/her logbook.
7) The student is responsible for getting the entries in the logbook verified by the Faculty in charge regularly.
8) Entries in the logbook will reflect the activities undertaken in the department & have to be scrutinized by the Head of the concerned department.
9) The logbook is a record of various activities by the student like:
    f. Overall participation & performance
    g. Attendance
    h. Participation in sessions
    i. Record of completion of pre-determined activities.
    j. Acquisition of selected competencies
10) The logbook is the record of work done by the candidate in that department / specialty and should be verified by the college before submitting the application of the students for the University examination.

SUMMARY OF ATTENDANCE

Phase	*Percentage of classes attended*		*Eligible for University examination (Yes / No)*	*Signature of student*	*Signature of teacher*
	Theory	*Practical*			
Attendance at the end of MBBS Phase II			Not applicable		
Attendance at the end of MBBS Phase III (Part I)					

SUMMARY OF FORMATIVE ASSESSMENT (FA) &

INTERNAL ASSESSMENT (IA)

Sl. No.	*Type of Assessment*	*Date of Assessment*	*Total marks*	*Marks scored*	*Signature of student*	*Signature of teacher*

Suggested format for monitoring academic performance and providing feedback

Sl. No.	Marks obtained		Feedback provided		Date	Signature of student	Signature of mentor
			Positive	Could be improved			
1.	1st Internal Examination						
	Theory						
	Practical						
2.	2nd Internal Examination						
	Theory						
	Practical						
3.	3rd Internal Examination						
	Theory						
	Practical						
4	4th Internal Examination (Preliminary)						
	Theory						
	Practical						

ACTIVITIES DONE IN MBBS PHASE II

Competency # addressed	**Name of Activity**	**Date completed**	**Attempt at activity** First or Only (F); Repeat (R); Remedial (Re)	**Rating** Below Expectations (B); Meets Expectations (M); Exceeds Expectations (E)	**Decision of faculty** Completed (C); Repeat (R); Remedial (Re)	**Initial of faculty and date**	**Feedback Receive**d Initial of learner

- Duplicate of this template shall be made depending on the activities planned.
- Activities may be skill sessions, practical exercises, museum sessions, postmortems, seminars, tutorials, projects, case discussion, Self-directed learning etc.

ACTIVITIES DONE IN MBBS PHASE III (PART I)

Competency # addressed	**Name of Activity**	**Date completed**	**Attempt at activity** First or Only (F); Repeat (R); Remedial (Re)	**Rating** Below Expectations (B); Meets Expectations (M); Exceeds Expectations (E)	**Decision of faculty** Completed (C); Repeat (R); Remedial (Re)	**Initial of faculty and date**	**Feedback Receive**d Initial of learner

- Duplicate of this template shall be made depending on the activities planned.
- Activities may be skill sessions, practical exercises, museum sessions, postmortems, seminars, tutorials, projects, case discussion, Self-directed learning etc.

Suggested format for documentation and feedback for Self-Directed Learning

Sl no	Date	Topic of SDL	Feedback	Signature of faculty/mentor

SUGGESTED FORMAT FOR AETCOM SESSIONS

Name of the Facilitator: Date:

AETCOM module Number:

AETCOM Topic:

Competencies / Objectives:

1.

2.

3.

1. Briefly describe what you learnt from this AETCOM session in relation to the objectives. (in 100-150 words)

2. Apart from the above learning, what did you observe that influenced (Positive/negative) you during this session? (in 100-150 words)

Remarks by Facilitator:

Signature of Facilitator:

Module #	**Name of AETCOM Activity**	**Date completed**	**Attempt at activity** First or Only (F); Repeat (R); Remedial (Re)	**Rating** Below Expectations (B); Meets Expectations (M); Exceeds Expectations (E)	**Decision of faculty** Completed (C); Repeat (R); Remedial (Re)	**Initial of faculty and date**	**Feedback Receive**d Initial of learner

Suggested format for monitoring the attendance at mortuary
(Minimum of 15 cases)

Sl no	PM NO	DATE	CASE OF	COMPETANCY ADRESSED	SIGN OF TEACHER

Suggested format for assessment of competencies in internship

Sl no	Competency	Number of times done	Assessment done by	Sign of Teacher/Doctor
1	document and certification of trauma			
2	diagnosis and certification of death			
3	the legal documentation related to emergency care in a medicolegal register / accident register maintained at casualty / EMD			
4	certification in a medicolegal case of age estimation			
5	certification in a medicolegal case of victim of Sexual violence			
6	certification in a medicolegal case of accused of Sexual violence			
7	communication in medicolegal cases with police			
8	communication in medicolegal cases with public health authorities			
9	communication in medicolegal cases with Radiology / Pathology / Microbiology / FSL departments			

Other academic/non-academic activities

CONFERENCE/CME/WORKSHOP ATTENDED

SL NO	DATE	PARTICULARS	REMARKS IF ANY	SIGNATURE OF STAFF

SCIENTIFIC PROJECT PRESENTATIONS/REPORTS/ OUTREACH ACTIVITIES

SL NO	DATE	PARTICULARS	SIGNATURE OF STAFF

ACHIEVEMENTS/ AWARDS /ANY OTHER ACTIVITIES

SL NO	DATE	PARTICULARS	SIGNATURE OF FACULTY

EXTRACURRICULAR ACTIVITIES

SL NO	DATE	PARTICULARS	SIGNATURE OF FACULTY

Annexure

AETCOM Modules covered

Annexure

Model Question papers

COMMUNITY MEDICINE

PREAMBLE

Community Medicine plays a key role in the making of an Indian Medical Graduate going by the goals and role attributes envisaged by Medical Council of India. The sheet anchor nature of this speciality in moulding the IMG across the MBBS course provides scope and opportunity for us to train the student in preventive, promotive, curative, and rehabilitative aspects with seamless integration with other disciplines.

Community medicine is the umbrella of medicine which connects the dots together. It is the enterprise of responsibility, a living embodiment of what it means to be human and watch the true face of human suffering in all its fullness. This branch has evolved to a great extent with the addition of many interdisciplinary components and is now conferred the status of 'clinical speciality' by medical council of India which was long overdue.

Community medicine equips the IMG in 'community-oriented health care' encompassing community education, networking, advocacy, policy, research, and of course clinical care at primary and secondary level. This myriad nature of our speciality requires holistic training at the undergraduate level. With more specific and objective training in community medicine as per competency framework will bolster the philosophy and practice of 'holistic care' which will help bridge the changing paradigm of 'health for all' to 'universal health coverage'.

The new Graduate Medical Education Regulations provides for an outcome driven undergraduate curriculum, to provide the orientation and the skills necessary for life-long learning, to enable proper care of the patient. The undergraduate medical curriculum has thus evolved from being teacher-centered to student centered, from discipline-based to integrated core and options-based and from passive acquisition of knowledge imparted by teachers to active problem-based learning. Skill acquisition is an indispensable component of the learning process in modern medicine. However, the need for development of professional attitude, behaviour and communication skills befitting a medical practitioner is well perceived and emphasized by the new curriculum with incorporation of AETCOM sessions.

Index

Serial number	Content
1	Goals and Objectives
2	Terms and suggested teaching guidelines
3	Minimum teaching hours for 1ST Year
4	SLOs and Case scenarios for 1ST Year
5	Minimum teaching hours for 2nd & 3rd Year
6	Model Time Table
8	Integration of Topics
9	Competencies & Specific learning Objectives aligned with Teaching learning methods and Assessment methods, Certifiable Skills & Case Scenarios
10	Assessment in Community Medicine
11	AETCOM Module
12	Family study/ clinical posting
13	Reference Books
14	Logbook format (given separately)

GOALS AND OBJECTIVES

i) **GOAL:** The broad goal of the teaching of undergraduate students in Community Medicine is to prepare them to function as community and first level physicians in accordance with the institutional goals.

ii) **OBJECTIVES**

a) KNOWLEDGE

At the end of the course, the student should be able to: -

(1) Describe the health care delivery system including rehabilitation of the disabled in the country;
(2) Describe the National Health Programmes with particular emphasis on maternal and child health programmes, family welfare planning and population control.
(3) List epidemiological methods and describe their application to communicable and non-communicable diseases in the community or hospital situation.
(4) Apply bio-statistical methods and techniques.
(5) Outline the demographic pattern of the country and appreciate the roles of the individual, family, community and socio-cultural milieu in health and disease.
(6) Describe the health information systems.
(7) Enunciate the principles and components of primary health care and the national health policies to achieve the goal of 'Health for All'.
(8) Identify the environmental and occupational hazards and their control.
(9) Describe the importance of water and sanitation in human health.
(10) To understand the principles of health economics, health administration, health education in relation to community.

b) SKILLS At the end of the course, the student should be able to: -

(1) Use epidemiology as a scientific tool to make rational decisions relevant to community and individual patient intervention.

(2) Collect, analyse, interpret, and present simple community and hospital-based data.

(3) Diagnose and manage common health problems and emergencies at the individual, family and community levels keeping in mind the existing health care resources and in the context of the prevailing socio-cultural beliefs.

(4). Diagnose and manage maternal and child health problems and advise a couple and the community on the family planning methods available in the context of the national priorities.

(5) Diagnose and manage common nutritional problems at the individual and community level.

(6) Plan, implement and evaluate a health education programme with the skill to use simple audio-visual aids.

(7) Interact with other members of the health care team and participate in the organisation of health care services and implementations of national health programmes.

C) ETHICS, ATTITUDE AND COMMUNICATION:

1) Demonstrate ability to communicate and counsel patients and their families in a patient, respectful, nonthreatening, non- judgmental and empathetic manner
2) Apply fundamental principles of bioethics such as beneficence, non-maleficence and justice in patient care and community development
3) Promote autonomy and shared responsibility as a guiding principle in health seeking and patient care especially in reproductive health, family planning and management of diseases
4) Demonstrate justice as a guiding principle in encounters with patients and their families especially in mental illnesses, socially isolated communities and diseases such as HIV, leprosy and others.

5) Demonstrate respect in relationship with patients, fellow team members, superiors and other health care workers

6) Demonstrate empathy for patients.

7) Demonstrate an understanding of the implications and the appropriate procedure and response to be followed in the event of medical errors such as

adverse events following immunization, improper bio-medical waste management.

8) Appropriately address queries of patients and their families attending a health facility regarding disease control measures and national health schemes

9) Administer informed consent and ensure confidentiality in patient care and health related research

10) Demonstrates ability to maintain required documentation in health care (including correct use of medical records)

d). INTEGRATION:

Develop capabilities of synthesis between cause of illness in the environment or community and individual health and respond with leadership qualities to institute remedial measures for this.

EXPLANATION OF TERMS USED IN THE MANUAL

1. LECTURE

Any instructional large group method including traditional lecture and interactive lecture.

2. SMALL GROUP DISCUSSION

Any instructional method involving small groups of students in an appropriate learning context.

3. SELF DIRECTED LEARNING

A process in which individuals take the initiative, with or without the help of others in diagnosing their learning needs, formulating learning goals, identifying human and material sources for learning, choosing and implementing appropriate learning methods.

4. FIELD VISIST

Any visit to an organization of public health importance to observe its functioning. It may also include visits to community for family study / clinic-social case discussion.

5.SKILL ASSESSMENT

A session that assesses the skill of the student including those in the practical laboratory, skills lab, skills station that uses mannequins/ paper case/simulated patients/real patients or **in the community/ field** as the context demands.

6. CORE

A competency that is necessary in order to complete the requirements of the subject (traditional must know)

7. NON – CORE

A competency that is optional in order to complete the requirements of the subject (traditional nice (good) to know/ desirable to know

SUGGESTED GUIDELINES FOR THE TEACHING AND LEARNING METHODS

LECTURE: Suggested topics for didactic and interactive lectures have been included along with specific learning objectives linked to each competency. Lectures should cover the core competencies with appropriate pictures, charts, or diagrams.

SMALL GROUP DISCUSSION: The topics for small group discussion that have been suggested, these topics included are those where more intensive and interactive learning sessions are required.

SELF DIRECTED LEARNING: Non-core competencies are suggested to be taken as topics for self-directed learning. At the end of the session, the teacher moderates the discussion and the learning is recorded in the logbook.

PRACTICAL DEMONSTRATION

Practical classes will include demonstration and discussion on topics of public health importance. All sessions will have specific learning objectives which are linked to the relevant competencies and are assessed as described in the assessment module.

All sessions will be done with the faculty as facilitator.

The students will be encouraged to observe the demonstrations and perform the requisite skills either independently or with assistance as required. Emphasis will be on acquiring relevant skills at the field level and clinically. Thus,case-based learning and discussions will be encouraged.

FIELD VISIST

Any visit to an organization of public health importance to observe its functioning. These may include visit to PHC, Anganwadi, DOTS Centre, Hospital Waste Management Facility, Water Treatment Plant, ART / ICTC Centre

It may also include visits to community for family study / clinic social case discussion.

BEDSIDE CLINICO SOCIAL CASE DISCUSSIONS:

Is teaching clinico-social aspects of disease and communication skills in the presence of a patient.

FAMILY STUDY:

Students visit families in the community to understand the association of various environmental factors, socio-economic factors and the psychological or emotional factors with the health and disease of the family.

DOAP:

A practical session that allows the student to observe a demonstration, assist the performer, perform in a simulated environment, perform under supervision or perform independently.

RESEARCH PROJECT:

This teaching-learning method involves eight steps: question, hypothesis, objectives, review of literature, methodology, results (data and analysis), discussion, and conclusion

MINIMUM TEACHING HOURS IN 1st PROFESSION YEAR

Sl No	Number	Topic	Competencies	Lecture	SGD/ Tutorial DOAP	SDL	Total Hrs
1	CM 1	**Concept of Health and Disease**	10	8	6	2	16
2	CM 2	**Relationship of social and behavioural to health and disease**	5	4	3	1	08
3	CM 5	**Nutrition**	8	3	14	1	18
4	CM 9	**Demography and vital statistics**	7	5	4	1	10
		Total	**30**	**20**	**27**	**5**	**52**
		AETCOM Module 1.3		8			

To be noted:

- The number of hours mentioned above are rough guidelines that can be modified to suit the specific requirements of a medical college.
- It is recommended that didactic teaching be restricted to less than one third of the total time allotted for that discipline.
- Greater emphasis is to be laid on hands-on training, symposia, seminars, small group discussions, problem-oriented and problem-based discussions and self-directed learning.
- Students must be encouraged to take active part in and shared responsibility for their Learning.

Competencies to be covered in 1st Professional year with Specific Learning Objectives

Sl. No.	Number	Topic	lecture	Practical/ SGD/ Tutorial DOAP	Total hours

	CM 1	**Concept of Health and Disease** □ • Define Public Health, rise of public health. • Describe the changing concepts in Public Health • Define health, describe the changing concept of health, describe the concept of holistic and spiritual health, and describe the relative concept of health. Describe the concept of well-being, standard of living, quality of life – Physical quality of life index, Human development index. • Determinants of health- Enumerate and describe • Describe the characteristics of agent, host and environmental factors in health and disease. • Describe the concept of causation. Describe the germ theory of disease. • Describe the multi factorial etiology of disease • Describe and discuss the natural history of disease • Prevention – Concept, Levels of prevention, application of interventions at various levels of prevention. • Health promotion and Education - concepts, principles, • IEC and Behavioral change communication (BCC) - concept and examples. • Enumerate and describe health indicators • Describe the Demographic profile of India and its impact on health. • Describe communication skills in health.	8	8	16
2	CM 2	Relationship of social and behavioural to health and disease			

		• Describe the socio-cultural factors, Types of family, its role in health and disease & demonstrate in a simulated environment the correct assessment of socio-economic status. • Describe social psychology, community behaviour and community relationship with health and disease • Describe poverty and social security measures and its relationship to health and disease	4	4	8
3	**CM 5**	**NUTRITION**			
		• Describe the common sources of various nutrients, Demonstrate: food we eat and their nutritive value (Integrated session with Bio chemistry) special nutritional requirements according to age, sex, activity, physiological Conditions. • Describe and demonstrate the correct method of performing a nutritional assessment using the appropriate method (Integrated session with paediatrics /General medicine) nutritional assessment of individuals, nutritional assessment of families and nutritional assessment of the community. • Define common nutrition related health disorders (Integrated session with paediatrics /General medicine) (Including macro-PEM, Micro-iron, Zn, iodine, Vit. A, endemic fluorosis) • Describe the epidemiology of common nutrition related health disorders. Describe their control and management.	5	5	10
4	**CM 9**	**Demography and vital statistics**			

		• Define and describe the principles of Demography, Demographic cycle, Vital statistics • Define, calculate and interpret demographic indices including birth rate, death rate, fertility rates • Enumerate and describe the causes of declining sex ratio and its social and health implications • Enumerate and describe the causes and consequences of population explosion and population dynamics of India.	3	15	18

CASE SCENARIOS FOR FIRST YEAR PROFESSIONALS

1. Concept of health and disease

1.3.Define health, Describe the concept of holistic and spiritual health, Describe the relative concept of health. Describe the concept of wellbeing, standard of living, quality of life – Physical quality of life index, Human development index (PBL).

a. Calculate the HDI for a hypothetical nation having average expectancy of life at birth 68.3 years, mean years of schooling 6.3 years, expected years of schooling 11.7 years, per capita income (PP$) 5663.

Note: Maximum values and min values are as under:

	Maximum Value	Minimum Value
Life expectancy at Birth	83.2	20
Mean years of Schooling	13.2	0
Expected years of Schooling	20.3	0
Combined Education Index	0.951	0
Gross National Income	108,211	163

1.12. Enumerate and describe health indicators a. In a community development block area with population of one lac, there were 500 cases of TB and 5 cases of rabies during 2019. During the same year there were a total of 250 deaths, out of which 5 were due to rabies and 50 were due to TB. Calculate the CDR. Also calculate, separately for TB and rabies, the cause-specific mortality rate (CSMR), CFR and PMR.

b. In a township with population of 1 lac, the following are the statistics for the year 2019. From the table, calculate the CBR, GFR, ASFRs for the 6 age groups, TFR and GRR (all rates to be calculated per 1000).

Age Group	Mid-year population of females	Births in year	
		Total Live Births	***Total female live births***
15-19	5000	400	192
20-24	5000	700	347
25-29	4000	700	331
30-34	4000	500	240
35-39	4000	400	189
40-44	3000	300	151
Total	25000	3000	1450

1.11. IEC and Behavioural change communication (BCC) - concept and examples.

a. Mr X, a 40-year male leading an active life. He is an avid tennis player and loves to travel to exotic countries. Lately, Mr X complains of feeling uncharacteristically tired, so he scheduled an appointment with his doctor for an evaluation. That is when he was diagnosed with HIV. The health educator was informed about the same. Health educator knew that Mr X had multiple sexual practices, hence advised him for the use of condom but Mr X denied. Develop behaviour change communication strategy for promotion and adherence to condom.

b. In a PHC catering a population of 34000. Birth rate was 28/1000 live births. Unmet need of family planning was 48%. The percentage of use of oral contraceptive pills in the community was 0.8%. As a medical officer develop steps for BCC to increase awareness and promote the use of oral contraceptive pills.

SHORT GROUP DISCUSSION:

1. **Describe the concept of causation. Describe the germ theory of disease.**
   15 Min: Video/ Lecture on concept of causation.

   Later divide the students into groups and discuss on concept of causation

		Communicable diseases	Non-Communicable diseases	RTI/STI	Others
Example	1	Acute GE	Diabetes	AIDS	Genetic disease
	2	Chicken Pox	Hypertension	Herpes	
	3	Polio	CHD	Candidiasis	
	4	Tuberculosis	Lung cancer	Trichomonas Vaginalis	
	5	Dengue	Mental illness	Syphilis	

Concept of causation	Supernatural theory, Miasmatic theory, Contagious theory, Germ theory, Epidemiological triad, Advanced epidemiological triad, BEINGS model	Multifactorial causation, Web of causation, Epidemiological wheel theory	Supernatural theory, Multifactorial causation, Epidemiological triad	Epidemiological wheel theory

2. **Prevention – Concept, Levels of prevention, application of interventions at various levels of prevention. (2 HOURS)**
   Class I: lecture on levels of prevention.
   Class II: Divide the class into 4 groups and dictate the scenarios. Help them in identification of levels of prevention.

   Scenario1: A 40-year male came to a medical centre with complaints of weakness and lethargy along with the history of increased thirst and appetite during the day and night. He told the doctor that his sleep is disturbed during the night due to increase in frequency of micturition (2 to 3 visits to toilet). He further said to the doctor that his father is 72 year and has been suffering from diabetes and hypertension.
   a. What level of prevention is applicable for this specific scenario?
   b. What measures are required to protective from further disability?
   c. How could the patient have prevented from the occurrence of this disease?

   Scenario 2: A 35-year married female comes to the clinic with complain of pain and 2cm lump in the right breast. She has three children and has breastfed all of them for two years each. Her menstrual cycles are regular. She has a history of breast cancer from the maternal side.

   a. What level of prevention can be applied at this stage?
   b. What primary preventive measures would she have applied?

   Scenario 3: Youth movement NGO has introduced a **"Subsidized fitness programmes at selected centres"**to make it more affordable to the youths thus helping to make younger generation to be active and emphasising the need for exercise as a norm in community and reducing the development of risk factors for coronary heart disease.

   a. What level of prevention is applicable for the above scenario?

3. **Describe the socio-cultural factors, Types of family, its role in health and disease & demonstrate in a simulated environment the correct assessment of socio-economic status.**

1. **Scenario**

   Mangappa a 34-year-old male working as a carpenter and is an illiterate. He owns a semi-pucca house containing two rooms, 1 kitchen, 1 bathroom in V V puram, Bengaluru. Family is Hindu by religion and belongs to SC/ST community. He has five daughters and one son, with a gap of 1.5 to 2 years between them. His son is the youngest among all aged 7 years. Currently 6 members reside in the house – Mangappa, his wife, son and two daughters. Mangappa earns around 3000 per month. His wife working as maid in households earns 4000 per month. His son aarya accompanies him to workplace daily except weekends. Mangappa was little tensed on the day health worker Gayatri visited his home. On enquiring he told his son was suffering from amma, he had to take his son to anamma temple daily and hence had no earnings since a week.

   a) Comment on the socio-economic status of the family.
   b) List various socio-cultural factors and their impact on health. Add a comment on the socio-cultural factors prevalent in the current family
   c) Enumerate and define different types of family and the role of family in health and disease.
   d) You are the in charge medical officer of V V Puram, and while on routine field visit, you came across this family. what would be your approach to educate the family?

PHASE II MBBS, PART 1

MINIMUM TEACHING HOURS IN 2nd Year

Sl No	Topic	Number of competencies	Lecture	SGD/ Tutorial DOAP	SDL	Total Hrs
6	Epidemiology	9 (47 SLOs)	9	8	2	19
7	Occupational Health	5 (19 SLOs)	3	1	1	5
8	**Nutrition**	5 (16 SLOs)	2	4	1	7
9	Disaster Management	4 (10 SLOs)	2	0	2	4
10	International Health	2	2	0	0	2
11	Environmental Health Problems	8 (55 SLOs)	2	14	2	18
12	Mental Health	3 (6 SLOs)	0	2	1	3
13	Essential Medicines	3 (12 SLOs)	0	1	1	2
	Total	39	**20**	**30**	**10**	**60**
14	AETCOM Module 2.1&2.3		8			

3RD PROFESSIONAL YEAR

Sl No	Number	TOPIC	COMPETENCIES	LECTURE	PRACTICAL	SDL	TOTAL HOURS
1	CM 6	Basic statistics and its applications	9	0	12	0	12
2	CM 8	Epidemiology of communicable and non-communicable diseases	7	16	30	1	47
3	CM 10	Reproductive maternal and child health	9	12	10	1	23
4	CM 12	Geriatric services	4	1	2	0	3
5	CM 14	Hospital waste management	3	1	2	1	4
6	CM 16	Health planning and management	4	2	2	0	4
7	CM 17	Health care of the communtiy	5	6	0	1	7
8	CM 20	Recent advances in Community Medicine	4	2	2	1	5
		TOTAL HOURS		40	60	5	105
		ACTUAL HOURS		104	208		
			AETCOM - MODULE 3.1 AND 3.3 FOUNDATION OF COMMUNICATION 3 & 4				**10 HOURS**

Model Time table for Phase II MBBS

SAMPLE TIMETABLE

BLOCK 1: 15 WEEKS (OCT-JAN)

8-11		11.30-12.30	12.30-1.30	2-4
Monday	Postings	**PH-L**	**OBG-L**	PH-A,CM-B
Tuesday	Postings	**PH-L**	**FM-L**	FM-A,
Wednesday	Postings	**MIC-L**	**PA-L**	PA-A, MIC-B
Thursday	Postings	**CM-L**	PH-SGD	PA-B, MIC-A
Friday	Postings	**MIC-L**	**PA-L**	PH-B,CM-A
Saturday	Clinical training and Skills	G.MED-L	SUR-L	FM-B,

SECOND BLOCK 15 WEEKS (FEB-MAY)

8-11		11.30-12.30	12.30-1.30	2-4
Monday	Postings	**MIC-L**	**PA-SGD**	**PH-A, PA-B-SGD**
Tuesday	Postings	**PH-L**	**MIC-SGD**	**PH-SGD**
Wednesday	Postings	**PA-L**	**MIC-L**	**PA-A, MIC-B**
Thursday	Postings	PH-L		PH-B,PA-A SGD
Friday	Postings	**PA-L**	**MIC-SGD**	**PA-B,MIC-A**
Saturday	Clinical training and Skills	AETCOM	AETCOM	

THIRD BLOCK 10 WEEKS (JUN-AUG)

8-11		11.30-12.30	12.30-1.30	2-4	4-5
Monday	Postings	**PA-L**	MIC-L	**PH-SGD**	PA-SDL
Tuesday	Postings	**PA-L**	MIC-L	**PA-A, MIC-B**	PH-SDL
Wednesday	Postings	**PH-L**		**PH-A,PA-B SGD**	MIC-SDL
Thursday	Postings	**PH-L**		PH-B,PA-A SGD	CM-SDL
Friday	Postings	**CM-L**		PA-B, MIC-A	AETCOM-SDL
Saturday	Clinical training and Skills	**SUR-L**	**OBG**	G.M-L	

Timetable for Second Professional Year

	TERM-1-OCT-JAN (15 WK)			TERM-2-FEB-MAY (15 WK)			TERM-3- JUN-AUG (10 WK)			TOTAL		
	THEORY	PRACT	SGT/ TUTORIAL	THEORY	PRACT	SGT/ TUTORIAL	THEORY	PRACT	SGT/ TUTORIAL	THEORY	PRACT	SGT/ TUTORIAL
PATH	30	30	0	30	30	45	20	20	20	80	80	65
PHARM	30	30	15	30	30	30	20	20	20	80	80	65
MICRO	30	30	0	30	30	30	20	20	0	80	80	30
CM	15	0	30	0	0	0	15	0	0	30	0	30
FM	15	0	30	0	0	0	0	0	0	15	0	30
G.MED	15	0	0	0	0	0	10	0	0	25	0	0
G.SUR	15	0	0	0	0	0	10	0	0	25	0	0
OBG	15	0	0	0	0	0	10	0	0	25	0	0
AETCOM				AETCOM 30						AETCOM 30		

NOTE: Can be prepared at the convenience of the respective institutions

INTEGRATION CLASSES – SECOND PROFESSIONAL YEAR

TOPIC	TOPIC CODE	VERTICAL INTEGRATION	HORIZONTAL INTEGRATION	TOT
Epidemiology				
Define Epidemiology and describe and enumerate the principles, concepts, and uses	CM7.1	GENERAL MEDICINE		8
Enumerate, describe, and discuss the modes of transmission andmeasures for prevention and control of communicable and non-communicablediseases	CM 7.2			
Enumerate, describe, and discuss the sources of epidemiologicaldata	CM 7.3			
Define, calculate, and interpret morbidity and mortality indicatorsbased on given set of data	CM 7.4			
Enumerate, define, describe, and discuss epidemiological studydesigns	CM 7.5			
Enumerate and evaluate the need of screening tests	CM 7.6			
Describe and demonstrate the steps in the Investigation of anepidemic of communicable disease and describe the Principles ofcontrol measures	CM 7.7		MICRO	

Describe the principles of association, causation, and biases inepidemiological studies	CM 7.8			
Environmental Health Problems				
Describe the health hazards of air, water, noise, radiation, andpollution	CM 3.1	GM, ENT		5
Describe the aetiology and basis of water borne diseases /jaundice/hepatitis/ diarrheal diseases	CM 3.3	MICRO, GM, PAED		
Describe the role of vectors in the causation of diseases. Alsodiscuss National Vector Borne Disease Control Program	CM 3.6	MICRO		
Identify and describe the identifying features and life cycles ofvectors of Public Health importance and their control measures	CM 3.7	MICRO		
Describe the mode of action, application cycle of commonly usedinsecticides and rodenticides	CM 3.8	PHARMA		
Nutrition				
Describe the common sources of various nutrients and specialnutritional requirements according to age, sex, activity, physiologicalconditions	CM5.1	General Medicine, Pediatrics		
Describe and demonstrate the correct method of performing a nutritional assessment of individuals, families, and the community by using the appropriate method	CM5.2	General Medicine, Pediatrics		
Define and describe common nutrition related health disorders (including macro-PEM, Micro-iron, Zn, iodine, Vit. A), their control and management	CM5.3	General Medicine, Pediatrics		
Plan and recommend a suitable diet for the individuals and families based on local availability of foods and economic status, etc in a simulated environment	CM5.4	General Medicine, Pediatrics		
Describe the methods of nutritional surveillance, principles of nutritional education and rehabilitation in the context of socioculturalfactors.	CM5.5	General Medicine, Paediatrics		
Enumerate and discuss the National Nutrition Policy, important national nutritional Programs including the Integrated Child Development Services Scheme (ICDS) etc	CM5.6	Paediatrics		
Describe food hygiene	CM5.7		Microbiology	
Describe and discuss the importance and methods of foodfortification and effects of additives and adulteration	CM5.8	Paediatrics		
Disaster Management				
Define and describe the concept of Disaster management	CM13.1	GEN MED & GEN SURG		4
Describe disaster management cycle	CM13.2			
Describe man-made disasters in the world and in India	CM13.3			
Describe the details of the National Disaster management Authority	CM13.4			
Mental Health				

Define and describe the concept of mental Health	CM15.1	PSYCHIATRY		3
Describe warning signals of mental health disorder	CM15.2			
Describe National Mental Health program	CM15.3			
Essential Medicine				
Define and describe the concept of Essential Medicine List (EML)	CM19.1		PHARMA	3
Describe roles of essential medicine in primary health care	CM19.2			
Describe counterfeit medicine and its prevention	CM19.3			

Competencies to be covered in 2nd Professional year with

Specific Learning Objectives

THEORY

COMPETENCY DISTRIBUTION IN EACH BLOCK

FIRST BLOCK

SI.NO		TOPIC/SLO
LECTURES TO BE COVERED IN FIRST BLOCK		
36.	CM 3.1	1. Describe the health hazards of air and noise pollution 2. Explain prevention and control of air pollution. 3. Define water pollution and describe health hazards of water pollution 4. Enumerate biological effects of radiation
37.	CM 3.2	1. Discuss safe and wholesome water along with the sources of water 2. Describe the Purification of water on the large scale. 3. Describe the Purification of water on the small scale. 4. Discuss the drinking water quality-criteria standards water conservation and rainwater harvesting.
38.	CM 3.3	1. Classify the water borne diseases
39.	CM 3.4	1. List the types of solid waste and the hazards due to each type. 2. Describe various scientific methods of sewage/liquid waste and solid waste disposal 3. Discuss hazards due to human excreta and open defaecation 4. Explain the principles behind functioning of sanitary latrines and other methods of human excreta disposal
40.	CM 3.5	1. Explain and differentiate the housing standards of Urban and rural area. 2. Assess over crowding 3. Explain hazards of overcrowding. 4. List and explain the indicators of housing. 5. Explain the effects of poor housing on the health.
41.	CM 3.6	1. Describe medical entomology – arthropods 2. Classify vectors of medical importance 3. List various diseases transmitted by vectors and its modes 4. Describe various vector control measures 5. Describe the national vector borne disease control program
42.	CM 3.7	1. List vectors of public health importance 2. Identify different vectors of public health importance 3. Describe lifecycle and control measures of different vectors of public health importance
43.	CM 3.8	1. Define insecticides and rodenticides and Classify with examples 2. Explain mode of action and application of commonly used insecticides and rodenticides 3. List hazards of injudicious use of insecticides.

44.	CM 7.1	1. Define the term epidemiology 2. List various components and approaches of epidemiology 3. Describe the aims of epidemiology 4. Enumerate various uses of epidemiology
45.	CM 7.2	1. Define infection, contamination, and infestation 2. Classify modes of transmission of zoonotic diseases 3. Differentiate between concept of disease control, elimination and eradication 4. Define Incubation period, secondary attack time, generation time and serial interval 5. Classify and describe adverse events following immunization (AEFI) 6. Explain cold chain system and its uses
46.	CM 7.3	1. Enlist various sources of epidemiological data 2. Describe the advantages and disadvantages of various sources of epidemiological data 3. Discuss the uses of epidemiological data 4. Describe SRS Classify health surveys 5. Enlist the uses of hospital records
47.	CM 7.4	1. List the uses of morbidity and mortality indicators 2. Classify morbidity and mortality indicators of public health importance with examples. 3. Comment of the impact of national health programmes based on the given set of data on morbidity and mortality indicators
48.	CM 7.5	1. Classify the epidemiological study designs 2. Explain the steps of different epidemiological study designs (Cross sectional, case control, cohort and RCT) 3. List the advantages and limitations of various epidemiological study designs. 4. Select the appropriate study design for a given research question
49.	CM 7.6	1. Define screening test and list the types of screening tests 2. List the differences between screening and diagnostic test 3. List the criteria for screening of a disease 4. Enumerate and explain the uses of screening tests 5. List and explain the evaluation indicators for a screening test
50.	CM 7.7	1. Know the objectives and steps in investigation of epidemic 2. Know the principle of control measures 3. With problem-based case scenario, enumerate the steps in the investigation of epidemic able to list at least five steps of epidemic investigation
51.	CM 7.8	1. Explain the principle of association and causation 2. List different types of biases in epidemiological studies 3. Identify the biases in various epidemiological studies 4. Enlist 3 biases in epidemiological studies

52.	CM 7.9	1. Describe the application of computers in epidemiology 2. Hands on training by using computers in epidemiology 3.List out the 3 uses of computer in epidemiology
53.	CM 11.1	1. List the most common occupations in India 2. List the most common occupational illnesses suffered by workers in these occupations 3. List and describe the clinical features of the occupational illnesses experienced by workers, including those in agriculture
54.	CM 11.2	1. List two important acts related to Occupational Health in India. 2. Describe in brief the benefits to employees under the Employees State Insurance Act (ESI Act).
55.	CM 11.3	1. Distinguish between hazard and risk 2. List and classify the hazards faced employees in common occupations 3. Draw the triangle depicting the Hierarchy of Control 4. List preventive interventions under the different levels of the hierarchy of controls
56.	CM 11.4	1. Define "Ergonomics" 2. List the common ergonomic problems seen among employees in different occupations 3. List the risk factors implicated in the causation of common ergonomic problems 4. List the measures to be taken to ensure ergonomic safety
57.	CM 11.5	1. List the categories of healthcare workers employed in the healthcare industry 2. List and describe the clinical features of the occupational illnesses experienced by healthcare workers. 3. List and classify the hazards faced employees in different departments in a hospital setting 4. List preventive interventions to prevent and manage occupational hazards and illnesses in the hospital setting

PRACTICAL / DOAP TOPICS TO BE COVERED IN FIRST BLOCK

1	C M 3.2	1. Estimate the amount of bleaching powder required for chlorination of a water source 2. Differentiate a sanitary and non sanitary well from the given models 3. Analyse water quality form the given information
	C M 3.6	1. Identify and distinguish the vectors of public health importance based on the morphology 2. Identify and distinguish the different stages of the life cycle of the vectors of public health importance 3. Identify the insecticide/pesticide and associate its use in vector control
2	C M 5.2	1. Conduct a nutritional assessment of individuals, families, and the community using the appropriate anthropometric and clinical methods
	C M 5.4	1. Plan a diet chart for individuals of different age groups and gender, based on their requirements, availability of foods and economic status in a simulated environment 2. Plan a comprehensive dietary guideline for families belonging to various

		socio economic status in a simulated environment
3	C M 7.4	1. Calculate and interpret morbidity and mortality indicators based on given set of data 2. Calculate and interpret sensitivity, specificity, false positive, false negative, predictive value positive and negative of a screening test
	C M *7.7*	1. In a simulated scenario: Demonstrate the steps in the investigation of an epidemic of a communicable disease and outline the control measures
	C M 7.9	1. Use computers and appropriate software technology in epidemiology
4	C M 11.4	1. Identify the hazards associated with different occupations 2. Identify the measures, personal protective devices and equipments and demonstrate its correct use in ensuring occupational safety

SECOND BLOCK

Community Medicine has no teaching hours in 2nd Block

THIRD BLOCK

SI NO		TOPIC
LECTURES TO BE COVERED IN THIRD BLOCK		
19.	CM 13.1	1. DEFINE the terms Hazard, Disaster. 2. CLASSIFY different disaster types with examples 3. DESCRIBE the response of a given institution during past disasters
20.	CM 13.2	1. LIST the phases of disaster management 2. DESCRIBE Triaging, Tagging and Identification of Dead 3. LIST the steps of Epidemiological surveillance and disease control in disasters 4. Describe the role of disaster preparedness and personal protection in various disasters
21.	CM 13.3	1. LIST the various manmade disasters in the world and in India 2. LIST the responses in manmade disasters

22.	CM 13.4	1. DESCRIBE the role of the National Disaster Management Authority in Disaster Management
23.	CM 15.1	1. To list the common mental health problems among the population 2. To classify psychiatric ailments- Common Mental Health Disorders (CMDs) and Severe Mental Health Disorders (SMDs)
24.	CM 15.2	1. To understand the factors that contribute to the burden of the mental health problems among women in the rural areas 2. To describe the warning signs of mental health
25.	CM 15.3	1. To be able to state the roles and the functions of community health workers in a rural mental health programme
26.	CM 18.1	1. Define health 2. Define the concept of International health 3. Describe the concept of International health
27.	CM 18.2	1. Describe roles of various international health agencies 2. Explain the health work of bilateral health organization
28.	CM 19.1	1. Define NLEM 2. State the rationale for NLEM 3. Name atleast10 categories of drugs under NLEM 4. List 5 potential uses of NLEM
29.	CM 19.2	1. Define primary health care 2. Explain the roles of essential medicine in primary health care
30.	CM 19.3	1. Enlist the different types of counterfeit drugs which can be seen in healthcare settings 2. Discuss the medico-social consequences of prescription of counterfeit drugs to population 3. Demonstrate understanding of various legal, social, and medical measures to prevent availability of counterfeit drugs in Indian healthcare system
DOAP TOPICS TO BE COVERED IN THIRD BLOCK		
		NIL

Summary of TL methods and list of competencies to be covered in Phase II MBBS and Assessment methods

Competency No.	Teaching-Learning Methods	Assessment Method
CM 5.4	SGD – P (Practical)	Skill assessment –OSPE
CM 5.5	Lecture, SGD	WRITTEN
CM 5.6	Lecture	Written
CM 5.7	Lecture DOAP	WRITTEN OSPE
CM 5.8	Lecture	WRITTEN
CM 3.1	Lecture, SGD	Written, Viva Voce
CM 3.2	Lecture, SGD/ Field Visit/ DOAP session	Written Viva Voce
CM 3.3	Lecture, SGD, DOAP	Written, Viva voce
CM 3.4	Lecture, SGD, Practical	Written, Viva voce
CM 3.5	SGD/ Practical	Written, Viva voce
CM 3.6	Practical	Written, Viva voce
CM 3.7	SGD/ Practical/ Lecture	Written, Viva Voce, Skill assessment
CM 3.8	SGD/ Lecture	Written, Viva voce
CM 7.1	SGD, Lecture	Written/ Viva Voce
CM 7.2	SGD, Lecture	Written/ Viva Voce
CM 7.3	SGD, Lecture	Written/ Viva Voce
CM 7.4	Lecture/ SGD, DOAP sessions	Written/ Skill assessment
CM 7.5	Lecture/ SGD	Written, Viva Voce
CM 7.6	SGD, Lecture	Written/ Skill assessment
CM 7.7	Lecture/ SGD	Written/ Skill assessment
CM 7.8	Lecture/ SGD	Written/ Viva voce

CM 7.9	Lecture/ DOAP	Written
CM 11.1	Lecture, SGD	Written, Viva Voce
CM 11.2	Lecture, SGD	Written, Viva Voce
CM 11.3	Lecture/ SGD	Written, Viva Voce
CM 11.4	Lecture, SGD	Written, Viva Voce
CM 11.5	Lecture, SGD	Written, Viva Voce
CM 13.1	Lecture, SGD	Written, Viva voce
CM 13.2	Lecture, SGD	Written, Viva Voce
CM 13.3	Lecture, SDG	Written, Viva Voce
CM 13.4	Lecture, SGD	Written, Viva Voce
CM 15.1	Lecture, SGD	Written, Viva voce
CM 15.2	Lecture, SGD	Written, Viva voce
CM 15.3	Lecture, SGD	Written, Viva voce
CM 18.1	Lecture, SGD	Written, Viva voce
CM 18.2	Lecture, SGD	Written, Viva Voce
CM 19.1	Lecture, SGD	Written, Viva voce
CM 19.2	Lecture, SGD	Written, Viva voce
CM 19.3	Lecture, SGD	Written, Viva Voce

CERTIFIABLE SKILLS

Certifiable skill - 1

Conduct a nutritional assessment of individual by using the appropriate anthropometric and clinical methods and communicate the same to the patient. Student has to perform this activity 5 times to be certified

Certifiable skill - 2

Plan a diet chart for individuals of different age groups and gender, and physiological states (pregnancy, lactation, disease) based on their requirements, availability of foods and economic status during family study. Student has to perform this activity 2 times to be certified

Certifiable skill - 3

Plan a comprehensive dietary chart for families belonging to different socio economic status in a simulated environment. Student has to perform this activity 2 times to be certified

Certifiable skill – 4

Calculate and interpret morbidity and mortality indicators based on a given data set. Student has to perform this activity 5 times to be certified

Certifiable skill – 5

Validate a screening test (sensitivity, specificity, false positive, false negative, predictive value positive and negative) using the given information. Student has to perform this activity 2 times to be certified

CASE SCENERIOS FOR TOPICS OF SECOND PROFESSIONAL YEAR

I) Epidemiology

Topic: A) Enumerate, describe and discuss the sources of epidemiological data

TL method: SDL

Duration: 1 hour

Assignments:

1) Find out the current mortality and morbidity indicators from census, SRS, NFHS and DLHS. Comment on the current IMR and MMR.
2) Describe in brief about census and SRS. Compare and comment on the statistics from 2001 till current.
3) Describe the importance and list the parts of a death certificate. Collect and analyze 10 random death certificates from your hospital.
4) Enlist notifiable diseases in India.
5) Visit and find out the registers maintained in the urban health training centre, siddaiah road. Write a note on the importance of maintaining each register.
6) Visit and find out the registers maintained in ARC of your hospital. Write a note on importance of each register.
7) Enlist different sources of epidemiological data. What is primary data and secondary data.

Topic: B) Describe and demonstrate the steps in the Investigation of an epidemic of communicable disease and describe the principles of control measures.

TL method: SGD

Duration: 2 hours

Example

Class 1: A lecture class of duration 1 hour on the same topic Followed by

Class 2: Division into groups (how many ever possible) and Discussion on steps of outbreak investigation by quoting an example.

Dr. Vani was appointed as Medical officer of Health in **UHTC A** in Bangalore. On 2ndjune2019 at 12 AM, Dr. Vani got a call from the **medical officer of a girl's hostel B**, which was near to UHTC and informed that12 cases of diarrhoea and vomiting with mild dehydration had occurred in the hostel and he was referring them to the UHTC. The hostel had about 1000 girls who were students in different colleges in Bangalore. These girls used to leave early morning in namma metro or BMTC buses for their respective colleges, after breakfast and used to carry packed lunch. They used to comeback in late evening, have tea and some snacks at 6pm followed by dinner at 9 pm in the hostel. In the meanwhile Dr. Vani also gets 15 cases with similar history from a quarters which is located nearby to the hostel B. On enquiring she found that the hostel B and the

quarters had shared the same general piped water supply and sewerage system.KR market was very near to both hostel and quarters with all the necessary daily requirements available.

Topic: C) Describe and demonstrate the application of computers in epidemiology

TL method: SDL

Duration: 1 hour

Assignments:

1. Write a short note on computational epidemiology
2. Importance of ANMOL program
3. Role of GIS in epidemiology (quoting an example)
4. e hospitals
5. RCH portal and HMIS
6. Asha soft
7. Electronic health records
8. m health
9. e VIN

Occupational health

Topic: Enumerate and describe specific occupational health hazards, their risk factors and preventive measures

TL method: SDL

Duration: 1 hour

Assignments:

1. List important occupational health hazards in following streams
    - Software engineer
    - School Teacher
    - Traffic police
    - Miners
    - Nursing staff
    - Farmers
    - Truck driver

2. Write a note on the roles and responsibilities of an in charge medical officer in a factory

3. Visit ESI hospital and note down the facilities given under ESI scheme.

II) Disaster management

Topic: Describe man-made disasters in the world and in India

TL method: SDL

Duration: 1 hour

Assignments:

1. Write a note on the aftermath of terrorist attack onSrilanka.
2. Climate change and its effects on health.
3. Bhopal gas tragedy and its effect on the current generation.
4. Write a note on deep-water horizon oil spill, Mexico.
5. Write a note on effects of war on health system.

III) Environmental health problems

Topic: A) Describe the aetiology and basis of water borne diseases /jaundice/hepatitis/ diarrheal diseases

TL method: SGD

Duration: 1 hour

Division into 4 groups or establishment of 4 stations (on rotation)

1: Water borne diseases

2: Water washed diseases

3: Water based diseases

4: Water related diseases

Category	Basis	Examples
Water borne diseases	Caused by the ingestion of water contaminated by human or animal faeces or urine containing pathogenic bacteria or viruses.	Cholera, typhoid, amoebic and bacillary dysentery, viral hepatitis, leptospirosis, giardiasis.
Water washed diseases	Diseases due to lack of water. Poor personal hygiene favours spread.	Scabies, skin sepsis & ulcers, yaws, trachoma, conjunctivitis, flea-, lice-, and tick- borne diseases.
Water based diseases	Caused by parasites found in intermediate organisms living	Schistosomiasis, dracunculiasis and some other

	in water. Infecting agents spread by contact or ingestion of water. An essential part of life cycle of agent takes place in aquatic animal eg snails, Cyclops etc	helminths
Water related diseases	Transmitted by insect vectors which breed in water	Yellow fever, dengue, encephalitides, filariasis, malaria, onchocerciasis, trypanosomiasis, sleeping sickness

Topic: B) Describe the concept of solid waste, human excreta and sewage disposal

TL method: Practical

Duration: 1 hour

Modular based teaching

Topic: C) Describe the mode of action, application cycle of commonly used insecticides and rodenticides

TL method: SDL

Duration: 1 hour

Assignments

1. What is an insecticide and rodenticide?
2. Classification of insecticides with examples
3. DDT and its application
4. Write a note on botanical insecticides
5. Classification of rodenticides with examples
6. Insecticide toxicity and its treatment
7. Write a note on different anti rodent measures.

IV) MENTAL HEALTH

Topic: Describe warning signals of mental health disorder

TL method: SDL

Duration: 1 hour

Assignments

1. Write down the epidemiology of suicide - world and India
2. Signs of good mental health
3. Enlist features of depression
4. List down the preventive strategies to curtail increasing suicidal rates in India

5. Note on mental health care act
6. Burden of depression on individuals and families

ESSENTIAL MEDICINE

Topic: Describe roles of essential medicine in primary health care

TL method: SDL

Duration: 1 hour

Assignments

1. List the essential medicines to be available in PHC
2. Visit a PHC and understand the indenting of essential medicines
3. Role of essential medicines in primary health care
4. Enlist and describe various methods of inventory management

ASSESSMENT / UNIVERSITY EXAMINATION

Summative Assessment - An assessment conducted at the end of instruction to check how much the student has learnt.

Formative Assessment - An assessment conducted during the instruction with primary purpose of providing feedback for improving learning.

Internal assessment – Range of assessments conducted by the teacher teaching a particular subject with the purpose of knowing what is learnt. Internal assessment can have both formative and summative functions.

Note - Assessment requires specification of measurable and observable entities. This could be in the form of whole tasks that contribute to one or more competencies or assessment of a competency per se. Another approach is to break down the individual competency into learning objectives related to the domains of knowledge, skills, attitudes, communication etc. and then assess them individually.

Scheduling of Internal Assessment - done once at the end of each professional year

Theory IA can include: Written tests should have essay questions, short notes, and creative writing experiences.

Practical IA can include: Spotters, Problem solving exercises, Objective Structured Practical / Clinical Examination (OSPE / OSCE), Clinicosocial case discussion, and records maintenance and logbook assessment.

Assessment of Log-book- Log book should record all academic and curricular activities like seminar, symposia, and quizzes. It should be assessed regularly and submitted to the department. Marks should be allotted for logbook assessment and should be included as a part of formative assessment marks under practical's

Assessment of Practical Record book- Practical book should record all skills and other practical exercises done during the academic programme. It should be assessed regularly and submitted to the department. Marks should be allotted for practical record and should be included as a part of formative assessment marks under practical's

Assessment for AETCOM will include: - Written tests comprising of short notes and creative writing experiences only in internal assessment.

INTERNAL ASSESSMENT

- There will be 3 internal assessment examinations in Community Medicine. The structure of the internal assessment examinations should be like the structure of University examinations.
- It is mandatory for the students to appear for all the internal assessment examinations.
- First internal assessment examination will be held at the end of 1st professional, second internal assessment examination will be held at the end of 2nd professional and third internal assessment examination will be held at the end of 3rd professional.

- Pattern of first and second Internal Assessment are left to the discretion of the individual institute. However, third internal assessment has to be conducted in the same pattern of the University exam
- Additional internal assessment examination for absent students can be considered due to genuine reason after approval by the head of the department. It should be taken before the submission of internal assessment marks to the University.
- Internal assessment marks allotment for theory and practical for the first and second internal assessment are left to the discretion of the respective institutes. Marks allotted in the third (final) Internal Assessment should be preferably for 100 marks each for Theory and Practical.
- 20% of the internal assessment marks should be from Formative Assessment in Practical internal assessment
- Feedback in Internal Assessment - Feedback should be provided to students throughout the course so that they are aware of their performance and remedial action can be initiated well in time. The feedbacks need to be structured and the faculty and students must be sensitized to giving and receiving feedback.
- The results of IA should be displayed on notice board within two weeks of the test and an opportunity provided to the students to discuss the results and get feedback on making their performance better.
- It is also recommended that students should sign with date whenever they are shown IA records in token of having seen and discussed the marks.
- Internal assessment marks will not be added to University examination marks and will reflect as a separate head of passing at the summative examination.
- Internal assessment should be based on competencies and skills.
- Criteria for appearing in University examination: Learners must secure at least 50% marks of the total marks (combined in theory and practical; not less than 40 % marks in theory and practical separately) assigned for internal assessment in order to be eligible for appearing at the final University examination.
- **Average marks obtained in all three internal assessments should be calculated to 40 marks**.
- A candidate who has not secured requisite aggregate in the internal assessment may be subjected to remedial assessment by the institution. If he/ she successfully complete the same, he/she is eligible to appear for University Examination. Remedial assessment shall be completed before submitting the internal assessment marks online to the University.

Annexures

Blueprint for Theory and Practical assessment

SCHEME OF EXAMINATION

Internal assessment

TABLE SHOWING SCHEME FOR CALCULATION OF INTERNAL EXAMINATION MARKS

Theory (Maximum marks)		**Practical (Maximum marks)**	
Theory papers	30*	Practical exercises	30**
Professionalism	5	Level of participation in AETCOM activities	5
Part completion tests	5	Practical record book	5
TOTAL	40	TOTAL	40
Please note: □ *Prior to submission to the University, the marks for each of the internal examination theory assessments must be calculated out of 30 marks, regardless of the maximum marks. □ **Prior to submission to the University, the marks for each of the internal examination practical assessments must be calculated out of 30 marks, regardless of the maximum marks. □ Only the final marks out of 40 (as in the table) needs to be submitted to the University, separately for theory and practical for each internal assessment.			

GENERAL INSTRUCTIONS

- Questions in each paper should be as per distribution of competencies in each professional year.
- The SLO to be referred while setting the question paper
- Repetition of questions from the same SLO to be avoided
- The marks allotted to the different topics & sections to be adhered
- There will be at least one question on AETCOM in the theory papers.
- Internal assessment needs to be for 40 marks in theory and 40 marks for Practical
- Internal assessment for theory may constitute Long essay, Short essay, and short answers
- 20% of the internal assessment marks will be contributed by formative assessment in both theory i.e. 8 marks in theory and 8 marks in practical.
- Total internal assessment marks of 40 will be 32 for internal assessment and 8 for formative assessment conducted. (32+8=40)
- Marks allocated for record and logbook maintenance will be added to practical internal assessment marks.

FORMATIVE ASSESSMENT

- CBME mandates conduct of formative assessments, institutions can conduct formative assessments as per their convenience however the formative assessment would contribute towards the internal assessments.

- Institutions can select from the suggested methods of formative assessment that are given below however the institutions can adapt methods that comply with that of the MCI regulations.
- Feedback to students regarding formative assessment have to be documented and should be the basis for mark allocation.
- The logbook in community medicine is a record of all activities of the students. All competencies at a "Shows How" level in the Miller's pyramid should be documented in the logbook. In addition, logbook also contains documentation of attendance, involvement in departmental academic and extracurricular activities and feedback given to the student. The logbook should be signed by faculty on a regular basis. A total of 10 marks should be allotted to logbook in the second professional year. This should be reduced and added to formative assessment marks.
- The practical record in community medicine contains documentation of the practical sessions head during the course.A total of 10 marks should be allotted to practical record and should be reduced and added to formative assessment marks in the second professional year.
- Suggested methods for Formative Assessments are:
    - MCQs
    - Essays
    - Assignments
    - Seminar presentations
    - Project work
    - OSCE
    - OSPE

TOPIC-WISE MARKS DISTRIBUTION FOR THEORY EXAMINATION

Si. No.	TOPICS	Percentage Weightage	Nature of question
1	Epidemiology	**5 – 30%**	**LA, SE, SA**
2	Occupational Health	**3 -10%**	**LA, SE, SA**
3	Disaster Management	**3- 4%**	**SE, SA**
4	International health	**3- 4%**	**SE, SA**
5	Environmental health problems	**5- 35%**	**LA, SE, SA**
6	Mental Health	**3- 4%**	**SE, SA**
7	Essential Medicine	**3- 3%**	**SA**
8	AETCOM	**3- 12%**	**SE, SA**

*LA-LONG ANSWER, SE-SHORT ESSAY, SA-SHORT ANSWER

PRACTICALS

Total Marks – 40

Respective institutions can conduct practical examinations by the following suggested methods

Exercise 1- Spotters

Spotters can be chosen from among the following topics covered in the second professional year including Entomology. Disinfectants, insecticides, environment health models, instruments, occupational health

Note: Students need to identify the spotter and write two relevant points

Exercise 2– Problem solving exercises

Three problems from a list of problems on topics covered in the second professional year including epidemiology, biostatistics, environmental health, occupational health and AETCOM

Exercise 3: OSPE / OSCE

Two OSPE / OSCE stations will be set up based on topics covered in the second professional year of which at least one station should be a counselling station.

Exercise 4: Family study

One clinic-social case / family study will be allotted per student based on problems of public health importance. The clinic-social case may be allotted from the community or the hospital.

Exercise 5: Viva Voce

Division of the topics can be at the discretion of the institution.

NOTE:

3. **The spotters, exercises and OSPE depends on the portion covered in the respective block.**
4. **Certifiable competencies/AETCOM should be completed in Formative/Internal assessment**

ATTITUDE ETHICS AND COMMUNICATION SKILLS (AETCOM)

SI NO	MODULE	TOPIC	DEPARTMENT				
			PA	MI	PH	CM	FM
1	2.1	Foundation of communication				✓	
2	2.2	Foundation of bioethics					✓
3	2.3	Health care as a right				✓	
4	2.4	Working in a health care team	✓				
5	2.5	Bioethics- case studies on patient autonomy and decision making (patient rights and shared responsibility in health care)			✓		
6	2.6	Bioethics-Case studies on patient autonomy and decision making (refusal of care including do not resuscitate and withdrawal of life Support)			✓		
7	2.7	Bioethics- Case studies on patient autonomy and decision making (consent for surgical procedures)		✓			
8	2.8	What does it mean to be a family member of sick patient					✓

****PA-Pathology; MI- Microbiology; PH- Pharmacology; CM- Community medicine; FM- Forensic medicine.**

FAMILY STUDY/ CLINICAL POSTING IN SECOND PROFESSIONAL YEAR

Duration - one month

SLOs

1. To assess socioeconomic status of given family
2. To assess housing condition and presence of overcrowding in a given family
3. To do anthropometric measurement of individuals in given family
4. To explain effect of socio-environmental conditions on the health of the family
5. To plan and recommend suitable diet for family
6. To do nutritional assessment of under five children in anganwadis
7. To assess the socio environmental conditions of anganwadis
8. To describe maternal and child health services at PHC/UHC.

Sl.no	Topic
1.	Family health study-Introduction (CM 2.2)
2	Spot mapping and Assessment of Housing standards (CM3.4 and 3.5)
3	Family visit - Anthropometric measurement & Dietary assessment (CM 5.2)
4	Family visit – Dietary assessment
5	Family visit – Dietary assessment
6	Family visit – Dietary assessment
7	Diet calculation
8	Introduction of Health education principles (CM 1.6)
9	Preparation of presentation
10	Presentation of family health study
11	Presentation of family health study
12	Feedback to family
13	Health education activity in family
14	Nutritional education
15	Planning and recommending diet for family from the locally available food
16	Health education activity in community (CM 1.6, 1.9)
17	Health education activity in community
18	Health education activity in community
19	Follow up visit to studied family
20	Presentation of follow up visit
21	Data analysis (CM 7.9)
22	Anganwadi visit -
23	Anganwadi visit
24	Anganwadi visit
25	Anganwadi visit
26	Presentation
27	Observation of maternal child health services at PHC/UHC
28	Observation of maternal child health services at PHC/UHC
29	Writing reports of family study, Anganwadi visit and PHC
30	Presentation of Family study activity

REFERENCE BOOK

1. K. Park, Park's textbook of preventive and social medicine, M/s Banarasidas Bhanot Publishers, Jabalpur. -

2. B.K. Mahajan &M. Gupta Textbook of preventive and social medicine, Jaypee Brothers.

3. Mahajan's Methods in Biostatistics for Medical Students and Research Workers. Jaypee Publishers

4). D.K Mahabalaraju., Essentials of Community Medicine, Practicals.

5) Sundar Lal, Textbook of Community Medicine, CBS Publishers.

Level II

1) A M Kadri.IAPSM's Textbook of Community Medicine.

2) J Kishore.Kishore's National Health Programs of India

3) Rajvir Bhalwar ,Textbook of Public Health and Community Medicine, Published in Collaboration with WHO.

3) Principles of Medical Education: Dr. T Singh

4) A H Suryakanth Community Medicine with Recent Advances.

5) P S S Sundar Rao.Introduction to biostatistics and research methods

Level-III

1. Donald Hunter, (2018) The Disease of Occupations, Latest Edition, Hodder & Stoughton London, Sydney, Auckland, Toronto.

2. International Labour Organization, Encyclopaedia of Occupational Health and Safety, Volume 1 & 2. ILO, Geneva, Switzerland

3. Jallifee, Clinical Nutrition, WHO., Geneva

SRI SIDDHARTHA
ACADEMY OF HIGHER EDUCATION

(Deemed to be University, declared u/s 3 of the UGC Act, 1956)

UNDERGRADUATE LOGBOOK

FOR 1ST, 2ND AND 3RD PROFESSIONAL

YEAR MBBS STUDENTS

DEPARTMENT OF COMMUNITY MEDICINE

Name of College, Address & Logo

PREFACE

The Medical Council of India has revised the undergraduate medical education curriculum so that the Indian Medical Graduate (IMG) is able to recognize "Health for all" as a national goal. He/she should also be able to fulfil his/her societal obligations. The revised curriculum has specified the competencies that a student must attain and clearly defined teaching learning strategies for the same. With this goal in mind, integrated teaching, skill development, AETCOM and self-directed learning have been introduced. There would be emphasis on communication skills, basic clinical skills, and professionalism. There is a paradigm shift from the traditional didactic classroom-based teaching to learning environments where there is emphasis on learning by exploring, questioning, applying, discussing, analysing, reflecting, collaborating, and doing. The recognition of this need is enshrined by a greatly enhanced allocation of time to these methods and also the assessment techniques. With this view in mind the logbook has been designed as per the guidelines of Competency Based Curriculum.

INSTRUCTIONS

1) The logbook is a record of the academic and co-curricular activities of thedesignated student, who would be responsible for maintaining his/her logbook.

2) The student is responsible for

3) getting the entries in the logbook verified by thefaculty in charge regularly.

4) Entries in the logbook will reflect the activities undertaken in the department &have to be scrutinized by the Head of the concerned department.

5) The logbook is a record of various activities by the student like:

- Overall participation & performance
- Attendance
- Participation in sessions
- Record of completion of pre-determined activities.
- Acquisition of selected competencies

6) The logbook is the record of work done by the candidate in that department /specialty and should be verified by the college before submitting the application ofthe students for the university examination.

BASIC INFORMATION

Passport size photo

Name	
Roll No	
University Registration Number	
Batch	
Contact No	
E mail Id	
Guardian/Parent Name Contact Number	
Faculty Mentor Name Department	

LOGBOOK CERTIFICATE

This is to certify that this log book is the bonafide record of Mr./Ms……...Registrationnumber …..... and admitted to this Institution in the academic year .....whose particulars are given above. His/ Her log of competencies acquired, are as noted in the entries in this log book in the subject of COMMUNITY MEDCINE and related AETCOM modules as per the Competency Based Undergraduate Medical Education Curriculum, Graduate Medical Regulation 2019, during the period …….. to……..

She / He is not eligible / eligible to appear for the summative (University) assessment as on the date given below.

Signature of FacultyMentor

Name and Designation

Countersigned by Head of the Department

Place:

Date:

INDEX

Topic	Page Nos.	Signature of Faculty
Core Activities		
Attendance extract	**-------**	
Internal assessment marks	With record feedback	
Communication activity		
Family study		
Clinico-social Case		
Seminar		
Self-Directed Learning		
Record Maintenance		
Health Days		
Volunteering in National Health Program Related Field Activities		
Field Visit		
AETCOM		
Research		
Investigation of an Epidemic*		
Non-Core Activities		
Co - Curricular Activities (Quiz, Poster, Debate, Essay, Skits)		
CME/ Conference / Workshop		
Awards / recognition		
Overall assessment of student		

ATTENDANCE EXTRACT

Professional year	Classes conducted		Classes attended		Percentage	
	Theory	Practical	Theory	Practical	Theory	Practical
First						
Second						
Third						
Total						

Signature of faculty and date

Note:

Every candidate should have **attendance not less than 75% of the total classes conducted in theory which includes didactic lectures and self-directed learning and not less than 80% of the total classes conducted in practical which includes small group teaching, tutorials, integrated learning and practical sessions** in each calendar year calculated from the date of commencement of the term to the last working day as notified by the University in each of the subjects prescribed to be eligible to appear for the university examination.

The Principal should notify at the College the attendance details at the end of each term withoutfail under intimation to this University

INTERNAL ASSESSMENT MARKS

Professional year	Theory		Practicals	
	Total marks	Obtained	Total	Obtained
First				
Feedback given Date Signature of faculty Signature of student				
Second				
Feedback given Date Signature of faculty Signature of student				
Third				
Feedback given Date Signature of faculty Signature of student				

SUMMARY OF FORMATIVE ASSESSMENT FOR THE ENTIRE YEAR

Sl. No.	Type of Assessment	Total marks	Marks scored	Signature of student	Signature of teacherwith date
1	Seminars/Tutorials/other activities/SGD	10			
2	Professionalism	10			
	TOTAL	20			

Note: Learners must secure at least 50% marks of the total marks (combined in theory andpractical / clinical; not less than 40 % marks in theory and practical separately) assignedfor internal assessment in a particular subject in order to be eligible for appearing at thefinal University examination of that subject. Internal assessment marks will reflect asseparate head of passing at the summative examination.

RUBRIC FOR ASSESSING THE PROFESSIONALISM

Phase	**Areas assessed**					**Signature of student**	**Signature of teacher**
	Regular for Classes (5)	Submission of records (5)	Behaviour in class and discipline (5)	Dress code and presentablility (5)	Total (20)		
At the end of 1st IA							
At the end of 2nd IA							
At the end of 3rd IA							
Average score at the end of the year							

COMMUNICATION ACTIVITY

Competencies covered

1.9: Demonstrate the role of effective communication skills in health in a simulated environment

1.10: Demonstrate the important aspects of the doctor patient relationship in a simulated environment

4.3: Demonstrate and describe the steps in evaluation of health promotion and education program

Competency # addressed	**Name of Activity**	**Date completed**	**Attempt at activity** First or Only (F) Repeat (R) Remedial (Re)	**Rating** Below (B) expectations Meets (M) expectations Exceeds (E) expectations	**Decision of faculty** Completed (C) Repeat (R) Remedial (Re)	**Initial of faculty and date**	**Feedback received** Initial of learner

FAMILY STUDY

Competencies covered

2.1: Describe the steps and perform clinic-socio-cultural and demographic assessment of the individual, family, and community

2.2: Describe the socio-cultural factors, family (types), its role in health and disease & demonstrate in a simulated environment the correct assessment of socio-economic status

2.3: Describe and demonstrate in a simulated environment the assessment of barriers to good health and health seeking behaviour

5.2: Describe and demonstrate the correct method of performing a nutritional assessment of individuals, families, and the community by using the appropriate method

5.4: Plan and recommend a suitable diet for the individuals and families based on local availability of foods and economic status, etc in a simulated environment

Competency # addressed	**Name of Activity**	**Date completed**	**Attempt at activity** First or Only (F) Repeat (R) Remedial (Re)	**Rating** Below (B) expectations Meets (M) expectations Exceeds (E) expectations	**Decision of faculty** Completed (C) Repeat (R) Remedial (Re)	**Initial of faculty and date**	**Feedback received** Initial of learner

CLINICO – SOCIAL CASE

Competencies covered

2.1: Describe the steps and perform clinic-socio-cultural and demographic assessment of the individual, family, and community

2.2: Describe the socio-cultural factors, family (types), its role in health and disease & demonstrate in a simulated environment the correct assessment of socio-economic status

2.3: Describe and demonstrate in a simulated environment the assessment of barriers to good health and health seeking behaviour

5.2: Describe and demonstrate the correct method of performing a nutritional assessment of individuals, families, and the community by using the appropriate method

5.4: Plan and recommend a suitable diet for the individuals and families based on local availability of foods and economic status, etc in a simulated environment

Competency # addressed	**Name of Activity**	**Date completed**	**Attempt at activity** First or Only (F) Repeat (R) Remedial (Re)	**Rating** Below (B) expectations Meets (M) expectations Exceeds (E) expectations	**Decision of faculty** Completed (C) Repeat (R) Remedial (Re)	**Initial of faculty and date**	**Feedback received** Initial of learner

SEMINAR

Competencies covered

1.9: Demonstrate the role of effective communication skills in health in a simulated environment

4.3: Demonstrate and describe the steps in evaluation of health promotion and education program

Competency # addressed	**Topic**	**Date completed**	**Attempt at activity** First or Only (F) Repeat (R) Remedial (Re)	**Rating** Below (B) expectations Meets (M) expectations Exceeds (E) Expectations	**Decision of faculty** Completed (C) Repeat (R) Remedial (Re)	**Initial of faculty and date**	**Feedback received** Initial of learner

STUDENT SEMINAR EVALUATION RUBRIC

Name of the student: _____

Reg.No._____

Name of the Topic: _____ Date of Presentation: _____

Please tick mark (√) the response which best represents your answer for the following questions.

S. No.		Strongly Disagree (1)	Disagree (2)	Uncertain (3)	Agree (4)	Strongly Agree (5)
	Content:					
1.	The topic chosen was relevant to the course					
2.	The objectives of the topic were clearly stated.					
3.	There was adequate review of the literature.					
4.	The student maintained good continuity of thoughts throughout the presentation.					
5	The student demonstrated a good understanding of the topic.					
6.	The material presented was appropriate for the time allotted.					
	Presentation:					
1.	The presentation was well organized.					
2.	The audio visuals were well prepared.					
3.	The voice was clear and audible.					
4.	The student maintained regular eye contact with the audience.					
5.	The student adhered to the expected style of a scientific talk.					
6.	The student maintained the interest of the audience throughout the presentation.					
7.	The student maintained proper pace during the presentation.					
8.	The student handled all the questions well.					
9.	The student summarized the topic well emphasizing a take home.					

Suggestions for Improvement:

Any other Comments:

Overall Score: ☐ **Evaluated by: Name of the Faculty: _____**

SMALL GROUP DISCUSSION– ASSESSMENT AND FEEDBACK

Module#	**Name of SGD/SDL Activity**	**Date completed**	Score	**Initial Offaculty anddate**	**Feedback Receive**d Initial of learner

The small group discussions will be scored based on the following criteria. Marks to be given

Score	Criteria for assessment
5	Is a proactive participant showing a balance between listening, initiating, and focusing discussion. Displays a proactive use of the whole range of discussion skills to keep discussion going and to involve everyone in the group. Understands the purpose of the discussion and keeps the discussion focused and on topic. Applies skills with confidence, showing leadership and sensitivity.
4	Is an active participant showing a balance between listening, initiating, and focusing discussion. Demonstrates all the elements of discussion skills but uses them less frequently and with less confidence than the above level. Keeps the discussion going but more as a supporter than a leader. Tries to involve everyone in the group. Demonstrates many skills but lacks the confidence to pursue them so that the group takes longer than necessary to reach consensus. Demonstrates a positive approach but is more focused on getting done than on having a positive discussion.
3	Is an active listener but defers easily to others and lacks confidence to pursue personal point of view even when it is right. Participates but doesn't use skills such as summarizing and clarifying often enough to show confidence. Limits discussion skills to asking questions, summarizing, and staying on topic. Lacks balance between discussion and analytical skills. Either displays good analysis skills and poor discussion skills or good discussion skills and poor analysis skills.
2	Is an active listener but defers easily to others and tends not pursue personal point of view, lacking confidence. Limits discussion skills to asking questions, summarizing, and staying on topic. Rarely demonstrates analysis skills because doesn't understand the purpose of the discussion, and as a result, offers little evidence to support any point of view.
1	Demonstrates no participation or effort. Participates only when prompted by the teacher. Only responds to others and initiates nothing. Provides limited responses that are often off topic. Participates minimally so that it is impossible to assess analysis skills or understanding of the issues.

EVALUATION OF SGL SESSIONS

COURSE TITLE: _____

PHASE_____ DATE: _____

Scale:1- Never

2- Occasionally

3- Sometimes

4- Often

5- Always

1 2 3 4 5

1.	Assembles for the session in time					
2.	Contributes relevant information in discussions					
3.	Shares learning resources relevant to the topic					
4.	Gives critical feedback					
5.	Takes criticism in a healthy manner					
6.	Seeks answers to learning questions					
7.	Integrates old and new knowledge (across the courses)					
8.	Shows consideration for group process					
9.	Shows confidence in areas of understanding					
10.	Shows commitment to correct deficiencies					
	Total					

STUDENT TUTOR

SIGNATURE	SIGNATURE
NAME:	NAME:
REG.NO.	DEPARTMENT:

Documentation and feedback for Self-Directed Learning

Sl no	Date	Topic of SDL	Feedback	Signature of faculty/mentor
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				

Reflection on Self-directed learning Experience

Topic:

Date:

Signature of Teacher-in- charge

RECORD MAINTAINANCE

Scoring: Excellent (8-10) Good (6-7) Average (4-5) Poor (<4)

Criterion	Rating	Signature of faculty and date
Completion		
Quality of content		
Appropriate diagrams where required		
Neatness		
Total		

WORLD HEALTH DAY

Health day observed		
Date		
Location		
Role of the student	Participated	Observed
Details of the program		
Reflection by student		

Signature of faculty and date

VOLUNTEERING IN NATIONAL HEALTH PROGRAM RELATED FIELD ACTIVITIES

Name of the National Health Program		
Date		
Location		
Role of the student	Participated	Observed
Details of the activity		
Reflection by student		

Signature of faculty and date

FIELD OR CLINIC VISIT

Name of the visit	Date	Report written in record	Signature of faculty

The following are the recommendedfield visits for undergraduate students

1. PHC
2. Anganwadi
3. DOTS Centre
4. Hospital Waste Management Facility
5. Water Treatment Plant
6. ART / ICTC Centre

Check List for Evaluation of Field Visit Report

Field Visit Report will be marked on five-point Likert Scale:

1=Strongly Disagree,2= Disagree, 3= Neutral, 4= Agree, 5= Strongly Agree

	1	2	3	4	5
1. There is a comment on whether the objectives of the visit have been fulfilled, if not which objective has not been covered					
2. There is Clear Description of student observation/ skill learned.					
3. Analysis of strengths and weaknesses of the services in light of theory and key concepts of the course					
4. Report include information that supports student analysis [Pictures, maps, forms]					
5. There is evidence of active participation of student during the visit					
6. There is statement of Limitation / suggestions					

AETCOM

Competency # addressed	Name of Activity	Date	Signature of faculty	Feedback Received Initial of learner

RESEARCH

Competencies covered

6.2: Describe and discuss the principles and demonstrate the methods of collection, classification, analysis, interpretation, and presentation of statistical data

6.3: Describe, discuss, and demonstrate the application of elementary statistical methods including test of significance in various study designs

6.4: Enumerate, discuss, and demonstrate Common sampling techniques, simple statistical methods, frequency distribution, measures of central tendency and dispersion

7.9: Describe and demonstrate the application of computers in epidemiology

Activity	
Objectives	
Study design and sample size	
Study tool	
Main results	
Results presented in conference / department	
Signature of faculty guide	

INVESTIGATION OF EPIDEMIC

Competencies covered

7.7: Describe and demonstrate the steps in the Investigation of an epidemic of communicable disease and describe the principles of control measures/ If this activity is not possible a case scenario/ simulated event may be given for completion of this activity

Name of the exercise	Date	Documentation in record	Signature of faculty

CME/CONFERENCE / WORKSHOP

Name of event	Date	Role	Learnings	Signature of faculty

CO-CURRICULAR ACTIVITIES

Details of event	Date	Role	Learnings	Signature of faculty

AWARDS/ RECOGNITION

Sl No	Details

OVERALL ASSESSMENT OF THE STUDENT

STRENGTHS	
SUGGESTIONS	

Signature of Mentor **Signature of HOD**

CLINICAL SUBJECTS IN PHASE II

GENERAL GUIDELINES-

A) **75 hours of lectures are allotted to Clinical subjects of which**

- 25 hours each for Medicine, Surgery and Gynecology & Obstetrics.
- At least 3 hours of clinical instruction each week must be allotted to training in clinical and procedural skill laboratories. Hours may be distributed weekly or as a block in each posting based on institutional logistics.
- The clinical postings in the second professional shall be 15 hours per week (3 hrs per day from Monday to Friday).

B) **Internal Assessment-**

- Regular periodic examinations shall be conducted throughout the course.
- There will be 3 internal assessment examinations in each clinical subject. The structure of the internal assessment examinations should be like the structure of University examinations.
- It is mandatory for the students to appear for all the internal assessment examinations.
- First internal assessment examination (THEORY) will be held at the end of 1st professional, second internal assessment examination will be held at the end of 2nd professional and third internal assessment examination will be held at the end of 3rd professional.
- An end of posting clinical internal assessment shall be conducted for each clinical posting in each professional year.
- Pattern of first and second Internal Assessment are left to the discretion of the individual institute. However, third internal assessment has to be conducted in the same pattern of the University exam
- Additional internal assessment examination for absent students can be considered due to genuine reason after approval by the head of the department. It should be taken before the submission of internal assessment marks to the University.
- Internal assessment marks allotment for theory and practical for the first and second internal assessment are left to the discretion of the respective institutes. Marks allotted in the third (final) Internal Assessment should be preferably for 100 marks each for Theory and Practical.
- 20% of the internal assessment marks should be from Formative Assessment in Practical internal assessment

- Feedback in Internal Assessment - Feedback should be provided to students throughout the course so that they are aware of their performance and remedial action can be initiated well in time. The feedbacks need to be structured and the faculty and students must be sensitized to giving and receiving feedback.
- The results of IA should be displayed on notice board within two weeks of the test and an opportunity provided to the students to discuss the results and get feedback on making their performance better.
- It is also recommended that students should sign with date whenever they are shown IA records in token of having seen and discussed the marks.
- Internal assessment marks will not be added to University examination marks and will reflect as a separate head of passing at the summative examination.
- Internal assessment should be based on competencies and skills.
- Criteria for appearing in University examination: Learners must secure at least 50% marks of the total marks (combined in theory and practical; not less than 40 % marks in theory and practical separately) assigned for internal assessment in order to be eligible for appearing at the final University examination.
- **Average marks obtained in all three internal assessments should be calculated to 40 marks**.
- A candidate who has not secured requisite aggregate in the internal assessment may be subjected to remedial assessment by the institution. If he/ she successfully complete the same, he/she is eligible to appear for University Examination. Remedial assessment shall be completed before submitting the internal assessment marks online to the University.

Second Professional teaching hours

Subjects	Lectures (hours)	Small group learning (Tutorials / Seminars) /Integrated learning (hours)	Clinical Postings (hours) *	Self - Directed Learning (hours)	Total (hours)
Pathology	80	138	-	12	230
Pharmacology	80	138	-	12	230
Microbiology	70	110	-	10	190
Community Medicine	20	30	-	10	60
Forensic Medicine and Toxicology	15	30	-	5	50
Clinical Subjects	**75****	-	540***		615
Attitude, Ethics & Communication Module (AETCOM)		29	-	8	37
Sports and extracurricular activities	-	-	-	28	28
Total	-	-	-	-	1440

Clinical postings

Subjects	Period of training in weeks			Total weeks
	II MBBS	III MBBS Part I	III MBBS Part II	
Electives	-	-	8* (4 regular clinical posting)	4
General Medicine[1]	4	4	8+4	20
General Surgery	4	4	8+4	20
Obstetrics &Gynaecology[2]	4	4	8 +4	20
Pediatrics	2	4	4	10
Community Medicine	4	6	-	10
Orthopedics - including Trauma[3]	2	4	2	8
Otorhinolaryngology	4	4	-	8
Ophthalmology	4	4	-	8
Respiratory Medicine	2	-	-	2
Psychiatry	2	2	-	4
Radiodiagnosis[4]	2	-	-	2
Dermatology, Venereology & Leprosy	2	2	2	6
Dentistry & Anesthesia	-	2	-	2
Casualty	-	2	-	2
	36	42	48	126

GENERAL MEDICINE

CURRICULUM FOR MBBS PHASE II

CHAPTER: OBESITY & METABOLISM: NO. OF COMPETENCIES= 15;

CERTIFIABLE PROCEDURES= 0 (NIL)

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	COREY/N	SPECIFIC LEARNING OBJECTIVES	SUGGESTED LEARNING METHOD	TIME ALLOTTED	SUGGESTED ASSESSMENT METHOD
IM 14.1	DEFINE AND MEASURE OBESITY AS IT RELATES TO INDIAN POPULATION	K	K	Y	AT THE END OF THE SESSION THE STUDENT SHOULD BE ABLE TO; • Define Obesity as per WHO guidelines and with respect to Asia/ Indian population • List the normal BMI and calculate the same using various formulae • Classify Obesity as per WHO/ Indian guidelines	LECTURES SMALL GROUP DISCUSSION (SGD)	30 MINS	SHORT NOTE/ VIVA VOCE
IM 14.2	DESCRIBE AND DISCUSS THE AETIOLOGY OF OBESITY INCLUDING MODIFIABLE AND NON	K	K	Y	AT THE END OF THE SESSION THE STUDENT SHOULD BE ABLE TO; • List the causes of	LECTURES SMALL GROUP	30 MINS	SHORT NOTE/ VIVA VOCE

	MODIFIABLE RISK FACTORS AND SECONDARY CAUSES				reversible and irreversible weight gain • Enumerate the reasons for increased prevalence of Obesity • List the modifiable and Non modifiable causes of obesity • Describe the reasons for susceptibility to Obesity	DISCUSSION (SGD)		
IM 14.3	DESCRIBE AND DISCUSS THE MONOGENIC FORMS OF OBESITY	K	K	**NO**	**DESIRABLE TO KNOW** AT THE END OF THE SESSION THE STUDENT SHOULD BE ABLE TO; • List the Monogenic forms of Obesity Describe the variants of Monogenic forms of Obesity	LECTURES SMALL GROUP DISCUSSION (SGD)	30 mins	SHORT NOTE/ VIVA VOCE
IM 14.4	DESCRIBE AND DISCUSS THE IMPACT OF ENVIRONMENTAL FACTORS INCLUDING EATING HABITS, FOOD, WORK, ENVIRONMENT & PHYSICAL ACTIVITY ON THE INCIDENCE OF OBESITY	K	K	Y	AT THE END OF THE SESSION THE STUDENT SHOULD BE ABLE TO; • List the causes of obesity • Describe host/ environment interactions in the pathogenesis of Obesity • Discuss the role of eating habits, physical activity, food and environment in weight management and obesity	LECTURES SMALL GROUP DISCUSSION (SGD)	1 HR	SHORT NOTE/ VIVA VOCE
IM 14.5	DESCRIBE AND DISCUSS THE NATURAL HISTORY OF	K	K	Y	AT THE END OF THE SESSION THE STUDENT SHOULD BE ABLE TO;	LECTURES SMAL	30 MINS	SHORT NOTE/ VIVA

	OBESITY AND ITS COMPLICATIONS				• Describe the pathophysiology of obesity • Discuss the natural history of obesity • List the complications of Obesity • Describe its implications on the organ systems	L GROUP DISCUSSION (SGD)		VOCE
IM 14.13	• DESCRIBE AND ENUMERATE THE INDICATIONS, PHARMACOLOGY AND SIDE EFFECTS OF PHARMACOTHERAPY FOR OBESITY	K	K	Y	AT THE END OF THE SESSION THE STUDENT SHOULD BE ABLE TO; • List the non pharmacological methods of weight loss • Enumerate the indications for using drugs in obesity management • List the drugs available in management of obesity • Describe the mechanism of action of these drugs, dosing and efficacy of these drugs • Discuss the adverse effects of these drugs	LECTURES SMALL GROUP DISCUSSION (SGD)	1 HR	SHORT NOTE/ VIVA VOCE
IM 14.14	DESCRIBE AND ENUMERATE THE INDICATIONS AND SIDE EFFECTS OF BARIATRIC SURGERY	K	K	Y	AT THE END OF THE SESSION THE STUDENT SHOULD BE ABLE TO; • Describe the concept of Bariatric Surgery and its benefits • List the indications of Bariatric surgery	LECTURES SMALL GROUP DISCUSSION (SGD)	1 HR	SHORT NOTE/ VIVA VOCE

					• List the various methods of Bariatric surgery available • Discuss each method; vertical Banded Gastroplasty, Laparoscopic banding and Roux en y procedure • Discuss the complications and side effects of these procedures • Discuss the long term advantages and disadvantages of Bariatric surgery			
IM 14.15	DESCRIBE AND ENUMERATE AND EDUCATE PATIENTS, HEALTH CARE WORKERS, & PUBLIC ON MEASURES TO PREVENT OBESITY AND PROMOTE HEALTHY LIFESTYLE	K	K	Y	AT THE END OF THE SESSION THE STUDENT SHOULD BE ABLE TO; • Discuss the benefits of exercise and healthy balanced diet • Discuss the disadvantages of sedentary lifestyle and unhealthy eating • Enumerate the side effects and complications of obesity • Discuss the concept of social well being and healthy eating	LECTURES SMALL GROUP DISCUSSION (SGD)	1HR	SHORT NOTE/ VIVA VOCE
						TOTAL	**6 HOURS**	

CHAPTER: NUTRITIONAL & VITAMIN DEFICIENCIES:

NO. OF COMPETENCIES= 05; **CERTIFIABLE PROCEDURES= 0 (NIL)**

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	SPECIFIC LEARNING OBJECTIVES	SUGGESTED ASSESSMENT METHOD	TIME ALLOTTED	SUGGESTED ASSESSMENT METHOD
IM 23.1	DISCUSS AND DESCRIBE THE METHODS OF NUTRITIONAL ASSESSMENT IN AN ADULT AND CALCULATION OF CALORIC REQUIREMENTS DURING ILLNESSESS	K	KH	Y	AT THE END OF THE SESSION THE STUDENT SHOULD BE ABLE TO; • Discuss the Physiology of Nutrition and Energy Balance • Describe the regulation of Energy balance • List the Macronutrients and Micronutrients • Describe the consequences of Over nutrition and Under Nutrition • Discuss the Dietary recommendations of macro and micro nutrients • Calculate caloric requiremen	LECTURES SMALL GROUP DISCUSSION (SGD) VISIT TO OPD/ WARDS TO CALCULATE BMI, OTHER NUTRITIONAL PARAMETERS	2 Hrs	WRITTEN/ VIVA VOCE

					ts in health & illness • Discuss special circumstances like pregnancy and lactation • Enumerate the anthropometric measurements and their methods			
IM 23.2	DISCUSS AND DESCRIBE THE CAUSES AND CONSEQUENCES OF PROTEIN CALORIC MALNUTRITION IN THE HOSPITAL	K	KH	Y	AT THE END OF THE SESSION THE STUDENT SHOULD BE ABLE TO; • Discuss the normal physiology of Protein metabolism • List the causes of Protein and Calorie malnutrition • Discuss consequences of Starvation and Famine • Enumerate the investigations available commonly to assess protein malnutrition • Describe the concept of 'Under Nutrition in the Hospital' • Discuss	LECTURES SMALL GROUP DISCUSSION (SGD) VISIT TO WARDS AND CALCULATE CALORIC REQUIREMENTS FOR IN-PATIENTS	1 Hr	WRITTEN/ VIVA VOCE

					Energy Balance in old age • List the Nutritional support available in the hospital and describe their details			
IM 23.3	DISCUSS AND DESCRIBE THE AETIOLOGY, CAUSES, CLINICAL MANIFESTATIONS, COMPLICATIONS, DIAGNOSIS AND MANAGEMENT OF COMMON VITAMIN DEFICIENCIES	K	KH	Y	AT THE END OF THE SESSION THE STUDENT SHOULD BE ABLE TO; • List the fat and water soluble vitamins • List the common causes of vitamin deficiencies • Describe vitamin A deficiency causes, its eye signs and clinical manifestations. Discuss on the management of it. • Discuss on Vitamin A toxicity and its features • Describe vitamin D deficiency causes, its clinical manifestations. Discuss on the management of it. • Describe vitamin E	LECTURES SMALL GROUP DISCUSSION (SGD) VISIT TO OPD TO SEE PATIENTS WITH SUCH DEFICIENCIES	4 Hrs	WRITTEN/ VIVA VOCE

					deficiency causes, its clinical manifestations. Discuss on the management of it. • Describe vitamin K deficiency causes, its clinical manifestations. Discuss on the management of it. • Describe vitamin B1 (Thiamine) deficiency causes, its clinical manifestations. Discuss on the management of it. • Describe vitamin B2 (Riboflavin) deficiency causes, its clinical manifestations. Discuss on the management of it. • Describe vitamin B 3(Niacin) deficiency/ Pellagra causes, its clinical manifestations. Discuss on the			

					management of it. • Describe vitamin B6 (Pyridoxine) deficiency causes, its clinical manifestations. Discuss on the management of it. • Describe vitamin B12 & Folate deficiency causes, its clinical & Neurological manifestations. Discuss on the management of it. • Describe vitamin C deficiency/ Scurvy causes, its clinical manifestations. Discuss on the management of it. • List out the Inorganic nutrients and minerals. Briefly discuss about their importance in health and illness			
IM 23.4	ENUMERATE THE INDICATIONS FOR ENTERAL	K	KH	Y	AT THE END OF THE SESSION THE STUDENT SHOULD BE ABLE TO;	LECTURES SMALL GROUP DISCUSSIO	1 HR	WRITTEN/ VIVA VOCE

	AND PARENTERAL NUTRITION IN CRITICALLY ILL PATIENTS				• Enumerate the indications for enteral and parenteral nutrition • Discuss methods to screen hospitalized patients for risk of malnutrition • Describe the enteral formulations available and their use • List the methods to give Enteral nutrition and the procedures in their insertion- nasogastric tube feeds, percutaneous endoscopic gastrostomy (PEG) • List the methods to give Parenteral nutrition and the formulations • Describe the medical, legal and ethical complications and considerations in the management of Artificial Nutrition	N (SGD) Visit to Medical ICU and demonstrate various feeding- Enteral and Parenteral methods & formulations		

					support • Define Refeeding syndrome and its implications			
IM 23.5	COUNSEL AND COMMUNICATE TO PATIENTS IN A SIMULATED ENVIRONMENT WITH ILLNESS ON AN APPROPRIATE BALANCED DIET	S	SH	Y	AT THE END OF THE SESSION THE STUDENT SHOULD BE ABLE TO; • Identify the dietary requirements of patients either in a simulated situation (Role Play) or in actual situation • Inform the patient about the importance of Balanced diet • Demonstrate a sample balanced diet plan for the patient who is ill • Counsel the patient about the need for balanced diet for health and inform about necessary dietary changes needed for the same	DOAP SESSION • ROLE PLAY • Attend ward & OPD with diet counselling sessions	2 hrs	SKILL ASSESSMENT
						TOTAL TIME	**10 HRS**	

`

CHAPTER: COMMON MALIGNANCIES

NO OF COMPETENCIES: 19, CERTIFIABLE PROCEDURES: 0

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	SPECIFIC LEARNING OBJECTIVES	SUGGESTED LEARNING METHOD	TIMEALLOTED	SUGGESTED ASSESSMENT METHOD
IM13.1	Describe the clinical epidemiology and inherited & modifiable risk factors for common malignancies in India	K	K	Y	AT THE END OF THE SESSION THE STUDENT SHOULD BE ABLE TO • Discuss the epidemiology of common malignancies in India • Describe the disease burden of common malignancies in India • List most	Lecture, Small group discussion Visit to wards	1 hour	Short notes/viva voce

					common solid organ malignancies • Enumerate the risk factors for common malignancies • List the modifiable risk factors of common malignancies • Discuss genetics of common malignancies • Describe the environmental determinants that predispose to common malignancies • Discuss the role of occupation in common malignancies • Enumerate the malignancies caused by radiation			
IM13.2	Describe the genetic basis of selected cancers	K	K	N	AT THE END OF THE SESSION THE STUDENT SHOULD BE ABLE TO • Discuss the genetic factors of common malignancies • Enumerate inherited	Lecture, Small group discussion	1 hour	Short notes/viva voce

					cancer predisposition syndromes and their respective malignancies • List a few malignancies with their pattern of inheritance • Enumerate the genes that predispose to malignancies			
IM13.3	Describe the relationship between infection and cancers	K	K	Y	AT THE END OF THE SESSION THE STUDENT SHOULD BE ABLE TO • Discuss the malignancies along with their infective agents • Enumerate the infections that predispose to common malignancies • List the viruses and bacteria that can cause malignancies	Lecture, Small group discussion Visit to wards	30 minutes	Short notes/viva voce
IM13.4	Describe the natural history, presentation, course, complications and cause of death for	K	K	Y	AT THE END OF THE SESSION THE STUDENT SHOULD BE ABLE TO • Enumerate some malignant diseases with their local	Lecture, Small group discussion Visit to wards	2 hours	Short notes/viva voce

	common cancers				features/symptoms • List the non-metastatic manifestations of malignant diseases and their site associations • Discuss the endocrine manifestations of tumors • Describe the cutaneous manifestations of cancer • Enumerate and describe the emergency complications of cancer • Describe neurological paraneoplastic syndromes in cancer • Describe clinical features, diagnosis and management of superior vena caval obstruction • Discuss etiology, clinical features, diagnosis of hypercalcemia in			

					malignancy • Describe neutropenic sepsis • Enumerate the primary tumor sites that metastasize to brain • Enumerate the primary tumor sites that metastasize to the lung • List the tumors that lead to liver metastasis • Describe the etiology, clinical features, of bone metastasis • Discuss the major cause of death in cancer			
IM13.5	Describe the common issues encountered in patients at the end of life and principles of management	K	K	N	AT THE END OF THE SESSION THE STUDENT SHOULD BE ABLE TO • Enumerate the presenting problems in palliative care • Discuss the principles of palliative care • List the pharmacological treatment of pain in palliative care • Discuss	Lecture, Small group discussion Visit to wards. Attend patient counseling sessions	1 hour	Short notes/viva voce

					non-pharmacological and complementary treatments for pain in palliative care • Enumerate, discuss in brief non painful presenting problems in palliative care and their management.			
IM13.6	Describe and distinguish the difference between curative and palliative care in patients with cancer	K	K	N	AT THE END OF THE SESSION THE STUDENT SHOULD BE ABLE TO • Enumerate the differences between curative and palliative care in patients with cancer • Enumerate the different modes of curative treatment in cancer • Describe in brief each of the curative therapies in cancer • Discuss biological therapies and their advantages over the other	Lecture, Small group discussion Visit to wards	1 hour	Short notes/viva voce

					modes of treatment in cancer			
IM13.12	Describe the indications and interpret the results of Chest X Ray, mammogram, skin and tissue biopsies and tumor markers used in common cancers	K	KH	Y	AT THE END OF THE SESSION THE STUDENT SHOULD BE ABLE TO • Enumerate the different methods of imaging in cancer • Discuss the role of mammogram in CA breast • Describe the tumor markers and enumerate them • Enumerate the different methods of histological analysis of a biopsy • Describe in brief the different methods of histological analysis of biopsy • Describe the role of immunohistochemistry in cancer • Describe in brief TNM classification	Bedside clinic, small group discussion Visit to wards and radiology department	1 hour 30 min	Short notes/viva voce
IM13.13	Describe and assess pain and suffering objectively in a patient with	K	KH	Y	AT THE END OF THE SESSION THE STUDENT SHOULD BE ABLE TO • Enumerate the types of pain in	Bedside clinic, small group discussion	1 hour	Short notes/viva voce

	cancer				cancer and their specific clinical features • Define pain & describe mechanisms of pain and its classification • Describe assessment and measurement of pain in a patient with cancer • Describe pharmacological treatment of pain in cancer and its side effects • Describe non pharmacological treatments of pain in cancer • Describe the WHO analgesic ladder of management of pain • Discuss the different methods of measurement of pain and its score	Visit wards and assess pain and write a pain scale		
IM13.14	Describe the indications for surgery, radiation and chemotherapy for	K	KH	Y	AT THE END OF THE SESSION THE STUDENT SHOULD BE ABLE TO • Enumerate the modes of	Bedside clinic, small group discussion Visit to	1 hour	Short notes/viva voce

	common malignancies				treatment in cancer • Describe the indications and role of surgery in common malignancies • Discuss adjuvant chemotherapy and its indications and adverse effects • Discuss radiation therapy, its indications and adverse effects	wards		
IM13.15	Describe the need, tests involved, their utility in the prevention of common malignancies	K	KH	Y	AT THE END OF THE SESSION THE STUDENT SHOULD BE ABLE TO • Enumerate the different investigations required for the screening and prevention of common malignancies • Discuss the need for various tests and investigations in common malignancies • Describe the role of cytogenetic analysis in prevention of cancer	Bedside clinic, small group discussion Visit to wards	30 min	Short notes/viva voce

					• List and discuss the imaging modalities in cancer			
IM13.16	Demonstrate an understanding and needs and preferences of patients when choosing curative and palliative therapy	A/C	KH	Y	AT THE END OF THE SESSION THE STUDENT SHOULD BE ABLE TO • Enumerate indications of palliative therapy in cancer • Discuss different forms of palliative therapy in cancer • Enumerate indications of curative therapy in cancer • Discuss different forms of curative therapy in cancer	Bedside clinic, small group discussion Visit to wards	30 min	Short notes/viva voce
IM13.17	Describe and enumerate the indications, use, side effects of narcotics in pain alleviation in patients with cancer	K	KH	Y	AT THE END OF THE SESSION THE STUDENT SHOULD BE ABLE TO • Enumerate the indications of narcotics/opioids in pain alleviation in patients with cancer • Enumerate and discuss about opioid use for pain in cancer • Describe WHO analgesic	Bedside clinic, small group discussion Visit wards and learn to counsel patients regarding side effects of narcotics and their advantages at the same	30 min	Short notes/viva voce

					ladder • Describe opioid toxicity • Enumerate , discuss, side effects of opioid and its manageme nt	time		
IM13.18	Describe and discuss the ethical and the medico legal issues involved in end of life care	K	KH	Y	AT THE END OF THE SESSION THE STUDENT SHOULD BE ABLE TO • Describe step wise how to manage a patient who is dying due to cancer • Discuss ethical issues at the end of life in a patient with terminal cancer • Discuss “talking about and planning towards dying” in a patient with terminal cancer • Describe euthanasia and its role in terminal cancer	Bedside clinic, small group discussio n Visit wards and learn to discuss ethical issues with patient relatives	30 min	Short notes /viva voce
IM13.19	Describe the therapies used in alleviating suffering in patients at the end of life	K	KH	Y	AT THE END OF THE SESSION THE STUDENT SHOULD BE ABLE TO • Enumerate the pharmacolo gical and non-	Bedside clinic, small group discussio n Visit wards	1 hour	Short notes/viva voce

					pharmacological treatment in terminal cancer • Enumerate non-pharmacological and complementary treatment in terminal cancer • Describe palliative treatment of breathlessness and cough in patients with terminal cancer • Describe the management of GI disturbances in terminal cancer • Describe how to manage the psychosocial factors in terminal cancer	and learn to discuss palliative therapy with patient and their relatives		

Recommended Books

1. Davidson's Principles and Practice of Medicine, 23rdEd., 2018, Churchil Livingston, London.
2. API Text Book of Medicine 11thed, 2019.
3. Swash M, Hutchison's Clinical Methods. 24th Edition, 2017
4. Chamberlain's Symptoms and Signs in Clinical Medicine 13th Edition, ELBS, 2010

Reference Books

1. Harrison's Principles of Internal Medicine 20th Ed 2018 . McGraw Hill
2. Macleod’s Clinical Examination ISE 14th ed,

SURGERY CURRICULUM FOR MBBS PHASE II

Topic - **metabolic response to injury**

Number of competencies- 03

Number of procedures that require certification- nil

Total number of hours required-

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	TEACHING TIME REQUIRED IN HOURS	
					THEORY	CLINICS
SU1.1	Describe basic concepts of homeostasis, enumerate the metabolic changes in injury and their mediators	K	KH	Y	4hrs	
SU1.2	Describe the factors that affect the metabolic response to injury	K	KH	Y		
SU1.3	Describe basic concepts of perioperative care	K	KH	Y		
PA 4.1	Define and describe the general features of acute and chronic inflammation including stimuli, vascular and cellular events • Acute Inflammation, • Morphological patterns of acute inflammation, • Chemical mediators and regulators of acute inflammation. • Chronic Inflammatory Cells • Chronic inflammation. • and Mediators. • Granulomatous	K	KH	Y		

	Inflammation. • Systemic inflammatory response syndrome following major injury					
PA4.2	Enumerate and describe the mediators Of acute inflammation • Cell-Derived Mediators • Plasma Protein–Derived Mediators	K	KH	Y		

SPECIFIC LEARNING OBJECTIVES
At the end of the teaching and learning session 1st phase MBBS student should be able to : • Classical concepts of homeostasis • To understand the terms - “milieu intérieu’’ and homeostasis • The graded nature of the injury response • Mediators of the metabolic response to injury • Systemic inflammatory response syndrome following major injury • The metabolic stress response to surgery and trauma: the ‘ebb and flow’ model • Key catabolic elements of the flow phase of the metabolic stress response • Changes in body composition following injury • Avoidable factors that compound the response to injury • Concepts behind enhanced recovery after surgery

Teaching and Learning Methods		**Assessment Method**	
Theory	**Clinical**	**Theory**	**Clinical**
• **Lecture** • **Case based learning**	• **Demonstration with small group discussion**	• **long essay** • **short essay** • **short answers**	• **Group discussion**

Topic - **SHOCK**

Number of competencies- 03

Number of procedures that require certification- nil

Total number of hours required-

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	TEACHING TIME REQUIRED IN HOURS	
SU2.1	Describe pathophysiology of shock ,types of shock ,principles of resuscitation including fluid replacement and monitoring	K	KH	Y	4 hrs	
SU2.2	Describe the clinical features of shock and its appropriate treatment	K	KH	Y		
SU2.3	Communicate and counsel patients and families about the treatment and prognosis of shock demonstrating empathy and care	K	KH	Y		
PA6.3	Define and describe shock, its pathogenesis and its stages • SHOCK • Pathogenesis of Septic Shock • Three Major Types of Shock • Stages of Shock	K	KH	Y		
SPECIFIC LEARNING OBJECTIVES						

At the end of the teaching and learning session 1st phase MBBS student should be able to :

- Pathophysiology-cellular,microvascular
- Systemic- cardiovascular,respiratory,renal,endocrine
- Classification of shock- hypovolemic,cardiogenic,obstructive,distributive,endocrine
- Severity of shock-compensated,decompensated ,mild,moderate,severe
- Pitfalls- capillary refill,tachycardia,blood pressure
- Effects on each system
- Consequences- unresuscitable shock,multi organ failure
- Effects of multi organ failure
- Resuscitation- Conduct of resuscitation. Fluid therapy, Type of fluids
- Dynamic fluid response
- Vasopressor and inotropic support
- Monitoring
- End points of resuscitation
- 'occult hypoperfusion'
- Resuscitation algorithms

Teaching and Learning Methods		**Assessment Method**	
Theory	**Clinical**	**Theory**	**Clinical**
• **Lecture** • **Case based learning**	• **Demonstration with small group discussion**	• **long essay** • **short essay** • **short answers**	• **Group discussion**

Topic - **Blood and blood components**

Number of competencies- 03

Number of procedures that require certification- nil

Total number of hours required-

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	TEACHING TIME REQUIRED IN HOURS	
SU3.1	Describe the Indications and appropriate use of blood and blood products and complications of blood transfusion.	K	K	Y	4 hrs	
	Observe blood transfusions	K	K	Y		DOAP

SU3.2						
SU3.3	Counsel patients and family/ friends for blood transfusion and blood donation	K	K	Y		DOAP
IM15.3	Describe and discuss the physiologic effects of acute blood and volume loss • Causes • Indications for Blood transfusion	K	K	Y		
IM15.4	Elicit document and present an appropriate history that identifies the route of bleeding, quantity, grade, volume loss, duration, etiology, comorbid illnesses and risk factors	K	K	Y		
IM15.12	Enumerate the indications for whole blood, component and platelet transfusion and describe the clinical features and management of a mismatched transfusion	K	KH	Y		
IM15.11	Develop, document and present a treatment plan that includes fluid resuscitation, blood and blood component transfusion, and specific therapy for arresting blood loss	K	KH	Y		
IM15.13	Observe cross matching and blood / blood component transfusion • Types of transfusions • Indications • Complications • Transfusion Components	K	KH	Y		

SPECIFIC LEARNING OBJECTIVES
At the end of the teaching and learning session 1st phase MBBS student should be able to : • Pathophysiology of haemorrhage • Revealed and concealed haemorrhage • Primary, reactionary and secondary haemorrhage • Surgical and non-surgical haemorrhage • Degree and classification • Management • History of blood transfusion • Blood and blood products • Indications for blood transfusion • Blood groups and cross-matching • Transfusion reactions • Complications of blood transfusion • Management of coagulopathy • Regarding the indication of transfusion • Regarding the blood and blood products • Regarding the procedure and complications • Blood substitutes

Teaching and Learning Methods		**Assessment Method**	
Theory	**Clinical**	**Theory**	**Clinical**
• **Lecture** • **Case based learning**	• **Demonstration with small group discussion**	• **long essay** • **short essay** • **short answers**	• **Group discussion**

Topic – Burns

Number of competencies- 04

Number of procedures that require certification- nil

Total number of hours required

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	TEACHING TIME REQUIRED IN HOURS	
					THEORY	CLINICS
SU4.1	Elicit document and present history in a case of Burns and perform physical examination. Describe Pathophysiology of Burns	K	KH	Y	4 Hrs	Case discussion
SU4.2	Describe Clinical features, Diagnose type and extent of burns and plan appropriate treatment	K	KH	Y		
SU4.3	Discuss the Medicolegal aspects in burn injuries.	K	K	Y		
SU4.4	Communicate and counsel patients and families on the outcome and rehabilitation demonstrating empathy and care.	K	KH	N		
FM2.25	Describe types of injuries, clinical features, patho-physiology, post-mortem findings and medico-legal aspects in cases of • burns, • scalds, • lightening, • electrocution and • radiations.	K	KH	Y		

SPECIFIC LEARNING OBJECTIVES

At the end of the teaching and learning session 1st phase MBBS student should be able to :

- To assess The area and depth of burns
- Prevention of burns
- Pathophysiology of burn injury
- Warning signs of burns to the respiratory system
- Injury to the airway and lungs
- Dangers of smoke, hot gas or steam inhalation
- Inflammation and circulatory changes
- The shock reaction after burns
- Other life-threatening events with major burns
- Immediate care of the burn patient
- Prehospital care
- Hospital care
- The criteria for acute admission to a burns unit
- Assessment of the burn wound-size, area and depth
- Fluid resuscitation
- Escharotomy
- Additional aspects of treating the burned patient
- Monitoring and control of infection
- Surgery for the acute burn wound
- Minor burns
- Non-thermal burn injury
- Recent advances
- Medicolegal aspects in burn injuries
- Outcome and rehabilitation demonstrating empathy and care.

Teaching and Learning Methods		**Assessment Method**	
Theory	**Clinical**	**Theory**	**Clinical**
• **Lecture** • **Case based learning**	• **Demonstration with small group discussion**	• **long essay** • **short essay** • **short answers**	• **Group discussion**

Topic – Wound healing and wound care

Number of competencies- 04

Number of procedures that require certification- nil

Total number of hours required

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	TEACHING TIME REQUIRED IN HOURS	
SU5.1	Describe normal wound healing and factors affecting healing	K	K/KH/SH	Y	THEORY 4 hrs	CLINICS
SU5.2	Elicit, document and present a history in a patient presenting with wounds	K/S	K/KH	Y		
SU5.3	Differentiate the various types of wounds, plan and observe management of wounds	K/S	K/KH/SH	Y		
SU5.4	Discuss medico legal aspects of wounds	K	K	N		
PA 5.1	Define and describe the process of repair and regeneration including wound healing and its types	K	K/KH	Y		

SPECIFIC LEARNING OBJECTIVES
At the end of the teaching and learning session 1st phase MBBS student should be able to : • Factors influencing healing of a wound • Phases of wound healing • Normal healing in specific tissues • Classification of wound closure and healing • Types of wounds − tidy versus untidy • Managing the acute wound • Specific wounds • Compartment syndromes • Chronic wounds • pressure sores- frequency, staging, vacuum assisted closure • Necrotising soft-tissue infections • Hypertrophic scars,keloids • Contractures • Medico legal aspects of wounds

Topic – **Surgical infections**

Number of competencies- 02

Number of procedures that require certification- nil

Total number of hours required

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	TEACHING TIME REQUIRED IN HOURS	
SU6.1	Define and describe the aetiology and pathogenesis of surgical Infections	K	K/KH	Y	2 hr	
SU6.2	Enumerate Prophylactic and therapeutic antibiotics Plan appropriate management	K	K/KH	Y		

SPECIFIC LEARNING OBJECTIVES

At the end of the teaching and learning session 1st phase MBBS student should be able to :

- Koch's postulates
- Microbiology of surgical infection
- Sources of infection
- Factors that determine whether a wound will become infected
- Presentation of surgical infection
- Southampton wound grading system
- ASEPSIS wound score
- Specific local wound infections
- Systemic infection
- Systemic inflammatory response syndrome (SIRS)
- Viral infections relevant to surgery
- Prevention of surgical infection
- Prophylactic antibiotics
- Postoperative wound infections
- Antimicrobial treatment of surgical infection

Teaching and Learning Methods		**Assessment Method**	
Theory	**Clinical**	**Theory**	**Clinical**
• **Lecture** • **Case based learning**	• **Demonstration with small group discussion**	• **long essay** • **short essay** • **short answers**	• **Group discussion**

Recommended Books for General surgery:

1. Baily & Love, A Short Practice of Surgery, Ed. 27, 2018
2. Das S, Clinical Methods in Surgery, Ed. 14, S Das 13 Old Mayors, Calcutta;

Reference books

1. Sabiston textbook of surgery, 20th edition, Elsevier.
2. Schwartz'z Principles of surgery, 11th edition, Mcgraw Hill Education
3. Hamilton bailey's demonstration of physical signs in clinical surgery, 19th edition, CRC press.

OBSTETRICS AND GYNAECOLOGY

CURRICULUM FOR MBBS PHASE II

Topic: Demographic and Vital Statistics

Number of Competencies: 3

Number of procedures that require certification: nil

Total number of hours required: 2 hours

Number	COMPETENCY The student should be able to:	Domain K/S/A/C	Level K/KH/SH/P	CORE Y/N	Suggested Teaching/ Learning method	Suggested Assesment method	Number required to certify	Vertical Integration	Horizontal Integration	Number of hours
OG1.1	Define and discuss birth rate, maternal mortality rate and morbidity	K	KH	Y	Lecture, Small group discussion	Short notes		Community Medicine		2 HOURS
OG1.2	Define and discuss perinatal mortality and morbidity including perinatal and neonatal mortality and morbidity audit	K	KH	Y	Lecture, Small group discussion	Short notes		Community Medicine	Pediatrics	
CM9.2	Define, calculate and interpret demographic indices including birth rate, death rate, fertility rates	S	SH	Y	Lecture, Small group discussion, DOAP sessions	Skill assessment		Obstetrics & Gynaecology, Pediatrics		

SPECIFIC LEARNING OBJECTIVES
At the end of the teaching and learning session the student should be able to : • Define birth rate, Maternal Mortality rate (MMR), Perinatal mortality • Define perinatal and neonatal mortality • Enumerate causes of Maternal mortality • Enumerate causes of Perinatal mortality • Discuss measures to reduce the maternal mortality and morbidity

Teaching and Learning Methods	**Assessment Method**
Theory • **Lecture** • **Small group discussions**	**Theory** • **long essay** • **short essay** • **short answers**

Topic: Anatomy of the female reproductive tract (Basic anatomy and embryology)

Number of Competencies: 01

Number of procedures that require certification: nil

Number of hours required: 2 hours

Number	COMPETENCY The student should be able to:	Domain K/S/A/ C	Level K/KH/SH/P	CORE Y/N	Suggested Teaching/ Learning method	Suggested Assesment method	Number required to certify	Vertical Integrati on	Horizontal Integration	Number of hours
OG2.1	Describe and discuss the development and anatomy of the female reproductive tract, relationship to other pelvic organs, applied anatomy as related to Obstetrics and Gynaecology	K	KH	Y	Lecture, Small group discussion	Theory/ Skill station		Human Anatomy		2 HOURS
AN52.8	Describe the development of male & female reproductive system	K	KH	Y	Lecture	Written/ Viva voce		Obstetrics and Gynecology		

SPECIFIC LEARNING OBJECTIVES
At the end of the teaching and learning session student should be able to : • Discuss the anatomy of external genitalia and internal genital organs • Describe the blood supply, nerve supply and lymphatics to the pelvic organs • Describe the muscles and fascia in relation to the pelvic organs • Describe the structure of female urethra , urinary bladder and course of pelvic ureter

Teaching and Learning Methods		**Assessment Method**	
Theory	**Clinical**	**Theory**	**Clinical**
Lecture	**Demonstration with small group discussion**	• **long essay** • **short essay** • **short answers**	**Group discussion**

Topic: Physiology of conception

Number of Competencies: 01

Number of procedures that require certification: nil

Number of hours required: 2 hour

No.	COMPETENCY The student should be able to:	Domain K/S/A/C	Level K/KH/SH/P	CORE Y/N	Suggested Teaching/ Learning method	Suggested Assesment method	Number required to certify	Vertical Integration	Horizontal Integration	Number of hours
OG3.1	Describe the physiology of ovulation, menstruation, fertilization, implantation and gametogenesis	K	K	Y	Lecture, seminars	Theory		Physiology		2 HOUR
PY9.8	Describe and discuss the physiology of pregnancy, parturition & lactation and outline the psychology and psychiatry-disorders associated with it.	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Obstetrics and Gynecology		

SPECIFIC LEARNING OBJECTIVES
At the end of the teaching and learning session student should be able to : • Describe about the morphology of the oocyte, development of graafian follicle and selection and maturation of the dominant follicle during a natural cycle • Discuss Ovulation , Gametogenesis and morula formation • Discuss the phases of menstruation – endometrial cycle and even about hormones role • Draw the structure of graafian follicle and blastocyst

Teaching and Learning Methods		**Assessment Method**	
Theory	**Clinical**	**Theory**	**Clinical**
Lecture	**Demonstration with small group discussion**	• **long essay** • **short essay** • **short answers**	**Gro**

Topic: Development of the fetus and the placenta

Number of Competencies: 01

Number of procedures that require certification: nil

Number of hours required: 1 hours

Number	COMPETENCY The student should be able to:	Domain K/S/A/C	Level K/KH/SH/P	CORE Y/N	Suggested Teaching/ Learning method	Suggested Assesment method	Number required to certify	Vertical Integration	Horizontal Integration	Number of hours
OG4.1	Describe and discuss the basic embryology of fetus, factors influencing fetal growth and development, anatomy and physiology of placenta, and teratogenesis	K	K	Y	Lecture, Small group discussion	Theory		Human Anatomy		1 HOUR
AN77.4	Describe the stages and consequences of fertilisation	K	KH	Y	Lecture	Written		Obstetrics and Gynecology		
AN79.6	Describe the diagnosis of pregnancy in first trimester and role of teratogens, alphafetoprotein	K	KH	Y	Lecture	Written		Obstetrics and Gynecology		
AN80.3	Describe formation of placenta, its physiological functions, foetomaternal circulation & placental barrier	K	KH	Y	Lecture	Written		Obstetrics and Gynecology		

SPECIFIC LEARNING OBJECTIVES

At the end of the teaching and learning session student should be able to :

- Describe the development and function of placenta
- Describe the placental circulation
- Describe about the fetal membranes and functions
- Discuss the fetal circulation and changes of the fetal circulation at birth
- Enumerate about the FDA categories and about various teratogenic drugs

Teaching and Learning Methods		**Assessment Method**	
Theory	**Clinical**	**Theory**	**Clinical**
Lecture	**Demonstration with small group discussion**	• **long essay** • **short essay** • **short answers**	**Group discussion**

Topic: Diagnosis of pregnancy

Number of Competencies: 01

Number of procedures that require certification: nil

Number of hours required: 2 hours

Number	COMPETENCY The student should be able to:	Domain K/S/A/C	Level K/KH/SH/P	CORE Y/N	Suggested Teaching/ Learning method	Suggested Assesment method	Number required to certify	Vertical Integration	Horizontal Integration	Number of hours
OG6.1	Describe, discuss and demonstrate the clinical features of pregnancy, derive and discuss its differential diagnosis, elaborate the principles underlying and interpret pregnancy tests.	S	SH	Y	Lecture, Small group discussion, Bedside clinics	Theory/ Clinical Assessment/Viva voce				2 HOURS

SPECIFIC LEARNING OBJECTIVES

Teaching and Learning Methods		**Assessment Method**	
Theory	**Clinical**	**Theory**	**Clinical**
Lecture	**Demonstration with small group discussion**	• **long essay** • **short essay** • **short answers**	**Group discussion**

Topic: Maternal changes in pregnancy

Number of Competencies: 01

Number of procedures that require certification: nil

Number of hours required: 2 hours

Number	COMPETENCY The student should be able to:	Domain K/S/A/C	Level K/KH/SH/P	CORE Y/N	Suggested Teaching/ Learning method	Suggested Assesment method	Number required to certify	Vertical Integration	Horizontal Integration	Number of hours
OG7.1	Describe and discuss the changes in the genital tract, cardiovascular system, respiratory, haematology, renal and gastrointestinal system in pregnan	K	KH	Y	Lecture, seminars	Theory		Physiology		2 HOURS

	cy									
PY9.8	Describe and discuss the physiology of pregnancy, parturition & lactation and outline the psychology and psychiatry-disorders associated with it.	K	KH	Y	Lecture, Small group discussion	Written, Viva Voce		Obstetrics and Gynecology		

SPECIFIC LEARNING OBJECTIVES

At the end of the teaching and learning student should be able to:

Discuss the changes in pelvic organs during pregnancy

- Discuss the physiological changes in different organ systems during pregnancy

Teaching and Learning Methods		Assessment Method	
Theory	**Clinical**	**Theory**	**Clinical**
Lecture	**Demonstration with small group discussion**	• **long essay** • **short essay** • **short answers**	**Gro**

TOPIC: ANTENATAL CARE

Number of Competencies: 08

Number of procedures that require certification: nil

Number of hours required: 4 hours

Number	COMPETENCY The student should be able to:	Domain K/S/A/C	Level K/KH/SH/P	CORE Y/N	Suggested Teaching/ Learning method	Suggested Assesment method	Number required to certify	Vertical Integration	Horizontal Integration	Number of hours
OG8.1	Enumerate, describe and discuss the objectives of antenatal care, assessment of period of gestation;	K	KH	Y	Small group discussion, Bedside clinics, Lecture	Written/ Viva voce/ Skill assessment		Community Medicine		1 HOUR

	screening for highrisk factors.									
OG8.2	Elicit document and present an obstetric history including menstrual history, last menstrual period, previous obstetric history, comorbid conditions, past medical history and surgical history	KS	SH	Y	Small group discussion, Bedside clinics, Lecture	Written/ Viva voce/ Skill assessment				**1 HOUR**
OG8.3	Describe, demonstrate, document and perform an obstetrical examination including a general and abdominal examination and clinical monitoring of maternal and fetal well-being;	K/S	SH	Y	Bed side clinic, DOAP session	Skill assessment				1 HOUR
OG8.4	Describe and demonstrate clinical monitoring of maternal and fetal well-being	K/S	SH	Y	Bedside clinic, DOAP session, Small group discussion	Skill assessment/ Written/ Viva voce				1 HOUR

OG8.7	Enumerate the indications for and types of vaccination in pregnancy	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce				
PE18.3	Conduct Antenatal examination of women independently and apply at-risk approach in antenatal care	S	SH	Y	Bedside clinics	Skill Station		Community Medicine	Obstetrics and Gynecology	
CM10.2	Enumerate and describe the methods of screening high risk groups and common health problems	K	KH	Y	Small group discussion, Lecture	Written / Viva voce		Pediatrics, Obstetrics & Gynaecology		

SPECIFIC LEARNING OBJECTIVES
At the end of the teaching and learning session student should be able to : ▪ Discuss history taking ▪ Discuss the estimation of gestational age and prediction of expected date of delivery ▪ Discuss antenatal advice and follow up ▪ Discuss screening of high risk pregnancy

SPECIFIC LEARNING OBJECTIVES
At the end of the teaching and learning session student should be able to : ▪ Discuss vaccinations in pregnancy

Teaching and Learning Methods		**Assessment Method**	
Theory	**Clinical**	**Theory**	**Clinical**
Lecture	**Demonstration with small group discussion**	• **long essay** • **short essay** • **short answers**	**Group discussion**

Topic: Complications in early pregnancy

Number of Competencies: 05

Number of procedures that require certification: nil

Number of hours required: 3 hours

Number	COMPETENCY The student should be able to:	Domain K/S/A/C	Level K/KH/SH/P	CORE Y/N	Suggested Teaching/ Learning method	Suggested Assesment method	Number required to certify	Vertical Integration	Horizontal Integration	Number of hours
OG9.1	Classify, define and discuses the aetiology and management of abortions including threatened, incomplete, inevitable, missed and septic abortion	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce				2 HOURS
OG9.5	Describe the etiopathology, impact on maternal and fetal health and principles of management of hyperemesis gravidarum	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce				1 HOUR

SPECIFIC LEARNING OBJECTIVES
At the end of the teaching and learning session student should be able to : ▪ Define abortion. ▪ Discuss about the types and management of abortion

SPECIFIC LEARNING OBJECTIVES
At the end of the teaching and learning session student should be able to : ▪ Define hyperemesis and discuss the causes and management

Teaching and Learning Methods		Assessment Method	
Theory	**Clinical**	**Theory**	**Clinical**
Lecture	**Demonstration with small group discussion**	• **long essay** • **short essay** • **short answers**	**Gro**

TOPIC: NORMAL LABOUR

Number of Competencies: 05

Number of procedures that require certification: nil

Number of hours required: 5 hours

Number	COMPETENCY The student should be able to:	Domain K/S/A/C	Level K/KH/SH/P	CORE Y/N	Suggested Teaching/ Learning method	Suggested Assesment method	Number required to certify	Vertical Integration	Horizontal Integration	Number of hours
OG13.1	Enumerate and discuss the physiology of normal labour , mechanism of labour in occipito-anterior presentation ; monitoring of labour including partogram ; conduct of labour , pain relief ; principles of inductio	K/S	KH	Y	Lecture, Small group discussion(with models / videos / AV aids etc)	THEORY / clinical assessment/ viva voce				**5HOURS**

	n and accelera tion of labour ; manage ment of third stage of labour									

SPECIFIC LEARNING OBJECTIVES

Teaching and Learning Methods		**Assessment Method**	
Theory	**Clinical**	**Theory**	**Clinical**
Lecture	**Demonstration with small group discussion** **Mechanism of labour with dummy pelvis** **Plotting of partogram**	• **long essay** • **short essay** • **short answers**	**Group discussion**

At the end of the teaching and learning session student should be able to :

- Define labour
- Discuss physiology of labour
- Discuss the mechanism of labour
- Discuss management of labour
- Describe the methods of induction of labor -medical, surgical and combined

TOPIC: NORMAL PUERPERIUM

Number of Competencies: 04

Number of procedures that require certification: nil

Number of hours required: 2 hours

Number	COMPETENCY The student should be able to:	Domain K/S/A/C	Level K/KH/SH/P	CORE Y/N	Suggested Teaching/ Learning method	Suggested Assesment method	Number required to certify	Vertical Integration	Horizontal Integration	Number of hours
OG19.1	Describe and discuss the physiology of puerperium, its complications, diagnosis and management; counselling for contraception, puerperal sterilization	K	KH	Y	Lecture, Small group discussion, Bedside clinics	Written/ Viva voce				2 HOURS

SPECIFIC LEARNING OBJECTIVES
At the end of the teaching and learning session student should be able to : ▪ Describe the involution of uterus ▪ Discuss about lochia and types ▪ Discuss the physiology of lactation ▪ Discuss postnatal care ▪ Define and discuss puerperal sepsis ▪ Discuss the different methods of contraception in the postpartum period

Teaching and Learning Methods		Assessment Method	
Theory	**Clinical**	**Theory**	**Clinical**
Lecture	**Demonstration with small group discussion**	• **long essay** • **short essay** • **short answers**	**Group discussion**

Obstetrics :

1. Mudaliar & Menon, Clinical Obstetrics, 12th edition, 2015, Orient Longman.

2. Dutta D.C., Text book of Obstetrics including Perinatology and Contraception, 9th edition, New central Book Agency (P) Ltd., New Delhi, 2017

3. Dawn C.S., Text Book of Obstetrics and Neonatology, 14th edition, Dawn Books, Calcutta, 2004.

4. Holland and Brews, Textbook of Obstetrics, 16th Edition, B. I. Publication, New Delhi, 1998.

Reference books:

1. Williams Obstetrics – Cunningham, Mc Donald & Gant, 25th edition

2. Dewhurst's Text book of Obstetrics & Gynaecology by whitfield C.R, 9th edition, 2018

Gynaecology:

1. Padubidri VG and Shirish N Dafftary, Shaw's A Text book of Gynaecology, 17th edition B. I. Churchill Livingstone, New Delhi, 2018

2. Dutta DC, Text book of Gynaecology, 8th edition, 2020.

3. Dawn CS, Text book of Gynaecology & Contraception, 14th edition, Dawn Books Calcutta,

2003

Reference books

1. Jeffcoate Principles of Gynaecology, by V.R. Trindall, 9th edition, Bullerworth Heinmans.

Revised Ordinance Governing

MBBS Degree Course and Curriculum of

Phase-III Part-I Subjects – RS3

SRI SIDDHARTHA
ACADEMY OF HIGHER EDUCATION

(Deemed to be University, declared u/s 3 of the UGC Act, 1956)

Agalakote, B.H. Road, Tumkur – 572107, Karnataka, India

PREAMBLE

Introduction to CBME based curriculum

The Medical Council of India has revised the undergraduate medical education curriculum so that theIndian Medical Graduate is able to recognize ″health for all″ as a national goal and should be able tofulfill his/her societal obligations. The revised curriculum has attempted to enunciate the competenciesthe student must be imparted and should have learnt, with clearly defined teaching-learning strategiesand effective methods of assessment. Communicating effectively and sympathetically with patientsand their relatives has been visualized as a core area of the revised curriculum. These and other goalsidentified in the curriculum are to be implemented in all medical colleges under the ambit of MedicalCouncil of India from August 2019 and to smoothen this process Guidelines have been prepared for itseffective implementation. In response to the need for a seamless introduction of the curriculum into theUndergraduate system, all medical colleges need to upgrade the teaching-learning skills of their faculty. Earlier experience with implementation of curricular changes suggests thata carefully managed, sustainable approach is necessary to ensure that every college has access to the new skillsand knowledge enunciated in the new curriculum. Faculty training and development thus assumes a key role in the effective implementation and sustenance of the envisaged curricular reforms.

INTRODUCTION

The undergraduate medical curriculum of the medical council of India is created to ensure that themedical doctor who emerges from the MBBS training program is capable of assisting the nation toachieve its goal of health for all. In addition, it aspires to ensure that the "graduate" meets or exceedsglobal bench-mark in knowledge, attitude, skills and communication. This intent is at the core of theGraduateMedical Regulations,2019.

The Graduate Medical Regulations, 2019 represents the first major revision to the medical curriculumsince 1997 and hence incorporates changes in science and thought over two decades. A significantadvance is the development of global competencies and subject-wise outcomes that define the roles ofthe "Indian Medical Graduate". Learning and assessment strategies have been outlined that will allow the learner to a chieve the secompetencies/ outcomes. Effective appropriate and empathetic communication, skill acquisition, student-doctor method of learning, aligned and integrated learning and assessment are features that have been given additional emphasis in the revised curriculum.

The revised curriculum is to be implemented by all medical colleges under the ambit of MedicalCouncil of India from August 2019. The roll out will be progressive over the duration of the MBBScourse.

This document represents a compilation of the resource material that was used in the CurricularImplementation Support Program (CISP) and has attempted to provide a stepwise and comprehensiveapproach to implement the curriculum. It details the philosophy and the steps required in a simple and richly illustrated manner.Teachings lide decks,faculty guides and on line resource material supplement this document.The document is tobeusedin conjunction with the Competency document, AETCOM module and the GMR document.

Indian Medical Graduate Training Programme

The undergraduate medical education programme is designed with a goal to create an "Indian MedicalGraduate" (IMG) possessing requisite knowledge, skills, attitudes, values and responsiveness, so that he may function appropriately and effectively as a physician of first contact of the community whilebeing globally relevant. To achieve this, the following national and institutional goals for the learner of theIndianMedical Graduate training programme are here by prescribed:-

NationalGoals

At the end of undergraduate program, the Indian Medical Graduate should be able to:

(a) Recognize "health for all" as a national goal and health right of all citizens and by undergoing training for medical profession to fulfill his/hersocial obligations towards realization of this goal.

(b) Learn every aspect of National policies on health and devote her/him to its practical implementation.

(c) Achieve competence in practice of holistic medicine, encompassing promotive, preventive, curative and rehabilitative aspects of common diseases.

(d) Develop scientific temper, acquire educational experience for proficiency in profession and promote healthy living.

(e) Become exemplary citizen by observance of medical ethics and fulfilling social and professional obligations, so as to respond to national aspirations.

Institutional Goals

(1) In consonance with the national goals each medical institution should evolve institutional goals todefine the kind of trained manpower (or professionals) they intend to produce. The Indian Medical Graduates comingout ofamedical institute should:

(a) Be competent in diagnosis and management of common health problemsof the individual and the community, commensurate with his/her position as a member of the health teamat the primary,secondary or tertiary levels, using his/her clinical skills based on history, physical examination and relevant investigations.

(b) Be competent to practice preventive, promotive, curative, palliative and rehabilitative medicine inrespect to the commonly encountered health problems.

(c) Appreciate rationale for different the rapeutic modalities; be familiar with the a dministration of "essential medicines"and their common adverse effects.

(d) Be able to appreciate the socio-psychological, cultural, economic and environmental factors affecting health and develop humane attitude towards the patients in discharging one's professional responsibilities.

(e) Possess the attitude for continued self learning and to seek further expertise or to pursue research in any chosen areaof medicine, action research and documentation skills.

(f) Be familiar with the basic factors which are essential for the implementation of the National Health Programmes including practical aspects of the following:

(i) Family Welfare and Maternal and Child Health(MCH)
(ii) Sanitation and water supply
(iii) Prevention and control of communicable and non-communicable diseases
(iv) Immunization
(v) Health Education
(vi) Indian Public Health Standards (IPHS), at various levels of service delivery
(vii) Bio-medical waste disposal
(viii) Organizational and/ or institutional arrangements.

(g) Acquire basic management skills in the area of human resources, materials and resource management related to health care delivery, hospital management, inventory skills and counseling.

(h) Be able to identify community health problems and learn to work to resolve these by designing, instituting corrective steps and evaluating outcome of such measures.

(i) Be able to work as a leading partner in health care teams and acquire proficiency in communication skills.

(j) Be competent to work in a variety of health care settings.

(k) Have personal characteristics and attitudes required for professiona life such as personal integrity, sense of responsibility and dependability and ability to relate to orshow concernfor other individuals.

All efforts must be made to equip the medical graduate to acquire the skills as detailed in Table 11 Certifiable procedural skills – A Comprehensive list of skills recommended as desirable for Bachelor of Medicine and Bachelor of Surgery (MBBS) –Indian Medical Graduate.

Goals and Roles for the Learner

In order to fulfill the goal of the IMG training programme, the medical graduate must be able to function in the following roles appropriately and effectively

- Clinician whounder stands and provides preventive, promotive, curative, palliative and holistic care with compassion.
- Leader and member of the health care team and system with capabilities to collect analyze, synthesize and communicate health data appropriately.
- Communicate with patients, families, colleagues and community.
- Life long learner committed to continuous improvement of skills and knowledge.
- Professional, who is committed to excellence, is ethical, responsive and accountable to patients, community and profession.

Competency Based Training Programme of the Indian Medical Graduate

Competency based learning would include designing and implementing medical education curriculum that focuses on the desired and observable ability in real life situations. In order to effectively fulfil the roles aslisted in clause 2, the Indian Medical Graduate would have obtained the following set of competencies at the time of graduation:

Clinician, who understands and provides preventive, promotive, curative, palliative and holistic care with compassion

- Demonstrate knowledge of normal human structure, function and development from a molecular, cellular, biologic, clinical, behavioral and social perspective.
- Demonstrate knowledge of abnormal human structure, function and development from a molecular, cellular, biological, clinical, behavioral and social perspective.
- Demonstrate knowledge of medico-legal, societal, ethical and humanitarian principles that influence healthcare.
- Demonstrate knowledge of national and regional health care policies including the National Health Mission that incorporates National Rural Health Mission (NRHM) and National Urban Health Mission(NUHM), frameworks, economics and systems that influence health promotion, health care delivery,disease prevention,effectiveness, responsiveness, qualityand patient safety.
- Demonstrate ability toelicitandrecord fromthe patient, and other relevant sources including relatives and care givers, a history that is complete and relevant to disease identification, disease prevention and health promotion.
- Demonstrate ability to elicit and record from the patient,and other relevant sources including relatives and caregivers, a history that is contextual to gender, age, vulnerability, social and economic status, patient preferences, beliefs and values.
- Demonstrate ability to perform a physical examination that is complete and relevant to disease identification, disease prevention and health promotion.
- Demonstrate ability to perform a physical examination that is contextualto gender, social and economic status, patient preferences and values.

- Demonstrate effective clinical problem solving, judgment and ability to interpret and integrate available data in order to address patient problems, generate differential diagnoses and develop individualized management plans that include preventive, promotive and therapeutic goals.
- Maintain accurate, clear and appropriate record of the patient in conformation with legal and administrative frame works.
- Demonstrate ability to choose the appropriate diagnostic tests and interpret these tests based on scientific validity, cost effectivenesss and clinical context.
- Demonstrate ability to prescribe and safely administer appropriate therapies including nutritional interventions, pharmaco therapy and interventions based on the principles of rational drug therapy, scientific validity, evidence and cost that conform to established national and regional health programmes and policies for the following:

  (i) Disease prevention,
  (ii)Health promotion and cure,
  (iii) Pain and distressalleviation, and
  (iv) Rehabilitation.
- Demonstrate ability to provide a continuum of care at the primary and/ or secondary level that addresses chronicity, mental and physical disability.
- Demonstrate ability to appropriately identify and refer patients who may require specialized or advanced tertiary care.
- Demonstrate familiarity with basic, clinical and translational research as it applies to the care of the patient.

Leader and member of the health care team and system

- Work effectively and appropriately with colleagues in an inter-professional health care team respecting diversity of roles, responsibilities, and competencies of other professionals.
- Recognize and function effectively, responsibly, and appropriately as a health care team leader in primary and secondary health care settings.
- Educate and motivate other members of the team and work in a collaborative and collegial fashion that will help maximize the health care delivery potential of the team.
- Access and utilize components of the health care system and health delivery in a manner that is appropriate, cost effective, fair and in compliance with the national health care priorities and policies, as well as be able to collect,analyze and utilize health data.
- Participate appropriately and effectively in measures that will advance quality of health care and patient safety with in the health care system.
- Recognize and advocate health promotion, disease prevention and health care quality improvement through prevention and early recognition: in a) life style diseases and b) cancers, in collaboration with other members of the health care team.

Communicator with patients, families, colleagues and community

- Demonstrate ability to communicate adequately, sensitively, effectively and respectfully with patients in a language that the patient understands and in a manner that will improve patient satisfaction and health care out comes.

- Demonstrate ability to establish professional relationships with patients and families that are positive, understanding, humane, ethical, empathetic, and trust worthy.
- Demonstrate ability to communicate with patients in a manner respectful of patient's preferences, values, prior experience, beliefs, confidentiality, and privacy.
- Demonstrate ability to communicate with patients, colleagues and families in a manner that encourages participation and shared decision-making.

Lifelong learner committed to continuous improvement of skills and knowledge

- Demonstrate ability to perform an objective self-assessment of knowledge and skills, continue learning, refine existing skills and acquire new skills.
- Demonstrate ability to apply newly gained knowledge or skills to the care of the patient.
- Demonstrate ability to introspect and utilize experiences, to enhance personal and professional growth and learning.
- Demonstrate ability to search (including through electronic means), and critically evaluate the medical literature and apply the information in the care of the patient.
- Be able to identify and select an appropriate career path way that is professionally rewarding and personally fulfilling.

Professional who is committed to excellence, is ethical, responsive and accountable to patients, community and the profession

- Practice selflessness, integrity, responsibility, accountability and respect.
- Respect and mainta in professional boundarie sbetween patients,colleagues and society.
- Demonstrate ability to recognize and manage ethical and professional conflicts.
- Abide by prescribed ethical and legal codes of conduct and practice.
- Demonstrate a commitment to the growth of the medical professionas awhole.

Broad Out line on training format

In order to ensure that training is in alignment with the goals and competencies listed in sub-clause 2 and 3 above:

- There shall be a "Foundation Course" to orient medical learners to MBBS programme, and provide them with requisite knowledge, communication (including electronic), technical and language skills.
- The curricular contents shall be vertically and horizontally aligned and integrated to the maximum extent possible in order to enhance learner's interest and eliminateredundancy and overlap.
- Teaching-learning methods shall be learner centric and shall predominantly include small group learning, inter activate aching methods and case-based learning.
- Clinical training shall emphasize early clinical exposure, skill acquisition, certification in essential skills; community/ primary/ secondary care-based learning experiences and emergencies.
- Training shall primarily focus on preventive and community-based approaches to health and disease, with specific emphasis on national health priorities suchas family welfare, communicable and non communicable diseases including cancer, epidemics and disaster management.
- Acquisition and certification of skills shall be through experiences in patient care, diagnostic and skill laboratories.
- The development of ethical values and overall professional growth as integral part of curriculum shall be emphasized through has structured longitude in a land dedicated programme on professional development including attitude, ethics and communication.
- Progress of the medical learner shall be documented through structured periodic assessment that

Includes formative and summative assessments. Logs of skill-based training shall be also maintained.

Appropriate Faculty Development Programmes shall be conducted regularly by institutions to Facilitate medical teachers at all levels to continuously update their professional and teaching skills, and align their teaching skills to curricular objectives.

SECTIONII

Admission to theIndian Medical Graduate Programme
NATIONAL ELIGIBILITY-CUM-ENTRANCE TESTAND COMMON COUNSELLING

SECTIONIII
Migration AS PER MCI GUIDE LINES

SECTIONIV

REGULATIONS GOVERNING MBBS DEGREE COURSE
[Eligibility forAdmission, Duration, Attendance and Scheme of Examination]

1. ELIGIBILITY

As per guidelines of National Medical Council o fIndia

2. DURATION OF THE COURSE

Every learner shall undergo a period of certified study extending over 4 ½ academic years, divided intonine semesters from the date of commencement of course to the date of completion of examination which shall be followed by one year of compulsory rotating internship.

Each academic year will have at least 240 teaching days with a minimum of eight hours of working on each day including one hour as lunch break

The period of 4½ years is divided as follows:

- **Pre-Clinical Phase [(Phase I) - First Professional phase of 13 months** preceded by Foundation Course of one month]: will consist of preclinical subjects–Human Anatomy, Physiology, Biochemistry, Introduction to Community Medicine, Humanities, Professional development including Attitude, Ethics & Communication (AETCOM) module and early clinical exposure, ensuring both horizontal land vertical integration.

- **Para-clinical phase [(Phase II) - Second Professional of 12 months**]: will consist of Para-clinicalsubjects namely Pathology, Pharmacology, Microbiology, Community Medicine, Forensic Medicineand Toxicology, Professional development including Attitude, Ethics & Communication (AETCOM) module and introduction to clinical subjects ensuring both horizontal and vertical integration.

  The clinical exposure to learners will be in the form of learner-doctor method of clinical training in allphases. The emphasiswill be on primary, preventive andcomprehendsive healthcare. A part oftraining during clinical postings should take place at the *primary level* of health care. It is desirable to provide learning experiences in secondary health care, wherever possible**.** This will involve:

  (a) Experience in recognizing and managing common problems seen in out patient, in patient and emergency settings,
  (b) Involvement in patient care as a team member,
  (c) Involvement in patient management and performance of basic procedures.

- **ClinicalPhase–[(PhaseIII) Third Professional (28 months)]**
  (a) PartI(13months)-The clinical subjects include General Medicine, General Surgery, Obstetrics & Gynecology, Pediatrics, Orthopaedics, Dermatology, Otorhinolaryngology, Ophthalmology, Community Medicine, Forensic Medicine and Toxicology, Psychiatry, Respiratory Medicine, Radio diagnosis & Radio therapy and Anaesthesiology & Professional development including AETCOM module.

(b) Electives (2months)- Toprovide learners with opportunity for diverse learning experiences, todo research/ community projects that will stimulate enquiry, self directed experimental learning and lateral thinking[9.3].

(c) Part II (13months)-Clinicalsubjects include:

i. Medicine and allied specialties (General Medicine, Psychiatry, Dermatology Venereology And Leprosy (DVL), Respiratory Medicine including Tuberculosis)

ii. Surgery and allied specialties (General Surgery, Orthopedics [including trauma]), Dentistry, Physical Medicine and rehabilitation, Anesthesiology and Radiodiagnosis)

iii. Obstetrics and Gynecology (including Family Welfare)

iv. Pediatrics

v. AETCOMmodule

- **A learner shall not been titled to graduate after 10 years of his/her joining of the first part of the MBBS course**

<table>
<tr><th>Jan</th><th>Feb</th><th>Mar</th><th>Apr</th><th>May</th><th>Jun</th><th>Jul</th><th>Aug</th><th>Sep</th><th>Oct</th><th>Nov</th><th>Dec</th></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>Foundation course</td><td colspan="4">IMBBS</td></tr>
<tr><td colspan="8">IMBBS</td><td>PhaseI exam</td><td colspan="3">IIMBBS</td></tr>
<tr><td colspan="8">IIMBBS</td><td>PhaseII exam</td><td colspan="3">IIIMBBS PART1</td></tr>
<tr><td colspan="9">IIIMBBS PART1</td><td>PhaseIII part1 exam</td><td colspan="2">Electives andskills</td></tr>
<tr><td colspan="12">III MBBS PART 2</td></tr>
<tr><td colspan="2">Phase III part 2 exam</td><td></td><td colspan="9">Internship</td></tr>
<tr><td colspan="3">Internship</td><td colspan="9"></td></tr>
</table>

DISTRIBUTION OF SUBJECTS BY PROFESSIONAL PHASE

Phase and Year of MBBS Training	Subjects and new teaching elements	Duration	University examination
First professional MBBS	• Foundation course(1month) • Human Anatomy, Physiology & Biochemistry • Introduction of Community Medicine, Humanities • Early Clinical Exposure • Attitude. Ethics and Communication Module (AETCOM)	1+13 months	Ist Professional
Second professional MBBS	• Pathology, Microbiology, Pharmacology, Forensic Medicine and Toxicology • Introduction to clinical subjects including community Medicine • Clinical postings • AETCOM	12months	IInd Professional
Third professional MBBS-part I	• Internal Medicine, General Surgery, OBG, Pediatrics, Orthopedics, Dermatology, Psychiatry, Otorhinolaryngology, Ophthalmology, Community Medicine, Forensic Medicine and Toxicology, Respiratory Medicine, Radio diagnosis & Radio therapy, Anesthesiology • Clinical Subjects/postings • AETCOM	12months	IIIrd Professional Part I
Electives	• Electives, skills and assessment	2months	
Third professional MBBS-part II	• Internal Medicine, Pediatrics, General Surgery, Orthopedics, Obstetrics and Gynecology, including Family welfare and allied specialties • Clinical Postings/subjects • AETCOM	13months	IIIrd Professional PartII

AETCOM modules in 3rd MBBS Part 1

AETCOM Module number	Title	Department
3.1	The foundations of communication - 3	Community Medicine
3.2	Case studies in bioethics - Disclosure of medical errors	Forensic Medicine
3.3	The foundations of communication - 4	Ophthalmology
3.4	Case studies in bioethics - Confidentiality	Community Medicine
3.5	Case studies in bioethics - Fiduciary duty	ENT

AETCOM modules in 3rd MBBS Part 2

AETCOM Module number	Title	Department
4.1	The foundations of communication - 5	General Surgery
4.2	Case studies in medico-legal and ethical situations	Obstetrics and Gynaecology
4.3	Case studies in medico-legal and ethical situations	Internal Medicine
4.4	Case studies in ethics empathy and the doctor-patient relationship	General Surgery
4.5	Case studies in ethics: the doctor-industry relationship	Paediatrics
4.6	Case studies in ethics and the doctor - industry relationship	Orthopaedics
4.7	Case studies in ethics and patient autonomy	Paediatrics
4.8	Dealing with death	Internal Medicine
4.9	Medical Negligence	Obstetrics and Gynaecology

3. ATTENDANCE

- Every candidate should have **attendance not less than 75% of the total classes conducted in theory and not less than 80% of the classes conducted in practical** in each calendar year calculated from thedate of commencement of the term to the last working day as notified by the University in each of the subjects prescribed to be eligible to appear for the university examination.
- Seventy five percent (**75%) attendance in Professional Development Programme (AETCOM Module) is required for eligibility to appear forfinal examination in each professional year** (vide Medical Council of India Notification on Graduate Medical Education (Amendment) Regulations 2019, published in the Gazette of India Part III, Section4, Extraordinary issued on 4th November 2019)
- In subjects that are taught in more than one phase – the learner must have 75% attendance in theory and 80% in practical in each phase of instruction in thatsubject.
- If an examination comprises more than one subject (for e.g., General Surgery and allied ranches), the candidate must have 75% attendance in each subject and 80% attendance in each clinical posting. Learners who do not have at least 75% attendance in the electives will not be eligible for the Third Professional- Part II examination.

The Principal should notify at the College the attendance details at the end of each term without fail under intimation to this University.

A candidate lacking in the prescribed attendance and progress in any subject (s) in theory or practical should not be permitted to appear for the examination in that subject(s)

4. TEACHINGHOURS: Third Professional Part 1

Subjects	Lecture(hours)	Smallgroup learning(Tutorials /Seminars) /Integrated Learning(hours)	Self – DirectedLearning(hours)	Total(hours)
General Medicine	25	35	5	65
General Surgery	25	35	5	65
Obstetrics and Gynecology	25	35	5	65
Pediatrics	20	30	5	55
Orthopaedics	15	20	5	40
Forensic Medicine and Toxicology	25	45	5	75
Community Medicine	40	60	5	105
Otorhinolaryngology	25	40	5	70
Ophthalmology	30	60	10	100
Dermatology	20	5	5	30
Psychiatry	25	10	5	40
Respiratory Medicine	10	8	2	20
Radiodiagnosis and Radiotherapy	10	8	2	20
Anesthesiology	8	10	2	20
Clinicalpostings		-		756
Attitude, Ethics &Communication Module(AETCOM)		19	6	25
Total	303	401	66	1551

Teaching and learning shall be aligned and integrated across specialties both vertically and horizontally for better learner comprehension. Learner centered learning methods Should include problem oriented learning, case studies, community-oriented learning, self- directed and experiential learning.

- Didactic lectures shall not exceed one third of the schedule; two third of the schedule shall include interactive sessions, practicals, clinical or/and group discussions. The learning process should include clinical experiences, problem-oriented approach, case studies and community health care activities.

Table: Clinical postings for all clinical Subjects

Subjects	Period of training in weeks			Total(weeks)
	II MBBS	III MBBS Part 1	III MBBS Part 2	
Electives			8(4weeks clinical postings to continue)	
General Medicine	4	4	8+4	20
General Surgery	4	4	8+4	20
Obstetrics and Gynecology	4	4	8+4	20
Pediatrics	2	4	4	10
Orthopaedics including Trauma	2	4	2	8
Community Medicine	4	6	-	10
Otorhinolaryngology	4	4	-	8
Ophthalmology	4	4	-	8
Dermatology	2	2	2	6
Psychiatry	2	2	-	4
Respiratory Medicine	2	-	-	2
Radio diagnosis	2	-	-	2
Dentistry &Anesthesiology	-	2	-	2
Casualty	-	2	-	2
Total	36	42	44	126

SCHEME OF EXAMINATION

- **INTERNAL ASSESSMENT**

General guidelines

- Regular periodic examinations shall be conducted throughout the course.
- There shall be **minimum three internal assessment examinations** in each 3rd MBBS Part 1 subjects which includes ENT, Ophthalmology, Community Medicine and Forensic medicine and one internal assessment examination in each of the other clinical subject in a professional year.
- An end of posting clinical assessment shall be conducted for each clinical posting in each professional year
- The **third internal examination** should be conducted on the lines of the university examination (Preliminary examination).
- When subjects are taught in more than one phase, the internal assessment must be done in each phase

and must contribute proportionately to final assessment. For example, General Medicine mustbe assessed in second Professional, third Professional Part I and third Professional Part II, independently.

- An **average of the marks scored in all internal assessment examinations and the** average of all marks scored in the end of posting clinical assessment will be considered as the final internal assessment scores and eligibility for University examinations.
- Learners **must secure not less than 40 % marks in theory and practical separately and not lessthan 50% marks of the total marks (combined in theory and practical)** assigned for internal assessment in a particular subject in order to be eligible for appearing at the final University examination of that subject.
- A candidate who has not secured requisite aggregate in the internal assessment may be subjected to remedial measures by the institution. If he/she successfully completes there mediation measures, he/she is eligible to appear for University Examination. Remedial measures shall becompleted before submitting the internal assessment marks online to the university.
- **Internal assessment marks will reflect under separate head in the marks card of the university examination. The internal assessment marks (theory and practical) will not be added to the marks secured (theory/practical) in the university examination for consideration of pass criteria, pass percentage, award of first class/distinction/gold medal.**
- **The results of IA should be displayed on the notice board within a 1-2 week of the test.**
- Colleges should formulate policies for remedial measures for students who are either not able to score qualifying marks or have missed on some assessments due to any reason.
- Learners must have completed the required certifiable competencies for that phase of training and completed the log book appropriate for that phase of training to be eligible for appearing at the final university examination of that subject.

TABLE SHOWING SCHEME FOR CALCULATION OF INTERNAL EXAMINATION MARKS

	First Theory IA	**Second Theory IA**	**Third Theory IA ***
Theory paper Marks	80	80	Paper 1- 100 Marks Paper 2- 100Marks
Periodic test 1	5	5	NIL
Periodic test 2	5	5	NIL
Periodic test 3	5	5	NIL
Professionalism	5	5	NIL
Total Marks	100	100	200

THEORY INTERNAL ASSESSMENT

Note: * Subjects having single paper will have one paper for 100 marks only.

**** Subjects taught in more than one year will have an theory IA in each year also**

PRACTICALS INTERNAL ASSESSMENT

	First Practical IA	**Second Practical IA**	**Third Practical IA**
Marks	80	80	100 (University pattern, including viva voce)
Formative Assessment	20 (record+ log book)	20 (record+ log book)	NIL
Total	100	100	100

****Subjects with clinical postings in more than one year will have an end-of-posting after each clinical posting in addition**

3.Guidelines for Remedial measures for students who are unable to score qualifying marks and attendance:

Academic council of respective institutes / Colleges to provide the guidelines for remedial measures

UNIVERSITY EXAMINATION

Examination schedule

<table>
<tr><td>Jan</td><td>Feb</td><td>Mar</td><td>Apr</td><td>May</td><td>Jun</td><td>Jul</td><td>Aug</td><td>Sep</td><td>Oct</td><td>Nov</td><td>Dec</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>Foundation course</td><td colspan="4">IMBBS</td></tr>
<tr><td colspan="8">IMBBS</td><td>Phase exam</td><td colspan="3">IIMBBS</td></tr>
<tr><td colspan="8">IIMBBS</td><td>Phase II exam</td><td colspan="3">III MBBS PART 1</td></tr>
<tr><td colspan="9">III MBBS PART 1</td><td>Phase III part1 exam</td><td colspan="2">Electives and skills</td></tr>
<tr><td colspan="12">III MBBS PART 2</td></tr>
<tr><td colspan="2">Phase III part 2 exam</td><td></td><td colspan="9">Internship</td></tr>
<tr><td colspan="2">Internship</td><td colspan="10"></td></tr>
</table>

General guidelines

- University examinations are to be designed with a view to ascertain whether the candidate has acquired the necessary knowledge, minimal level of skills, ethical and professional values with clear concepts of the fundamentals which are necessary for him/her to function effectively and appropriately as a physician of first contact. Assessment shall be carried out on an objective basis to the extent possible.

- Nature of questions will include different types such as structured essays (LongAnswer Questions-LAQ), Short Essays, Short Answers Questions (SAQ) and Multiple choice questions (MCQs). Marks for each part should be indicated separately.

- **The blueprint for theory paper indicating the topics and marks allotted for each are also given. The blueprinting provided is an estimate only, the spirit of the blueprint must be honoured while setting the paper. This document will guide teachers/ students and evaluators on what to focus on. The focus should be on providing clinical oriented questions rather than purely theoretical questions**
- **The distribution of topics in paper 1 and paper 2, when a subject has 2papers is also given below. The given division of topics is only a guideline, as the topics are often a continuum, making clear demarcation difficult**.
- The learner **must secure at least 40% marks in each of the two papers with minimum 50% of marks in aggregate (both papers together) to pass in Community Medicine.**
- In subjects with one question paper the learner must secure a minimum of 50% marks to pass.
- Clinical examinations will be conducted at the bedside in the hospital wards. The objective will be to assessproficiency and skills to elicit a detailed history, perform clinical examination, interpret data and form logical conclusion, wherever applicable.

- **There shall be one main examination in an academic year and a supplementary to be held not later than 90 days after the declaration of the results of the main examination.**

- **A learner shall not be entitled to graduate after 10 years of his/her joining of the first part of the MBBS course.**

- **A maximum number of four permissible attempts would be available to clear the first Professional University examination, where by the first Professional course will have to be cleared within 4 years of admission to the said course. Partial attendance at any University examination shall be counted as an availed attempt.**

- **THIRD PROFESSIONALPART 1 EXAMINATION:**

  This examination shall be held at the end of third professional training (11months), in the subjects of Otorhinolaryngology, Ophthalmology, Community Medicine and Forensic medicine.

  Phase II

  Table:Examination components, Subjects and Distribution of Marks

THEORY	**Community Medicine**	**Forensic Medicine**	**Ophthalmology**	**Otorhinolaryngology**
WrittenPaper				
No. of Papers & Maximum Marks for each paper.	**2×100=200**	**1×100=100**	**1×100=100**	**1x100=100**
Total theory	**200**	**100**	**100**	**100**
PRACTICAL				
1. Practical exam	**80**	**80**	**80**	**80**
2.Viva-voce	**20**	**20**	**20**	**20**
Total practical	**100**	**100**	**100**	**100**
Internal assessment*				
Internal Assessment (Theory)	**100**	**100**	**100**	**100**
Internal assessment (Practical)	**100**	**100**	**100**	**100**

***Internal assessment marks will reflect under separate head in the marks card of the university examination.**

Type, number of questions and distribution of marks for written paper

TYPES OF QUESTION	NUMBER OF QUESTIONS	MARKS FOR EACH QUESTION
Long essay	**2**	**10**
Short essay	**6**	**5**
Shortanswers	**10**	**3**
MCQs	**20**	**1**
Total		**100**

5. SUBMISSION OF LOGBOOK

At the time of Clinical Examination each candidate shall submit to the Examiners his/herlogbook record duly certified by the Head of the Department as a bonafide record of the workdoneby the candidate.

6. ELIGIBILITY TO APPEAR FOR EXAMINATION

The following criteria to be met by the students to be eligible for the university exams:

a. Shall have undergone satisfactorily the approved course of study in the subject/subjects for the prescribed duration.
b. Shall have attended not less than 75% of the total classes conducted in theory and not less than 80%of the total classes conducted in practical separately to become eligible to appear for examination in that subject/subjects.
c. Minimum of 40% marks to be obtained **separately** in theory and practical ANDatleast 50% marksof the total marks **combined** in theory and practical assigned for internal assessment is to beobtained in a particular subject to appear for university exam. (average of 3 internal assessments theory and practical separately)
d. Learners must have completed the required certifiable competencies for that phase of training and completed the logbook appropriate for that phase of training to be eligible for appearing at the final university examinationof that subject.

7. CRITERIAFORPASS

For declaration of pass in any subject in the University examination, acandidate shall pass both in Theory and Practical examination components separately as stipulated below:

- The Theory component consists of marks obtained in University Written papers only. For a pass intheory, a candidate must secure at least 40% marks in each of the two papers with minimum 50% of marks in aggregate (both papers together).
- For a pass in practical examination, a candidate shall secure not less than 50% marks in aggregate, i.e.,marks obtained in university practical examination and vivavoce added together

- **Internal assessment marks will reflect as a separate head of passing at the university examination.**
- **The IA marks will not be added to the marks obtained in the University examination and will NOT be used to calculate pass percentage, award of class, distinction and GOLD medal.**

- A candidate not securing 50% marks in aggregate in Theory or Practical examination + viva in asubject shall be declared to have failed in that subject and is required to appear for both Theory and Practical again in the subsequent examination in that subject.

8. DECLARATIONOFCLASS

a. A candidate having appeared in all the subjects in the same examination and passed that examination in the first attempt and secures 75% of marks or more of **grand total marks (university examination + internal assessment)** prescribed will be declared to have passed the examination with distinction.

b. A candidate having appeared in all the subjects in the same examination and passed that examination in the first attempt and secures 65% of marks or more but less than 75% of **grand totalmarks (university examination + internal assessment)** prescribed will be declared to have passed the examination in First Class.

c. A candidate having appeared in all the subjects in the same examination and passed that examination in the first attempt and secures 50% of marks or more but less than 65% of **grand total marks (university examination + internal assessment)** prescribed will be declared to have passed the examination in Pass Class.

d. A candidate passing a university examination in more than one attempt shall be placed in Pass class irrespective of the percent age of marks secured by him/her in the examination.

Note: Please note fraction of marks will not be rounded off for clauses(a),(b)and(c)

Appointment of Examiners

(a) Person appointed as an examiner in the particular subject must have at least four years of totalteaching experience as assistant professor after obtaining postgraduate degree in the subject in a college affiliated to a recognized/ approved/ permitted medical college.

(b) For the Practical/ Clinical examinations, there shall be atleast four examiners for100 learners, out of whom notless than50% must be external examiners. Of the four examiners, the senior-most internal examiner will act as the Chair man and coordinator of the whole examination programme so that uniformity in the matter of assessment of candidates is maintained. Where candidates appearing aremore than 100, two additional examiners (one external & one internal) for every additional 50 or part there of candidates appearing, be appointed.

(c) External examiners may not be from the same University.

(d) The internal examiner in a subject shall not accept external examinership for a college from which external examiner is appointed in his/her subject.

(e) A University having more than one college shall have separate sets of examiners for each college, with internal examiners from the concerned college.

(f) External examiners shall rotate at an interval of 2 years.

(g) There shall be a Chairman of the Board of paper-setters who shall be an internal examiner and shall moderate the questions.

(h) All eligible examiners with requisite qualifications and experience can be appointed internalexaminersbyrotation intheirsubjects.

(i) All theory paper assessment should be done as central assessment program (CAP) of concerned university.

(j) Internal examiners should be appointed from same institution for unitary examination in same institution. For pooled examinations at one centre approved internal examiners from same university may be appointed.

(k) The grace marks up to a maximum of five marks may be awarded at the discretion of theUniversity to a learner for clearing the examination as a whole but not for clearing a subject resulting in exemption

Guidelines for electives for MBBS batch admitted in 2019

The 2019 admitted batch is expected to start their III MBBS Part II in February- March 2023. As per the Regulations on Graduate Medical Education (Amendment), 2019 the batch is expected to start elective posting at the start of III professional Part II, one month in Basic sciences (preclinical, paraclinical and research) and one month in clinical subjects. However, in view of the revised examination schedule, SSAHE is providing following guidelines for the electives, applicable for the batch admitted in 2019.

1. The duration of electives is reduced to one month, instead of original 2 months.
2. There shall be two blocks, block 1 and block 2 of fifteen days each.
3. Electives should be started immediately after completion of III MBBS part I practical examination.
4. Following are the details of the Block 1 and Block 2

	Block 1	Block 2
When to start	Immediately after completion of III MBBS Part I Practical Examination / After Completion of other Block of elective	
Possible Areas	Pre-clinical departments Para- clinical departments Basic Science laboratory Research	Clinical Specialities including Urban and Rural Health Centres
Nature of learning	Supervised Experiential Immersive Self-directed	Supervised Experiential Immersive Self-directed
Regular clinical postings	Will continue	Will not be offered
Attendance	Minimum 75 % to be eligible for III MBBS Part II examination	Minimum 75 % to be eligible for III MBBS Part II examination
Assessment	Formative Record of activities in log book	Formative Record of activities in log book
Whether permitted for Out of Institution within city	Allowed (Provided clinical postings can be continued)	Allowed within City
Whether permitted for Out of City	No	With prior permission of MUHS / NMC, if out of State
Examples of possible "Learning experiences" (not exhaustive)	1. Neuro-Anatomy 2. Biochemistry lab 3. Pathology Lab 4. Any one out of Bacteriology, virology, parasitology, serology etc labs 5. Genetics 6. Molecular Biology 7. Immunology 8. Pharmaco-vigilance and clinical pharmacology 9. Infection Control	1. Any clinical Broad Speciality 2. Any clinical super-speciality 3. Adult Intensive Care 4. Pediatric Intensive care 5. Emergency Care 6. Health care quality and safety 7. Adolescent Reproductive Health issues 8. Rehabilitation and palliative care 9. Medical retina 10. Sports medicine 11. Clinical Ethics

	10. Assisted living and Hospice care 11. Rehabilitation 12. Community / epidemiological surveys 13. Bio-statistics 14. Ethics 15. Bio-informatics 16. Computers and AI in health care 17. Learning Management System	12. Urban or Rural community Health Centres

5. Institutions shall pre-determine the number and nature of electives, names of the supervisors, and the number of learners in each elective based on the local conditions, available resources and faculty.
6. For each such elective should have the following details:

a) Defined learning objectives,
b) An identified preceptor responsible for guiding the student
c) A pre-published timetable of activities identified for the learner during the elective
d) List of learning resources for the learner to be used during the elective,
e) Provision to be part of the team to obtain an immersive learning experience
f) Prerequisites, if any, to be completed before joining the elective,
g) Defined formative assessments with appropriate requirements for portfolio and log book entry,
h) Program evaluation by the stakeholders.

7. The list of available learning experiences for each block and the names of preceptors for each should be available to students on the institutional notice board at least three months before the commencement of the electives. A process for submitting applications for both blocks with choices should be made available to the students. Written information on each learning experience (details as per point 6) must be available for students to examine and make an informed choice.
8. A counseling session with faculty mentors to help students choose electives is desirable. The faculty mentors must ascertain a student's expectation from the electives he/she has chosen. Students must also be made aware of the rules regarding attendance, work schedule, documentation and assessment requirements for each elective. The allocation of electives may be done based on student choice and availability of rotation by faculty who have been identified to be in-charge of the electives program, for each block. The allocation must be done sufficiently in advance and the students informed so that the prerequisites for the electives, if any (such as knowledge training in good laboratory practices, good research practices, CPR training etc.) can be completed by the student. A process to identify the veracity of student-initiated electives must be in place.
9. Institutions must prepare details of learning experiences as shown in following examples.

Block	Block 1
Name of Elective	Training in Medical retina
Location odepartment or hospital Lab or research facility	Department of Ophthalmology, Medical College Hospital
Name of internal preceptor(s)	
Name of external preceptor	N / A
Learning objectives of elective	1. Perform direct ophthalmoscopy confidently 2. Diagnose papilloedema accurately in patients with raised ICP 3. Detect diabetic retinopathy, stage the disease and refer to higher center for further treatment 4. Describe indications for laser treatment in diabetic retinopathy 5. Detect hypertensive retinopathy using direct ophthalmoscopy

Number of students that can be accommodated in this elective	Four
Prerequisites for elective	Good clinical practice
List of activities of student participation	1. Work with supervisor in the retina division of ophthalmology 2. Attend evening rounds with postgraduate resident examine inpatients with diabetes and hypertension. 3. Participate in clinical meetings of retina division. 4. Enter details of cases seen in opd and in-patients into logbook
Learning Resources	
Portfolio entries required	Enter details of cases examined
Log book entry required	Satisfactory completion of posting with a "meets expectation '(M)' grade"
Assessment	OSCE Write a reflection of their time in retina division

FORENSIC MEDICINE &TOXICOLOGY

GOAL:

The aim of teaching the undergraduate student in Forensic Medicine is to impart such knowledge and skills that may enable him to manage common medico-legal problems in dayto day practice. He/she shall acquire competence for post mortem diagnosis based on history, physical examination and relevant observations during autopsy.

COMPETENCIES:

Periodof Training – PhaseII MBBS & PhaseIII part1 MBBS

The learner must demonstrate:

- Understanding of medico-legal responsibilities of physicians in primary and secondarycaresettings,
- Understanding of the rational approach to the investigation of crime, based on scientific and legal principles,
- Abilityto manage medical and legal issuesin cases of poisoning/ overdose,
- Understanding the medico-legal framework of medical practice and medical negligence,
- Understanding of codes of conduct and medical ethics.

Period of Training –Internship

A. An intern must perform or assist in:

- Identifying and documenting medico-legal problems in a hospital and general practice,
- Identifying the medico-legal responsibilities of a medical practitioner in various hospital situations,
- Diagnosing and managing with competence basic poisoning conditions in thecommunity,
- Diagnosing and managing with competence and documentation in cases of Rape /Sexual assault,
- Preparing medico-legal reports in various medico legal situations.

B. An intern must have observed or preferably assisted at the following operations/ procedures:

- Various medico legal / post-mortem procedures and formalities during their performance by police.

Certifiable Procedural skills desirable of Indian Medical Graduate in Forensic Medicine &Toxicology

- Documentation and certification of trauma(I)
- Diagnosis and certification of death(D)

- Legal documentation related to emergency cases (D)
- Certification of medico-legal casese.g.Ageestimation, Sexual Violenceetc.(D)
- Establishing communication in medico-legal cases with police, public health authorities, other concerned departments,etc (D)

I-Independently performed on patients,
O-Observed in patients or on simulations,
D- Demonstration on patients or simulations and performance under supervision in patients

Competencies in Phase IIMBBS and Phase III part 1 MBBS			
No.	**Topic**	**Competencies**	**Procedures requiring certification**
1	General information	11	Nil
2	Forensic Pathology	35	Nil
3	Clinical Forensic Medicine	33	Nil
4	Medical jurisprudence (Medical Law& Ethics)	30	Nil
5	Forensic Psychiatry	06	Nil
6	Forensic laboratory investigationin Medico legal practice	03	Nil
7	Emerging technologies in Forensic Medicine	01	Nil
8	General Toxicology	10	Nil
9	ChemicalToxicology	06	Nil
10	Pharmaceutical Toxicology	01	Nil
11	Biotoxicology	01	Nil
12	Sociomedical Toxicology	01	Nil
13	Environmental Toxicology	02	Nil
14	Skills in Forensic Medicine & Toxicology	22	Nil
	TOTAL	**162**	**Nil**

Competencies in Internship			
Sl no	**Topic**	**Competencies**	**Procedures requiring certification**
1	Documentation and certification of Trauma(I)	**1**	**1**
2	Diagnosis and certification of death(D)	**1**	**1**
3	Legal documentation related to Emergency cases(D)	**1**	**1**
4	Certification of medico-legal cases e.g.Ageestimation, Sexual Violenceetc. (D)	**3**	**3**
5	Establishing communication in medico-legal cases with police, public health authorities, other concerned departments, etc(D)	**3**	**3**
6	Prerequisites, Procedure, Documentation and Opinion writing in Medicolegal Autopsy(D)	**1**	**1**
	Total	**10**	**10**

Minimum Teaching Hours in MBBS Phase II& Phase III part1

Forensic Medicine& Toxicology	**Lectures (hours)**	**Small group learning (Tutorials /Seminars) /Integrated learning(hours)**	**Self-Directed Learning (hours)**	**Total(hours)**
Phase II	15	30	05	50
Phase IIIpart1	25	45	05	75
Total	**40**	**75**	**10**	**125**
AETCOM	**Lectures (hours)**	**Small group learning (Tutorials /Seminars) /Integrated learning (hours)**	**Self-Directed Learning (hours)**	**Total(hours)**
Phase II	02	04	02	08
Phase IIIpart1	01	02	02	05
Total	**03**	**06**	**04**	**13**

Minimum Teaching Hours in Internship

Subject	**Period of posting**
Forensic Medicine &Toxicology	**7days**

List of Competencies and SLOs to be covered in PhaseII MBBS

General Information

- **Lecture– 1hr (Orientation class)**
- **Assessment:**No assessment

FM1.1 - Demonstrate knowledge of basics of Forensic Medicine like definitions ofForensic medicine, Clinical Forensic Medicine, Forensic Pathology, State Medicine,LegalMedicineand Medical Jurisprudence

: Define Forensic Medicine and Medical Jurisprudence**.**

:Describe different branches of Forensic medicine like Clinical Forensic Medicine, Forensic Pathology, Forensic Odontologyand Forensic Psychiatry.

:Discusson Forensic Medicine practice in different parts of the world.

FM1.2 –Describe history of Forensic Medicine

:Describe the etymology of Forensic Medicine.

: Describe how knowledge of medicine was applied to aid in the administration of justice from ancient time and its evolution to the recent times.

:Enumerate the important people and events related to Forensic Medicine.

Forensic Pathology

- **Lecture– 1hr(Interactive)** **Assessment:**Written,Vivavoce

FM2.1 - Define, describe and discuss death and its types including somatic/clinical/cellular, molecular and brain-death, Cortical Death and BrainstemDeath

:Definedeath.

: Describe the types of death (somatic, molecular, brain-death, cortical death and brain stem death).

:Describe the procedure of declaring death with specific reference to brain stem death.

FM2.2-Describe and discuss natural and un natural deaths

2.2.1:Describe the manner of death and cause of death

FM2.3 –Describe and discussissues related to sudden natural deaths

: Define sudden natural death.

: Enumerate the causes forsuddennaturaldeath.

: Describe the medicolegal importance of sudden natural death. 2.3.4: Discuss the autopsy procedure incase of sudden natural death.

- **SDL–1hr(Followedbyreflectivewriting)Assessment:** Written,Vivavoce

FM2.4 - Describe salient features of the Organ Transplantation and The Human Organ Trans plant (Amendment) Act 2011 and discuss ethical issues regarding organ donation

2.4.1: Discuss the ethical and legal issues related to organ donation and transplantation.2.4.2: Describe the salient features of The Human Organ Transplant Act, 1994 with amendment still date.

- **Lecture– 1hr (Interactive) Assessment:** Written,Vivavoce

FM2.5 -Discuss moment of death, modes of death-coma, asphyxia and syncope

2.5.1: Describe the modes of death (coma, syncope, asphyxia).

FM2.6 –Discuss presumeption of death and survivorship

2.6.1:Discuss the importance of presumption of death (Sec.107&108IEA).

FM2.7 –Describe and discuss suspended animation

: Define suspended animation.

: Enumerate the causes for suspended animation.
: Discuss the medicolegal importance of suspended animation.

- **SGD–2 hrs Assessment:**Written,Viva voce

FM2.10 –Discuss estimation of time since death

2.10.1: Enumerate the various factors which help in determination of time since death
2.10.2: Discuss on Forensic entomology.

FM2.8 - Describe and discuss postmortem changes including signs of death, cooling ofbody, post-mortem lividity, rigor mortis, cadaveric spasm, cold stiffening and heat stiffening

2.8.1 Classify post-mortem changes (immediate, early, late).
2.8.2 Describe postmortem cooling and its medicolegal importance.
2.8.3: Define postmortem lividity.
2.8.4: Describe postmortem lividity and its medicolegal importance.
2.8.5: Define rigormortis.
2.8.6: Describe rigor mortis and its medico legal importance
2.8.7: Enumerate the conditions simulating rigor mortis.
2.8.8: Definecadavericspasm.
2.8.9: Differentiate between cadaverics pasman drigormortis.
2.8.10: Discusson cold stiffening, heat stiffening, chemical stiffening and gas stiffening.

- **SGD– 1hrAssessment:**Written,Viva voce

FM2.9-Describe putrefaction, mummification, adipocere and maceration

2.9.1: Describe the various changes seen in the body due to put refaction.
2.9.2: Define adipocere.
2.9.3: Describe adipocere and its medico legal importance.
2.9.4: Define mummification.
2.9.5:Describe mummification and its medicolegal importance.

- **Lecture– 1hr** **Assessment:**Written,Vivavoce

FM2.11 - Describe and discuss autopsy procedures including post-mortem examination, different types of autopsies, aims and objectives of post-mortem examination

2.11.1 Describe the types of autopsy.
2.11.2 Enumerate the objectives of medicolegal autopsy.
2.11.3: Enumerate the objectives of foetal autopsy.
2.11.4: Enumerate the objectives of skeletalre mains examination.

FM2.14 - Describe and discuss examination of clothing, preservation of viscera on post-mortem examination for chemical analysis and other medico-legal purposes, post-mortemarte facts

2.14.1 Describe the method of preservation and dispatch of viscera and body fluids for chemical analysis.
2.14.2 Describe the method of preservation and dispatch of viscera and body fluids for his to pathology and micro biological investigations.
2.14.3 : Describe the method of preservation and dispatch of clothes in a medicolegal case.
2.14.4 : Discuss on postmortemarte facts and the irmedicolegal importance

***FM8.5 - Describe Medico-legal autopsy in cases of poisoning including preservation and dispatch of viscera for chemical analysis**

8.5.1: Explain the procedure of medico-legal autopsy in a suspected case of poisoning.

8.5.2: Describe the method of preserving the various viscera in a caseof poisoning.
8.5.3: Describe the procedure for dispatch of viscera for chemical analysis in a case of poisoning.

***FM8.9 - Describe the procedure of intimation of suspicious cases or actual cases of foulplay to the police, maintenance of records, preservation and dispatch of relevant samples for laboratory analysis.**

8.9.1 Describe the procedure of intimation of suspicious cases or actual cases of foul play tothe police

- S.39 CrPC, S. 40CrPC,S. 175 CrPC.
- S. 166(B) IPC,S.176 IPC,S.177IPC,S.201IPC,S.202 IPC.

8.9.2 Describe the procedure of record maintenance in a case of poisoning.
8.9.3: Describe the procedure of collection and dispatch of viscera for chemical analysis in a case of poisoning.

- **Lecture– 1hr** **Assessment:**Written,Vivavoce

FM2.12 - Describe the legal requirements to conduct post-mortem examination and procedures to conduct medico-legal post-mortem examination

2.12.1: Describe the rules for conducting medicolegal autopsy.
2.12.2: Enumerate the skin incisions in medicolegal autopsy.
: Enumerate the methods of evisceration in medicolegal autopsy.
: Describe the external and internal examination in medicolegal autopsy.
2.12.5: Explain the special techniques used in medicolegal autopsy (demonstration of pneumothorax, air embolism, etc).

FM2.13 –Describe and discuss obscure autopsy

2.13.1: Discuss on obscure autopsy with examples.
2.13.2: Discuss on negative autopsy with examples.

FM2.17 –Describe and discuss exhumation

2.17.1 : Define exhumation.
2.17.2 : Enumerate the objectives of exhumation.
2.17.3 : Describe the rules and procedure of exhumation.

- **SGD–4hrs (Practical)** **Assessment:** Written, Viva voce, OSPE, Practical book, Logbook

FM2.16 –Describe and discuss examination of mutilated bodies or fragments, charred bones and bundle of bones

2.16.1 Describe the procedure of examination of mutilated bodies/fragments.
2.16.2 Describe the procedure of examination of skeletal remains (including charred bones).

***FM14.9 - Demonstrate examination of & present an opinion after examination of skeletal remains in a simulated/ supervised environment**

14.9.1 Enumerate the objectives of skeletal remains examination.
14.9.2 Demonstrate the procedure of examination of skeletal remains in a simulated/supervised environment.
14.9.3 Draft a medicolegal report and opinion after examination of skeletal remains.

- **SGD– 1hrAssessment:**Written,Vivavoce

FM2.18 -CrimeSceneInvestigation: -

Describe and discuss the objectives of crime scene visit, the duties & responsibilities ofdoctors on crime scene and the reconstruction of sequence of events after crime sceneinvestigation

2.18.1 Enumerate the objectives of crime scene visit by an autopsy surgeon.
2.18.2 Describe the procedure of examination of crime scene and preservation of Evidentiary material.
2.18.3 Explain there construction of a case after the crime scene visit.

- **SGD– 1hr** **Assessment:**Vivavoce

FM2.31 - Demonstrate ability to work in a team for conduction of medico-legalautopsies in cases of death following alleged medical negligence, dowry death, death incustody or following violation of human rights as per National Human Rights Commission Guidelines on exhumation

2.31.1 Demonstrate the benefit of team work in a medicolegal autopsyof alleged medical negligence.
2.31.2 Demonstrate the benefit of team work in a medicolegal autopsy of alleged dowry death.
2.31.3:Demonstrate the benefit of team work in a medicolegal autopsy of alleged custodial death.
2.31.4: Demonstrate the benefit of team work in a medicolegal autopsy of death due to violation of human rights.
2.31.5: Demonstrate the benefit of team work in exhumation.

- **SDL– 1 hr Assessment:**Written,Vivavoce

FM2.19 - Investigation of anaesthetic, operative deaths: Describe and discuss special protocols for conduction of autopsy and for collection, preservation and dispatch of related material evidences

2.19.1: Explain the significance of autopsy in operative deaths.
2.19.2: Describe the procedure of autopsy in operative deaths.
2.19.3: Describe the procedure of preservation and dispatch of evidentiary material for investigation in deaths associated with anaesthesia and surgery

- **SDL– 1 hr** **Assessment:** Written,

FM2.15 - Describe special protocols for conduction of medico-legal autopsies in cases of death in custody or following violation of human rights as per National Human Rights Commission Guidelines

2.15.1: Describe the National Human Rights Commission guidelines for conduction ofmedicolegalautopsyin cases of death in custody or violation of human rights.

- **SGD– 1hr** **Assessment:**OSPE, **Written, Vivavoce**

FM2.32 - Demonstrate ability to exchange information by verbal or non verbal communication to the peers, family members, law enforcing agency and judiciary

2.32.1 Demonstrate the skills of communication by a doctor with the peers.
2.32.2 Demonstrate the skills of communication by a doctor with the patient's family members in MLC worksat casualty.
2.32.3 Demonstrate the skills of communication by a doctor with the deceased family members during medicolegal autopsy.
2.32.4 : Demonstrate the skills of communication by a doctor with the law enforcing agency/judiciary in medicolegal practices.

FM2.33 & FM2.34 - Demonstrate ability to use local resources whenever required likein mass disastersituations

: 2.33.1 DefineMass disaster
: 2.33.2 EnumeratethetypesofMassdisaster.
: 2.33.3 List the objectives of forensic investigation in mass disasters. 2.33.4: Describe the procedure of examination at disaster site and autopsy.
2.33.5: Describe the evidentiary materials to be preserved in mass disasters.

2.33.6: Demonstrate the importance of team work in Mass Disasters.

FM2.35-Demonstrate professionalism while conducting autopsy in medicolegal situations, interpretation of findings and making inference/opinion, collection, preservation and dispatch of biological ortrace evidences

2.35.1 Demonstrate the professionalism of a doctor during conduction of medicolegal autopsies (such as interaction with investigating officer/ relatives of deceased, receiving in quest form, maintaining confidentiality,etc).

2.35.2 Demonstrate the professionalism in preservation and dispatching evidentiarymaterials to FSL (such as proper method of preservation and dispatch of materials withnecessaryforms and maintaining confidentiality).

2.35.3: Demonstrate the professionalism in preservation and dispatching evidentiarymaterials to histopathology and microbiology investigations (such as proper method ofpreservation and dispatch of materials with necessary forms and maintaining confidentiality).

2.35.4: Demonstrate the professionalism while giving opinion in medicolegal cases (such ashonestywith unbiased inferences).

ClinicalForensicMedicine

- **SGD–2 hrs** **Assessment:**Written,

FM3.1 -IDENTIFICATION

Define and describe Corpus Delicti, establishment of identity of living persons includingrace, Sex, religion, complexion, Stature, age determination using morphology, teeth-eruption,decay,bitemarks, bones-ossificationcentres,medicolegalaspects ofage

3.1.1DefineCorpus delicti

: 3.1.2 Describe the importance of corpus delicti in establishing the crime.

3.1.3: List the various means of identification in living and dead persons.

3.1.4 Explain the role of hand writing analysis, gait, speech, photography and facial description as a tool of identification.

3.1.5 Describe the methods of determination of race.

3.1.6 Describe the methods of sex determination in a living person.

3.1.7 Describe the methods of sex determination in a dead person.

3.1.8 Defineinter sex.

3.1.9: Describe the types of intersex and its medicolegal importance.

3.1.10: Describe the methods of age determination in a living person.

3.1.11: Describe the methods of age determination in a dead person.

3.1.12: Explain the method of age estimation using Gustafson's technique.

3.1.13: Discuss the forensic aspects related to teeth.

3.1.14: Describe the methods of determination of stature.

- **SGD– 1hr Assessment:**Written,Vivavoce

FM3.2 -IDENTIFICATION

Describe and discuss identification of criminals, unknown persons, dead bodies from there mains-hairs, fibres, teeth, anthropometry, dactylography, foot prints, scars, tattoos, poroscopy & superim position

3.2.1: Explain the role of hair in the identification of an individual.

3.2.2: Describethe medicolegal importanceof hair.

3.2.3: Describe the dyes used, methods of erasure and medicolegal importance of a tattoo.

3.2.4: Describe the medicolegal importanceof the scar.

: Define anthropometry.
: Describe various data included in anthropometry and its importance in identification.
3.2.7: Define dactylography.
3.2.8: Describe the types, method of collection and medicolegal importance of dactylography.
3.2.9: Discuss the role of poroscopy, cheiloscopy and rugo scopy in identification.
:Describe the role of foot prints in establishing the identity.
: Describe the role official reconstruction in establishing the identity.
3.2.12: Discuss the role of super imposition in establishing the identity.

SGD–2hrs(Practical)Assessment: OSPE, Practical book, Log book

***FM14.6 - Demonstrate and interpret medico-legal aspects from examination of hair(human& animal) fibre, semen & otherbiological fluids**

:14.6.1 Identify hair (human/ animal), other fibres by physical and microscopic examinationanddescribeits medicolegal importance.
: 14.6.2 Identify the **semen** by physical and microscopic examination and describe itsmedicolegalimportance**.**

***FM14.7 - Demonstrate & identify that a particular stain is blood and identify thespeciesofits origin**

: 14.7.1 Identifythebloodbyphysical and microscopicexamination.
: 14.7.2 Explain the various medicolegal conclusions by examining the blood stains.
14.7.3:Explain the methodofidentifyingthespeciesoforiginofthe bloodstain.

***FM14.8 - Demonstrate the correct technique to perform and identify ABO & RH bloodgroupofa person**

14.8.1: Perform the technique of identifying the ABO blood group of a person.14.8.2:PerformthetechniqueofidentifyingtheRhbloodgroupofap erson.

Toxicology:GeneralToxicology

SDL– 1 hrAssessment: Written,VivaVoce

FM8.1-Describethehistoryof Toxicology

8.1.1:DescribethehistoryofToxicology.

Lecture– 1hrAssessment: Written,VivaVoce

FM8.2 - Define the terms Toxicology, Forensic Toxicology, Clinical Toxicology andpoison

8.2.1:DefineToxicology, Forensic Toxicology, ClinicalToxicologyandPoison

FM8.3 –Describethevarioustypesof poisons,Toxicokinetics,andToxicodynamicsanddiagnosisofpoisoning in living anddead

8.3.1: Classify poisons in respect to mode of action and mode of usage.
8.3.2: Describe pharmacokinetics &pharmacodynamics of the poisons.
8.3.3:Explain the diagnosis of poisoningin thelivingindividual.
8.3.4:Explain the diagnosis of poisoningin thedead individual

FM8.4 - Describe the Laws in relations to poisons including NDPS Act, Medico-legalaspectsof poisons

8.4.1 DescribethelegalsectionsrelatedtopoisoninginIndia.

- ✓ S.85 IPC,S.86 IPC,S.274IPC,S.284 IPC,S.299 IPC,S.300 IPC,S.304(A)IPC, S.375 IPC
- ✓ S.324 IPC,S.325 IPC, S.326 IPC,S.326AIPC, S.326BIPC,S.328IPC
- ✓ S.357C CrPC
- ✓ S.185IMVAct,S.203 IMVAct,S.204IMVAct

8.4.2 DescribeNarcoticDrugsandPsychotropic SubstancesAct,1985.

8.4.3:DescribeKarnatakaPoisons (Possession and Sale)Rules,2015.

8.4.4:Describethe legalresponsibilities ofadoctorin acaseofpoisoning

FM8.6 - Describe the general symptoms, principles of diagnosis and management ofcommonpoisons encountered inIndia

8.6.1: Describe the general symptoms and signs of the common poisons encountered in India.

8.6.2: Describe the general principles of diagnosis of the common poisons encountered inIndia.

8.6.3:Enumeratetheline ofmanagementofthecommonpoisonsencounteredinIndia.

- **Lecture– 1hr** **Assessment:**Written,VivaVoce

FM8.8 - Describe basic methodologies in treatment of poisoning: decontamination,supportivetherapy,antidotetherapy,proceduresof enhanced elimination

8.8.1: Listthegeneraltreatmentprocedureincase ofpoisoning.

8.8.2:Explain the procedureof Gastric lavage.

8.8.3: Enumerate the indications and contraindications for Gastric lavage.

8.8.4:Defineantidote.

8.8.5: Describe the various types of antidotes.8.8.6:Explain Chelationtherapy.

8.8.7:Describethe methods forhasteningelimination ofabsorbed poison.

- **Lecture– 1hrAssessment:** Written, Viva Voce

FM8.10 - Describe the general principles of Analytical Toxicology and give a briefdescriptionofanalyticalmethodsavailablefortoxicologicalanalysis:Chromato graphy

– Thin Layer Chromatography, Gas Chromatography, Liquid Chromatography andAtomicAbsorption Spectroscopy

8.10.1:Listthevariousanalyticalmethodsusedin Toxicology.8.10.2:Describethegeneralprinciple ofThin LayerChromatography.8.10.3:Describethebasicprincipleanduses ofGasChromatography.

:Describethebasicprincipleandusesof LiquidChromatography.

:DescribethebasicprincipleandusesofAtomicAbsorptionSpectroscopy

8.10.6:Describethe basic principle and usesof Mass Spectrometry.

8.10.7:Describethe basicprinciple and usesof Radioimmuno Assay

SGD–2hrs(Practical/Skillslab) **Assessment:**OSPE, Written, Viva Voce

***FM14.2-**
Demonstratethecorrecttechniqueofclinicalexaminationinasuspectedcaseof poisoning & prepare medico-legal report in a simulated/ supervised environment

14.2.1: Take an informed consent from the Patient / Guardian after explaining the importanceofMLC registration in Poisoningcases.
: Perform the clinical examination (history taking, general physical examination,systemicexamination,laboratoryinvestigations,differentialdiagnosis)inpoisoningcasesinasimulated/ supervised environment.
: Preparethemedicolegalcertificate afterdocumentingthe clinicalfindings.
14.2.4:Preparethe policeintimation.

***FM14.3 - Assist and demonstrate the proper technique in collecting, preserving anddispatchoftheexhibitsinasuspectedcaseofpoisoning,alongwithclinicalexamination**
14.3.1: Demonstrate the process of collecting, preserving and dispatch of the materials/exhibitsin a suspected caseof**ingested poisoning**.

14.3.2:Demonstratethe processof collecting,preservinganddispatchofthematerials/exhibits in a suspected case of **inhalation poisoning** along with clinical examination.

14.3.3:Demonstratethe processof collecting,preservinganddispatchofthematerials/exhibitsin a suspected caseof **injected poisoning**longwith clinical examination.

FM8.7 - Describe simple Bedside clinic tests to detect poison/drug in a patient's bodyfluids

: Describe the bedside clinic tests for Hydrochloric acid poisoning (Ammonia test,Litmuspaper test, Silver nitrate test).
: Describe the bedside clinic tests for Nitric acid poisoning (Ferrous Sulphate test).
8.7.3: Describe the bedside clinic tests for Sulphuric acid poisoning (Litmus paper test).
8.7.4: Describe the bedside clinic tests for Oxalic acid poisoning (Barium nitrate test).
8.7.5: Describe the bedside clinic tests for Caustic alkalis poisoning (Litmus paper test).
8.7.6:Describethebedside clinictestsforPhenol(FolinCiocaltaeu reagenttest).
8.7.7:DescribethebedsideclinictestsforSalicylates(Trinder'sreagenttest).

Toxicology:ChemicalToxicology

- **SGD–2 hrsAssessment:** Written, Viva voce

FM9.1 - Describe General Principles and basic methodologies in treatment of poisoning
:decontamination, supportive therapy, antidote therapy, procedures of enhancedeliminationwith regard to: Caustics Inorganic – sulphuric, nitric, and hydrochloricacids;Organic-CarbolicAcid(phenol),Oxalic andacetylsalicylicacids
:Describethe characteristics,mechanismofaction,fataldose, fatal period,clinicalfeatures,treatment, postmortem findings and medicolegal aspects of

Sulphuric acidpoisoning.

: Describe the characteristics, mechanism of action, fatal dose, fatal period, clinicalfeatures,treatment,postmortemfindingsandmedicolegalaspectsofNitricacidpoisoning.

9.1.3: Describe the characteristics, mechanism of action, fatal dose, fatal period, clinicalfeatures, treatment, postmortem findings and medicolegal aspects of Hydrochloric acidpoisoning.

:DiscussonVitriolage.

Describe the characteristics, pharmacokinetics, mechanism of action, fatal dose, fatalperiod,clinicalfeatures,treatment,postmortemfindingsandmedicolegalaspectsofCarbolicacidpoisoning.

:DiscussonCarboluria.

: Describe the characteristics, pharmacokinetics, mechanism of action, fatal dose, fatalperiod, clinical features, treatment, postmortem findings and medicolegal aspects of Oxalicacidpoisoning.

:DiscussonOxaluria.

: Describe the characteristics, pharmacokinetics, mechanism of action, fatal dose, fatalperiod, clinical features, treatment, postmortem findings and medicolegal aspects ofAcetylsalicylicacid poisoning.

- **Lecture– 1hr** **Assessment:**Written,Vivavoce

FM9.2 - Describe General Principles and basic methodologies in treatment of poisoning:decontamination, supportive therapy, antidote therapy, procedures of enhancedelimination with regard to Phosphorus, Iodine,Barium

9.2.1: Describe the characteristics, mechanism of action, fatal dose, fatal period, clinicalfeatures, treatment, postmortem findings and medicolegal aspects of Phosphorus poisoning.

9.2.2: Discuss on Phossyjaw.

9.2.3: Describe the characteristics, mechanism of action, fatal dose, fatal period, clinicalfeatures, treatment, postmortem findings and medicolegal aspects of Iodine poisoning.

9.2.4: Describe the characteristics, mechanism of action, fatal dose, fatal period, clinicalfeatures,treatment,postmortemfindingsandmedicolegalaspectsofBariumpoisoning.

- **Lecture–2 hrs** **Assessment:**Written,Vivavoce

FM9.3 - Describe General Principles and basic methodologies in treatment of poisoning:decontamination, supportive therapy, antidote therapy, procedures of enhancedeliminationwith regard to Arsenic, lead, mercury, copper, iron, cadmium and thallium

9.3.1: Describe the characteristics, mechanism of action, fatal dose, fatal period, clinicalfeatures,treatment,postmortemfindings andmedicolegalaspectsof Arsenicpoisoning.

:Describethe characteristics,mechanismofaction,fataldose, fatalperiod,clinicalfeatures,treatment,postmortemfindingsandmedicolegalaspectsof Leadpoisoning.

: Describe the characteristics, mechanism of action, fatal dose, fatal period, clinicalfeatures,treatment,postmortemfindingsandmedicolegalaspectsofMercurypoisoning

9.3.4: Describe the characteristics, mechanism of action, fatal dose, fatal period, clinicalfeatures, treatment, postmortem findings and medicolegal aspects of Copper poisoning.
9.3.5: Describe the characteristics, mechanism of action, fatal dose, fatal period, clinicalfeatures,treatment,postmortemfindingsandmedicolegalaspectsofIron poisoning.
9.3.6: Describe the characteristics, mechanism of action, fatal dose, fatal period, clinicalfeatures, treatment, postmortem findings and medicolegal aspects of Thallium poisoning.9.3.7: Describe the characteristics, mechanism of action, fatal dose, fatal period, clinicalfeatures, treatment, postmortem findings and medicolegal aspects of Cadmium poisoning.9.3.8:Describethecauses,clinical featuresandtreatmentofMetallicfumefever.

- **Lecture–2 hrs** **Assessment:**Written,Vivavoce

FM9.4 - Describe General Principles and basic methodologies in treatment of poisoning:
decontamination, supportive therapy, antidote therapy, procedures of enhancedelimination with regard to Ethanol, methanol,ethyleneglycol
:Describephysical/chemicalcharacteristics,pharmacokinetics,mechanismofaction,fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegalaspectsof ethanol intoxication.
:Definedrunkenness.
:Describethe methodsof detectionofdrunken personin legalsituations.
:Describeclinicalfeatures,treatmentandmedicolegalaspectsofchronicalcoholism.

: Describe physical/chemical characteristics, pharmacokinetics, mechanism of action,fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegalaspectsin acaseof methanol poisoning.
: Describe physical/chemical characteristics, pharmacokinetics, mechanism of action,fataldose,fatalperiod,clinicalfeatures,treatment andmedicolegalaspects ofethyleneglycolpoisoning.

- **SGD–2hrs(Integration–Pharmacology)Assessment:** Written,VivaVoce

FM9.5 - Describe General Principles and basic methodologies in treatment of poisoning:decontamination, supportive therapy, antidote therapy, procedures of enhancedelimination with regard to Organophosphates, Carbamates, Organochlorines,Pyrethroids,Paraquat,AluminiumandZincphosphide
:Classifyagriculturalpoisons.
:Describephysical/chemicalcharacteristics,pharmacokinetics,mechanismofaction,fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegalaspectsof Organo-phosphorous poisoning.
: Describe physical/chemical characteristics, pharmacokinetics, mechanism of action,fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegalaspectsof Carbamatepoisoning.
:Describephysical/chemicalcharacteristics,pharmacokinetics,mechanismofaction,fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegalaspectsof Organo-chlorinepoisoning.
:Describephysical/chemicalcharacteristics,pharmacokinetics,mechanismofaction,fatal dose,

fatal period, clinical features, treatment, postmortem findings and medicolegalaspectsof Paraquat poisoning.

:Describephysical/chemicalcharacteristics,pharmacokinetics,mechanismofaction,fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegalaspectsof Pyrethroid poisoning.

:Describephysical/chemicalcharacteristics,pharmacokinetics,mechanismofaction,fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegalaspectsof Aluminum and Zincphosphidepoisoning.

- **SGD– 1hr** **Assessment:**Written,VivaVoce

FM9.6 - Describe General Principles and basic methodologies in treatment of poisoning:decontamination, supportive therapy, antidote therapy, procedures of enhancedelimination with regard to Ammonia, carbon monoxide, hydrogen cyanide &derivatives,methyl isocyanate, tear(riot control) gases

:Describephysical/chemicalcharacteristics,pharmacokinetics,mechanismofaction,fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegalaspectsof Ammoniapoisoning.

:Describephysical/chemicalcharacteristics,pharmacokinetics,mechanismofaction,fatal dose, fatal period, clinical features, treatment, postmortem findings & medicolegalaspectsofCarbon monoxidepoisoning.

:Describephysical/chemicalcharacteristics,pharmacokinetics,mechanismofaction,fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegalaspectsof Cyanide poisoning.

: Describe physical/chemical characteristics, mechanism of action, clinical features,treatment, postmortem findings and medicolegal aspects of Methyl Isocyanate poisoning.

9.6.5: Describe clinical features, treatment and medicolegal aspects of exposure to tear gas (inriot control).

Toxicology:PharmaceuticalToxicology

- **SDL – 1 hr (Integration – Pharmacology)Assessment:**Written, VivaVoce

FM10.1 - Describe General Principles and basic methodologies in treatment ofpoisoning: decontamination, supportive therapy, antidote therapy, procedures ofenhancedeliminationwith regard to:

i. Antipyretics–Paracetamol,Salicylates
ii. Anti-Infectives(Commonantibiotics–anoverview)
iii. NeuropsychotoxicologyBarbiturates,benzodiazepins,phenytoin,lithium,haloperidol,neuroleptics, tricyclics
iv. NarcoticAnalgesics,Anaesthetics,andMuscleRelaxants
v. Gastro-IntestinalandEndocrinalDrugs–Insulin

: Describe clinical features, treatment and medico-legal aspects of poisoning due toAntipyretics(such as Paracetamol andSalicylates).

: Describe clinical features, treatment and medico-legal aspects of poisoning due toAnti-Infectiveoverdose (common antibiotics).

: Describe clinical features, treatment, post-mortem findings and medico-legal aspectsofBarbiturate poisoning.

: Describe clinical features, treatment and medico-legal aspects of

Benzodiazepinepoisoning.

: Describe clinical features, treatment, post-mortem findings and medico-legal aspectsofopium and its alkaloids.

: Describe clinical features, treatment, post-mortem findings and medico-legal aspectsofpoisoningduetoGastro-Intestinal and EndocrinalDrugs (e.g.,Insulin).

- **Lecture– 1hrAssessment:** Written, Viva voce

FM10.1 vi - Cardiovascular Toxicology Cardiotoxic plants – oleander, odollam, aconite,digitalis

:Enumerate the cardiotoxic plants.

: Describe the active principles, mechanism of action, fatal dose, fatal period, clinicalfeatures, treatment, post-mortem findings and medico-legal aspects of poisoning due tocardiotoxic plants.

Toxicology :Biotoxicology

- **SGD–2 hrsAssessment:**Written,VivaVoce

FM11.1 - Describe features and management of Snake bite, scorpion sting, bee andwaspsting and spiderbite

11.1.1: Differentiate poisonous and non-poisonous snakes.

11.1.2:Classifypoisonous snakes.

:Identifythecommon poisonousandnon-poisonous snakesinIndia.

:Describemechanismofaction,clinicalfeatures,management,postmortemfindingsand medicolegal aspectsofsnakebite(Ophitoxaemia).

:IdentifythecommonscorpionsseeninIndia.

:Describemechanismofaction,clinicalfeatures,management,postmortemfindingsand medicolegal aspectsofscorpion sting.

: Describe mechanism of action, clinical features, management, postmortem findingsandmedicolegal aspectsofbeeandwasp sting, and spiderbite.

Toxicology:EnvironmentalToxicology

- **Lecture– 1hrAssessment:** Written, Viva voce

FM13.1 - Describe toxic pollution of environment, its medico-legal aspects &toxichazardsofoccupationand industry

:Enumeratethe causes forenvironmentalpollution.

: Describe the health effects of environmental pollution due to toxic substances.

13.1.3: Describe the medico-legal aspects of toxic hazards on employees of an industry

FM13.2 - Describe medico-legal aspects of poisoning in Workman's Compensation Act

13.2.1: Describe the medico-legal issues arising out of effects of poisoning due tooccupationalexposureasper Workman'sCompensation Act.

13.2.2:Discusstheroleof physicianin casesof poisoningduetooccupational exposure.

Toxicology:SociomedicalToxicology

- **Lecture–2 hrsAssessment:** Written, Viva voce

FM12.1 - Describe features and management of abuse/ poisoning with following chemicals:Tobacco,cannabis,amphetamines, cocaine,hallucinogens,designerdrugs&solvent

12.1.1:Definedrugabuse, drugaddiction, drughabituation and

drugdependence.12.1.2:List the drugs ofabuse.
: Describe clinical features, treatment, post-mortem findings and medico-legal aspectsofacuteand chronictobacco poisoning.
:Enumeratethe activeprinciplesandvariouspreparationsofcannabis.
: Describe clinical features, treatment, post-mortem findings and medico-legal aspectsofacuteand chroniccannabis poisoning.
: Describe clinical features, treatment, post-mortem findings and medico-legal aspectsofacuteand chroniccocaine poisoning.
: Describe clinical features, treatment, post-mortem findings and medico-legal aspectsofamphetaminepoisoning.
:Enlisthallucinogenicsubstances.
: Describe clinical features, treatment, post-mortem findings and medico-legal aspectsof Lysergicacid diethylamidepoisoning.
:Define'Designerdrug'.

:Describethe clinicalfeaturesandmanagementofcommondesignerdrugs.12.1.12:Define'Solventab use'.
: Describe clinical features, treatment, post-mortem findings and medico-legal aspectsofSolventabuse.
:Discusson Bodypacker'ssyndrome.

Skillsin ForensicMedicine&Toxicology

- **SGD–2hrs(Practical)Assessment:** OSPE, Practical book, Logbook,VivaVoce

FM14.17 - To identify & draw medico-legal inference from common poisons e.g.dhatura, castor, cannabis, opium, aconite copper sulphate, pesticides compounds,markingnut,oleander,Nuxvomica,abrusseeds,Snakes,capsicum,cal otropis,leadcompounds& tobacco.

: Identifywithphysicaland/orchemicalcharacteristicsofthecommonpoisons e.g. dhatura, castor, cannabis, opium, aconite, copper sulphate, pesticide compounds, markingnut, oleander, Nux vomica, abrus seeds, snakes, capsicum, calotropis, lead compounds &tobacco.*(regional / local poisons)*
:Drawthemedico-legalinferences withtheuseofthe commonpoisons.

- **SGD–5hrs(Practical–5cases)Assessment:** OSPE, Practicalbook,Logbook, VivaVoce

FM14.5 - Conduct & prepare post-mortem examination report of varied aetiologies (atleast15) in a simulated/supervised environment

:Describethe techniquesofconductingamedicolegal autopsy.
: Describe the postmortem findings (external and internal) in a medicolegal autopsy.
14.5.3: Enumerate the ancillary investigations required (along with appropriate materials forsuchinvestigations) in amedicolegal autopsy.
14.5.4:Draftthepostmortemreport afteramedicolegalautopsy.
Medicolegal autopsies may be a case of unnatural death, natural death, custodial death,allegedmedical negligence, decomposedbody, mutilated body.

- **SGD–1hr(Practical)IntegrationPathology** **Assessment:** OSPE, Practicalbook,Logbook, VivaVoce

FM14.19* - To identify & prepare medico-legal inference from histo-pathological slidesof Myocardial Infarction, pneumonitis, tuberculosis, brain infarct, liver cirrhosis,Pulmonaryoedema,*(remainingslideswillbecoveredin phase3MBBS)*
: List the microscopic identifying features after examining the histopathological slidesof

myocardial Infarction, pneumonitis, tuberculosis, brain infarct, liver cirrhosis, pulmonary edema.

: Describe the medico-legal inferences after examining the above-mentionedhistopathologicalslides

Summary of TL methods and list of competencies to be covered in Phase IIMBBSandAssessment methods

Sl. No.	Teachinghoursandtype	Competencynumbers	Assessmentmethods
1.	Lecture– 1 hr (Orientationclass)	1.1, 1.2	Noassessment
2.	Lecture– 1 hr (Interactive)	2.1, 2.2, 2.3	Written,Vivavoce
3.	SDL– 1 hr(Followed by reflectivewriting)	2.4	Written,Vivavoce
4.	Lecture– 1 hr (Interactive)	2.5, 2.6, 2.7	Written,Vivavoce
5.	SGD– 2 hrs	2.10, 2.8	Written,Vivavoce
6.	SGD– 1 hr	2.9	Written,Vivavoce
7.	Lecture– 1 hr	2.11, 2,14, 8.5, 8.9	Written,Vivavoce
8.	Lecture– 1 hr	2.12, 2.13, 2.17	Written,Vivavoce
9.	SGD–4hrs(Practical)	2.16, 14.9	Written, Viva voce,OSPE,Practicalbook,Logbook
10.	SGD– 1 hr	2.18	Written,Vivavoce
11.	SGD– 1 hr	2.31	Vivavoce
12.	SDL– 1 hr	2.19	Written,Vivavoce
13.	SDL– 1 hr	2.15	Written,Vivavoce
14.	SGD– 1 hr	2.32, 2.33, 2.34,2.35	OSPE,Written, Vivavoce
15.	SGD– 2 hrs	3.1	Written,Vivavoce
16.	SGD– 1 hr	3.2	Written,Vivavoce
17.	SGD–2hrs(Practical)	14.6. 14.7, 14.8	OSPE,Practicalbook,Logbook
18.	SDL– 1 hr	8.1	Written,Vivavoce
19.	Lecture– 1 hr	8.2, 8.3, 8.4, 8.6	Written, Vivavoce
20.	Lecture– 1 hr	8.8	Written,Vivavoce
21.	Lecture– 1 hr	8.10	Written,Vivavoce
22.	SGD–2hrs(Practical/ Skillslab)	14.2, 14.3, 8.7	OSPE,Written, VivaVoce
23.	SGD– 2 hrs	9.1	Written,Vivavoce

24.	Lecture– 1 hr	9.2	Written,Vivavoce
25.	Lecture– 2 hrs	9.3	Written,Vivavoce
26.	Lecture– 2 hrs	9.4	Written,Vivavoce
27.	SGD–2hrs(Integration –Pharmacology)	9.5	Written,Vivavoce
28.	SGD– 1 hr	9.6	Written,Vivavoce
29.	SDL–1 hr (Integration – Pharmacology)	10.1(i-v)	Written,Vivavoce
30.	Lecture– 1 hr	10.1(vi)	Written,Vivavoce
31.	SGD– 2 hrs	11.1	Written,Vivavoce
32.	Lecture– 1 hr	13.1, 13.2	Written,Vivavoce
33.	Lecture– 2 hrs	12.1	Written,Vivavoce
34.	SGD–2hrs(Practical)	14.17	OSPE,Practicalbook, Logbook, VivaVoce
35.	SGD– 5hrs(5 cases)	14.5	OSPE,Practicalbook, Logbook, VivaVoce
36.	SGD–1hr(Practical) IntegrationPathology	14.19	OSPE,Practicalbook, Logbook, VivaVoce

List of Competencies and SLOs to be covered in Phase III MBBS part 1

General Information

- **Lecture – 1 hr (Orientation class/ SDL)** **Assessment:** No assessment

FM1.3 - Describe legal procedures including Criminal Procedure Code, Indian Penal Code, Indian Evidence Act, Civil and Criminal Cases, Inquest (Police Inquest and Magistrate's Inquest), Cognizable and Non-cognizable offences

1.3.1: Describe the meaning of Criminal Procedure Code, Indian Penal Code, and Indian Evidence Act.

1.3.2: Differentiate between civil and criminal cases and their proceedings in the court of law.

1.3.3: Define inquest.

1.3.4: Describe the types of inquest practiced in India.

1.3.5: Discuss the meaning of cognizable and non-cognizable offence with examples.

FM 1.4 - Describe Courts in India and their powers: Supreme Court. High Court, Sessions court, Magistrate's Court. Labour Court. Family Court, Executive Magistrate Court and Juvenile Justice Board

1.4.1: List various civil and criminal courts in India.

1.4.2: Describe the location, presiding officer and powers of various courts in India.

FM 1.5 - Describe Court procedures including issue of summons, conduct money, types of witnesses, recording of evidence: oath, affirmation, examination in chief, cross examination, re- examination & court questions, recording of evidence & conduct of doctor in witness box.

1.5.1: Define 'Summons'.

1.5.2: Describe the formalities to be followed by a doctor while receiving summons and consequence of not honouring the summons.

1.5.3: Define 'Witness'.

1.5.4: Describe the types of witness.

1.5.5: Define 'Evidence'.

1.5.6: Describe the types of evidence.

1.5.7: Describe the steps of recording evidence in the court of law.

1.5.8: Describe the conduct of a doctor in the witness box.

FM 1.6 - Describe the offences in Court including Perjury; Court strictures vis-a-vis medical officer

1.6.1: Explain the meaning of perjury and its punishment.

1.6.2: Mention the various offences that could be charged upon medical officer by the court of law and its punishment.

- **SGD – 2 hrs (Moot Court)** **Assessment:** Log book / Viva voce / OSCE

FM14.22 - To give expert medical/ medico-legal evidence in Court of law

14.22.1: Describe **conduct of a doctor in witness box** during the process of deposing expert medical/ medico-legal evidence in Court of law.

14.22.2: Describe **the steps /procedure of recording of expert medical/ medico-legal evidence** in Court of law with relation to Court procedures.

FM2.29 - Demonstrate respect to the directions of courts, while appearing as witness for recording of evidence under oath or affirmation, examination in chief, cross examination, re-examination and court questions, recording of evidence

2.29.1: Demonstrate the procedure of receiving summons.
2.29.2: Demonstrate the oath taking in the court of law.
2.29.3: Demonstrate the procedure of recording of evidence in court of law (examination in chief, cross examination, re-examination, question by Judge).
2.29.4: Demonstrate the doctor's professionalism (attitude and subject expertise) expected in the witness box.

- **SGD – 1 hr(Role play)** **Assessment:**Log book / Viva voce / OSCE / Skill station

FM 1.7 - Describe Dying Declaration and Dying Deposition.

1.7.1: Define dying declaration and dying deposition.
1.7.2: Describe the procedure of recording of dying declaration.
1.7.3: Differentiate between dying declaration and dying deposition.

FM14.20 - To record and certify dying declaration in a simulated/ supervised environment
14.20.1: Certify compos mentis (sound mind) by examining higher mental functions before recording of dying declaration in a simulated environment.
14.20.2: Record dying declaration in a simulated environment.
14.20.3: Assist the executive magistrate in recording of dying declaration in a simulated environment

- **Lecture – 1 hr** **Assessment:**Written, Viva voce

FM 1.8 - Describe the latest decisions/ notifications/resolutions/circulars/ standing orders related to medico-legal practice issued by Courts/Government authorities etc.

1.8.1: Describe the latest decisions/notifications/resolutions/ circulars/ standing orders related to medico-legal practice issued by Courts.
1.8.2: Describe the latest decisions/notifications/resolutions/ circulars/ standing orders related to medico-legal practice issued by Central Government authorities.
1.8.3: Describe the latest decisions/notifications/resolutions/ circulars/ standing orders related to medico-legal practice issued by State Government authorities.
1.8.4: Describe the latest decisions/notifications/resolutions/ circulars/ standing orders related to medico-legal practice issued by NMC/MCI/ SMC.

FM2.30 - Have knowledge/awareness of latest decisions/ notifications/ resolutions/ circulars/standing orders related to medico-legal practice issued by Courts/ Government authorities etc

2.30.1: Debate on the latest decisions/notifications/circulars/standing orders related to medico-legal practice issued by Courts.
2.30.2: Debate on the latest decisions/notifications/circulars/standing orders related to medico-legal practice issued by Central Government.
2.30.3: Debate on the latest decisions/notifications/circulars/standing orders related to medico-legal practice issued by State Government.

2.30.4: Debate on the latest decisions/notifications/circulars/standing orders related to medico-legal practice issued by NMC/MCI/ SMC

- **Lecture – 1 hr** **Assessment:**Written, Viva voce

FM 1.9 - Describe the importance of documentation in medical practice in regard to medicolegal examinations, Medical certificates & medicolegal reports especially

- **Maintenance of patient case records, discharge summary, prescribed registers to be maintained in Health Centres.**
- **Maintenance of medico-legal register like accident register**
- **Documents of issuance of wound certificate**
- **Documents of issuance of drunkenness certificate**
- **Documents of issuance of sickness & fitness certificate**
- **Documents of issuance of death certificate**
- **Documents of issuance of medical certification of cause of death-form no.4, 4A**
- **Documents of estimation of age by physical, dental & radiological examination & issuance of certificate**

1.9.1: Enumerate various medical / medicolegal records to be maintained by hospital/ medical practitioner.
1.9.2: Describe the importance of documentation and maintenance of medical records (out-patient slips, in-patient case details, consent forms, operative & anesthetic notes, discharge/death summary, sickness & fitness certificates, MCCD certificate, etc).
1.9.3: Describe the importance of documentation and maintenance of medicolegal records (MLC register, MTP register, age certificate, wound certificate, drunkenness certificate, sexual violence report, postmortem report, etc).

- **SGD – 1 hr(Practical)** **Assessment:**Written / Viva voce / OSCE

FM 1.10 - Select appropriate cause of death in a particular scenario by referring ICD 10 code.

1.10.1: Explain the importance of ICD-10 code in certifying the cause of death.
1.10.2: Enumerate the important causes of death as per ICD-10.
1.10.3: Chose the appropriate cause of death in a particular scenario.

FM 1.11 - Write a correct cause of death certificate as per ICD 10 document

1.11.1: Describe the objectives of MCCD certification.
1.11.2: Draft the MCCD certificate in a particular scenario as per ICD-10.
1.11.3: Explain the procedure of dispatching MCCD certificate to the concerned authorities.

Forensic Pathology

- **SGD – 5 hrs** **Assessment:**Written / Viva voce

FM 2.20 - Mechanical asphyxia: Define, classify and describe asphyxia and medico-legal interpretation of post-mortem findings in asphyxial deaths.

2.20.1: Define asphyxia.
2.20.2: Mention the various types of asyphyxial deaths (mechanical, pathological, toxic, environmental, traumatic, postural, iatrogenic).
2.20.3: Describe the pathophysiology (vicious cycle) of asphyxia.
2.20.4: Explain the types of anoxia/ hypoxia (Gordon's classification).
2.20.5: Discuss the classical postmortem findings in asphyxial deaths.

FM 2.21 - Mechanical asphyxia: Describe and discuss different types of hanging and strangulation including clinical findings, causes of death, post-mortem findings and medico-legal aspects of death due to hanging and strangulation including examination, preservation and dispatch of ligature material.

2.21.1: Define mechanical asphyxia death.
2.21.2: Classify mechanical asphyxial deaths.
2.21.3: Define hanging.
2.21.4: Enumerate the types of hanging.
2.21.5: Explain the symptoms experienced by the victim in hanging.
2.21.6: Describe the causes of death, postmortem findings and medicolegal aspects of death due to hanging.
2.21.7: Discuss on judicial hanging.
2.21.8: Define strangulation.
2.21.9: Enumerate the types of strangulation.
2.21.10: Describe the causes of death, postmortem findings and medicolegal aspects of death due to ligature strangulation.
2.21.11: Describe the causes of death, postmortem findings and medicolegal aspects of death due to manual strangulation.
2.21.13: Discuss on Bansdola, Mugging, Garrotting,
2.21.14: Describe the examination, preservation and dispatch of ligature material used in hanging and strangulation.
2.21.15: Explain the fractures of hyoid bone.

FM 2.22 - Mechanical asphyxia: Describe and discuss patho-physiology, clinical features, post-mortem findings and medico-legal aspects of traumatic asphyxia, obstruction of nose & mouth, suffocation and sexual asphyxia.

2.22.1: Define traumatic asphyxia.
2.22.2: Describe the pathophysiology, postmortem findings and medicolegal aspects of traumatic asphyxia.
2.22.3: Discuss on postural/positional asphyxia.
2.22.4: Discuss on Overlying.
2.22.5: Define suffocation.
2.22.6: Enumerate the types of suffocation.
2.22.7: Describe the postmortem findings and medicolegal aspects of Environmental asphyxia, Smothering, Gagging and Choking.
2.22.8: Discuss on Café-coronary.
2.22.9:Discuss on Burking.
2.22.10: Describe methods used, postmortem findings and medicolegal aspects of Sexual/ Auto-erotic asphyxia.

FM 2.23 - Mechanical asphyxia: Describe and discuss types, patho-physiology, clinical features, post-mortem findings and medico-legal aspects of drowning, diatom test and gettler test.

2.23.1: Define drowning.
2.23.2: Explain the mechanism of drowning.
2.23.3: Enumerate the types of drowning.
2.23.4: Describe the pathophysiology, causes of death, postmortem findings and medicolegal aspects of drowning.
2.23.5: Describe the clinical features and treatment of Post-immersion syndrome (Near drowning).
2.23.6: Discuss on Diatom test and its medicolegal importance.
2.23.7: Discuss on Gettler test and its medicolegal importance.

- **SGD – 1 hr** **Assessment:** Written / Viva voce

FM 2.24 - Thermal deaths: Describe the clinical features, post-mortem finding and medicolegal aspects of injuries due to physical agents like heat (heat-hyper-pyrexia, heat stroke, sun stroke, heat exhaustion/ prostration, heat cramps [miner's cramp] or cold (systemic and localized hypothermia, frostbite, trench foot, immersion foot)

2.24.1: Classify thermal injuries.
2.24.2: Describe the local (frostbite, trench foot, immersion foot) and general effects (hypothermia) due to Cold.
2.24.3: Describe the postmortem findings and medicolegal aspects of deaths due to Hypothermia.
2.24.4: Describe the general effects due to Heat (heat cramps, heat exhaustion/prostration, heat hyperpyrexia/heat stroke/ sunstroke).
2.24.5: Describe the postmortem findings and medicolegal aspects of deaths due to Heat stroke.

- **SGD – 1 hr** **Assessment:** Written / Viva voce / OSPE

FM 2.25 - Describe types of injuries, clinical features, patho-physiology, postmortem findings and medico-legal aspects in cases of burns, scalds, lightening, electrocution and radiations.

2.25.1: Define Burn.
2.25.2: Enumerate the types or causes of burns.
2.25.3: Describe the degree of burns (Dupuytren's, Wilson's and Clinical classification).
2.25.4: Explain the method of calculation of percentage of burns (Rule of Nine/Wallace, Lund and Browder chart).
2.25.5: Describe the clinical features, management, causes of death, postmortem findings and medicolegal aspects of Dry burns and Scalds.
2.25.6: Differentiate between antemortem and postmortem burns.
2.25.7: Describe the factors affecting the electrical injuries.
2.25.8: Describe the postmortem findings, causes of death and medicolegal aspects in deaths due to electrocution.
2.25.9: Describe the factors affecting the lightening injuries.
2.25.10: Describe the postmortem findings, causes of death and medicolegal aspects in deaths due to lightening.
2.25.11 Discuss on injuries caused by exposure to radiation

- **Lecture – 1 hr** **Assessment:** Written, Viva voce

FM 2.26 - Describe and discuss clinical features, post-mortem findings and medico-legal aspects of death due to starvation and neglect

2.26.1: Explain the meaning of starvation.
2.26.2: Enumerate the types of starvation.
2.26.3: Enumerate the causes of starvation.
2.26.4: Describe the factors modifying the effects of starvation.
2.26.5: Describe the clinical features, management, causes of death, postmortem findings and medicolegal aspects of starvation.

- **SGD – 3 hrs** **Assessment:**Written / Viva voce / OSPE / log book / Practical record

FM 2.27 - Define and discuss infanticide, foeticide and stillbirth

2.27.1: Define Foeticide, Neonaticide and infanticide.
2.27.2: Define dead birth, still birth and live birth.
2.27.3: Discuss on medicolegal aspects of infanticide

FM 2.28 - Describe and discuss signs of intrauterine death, signs of live birth, viability of foetus, age determination of foetus, DOAP session of ossification centres, Hydrostatic test, Sudden Infant Death syndrome. Munchausen's syndrome by proxy. ***[Munchausen's syndrome by proxy is covered in FM 3.29]***

2.28.1: Describe the causes of Intra Uterine Death (IUD).
2.28.2: Describe the features of 'Dead born foetus'.
2.28.3: Define 'Viability of foetus' and its medicolegal importance.
2.28.4: Describe the method of estimation of gestational age of foetus.
2.28.5: Describe the signs of 'Live birth'.
2.28.6: Describe the causes of infant death.
2.28.7: Define Sudden Infant Death Syndrome (SIDS).
2.28.8: Describe causes, postmortem findings & medicolegal aspects of SIDS

FM14.13 - To estimate the age of foetus by post-mortem examination
14.13.1: Enumerate the objectives of foetal autopsy.
14.13.2: Describe the procedure of foetal autopsy.
14.13.3: Estimate the age of foetus by examination of ossification centres, anthropometric measurements, blood constituents, hair, nail, umbilical cord etc.
14.13.4: Draft a medicolegal report and opinion after foetal autopsy.

Clinical Forensic Medicine

- **SGD – 4 hrs** **Assessment:**Written, Viva voce, OSCE

FM 3.3 - Mechanical injuries and wounds: Define, describe and classify different types of mechanical injuries, abrasion, bruise, laceration, stab wound, incised wound, chop wound, defense wound, self-inflicted/ fabricated wounds and their medico-legal aspects.
3.3.1: Define mechanical injury.
3.3.2: Classify mechanical injuries.
3.3.3: Define abrasion.
3.3.4: Describe the characteristic features, types and medicolegal aspects of an abrasion

3.3.5: Define contusion.
3.3.6: Describe the characteristic features, types and medicolegal aspects of contusion.
3.3.7: Describe the factors influencing the formation of contusion.
3.3.8: Define laceration.
3.3.9: Describe the characteristic features, types and medicolegal aspects of a laceration.
3.3.10: Define an incised wound.
3.3.11: Describe the characteristic features, types and medicolegal aspects of an incised wound.
3.3.12: Define chop wound.
3.3.13: Describe the characteristic features and medicolegal aspects of chop wound.

3.3.14: Define stab wound.
3.3.15: Describe the characteristic features, types and medicolegal aspects of stab wound.
3.3.16: Define defense wound.
3.3.17: Describe the characteristic features and medicolegal importance of defense wound.
3.3.18: Define fabricated wound.
3.3.19: Describe the characteristic features and medicolegal importance of fabricated wound.

- **Lecture – 2 hrs** **Assessment:** Written, Viva voce

FM 3.4 - Define injury, assault & hurt. Describe IPC pertaining to injuries
3.4.1: Define injury (S. 44 IPC), assault (S. 351 IPC) and hurt (S. 319 IPC).
3.4.2: Define homicide.
3.4.3: Describe the types of homicide.
3.4.4: Describe Grievous hurt (S. 320 IPC).
3.4.5: Understand the IPC sections pertaining to injuries (Sec. 44, 299, 300, 302, 304, 304-A, 304-B, 306, 307, 319, 320, 321-326, 351, 354, 497, 498-A).
FM 3.5 - Describe accidental, suicidal and homicidal injuries. Describe simple, grievous and dangerous injuries. Describe ante-mortem and post-mortem injuries.
3.5.1: Define medico-legal case (MLC) with examples.
3.5.2: Differentiate between the accidental, suicidal and homicidal injuries with examples.
3.5.3: Describe simple and grievous hurt.
3.5.4: Explain the difference between the injuries that are likely to cause death, sufficient in the ordinary course of nature to cause death and imminently dangerous.
3.5.5: Describe the difference between ante-mortem and post-mortem wounds.
FM 3.6 - Describe healing of injury and fracture of bones with its medico-legal importance
3.6.1: Describe wound healing by primary and secondary intention and its medicolegal importance.
3.6.2: Enumerate the types of fracture.
3.6.3: Describe the healing of a fracture and its medicolegal importance.
3.6.4: Describe the difference between ante-mortem and post-mortem fracture.

FM 3.7 - Describe factors influencing infliction of injuries and healing, examination and certification of wounds and wound as a cause of death: Primary and Secondary (along with FM 14.1)
3.7.1: Describe the factors influencing the causation of an injury.
3.7.2: Describe the factors that influence healing of an injury or fracture.
3.7.3: Discuss the primary and secondary causes of death from a wound.
FM 3.8 - Describe and discuss different types of weapons including dangerous weapons and their

examination

3.8.1: Identify the weapons that cause blunt force and sharp force injuries.

3.8.2: Define dangerous weapon (S. 324 IPC and 326 IPC).

- **SGD – 3 hrs** **Assessment:**Written, Viva voce, OSCE

FM 3.9 - Firearm injuries: Describe different types of firearms including structure and components. Along with description of ammunition propellant charge and mechanism of fire-arms, different types of cartridges and bullets and various terminology in relation of firearm – caliber, range, choking

3.9.1: Define Forensic ballistics, Proximal ballistics, Intermediate ballistics, and Terminal ballistics.

3.9.2: Define firearm.

3.9.3: Classify firearms.

3.9.4: Enumerate the parts of the basic firearms.

3.9.5: Explain 'rifling' and 'calibre' of a firearm.

3.9.6: Explain 'choking' in a firearm and its purpose.

3.9.7: Enumerate the components of rifled firearm and shotgun cartridge, and its function.

3.9.8: Describe the types of gunpowder.

3.9.9: Discuss on types of bullets and pellets.

FM 3.10 - Describe and discuss wound ballistics-different types of firearm injuries, blast injuries and their interpretation, preservation and dispatch of trace evidences in cases of firearm and blast injuries, various tests related to confirmation of use of firearms

3.10.1: Define wound ballistics.

3.10.2: Enumerate the factors affecting gunshot wound production.

3.10.3: Explain the mechanism of firing and various components of discharge of firing.

3.10.4: Describe the entry and exit wounds from a rifled firearm at various ranges.

3.10.5: Describe the entry and exit wounds from a shotgun at various ranges.

3.10.6: Discuss on Ricocheting of a bullet and its effect.

3.10.7: Discuss on Tumbling bullet, Yawning bullet, Dumdum bullet, Tandem bullet, Souvenir bullet.

3.10.8: List the evidentiary materials to be collected in gunshot wounds.

3.10.9: Describe the method of collection and preservation of evidentiary materials in gunshot wounds.

3.10.10: Describe the significance of bullet markings and use of comparison microscope.

3.10.11: Enumerate the tests done for detection of gunshot residue.

3.10.12: Describe the injuries caused by bomb blast / explosion

- **SGD – 4 hrs** **Assessment:**Written, Viva voce, OSCE / OSPE

FM 3.11 - Regional injuries: Describe and discuss regional injuries to head (Scalp wounds, fracture skull, intracranial haemorrhages, coup and contrecoup injuries), neck, chest, abdomen, limbs, genital organs, spinal cord and skeleton

3.11.1: Define head injury.

3.11.2: Discuss the forensic anatomy of scalp and scalp injuries.

3.11.3: Enumerate the types of skull fracture.

3.11.4: Describe the intracranial hemorrhages and its medicolegal aspects.

3.11.5: Describe the cerebral injuries and its medicolegal aspects.

3.11.6: Explain 'concussion of brain' and 'diffuse axonal injury'.

3.11.7: Discuss on 'Punch drunk syndrome'.
3.11.8: Describe the mechanism, clinical features and medicolegal aspects of whiplash injury.
3.11.9: Discuss on 'railway spine'.
3.11.10: Discuss on injuries to chest, abdomen and genital organs

FM 3.12 - Describe and discuss injuries related to fall from height and vehicular injuries – Primary and Secondary impact, Secondary injuries, crush syndrome, railway spine
3.12.1: Describe the injuries sustained to person in a fall from height.
3.12.2: Describe the injuries to a pedestrian in vehicular accident (primary impact, second impact and secondary injuries).
3.12.3: Describe the injuries to driver, front seat passenger and back seat passenger of a motor car.
3.12.4: Discuss on 'Crush syndrome'.

- **SGD – 2 hrs (Practical)** **Assessment:**Log book / Skill station / Viva voce, OSCE

FM14.1 - Examine and prepare Medico-legal report of an injured person with different etiologies in a simulated/ supervised environment
14.1.1: Take an informed consent from the Patient / Guardian after explaining the importance of MLC registration in Medicolegal cases (Road traffic accident / Fall from height / Assault / Self infliction of injuries / Burns / Firearms).
14.1.2: Perform the clinical examination of an injured person (history taking, general physical examination, systemic examination, laboratory investigations) in a simulated/ supervised environment.
14.1.3: Prepare the wound certificate after documenting the clinical findings.
14.1.4: Prepare the police intimation.

- **SGD – 1 hr (Practical)** **Assessment:**Log book / Practical record / Viva voce, OSPE

FM14.10 - Demonstrate ability to identify & prepare medicolegal inference from specimens obtained from various types of injuries e.g. contusion, abrasion, laceration, firearm wounds, burns, head injury and fracture of bone
14.10.1: Prepare a medicolegal inference from **photographs** showing various types of injuries/ lesions/ postmortem findings.
14.10.2: Prepare a medicolegal inference from **wet specimens** showing various types of injuries/ lesions/ postmortem findings.
14.10.3: Prepare medicolegal inference from **models** showing various types of injuries/ lesions/ postmortem findings.

- **Lecture – 2 hrs** **Assessment:**Written, Viva voce

FM3.18 - Describe legitimacy and its medicolegal importance. Describe and discuss how 'signs' of virginity (so called 'virginity test', including finger tests on female genetalia) are unscientific, inhuman and discriminatory. Describe and discuss how to appraise the courts about unscientific basis of these tests if court orders it.
3.18.1: Define legitimacy.
3.18.2: Enumerate the medicolegal importance of legitimacy.
3.18.3: Discuss the unscientificity, discriminatory nature, legal position and violation of human rights of 'two finger test'.
3.18.4: Discuss whether there is an evidence based validity of Viginity tests in medical research.

FM3.19 - Discuss the medicolegal aspects of pregnancy and delivery, signs of pregnancy, precipitate

labour, superfoetation, superfecundation, and signs of recent and remote delivery in living and dead

3.19.1: Describe the presumptive, probable and positive signs of pregnancy.

3.19.2: Describe pseudocyesis.

3.19.3: Define superfoetation and superfecundation.

3.19.4: Describe the medicolegal aspects of pregnancy.

3.19.5: Define delivery.

3.19.6: Describe the signs of recent and remote delivery in a living individual.

3.19.7: Enumerate the signs of recent & remote delivery in a dead individual.

3.19.8. Mention the medicolegal aspects of delivery.

3.19.9: Define precipitate labour.

3.19.10: Describe the signs and medicolegal aspects of precipitate labour.

FM3.20 - Discuss disputed paternity and maternity

3.20.1: Discuss the medicolegal issues related to disputed paternity and maternity.

3.20.2: Describe the method of identifying paternalism and maternalism.

- **Lecture – 2 hrs** **Assessment:**Written, Viva voce

FM3.22 - Define and discuss impotence, sterility, frigidity, sexual dysfunction, premature ejaculation. Discuss the causes of impotence and sterility in male and female

3.22.1: Define impotence, sterility, frigidity, sexual/erectile dysfunction and premature ejaculation.

3.22.2: List the causes of impotence in male and female.

3.22.3: Describe the medicolegal issues related to impotence, sexual/erectile dysfunction and premature ejaculation.

3.22.4: List the causes of sterility in male and female.

3.22.5: Describe the medicolegal issues related to sterility.

3.22.6: Describe procedure of examination in alleged case of impotency.

FM3.23 - Discuss Sterilization of male and female, artificial insemination, Test Tube Baby, surrogate mother, hormonal replacement therapy with respect to appropriate national and state laws

3.23.1: Describe the methods of sterilization in male and female.

3.23.2: Discuss the medicolegal issues related to sterilization procedure.

3.23.3: Define artificial insemination.

3.23.4: Mention the types of artificial insemination.

3.23.5: Enumerate the indications for artificial insemination.

3.23.6: Discuss ethical issues and precautions to be taken during the artificial insemination.

3.23.7: Describe medicolegal issues related to artificial insemination.

3.23.8: Discuss on invitro fertilization/ test tube baby and surrogate motherhood.

FM3.26 - Discuss the national Guidelines for accreditation, supervision & regulation of ART Clinics in India

3.26.1: Discuss the National Guidelines for accreditation, supervision & regulation of ART Clinics in India.

3.26.2: Explain the recent updates on laws related to ART and Surrogacy.

- **SDL – 1 hr** **Assessment:**Written, Viva voce

FM3.21 - Discuss Pre-conception and Pre Natal Diagnostic Techniques (PC&PNDT) - Prohibition of Sex Selection Act 2003 and Domestic Violence Act 2005

3.21.1: Describe the objectives of PCPNDT Act, 1994.

3.21.2: Enumerate the indications for prenatal diagnostic procedures.
3.21.3: List the various prenatal diagnostic techniques.
3.21.4: Describe the guidelines for establishing and maintaining the centres to practice prenatal diagnostic procedures.
3.21.5: Describe the punishment for offences under PCPNDT Act.
3.21.6: Discuss on amendments to the PCPNDT Act till date.
3.21.7: Define domestic violence.
3.21.8: Describe the salient features of The Protection of Women from Domestic Violence Act, 2005.
3.21.9: Explain the medicolegal responsibilities of a medical practitioner in a domestic violence case.

FM3.24 - Discuss the relative importance of surgical methods of contraception (vasectomy and tubectomy) as methods of contraception in the National Family Planning Programme

3.24.1: Describe the salient features of the National Family Planning Programme related to vasectomy and tubectomy.

FM3.25 - Discuss the major results of the National Family Health Survey

3.25.1: Discuss the major results of National Family Health Survey (NFHS).

- **Lecture – 1 hr** **Assessment:**Written, Viva voce, OSPE / OSCE

FM 3.13 – Describe various sections of IPC & CrPC related to definition of rape and sexual assault, medical examination of rape victim and accused of rape, police information by the doctors and medical care with recent amendments notified till date (i.e., section 375IPC, 166B IPC, 357C CrPC, 164A CrPC, 53A CrPC). Describe the relevant provisions of POCSO Act related to medical examination, emergency medical care and police information.

3.13.1: Describe the legal provisions of Sexual Violence as per criminal law and Special law like POCSO Act.
3.13.2: Describe the legal basis of medical examination of victim / survivor of Sexual violence
3.13.3: Describe the legal basis of medical examination of accused of Sexual violence
3.13.4: Discuss the issues related to mandatory reporting of sexual violence.

- **Lecture – 1 hr** **Assessment:**Written, Viva voce, OSCE

FM 3.14 - Describe and discuss the examination of the victim of an alleged case of rape, and the preparation of report, framing the opinion and preservation and dispatch of trace evidences in such cases.

3.14.1: Describe the findings in a victim of sexual violence.
3.14.2: Describe the duties of doctor towards victim of sexual violence.
3.14.3: Understand the legal sections related to examination of a victim of sexual violence (164-A CrPC, 327 CrPC, 357-C CrPC, 228-A IPC, 114-A IEA, 146 IEA).
3.14.4: Describe the procedure of examination, contents of the format, guidelines for preliminary and final opinion in a victim of sexual violence (given by Ministry of Health and Family welfare, Government of India).
3.14.5: Describe the procedure of collecting, preservation and dispatch of evidentiary materials from a victim of sexual violence.
3.14.6: Understand the significance of SAFE kit in collecting evidentiary material from a victim of sexual assault.

SGD – 3 hrs **Assessment:**Written, Viva voce, OSCE

FM 3.15 - Describe and discuss examination of accused and victim of sodomy, preparation of report,

framing of opinion, preservation and despatch of trace evidences in such cases.

3.15.1: Define sodomy.

3.15.2: Describe the findings in a victim of sodomy.

3.15.3: Describe the procedure of examination, contents of the format, and guidelines for opinion in a victim of sodomy.

3.15.4: Describe the procedure of collecting, preservation and dispatch of evidentiary materials from a victim of sodomy.

3.15.5: Describe the findings in an accused of sexual assault.

3.15.6: Describe the procedure of examination, contents of the format, and guidelines for opinion in an accused of sexual assault.

3.15.7: Understand the recent amendments in section 377 IPC.

FM 3.16 - Describe and discuss informed consent in sexual intercourse. Describe and discuss histories of gender and sexuality –based (sexual orientation) identities and rights in India. Describe history of decriminalization of 'adultery' and consensual adult homosexual sexual behavior. Describe sexual offences with its medicolegal significance –

- forced / non-consensual penetrative anal sex

- forced / non-consensual oral sex

-sexual acts with animals / bestiality / zoophilia

- forced / non-consensual insertions of fingers or objects

- forced / non-consensual touching or groping or disrobing (indecent assault)

3.16.1: Discuss the role of consent in adjudication of forced sexual intercourse / sexual violence.

3.16.2: Discuss the past and current legal status of gender and sexuality based identities and sexual rights in India.

3.16.3: Discuss the role of consent and age in sexual relations covered under section 377 IPC between human beings.

3.16.4: Discuss the role of consent and age in sexual relations covered under section 377 IPC between human being and animals (Zoophilia).

3.16.5: Discuss the current legal and ethical status of Adultery (like under Sec 498 IPC, Domestic violence, Divorce, abetment of Suicide, Professional misconduct).

3.16.6: Understand the salient features of Indecent assault as per section 354, 354-A, 354-B, 354-C and 354-D IPC.

3.16.7: Describe the procedure of examination, collection, preservation and dispatch of evidentiary materials in a accused of bestiality/ Zoophilia

FM 3.17 – Describe the difference between Paraphilia and Paraphilic disorder. Describe Paraphilic disorder as per the latest guidelines of DSM & ICD and describe the medicolegal implications of paraphilic disorder by referring scientific literature and legal justification (if any). Describe and discuss various paraphilias in the context of informed consent during any sexual interaction.

3.17.1: Define Paraphilia and Paraphilic disorder as per DSM and ICD guidelines.

3.17.2: Explain the Paraphilia/ Paraphilic disorder requiring partner for sexual gratification (sadism, masochism, frotteurism, pedophilia, necrophilia, necrophagia) and its medicolegal importance.

3.17.3: Explain the Paraphilia/ Paraphilic disorder not requiring partner for sexual gratification (voyeurism, exhibitionism) and its medicolegal importance.

3.17.4: Explain the Paraphilia/ Paraphilic disorder requiring object/article as a stimulus for sexual gratification (fetishism, transvestism) and its medicolegal importance.

3.17.5: Discuss the role of consent and age in sexual relations covered under Paraphilia/ Paraphilic

disorder

SGD – 1 hr (Practical) **Assessment:** Practical record, log book, Viva voce, OSCE

FM14.15 - To examine & prepare medico-legal report on an alleged victim of various sexual offences in a simulated/ supervised environment. (Guidelines and Protocols of Medicolegal Care for Survivors / Victims of Sexual Violence. Ministry of Health & Family Welfare, GOI – with latest modifications, if any.) Demonstrate an understanding of framing the opinion and preservation and dispatch of trace evidences in such cases. Describe and discuss sympathetic / empathetic examination and interview of victims of sexual assault, including presence of trusted adult figure in cases of minor victims.

14.15.1: Describe the procedure of obtaining an informed consent for examination of an alleged victim of sexual offence.

14.15.2 : Discuss the sensitivity required for an empathetic history collection/ interaction and examination from an alleged victim of sexual violence (based on Age, sexual identity, disability and other vulnerabilities)

14.15.3: Describe the procedure of examination and collection of evidentiary material for medical and medicolegal purposes from an alleged victim of sexual violence.

14.15.4: Prepare a medicolegal report and opinion in an alleged victim of sexual offence.

14.15.5: Explain the procedure of handing over the evidentiary material to the investigating officer after medical examination of an alleged victim of sexual offence.

SGD – 1 hr (Practical) **Assessment:** Practical record, log book, Viva voce, OSCE

FM14.14 - To examine & prepare report on an alleged accused person in cases of various sexual offences in a simulated/ supervised environment. Demonstrate an understanding of framing the opinion and preservation and dispatch of trace evidences in such cases. Describe and discuss personal opinions and their impact on such examinations and the need for objectivity / neutrality to avoid prejudice influencing the case.

14.14.1: Describe the procedure of obtaining an informed consent for examination of an alleged accused of sexual offence.

14.14.2: Discuss the need for objectivity / neutrality required in history collection/ interaction and examination on an alleged accused of sexual violence (based on Age, sexual identity, disability and also other personal biases and prejudices)

14.14.3: Describe the procedure of examination and collection of evidentiary material for medical and medicolegal purposes on an alleged accused of sexual violence.

14.14.4: Prepare a medicolegal report and opinion in an alleged accused of sexual offence.

14.14.4: Explain the procedure of handing over the evidentiary material to the investigating officer after medical examination of an alleged accused of sexual offence.

- **Lecture – 2 hrs** **Assessment:** Written, Viva voce, OSCE

FM3.27 - Define, classify and discuss abortion, methods of procuring MTP and criminal abortion and complication of abortion. MTP Act 1971

3.27.1: Define abortion.

3.27.2: Classify abortion.

3.27.3: Describe the methods used for therapeutic abortion.

3.27.4: Describe the methods used for criminal abortion & its complications.

3.27.5: Discuss the Medical termination of Pregnancy Act, 1971 and its amendments.

FM3.28 - Describe evidences of abortion - living and dead, duties of doctor in cases of abortion, investigations of death due to criminal abortion

3.28.1: Describe evidences of abortion in living and dead individual.

3.28.2: Explain the circumstances under which a case of abortion is brought to the notice of medical officer.

3.28.3: Describe the medical and legal duties of doctor in a case of criminal abortion.

3.28.4: Describe the examination, method of collection, preservation and dispatch of evidentiary materials during investigation of death of woman in criminal abortion.

- **Lecture – 1 hr** **Assessment:** Written, Viva voce, OSCE

FM3.29 - Describe and discuss child abuse and battered baby syndrome

3.29.1: Define child abuse or child maltreatment (as per WHO).

3.29.2: Enumerate different forms of child abuse.

3.29.3: Define battered baby syndrome.

3.29.4: Describe the clinical findings and medicolegal aspects of battered baby syndrome.

3.29.5: Discuss on Shaken baby syndrome and Cinderella syndrome.

3.29.6: Discuss on Munchausen's Syndrome by proxy.

3.29.7: Describe the medicolegal responsibilities of a doctor in child abuse cases.

SDL – 1 hr **Assessment:** Written, Viva voce, OSCE

FM3.30 - Describe and discuss issues relating to torture, identification of injuries caused by torture and its sequalae, management of torture survivors

3.30.1: Define Torture (as per UN Convention of Torture, World Medical Association).

3.30.2: Enumerate the types/methods/techniques used for torture.

3.30.3: Explain the medical findings in a case of torture.

3.30.4: Outline the management of torture survivors.

3.30.5: Discuss the ethical and legal issues related to torture.

FM3.31 - Torture and Human rights- Describe and discuss guidelines and Protocols of National Human Rights Commission regarding torture

3.31.1: Describe the guidelines and protocols of National human rights commission in cases of torture.

SGD – 2 hrs **Assessment:** Practical record, Log book, Viva voce, OSCE

FM3.32 - Demonstrate the professionalism while preparing reports in medico-legal situations, interpretation of findings and making inference/opinion, collection preservation and dispatch of biological or trace evidences

3.32.1: Demonstrate the professionalism to be shown by a doctor while preparing reports in medicolegal cases, interpretation of findings and making inference/opinion.

3.32.2: Demonstrate the professionalism to be shown by a doctor during the collection, preservation and dispatch of biological or trace evidences.

FM3.33 - Should be able to demonstrate the professionalism while dealing with victims of torture and human right violations, sexual assaults psychological consultation, rehabilitation

3.33.1: Demonstrate the professionalism to be shown by a doctor while dealing with victims of torture and human right violations.

3.33.2: Demonstrate the professionalism to be shown by a doctor during the examination, psychological

consultation and rehabilitation of sexual victims

FM14.18 - To examine & prepare medico-legal report of a person in police, judicial custody or referred by Court of Law and violation of human rights as requirement of NHRC, who has been brought for medical examination

14.18.1: Explain the procedure of examination and preparing the medico-legal report of a person in police custody/ judicial custody who has been brought for medical examination.

14.18.2: Explain the procedure of examination and preparing the medico-legal report of a person referred by Court of Law for medical examination.

14.18.3: Explain the procedure of examination and preparing the medico-legal report of a person with history of violation of human rights as per requirement of NHRC (victim of torture, hunger strike, etc), who has been brought for medical examination.

Medical Jurisprudence (Medical Law and ethics)

- **Lecture – 3 hrs** **Assessment:** Written, Viva voce, OSCE

FM4.1 - Describe Medical Ethics and explain its historical emergence

4.1.1: Define Ethics and Medical ethics.

4.1.2: Describe the historical emergence of Medical ethics.

4.1.3: Discuss the need for and the emergence of World Medical Association's Declaration of Helsinki 1964 and its subsequent revisions.

FM4.2 - Describe the Code of Medical Ethics 2002 conduct, Etiquette and Ethics in medical practice and unethical practices & the dichotomy

4.2.1: Describe the 'Code of medical ethics' as per Indian Medical Council (Professional conduct, Etiquette and Ethics) Regulations, 2002.

4.2.2: Enumerate the various practices of a medical practitioner which are considered as unethical.

4.2.3: Explain the meaning of Dichotomy with examples.

4.2.4: Mention guidelines laid down by MCI with respect to remuneration

FM4.3 - Describe the functions and role of Medical Council of India / National Medical Commission and State Medical Councils

4.3.1: Describe the constitution and functions of Medical Council of India/ National Medical Council.

4.3.2: Describe the constitution and functions of State Medical Council.

FM4.4 - Describe the Indian Medical Register

4.4.1: List the various particulars to be entered in Indian Medical Register (IMR).

4.4.2: Mention under which schedules, the degrees obtained by institutions in and outside India are recognized by MCI.

4.4.3: Describe the procedure for a foreign medical practitioner to get enrolled in IMR.

4.4.4: Mention the advantages to a Doctor after enrolling in IMR.

FM4.5 - Rights/privileges of a medical practitioner, penal erasure, infamous conduct, disciplinary Committee, disciplinary procedures, warning notice and penal erasure

4.5.1: Enumerate the Rights/privileges of a medical practitioner

4.5.2: Define Infamous conduct/Professional misconduct with suitable examples (as per IMC regulations, 2002)

4.5.3: Describe the composition of disciplinary committee and its procedure in dealing with cases of infamous conduct.

4.5.4: Discuss the various punishments awarded by disciplinary committee for infamous conduct (warning notice, temporary erasure, penal erasure).

FM4.6 - Describe the Laws in Relation to medical practice and the duties of a medical practitioner towards patients and society

4.6.1: Enumerate the laws related to medical practice in India.

4.6.2: Describe the 'Duties of a medical practitioner' in general towards his patient, society and research.

- **Lecture – 1 hr** **Assessment:** Written, Viva voce, OSCE

FM4.7 - Describe and discuss the ethics related to HIV patients

4.7.1: Describe legal and ethical issues in HIV testing.

4.7.2: Mention the rights of HIV positive patients.

4.7.3: Discuss the duties of a Doctor while treating HIV patients with respect to confidentiality & disclosure.

4.7.4: Discuss the current policies related to the research and health care of HIV positive patients.

FM4.12 - Discuss legal and ethical issues in relation to stem cell research

4.12.1: Enumerate the application of stem cells in research and therapy.

4.12.2: Discuss the ethical issues arising from stem cell research and therapy.

4.12.3: Discuss the legal status of stem cell therapy and research in India.

4.12.4: Describe the guidelines for stem cell research in India.

FM4.13 - Describe social aspects of Medico-legal cases with respect to victims of assault, rape, attempted suicide, homicide, domestic violence, dowry- related cases

4.13.1: Describe the social aspects and role of medical professionals with respect to victim of sexual violence.

4.13.2: Describe the social aspects and role of medical professionals with respect to victim of attempted suicide.

4.13.3: Describe the social aspects and role of medical professionals with respect to victim of attempted homicide.

4.13.4: Describe the social aspects and role of medical professionals with respect to victim of domestic violence.

- **Lecture – 1 hr** **Assessment:** Written, Viva voce, OSCE

FM4.8 - Describe the Consumer Protection Act-1986 (Medical Indemnity Insurance, Civil Litigations and Compensations), Workman's Compensation Act & ESI Act

4.8.1: Discuss on Consumer Protection Act-1986 & 2019 n view of medical services with latest amendments.

4.8.2: Describe the purpose of Medical Indemnity Insurance in civil litigations and compensations.

4.8.3: Discuss the role of a doctor in awarding compensation to workers or their dependents as per Workman's Compensation Act and ESI Act.

SGD – 1 hr **Assessment:** Practical record, Log book, Viva voce, OSCE

FM4.9 - Describe the medico - legal issues in relation to family violence, violation of human rights, NHRC and doctors

4.9.1: Define Domestic Violence.

4.9.2: Discuss the salient features of "Protection of women from domestic violence Act, 2005" in relation to medical and legal responsibilities of a medical practitioner.

4.9.3: Enumerate the cases related to violation of human rights.

4.9.4: Discuss the responsibilities of a doctor in cases of violation of human rights.

FM4.10 - Describe communication between doctors, public and media

4.10.1: Describe the communication skills by a doctor with the public and its importance.

4.10.2: Describe the communication skills and precautions to be taken by a doctor while interacting with the media.

4.10.3: Describe communication skills by a doctor with his/her colleagues

FM4.14 - Describe & discuss the challenges in managing medico-legal cases including development of skills in relationship management – Human behaviour, communication skills, conflict resolution techniques

4.14.1: Discuss the challenges in managing the medico legal cases.

4.14.2: Describe the principles of doctor-patient relationship management.

4.14.3: Describe the development of human behavior and communication skills required for managing doctor-patient relationship.

4.14.4: Discuss the conflict resolution techniques in managing medico-legal cases.

FM4.15 - Describe the principles of handling pressure – definition, types, causes, sources and skills for managing the pressure while dealing with medico-legal cases by the doctor

4.15.1: Define stress.

4.15.2: Mention the types of pressure while dealing with medico-legal cases by a doctor.

4.15.3: List the causes/ sources of pressure in handling medico-legal cases.

4.15.4: Discuss the skills needed for managing the pressure situations in handling a medico-legal case.

- **Lecture – 1 hr** **Assessment:** Written, Viva voce

FM4.16 - Describe and discuss Bioethics

4.16.1: Define bioethics.

4.16.2: Enumerate the issues in medical practice wherein bioethics is applied.

4.16.3: Mention the four main principles of bioethics.

4.16.4: Discuss the medico-legal issues related to bioethics in patient care.

FM4.17 - Describe and discuss ethical Principles: Respect for autonomy, non-malfeasance, beneficence & justice

4.17.1: Describe respect for patient's autonomy.

4.17.2: Describe the role of beneficence as a guiding principle in patient care.

4.17.3: Describe the role of non-maleficence as a guiding principle in patient care.

4.17.4: Discuss the application of justice in distributing resources and benefits in medical practice and research.

FM4.11 - Describe and discuss euthanasia

4.11.1: Define euthanasia.

4.11.2: Describe various types of euthanasia.

4.11.3: Debate around euthanasia- the arguments against and in favour.

4.11.4: Mention the legal status of euthanasia in India and in other countries.

4.11.5: Discuss the landmark case of Aruna Shanbaug and its impact on the status of euthanasia in India.

SGD – 3 hrs **Assessment:** Written, Viva voce

FM4.18 - Describe and discuss medical negligence including civil and criminal negligence, contributory negligence, corporate negligence, vicarious liability, Res Ipsa Loquitor, prevention of medical negligence and defenses in medical negligence litigations

4.18.1: Define medical negligence.
4.18.2: Describe the elements of medical negligence.
4.18.3: Describe civil and criminal negligence with examples.
4.18.4: Describe contributory negligence with examples.
4.18.5: Describe the importance of Vicarious liability in medical practice.
4.18.6: Describe Corporate Negligence with examples.
4.18.7: Describe Res Ipsa Loquitur with examples.
4.18.8: Mention the precautionary measures to be taken to avoid medical negligence.
4.18.9: Describe the various defenses for a doctor in medical negligence (including Contributary negligence, Therapeutic misadventure, Medical maloccurrence, Calculated risk doctrine, Novus actus interveniens, Res judicata etc).

FM4.19 - Define Consent. Describe different types of consent and ingredients of informed consent. Describe the rules of consent and importance of consent in relation to age, emergency situation, mental illness and alcohol intoxication
4.19.1: Define consent.
4.19.2: Describe the different types of consent with suitable examples.
4.19.3: Describe the ingredients of an informed consent.
4.19.4: Describe the rules and regulations associated with consent.
4.19.5: Explain the importance of consent in relation to age, emergency situation, mental illness and alcohol intoxication (with relevant sections of IPC).
FM4.20 - Describe therapeutic privilege, Malingering, Therapeutic Misadventure, Professional Secrecy, Human Experimentation
4.20.1: Explain the concept of 'therapeutic privilege' in medical practice.
4.20.2: Discuss the legal aspects of Malingering during medical practice.

FM4.21 - Describe Products liability and Medical Indemnity Insurance
4.21.1: Discuss about 'product liability' in medical negligence.
4.21.2: Describe medical indemnity insurance and its purpose.

FM4.24 - Enumerate rights, privileges and duties of a Registered Medical Practitioner. Discuss doctor-patient relationship: professional secrecy and privileged communication
4.24.1: Enumerate the rights and privileges of Registered Medical Practitioner.
4.24.2: Describe the duties of a Registered Medical Practitioner.
4.24.3: Discuss on doctor-patient relationship in clinical practice.
4.24.4: Explain professional secrecy with examples.
4.24.5: Describe Privileged communication with examples.
FM4.22 - Explain Oath – Hippocrates, Charaka and Sushruta and procedure for administration of Oath
4.22.1: Explain oath as described by Hippocrates, Charaka and Sushruta.
4.22.3: Describe the procedure for administration of oath for a medical practitioner.
FM4.23 - Describe the modified Declaration of Geneva and its relevance
4.23.1: Describe the components of declaration of Geneva.

4.23.2: Describe the components of modified declaration of Geneva.

4.23.3: Explain the relevance of Declaration of Geneva in the medical profession.

FM4.25 - Clinical research & Ethics - Discuss human experimentation including clinical trials

4.25.1: Enumerate the need and drawbacks of different types of clinical research on humans.

4.25.2: Describe the phases of clinical trials and its implications.

4.25.3: Describe the ethical regulations and guidelines for clinical research.

4.25.4: Discuss the principles pertaining to human experimentation in Nuremberg code and Belmont report.

4.25.5: Discuss the steps to be taken for protection of vulnerable population in clinical trials/research

FM4.26 - Discuss the constitution and functions of ethical committees

4.26.1: List the composition of Institutional Ethics Committee (IEC).

4.26.2: Mention the responsibilities and duties of IEC.

4.26.3: Describe the proposals that are required to be presented before IEC.

4.26.4: Discuss limitations of IEC.

FM4.27 - Describe and discuss Ethical Guidelines for Biomedical Research on Human Subjects & Animals

4.27.1: Describe the international and national ethics guidelines for human and animal research.

4.27.2: Discuss the principles of ICMR guidelines for research involving human participants.

4.27.3: Discuss the rights of human research participants.

4.27.4: Discuss the 5 R's (replace, reduce, refine, reuse, and rehabilitate) of animal research ethics.

SGD – 1 hr **Assessment:** OSPE, Viva voce

FM4.28 - Demonstrate respect to laws relating to medical practice and Ethical code of conduct prescribed by Medical Council of India and rules and regulations prescribed by it from time to time

4.28.1: Demonstrate the conduct of doctor with patients as per the Code of Medical Ethics prescribed by IMC.

FM4.29 - Demonstrate ability to communicate appropriately with media, public and doctors

4.29.1: Demonstrate the skills of communication by a doctor with the public.

4.29.2: Demonstrate the skills of communication by a doctor with the media.

4.29.3: Demonstrate the skills of communication by a doctor with his/her colleagues.

FM4.30 - Demonstrate ability to conduct research in pursuance to guidelines or research ethics

4.30.1: Prepare a research protocol for a study as per the ICMR guidelines.

4.30.2: Demonstrate the procedure of taking informed consent for conducting a research.

Forensic Psychiatry

- **Lecture – 1 hr** **Assessment:** Written, Viva voce

FM5.1 - Classify common mental illnesses including post-traumatic stress disorder (PTSD)

5.1.1: Define Forensic Psychiatry.

5.1.2: Define mental illness.

5.1.3: Classify common mental illnesses.

5.1.4: Explain PTSD with examples.

FM5.2 - Define, classify and describe delusions, hallucinations, illusion, lucid interval and obsessions with exemplification

5.2.1: Define delusion.

5.2.2: Describe types of delusions and their medicolegal importance.
5.2.3: Define hallucination.
5.2.4: Describe types of hallucinations and their medicolegal importance.
5.2.5: Define illusion with examples.
5.2.6: Define lucid interval.
5.2.7: Describe the medicolegal importance of lucid interval.
5.2.8: Define Impulse.
5.2.9: Describe impulsive disorders with examples.
5.2.10: Describe the obsessive-compulsive disorders with examples.

- **Lecture – 1 hr** **Assessment:** Written, Viva voce

FM5.3 - Describe Civil and criminal responsibilities of a mentally ill person
5.3.1: Describe Civil responsibility of a mentally ill person.
5.3.2: Describe Criminal responsibility of a mentally ill person.
5.3.3: Describe the McNaughten Rule and critics about it.
5.3.4: Discuss the alternate hypotheses/tests in relation to criminal responsibility.
5.3.5: Describe the criminal responsibility in Automatism, Somnambulism, Somnolentia, Hypnotism and Intoxication.
FM5.4 - Differentiate between true insanity from feigned insanity
5.4.1: Differentiate between true and feigned insanity.
FM5.5 - Describe & discuss Delirium tremens
5.5.1: Define delirium tremens.
5.5.2: Describe the criminal responsibility in delirium tremens.

- **SDL – 1 hr** **Assessment:** Written, Viva voce

FM5.6 - Describe the Indian Mental Health Act, 1987 & Indian Mental Healthcare Act 2017 with special reference to admission, care and discharge of a mentally ill person
5.6.1: Describe the important definitions mentioned in Mental Health Care Act, 2017 (MHCA).
5.6.2: Describe the Rights of mentally ill person including 'Advance directive' as per the MHCA.
5.6.3: Describe the guidelines to start and run a 'Mental health establishment'.
5.6.4: Discuss on 'Admission, Treatment and Discharge of mentally ill person' as described in the MHCA.
5.6.5: Discuss on punishment for violation of provisions of MHCA.

Forensic Laboratory investigation in medical legal practice

- **SGD – 1 hr** **Assessment:** OSPE, Viva voce

FM6.1 - Describe different types of specimen and tissues to be collected both in the living and dead: Body fluids (blood, urine, semen, faeces, saliva), Skin, Nails, tooth pulp, vaginal smear, viscera, skull, specimen for histo-pathological examination, blood grouping, HLA Typing and DNA Fingerprinting. Describe Locard's Exchange Principle
6.1.1: Describe the importance of trace evidences in crime investigation.
6.1.2: Explain Locard's principle of exchange in crime investigation.
6.1.3: Enlist the various trace evidences seen in different type of crimes (living and dead).
6.1.4: Discuss the importance of DNA profiling in forensic investigation.
6.1.5: Enlist body tissue and body fluid suitable for DNA profiling.
6.1.6: Discuss the importance of histopathology and cytology examination in forensic investigation.

6.1.7: Discuss importance of blood grouping in forensic investigation.
6.1.8: Discuss significance of HLA typing in forensic investigation.

FM6.2 - Describe the methods of sample collection, preservation, labeling, dispatch, and interpretation of reports

6.2.1: Describe method of collection, packing, labelling, sealing and dispatch of evidentiary materials to the laboratory.

6.2.2: Describe the method of interpretation of investigation reports like Chemical analysis, Histopathological examination, Microbiological examination etc.

FM6.3 - Demonstrate professionalism while sending biological or trace evidences to Forensic Science lab, specifying the required tests to be carried out, objectives of preservation of evidences sent for examination, personal discussions on interpretation of findings

6.3.1: Draft requisition letter to be sent along with the samples preserved for laboratory analysis/examination mentioning type of sample preserved, required tests to be done, and brief history of the case.

6.3.2: Demonstrate professionalism while sending the samples for analysis such as maintaining confidentiality and chain of custody.

FM14.21 - To collect, preserve, seal and dispatch exhibits for DNA-Finger printing using various formats of different laboratories.

14.21.1: Describe the procedure involved in collecting, preserving, sealing and dispatching exhibits for DNA profiling from a living individual.

14.21.2: Describe the procedure involved in collecting, preserving, sealing and dispatching exhibits for DNA profiling from a dead individual after conducting medicolegal autopsy.

14.21.3: Describe the procedure involved in collecting samples for DNA profiling depending on the laboratory policies of collecting blood on dry gauze or EDTA vacutainer or on FTA cards,

Emerging technologies in Forensic Medicine

- **SDL – 1 hr** **Assessment:** Written, Viva voce

FM7.1 - Enumerate the indications and describe the principles and appropriate use for:- DNA profiling, Facial reconstruction, Polygraph (Lie Detector), Narcoanalysis, Brain Mapping, Digital autopsy, Virtual Autopsy, Imaging technologies

7.1.1: Discuss principle, procedure and medico-legal significance of DNA profiling.

7.1.2: Describe principle and medico-legal significance of Facial reconstruction.

7.1.3: Enlist different Lie detection tests.

7.1.4: Describe principle, procedure and medico-legal significance of Polygraph, Narcoanalysis and Brain mapping.

7.1.5: Describe principles of Virtual / Digital autopsy.

7.1.6: Describe the uses of different Imaging technologies in crime investigation.

Skills in Forensic Medicine & Toxicology

- **SGD – 2 hrs (Practicals)** **Assessment:** OSPE, OSCE, Viva voce

FM14.4 - Conduct and prepare report of estimation of age of a person for medico-legal and other purposes & prepare medico-legal report in a simulated/ supervised environment

14.4.1: Explain the procedure of taking an informed consent from a person after explaining the importance and procedure of age estimation in criminal cases (accused/ victim of a crime) and civil cases (joining employment, obtaining pension, etc).
14.4.2: Estimate the age of a person by using physical, dental and radiological findings.
14.4.3: Prepare the medicolegal report on the age of a person.

- **SGD – 10 hr (along with discussion of concerned competencies (Mechanical injuries, firearm injuries, thermal injuries, asphyxia, sexual offences, etc) in other SGD)**

Assessment: OSPE, Viva voce, Practical record, Log Book

FM14.5 - Conduct & prepare post-mortem examination report of varied etiologies (at least 10) in a simulated/ supervised environment
14.5.1: Describe the techniques of conducting a medicolegal autopsy.
14.5.2: Describe the postmortem findings (external and internal) in a medicolegal autopsy.
14.5.3: Enumerate the ancillary investigations required (along with appropriate materials for such investigations) in a medicolegal autopsy.
14.5.4: Draft the postmortem report after a medicolegal autopsy.
Medicolegal autopsies may be a case of unnatural death, natural death, custodial death, alleged medical negligence, decomposed body, mutilated body.

- **SGD – 2 hrs (Practicals)** **Assessment:** OSPE, Viva voce, Practical record, Log Book

FM14.11 - To identify & describe weapons of medicolegal importance which are commonly used e.g. lathi, knife, kripan, axe, gandasa, gupti, farsha, dagger, bhalla, razor & stick. Able to prepare report of the weapons brought by police and to give opinion regarding injuries present on the person as described in injury report/ PM report so as to connect weapon with the injuries. (Prepare injury report/ PM report must be provided to connect the weapon with the injuries)
14.11.1: Document the information before commencing the weapon examination.
14.11.2: Examine and document the details of weapons of medicolegal importance.
14.11.3: Prepare a report on the weapon examined.
14.11.4: Opine whether the injuries present in the wound certificate/ postmortem report are possible to be caused by the weapon examined.
14.11.5: Explain the method of packing and handing over the weapon to concerned police (maintaining the chain of custody).

FM14.12 - Describe the contents and structure of bullet and cartridges used & to provide medico-legal interpretation from these
14.12.1: Describe the structure and contents of Rifled cartridge & prepare a medico-legal inference.
14.12.2: Describe the structure and contents of Shotgun cartridge & prepare a medico-legal inference.

- **SGD – 1 hr (Practical)** **Assessment:** OSPE, OSCE, Viva voce, Practical record, Log Book

FM14.16 - To examine & prepare medico-legal report of drunk person in a simulated/ supervised environment
14.16.1: Take an informed consent for examination of a person with alleged drunkenness.
14.16.2: Describe the procedure of examination and collection of evidentiary material for medicolegal purpose.
14.16.3: Prepare a medicolegal report and opinion in a drunkenness case.
14.16.4: Explain the procedure of handing over the evidentiary material to the investigating officer.

- **SGD – 1 hr (Practical)** **Assessment:** OSPE, Viva voce, Practical record, Log Book

FM14.19 - To identify & prepare medico-legal inference from bone fracture, soot particles, diatoms & wound healing (slides)

14.19.1: List the microscopic identifying features after examining the histopathological slides of brain infarct, liver cirrhosis, brain haemorrhage, bone fracture, pulmonary oedema, brain oedema, soot particles, diatoms & wound healing.

14.19.2: Describe the medico-legal inferences after examining the above mentioned histopathological slides.

Summary of TL methods and list of competencies to be covered in Phase III MBBS part 1andAssessment methods

Sl. No.	Teachinghoursandtype	Competencynumbers	Assessmentmethods
1.	Lecture / SDL– 1 hr (Orientationclass)	1.3, 1.4, 1.5,1.6	Noassessment
2.	SGD– 2 hrs (Moot Court)	14.22, 2.29	Log book / Viva voce / OSCE
3.	SGD – 1 hr (Role play)	1.7, 14.20	Log book / Viva voce / OSCE / Skill station
4.	Lecture – 1 hr	1.8, 2.30	Written, Viva voce
5.	Lecture – 1 hr	1.9	Written, Viva voce
6.	SGD – 1hr (Practical)	1.10.1.11	Written / Viva voce / OSCE
7.	SGD – 5 hrs	2.20,2.21,2.22, 2.23,	Written / Viva voce
8.	SGD – 1 hr	2.24	Written / Viva voce
9.	SGD – 1 hr	2.25	Written / Viva voce / OSPE
10.	Lecture – 1 hr	2.26	Written, Viva voce
11.	SGD – 3hrs	2.27, 2.28, 4.13	Written / Viva voce / OSPE / log book / Practical record
12.	SGD – 4 hrs	3.3	Written, Viva voce, OSCE
13.	Lecture – 2hrs	3.4,3.5, 3.6, 3.7, 3.8	Written, Viva voce
14.	SGD – 3 hrs	3.9, 3.10	Written, Viva voce, OSCE
15.	SGD – 4 hrs	3.11, 3.12	Written, Viva voce, OSCE / OSPE
16.	SGD – 2 hrs (Practicals)	14.1	Log book / Skill station / Viva voce, OSCE
17.	SGD – 1 hr (Practicals)	14.10	Log book / Practical record / Viva voce, OSPE
18.	Lecture – 2 hrs	3.18, 3.19, 3.20	Written, Viva voce
19.	Lecture – 2 hrs	3.22, 3.23, 3.26	Written, Viva voce
20.	SDL – 1 hr	3.21, 3.24, 3.25	Written, Viva voce
21.	Lecture – 1 hr	3.13	Written, Viva voce, OSPE / OSCE

22.	Lecture – 1 hr	3.14	Written, Viva voce, OSCE
23.	SGD – 3 hrs	3.15, 3.16, 3.17	Written, Viva voce, OSCE
24.	SGD – 1hr (Practical)	14.15	Practical record, log book, Viva voce, OSCE
25.	SGD – 1hr (Practical)	14.14	Practical record, log book, Viva voce, OSCE
26.	Lecture – 2 hrs	3.27, 3.28	Written, Viva voce, OSCE
27.	Lecture – 1 hr	3.29	Written, Viva voce, OSCE
28.	SDL – 1 hr	3.30, 3.31	Written, Viva voce, OSCE
29.	SGD – 2 hrs	3.32, 3.33, 14.18	Practical record, Log book, Viva voce, OSCE
30.	Lecture – 3 hrs	4.1, 4.2, 4.3, 4.4, 4.5, 4.6	Written, Viva voce, OSCE
31.	Lecture – 1 hr	4.7, 4.12, 4.13	Written, Viva voce, OSCE
32.	Lecture – 1 hr	4.8	Written, Viva voce, OSCE
33	SGD – 1 hr	4.9, 4.10, 4.14, 4.15	Practical record, Log book, Viva voce, OSCE
34	Lecture – 1 hr	4.16, 4.17, 4.11	Written, Viva voce
35	SGD – 3hrs	4.18, 4.19, 4.20, 4.21, 4.24, 4.22, 4.23, 4.25, 4.26, 4.27	Written, Viva voce
36	SGD – 1 hr	4.28, 4.29, 4.30	OSPE, Viva voce
37	Lecture – 1 hr	5.1, 5.2	Written, Viva voce
38	Lecture – 1 hr	5.3, 5.4, 5.5	Written, Viva voce
39	SDL – 1 hr	5.6	Written, Viva voce
40	SGD – 1 hr	6.1, 6.2, 6.3, 14.21	OSPE, Viva voce
41	SDL – 1 hr	7.1	Written, Viva voce
42	SGD – 2hrs (Practicals)	14.4	OSPE, OSCE, Viva voce
43	SGD – 10 hrs	14.5	OSPE, Viva voce, Practical record, Log Book
44	SGD – 2hrs (Practicals)	14.11, 14.12	OSPE, Viva voce, Practical record, Log Book
45	SGD – 1 hr (Practicals)	14.16	OSPE, OSCE, Viva voce, Practical record, Log Book
46	SGD – 1 hr (Practicals)	14.19	OSPE, OSCE, Viva voce, Practical record, Log Book

Model Time table for Phase II &Phase III part 1 MBBS

Refer to SSAHEwebsite

Competencies in Internship

Certifiable Procedural skills desirable of Indian Medical Graduate in Forensic Medicine & Toxicology

A. An Intern must have observed or preferably assisted in:

- Documentation and certification of trauma (I)
- Diagnosis and certification of death (D)
- Legal documentation related to emergency cases (D)
- Certification of medico-legal cases e.g. Age estimation, Sexual Violence etc. (D)
- Establishing communication in medico-legal cases with police, public health authorities, other concerned departments, etc (D)

I- Independently performed on patients,
O- Observed in patients or on simulations,
D- Demonstration on patients or simulations and performance under supervision in patients

B. An Intern must have observed a medicolegal autopsy / postmortem

Compulsory rotating Internship posting of 7 days in Forensic Medicine and Toxicology
Log book to be maintained.
The internship posting has to be extended (repeated) till all the certifiable skills are achieved.
Use of skill lab is desirable wherever available

Sl. No	Competency	Number of times to be done	Assessment	Setting
1	IMG should independently examine a trauma patient / simulated patient and document and certify trauma	02	Skill assessment	Casualty / EMD
2	IMG should demonstrate on patients or simulations and performance under supervision in patients the diagnosis and certification of death	01	Skill assessment / DOAP Session	Casualty / EMD / Ward / ICU
3	IMG should demonstrate the legal documentation related to emergency care in a medicolegal register / accident register maintained at casualty / EMD	01	Skill assessment / DOAP Session	Casualty / EMD
4	IMG should examine, document and certify in a medicolegal case of age estimation	01	Skill assessment / DOAP Session	Forensic Medicine /Casualty / EMD
5	IMG should examine, document and certify in a medicolegal case of victim of Sexual violence	01	Skill assessment / DOAP Session	OBG /Forensic Medicine /Casualty / EMD
6	IMG should examine, document and certify in a medicolegal case of accused of Sexual violence	01	Skill assessment / DOAP Session	Forensic Medicine /Casualty / EMD
7	IMG should demonstrate communication in medicolegal cases with police	01	Skill assessment / DOAP Session	Forensic Medicine /Casualty / EMD
8	IMG should demonstrate communication in medicolegal cases with public health authorities	01	Skill assessment / DOAP Session	Forensic Medicine /Casualty / EMD
9	IMG should demonstrate communication in medicolegal cases with Radiology / Pathology / Microbiology / FSL departments	01	Skill assessment / DOAP Session	Forensic Medicine /Casualty / EMD
10	IMG should observe and document a medicolegal autopsy / postmortem examination	01	Skill assessment / DOAP Session	Forensic Medicine

Assessment in Forensic Medicine & Toxicology

Summative Assessment - An assessment conducted at the end of instruction to check how much the student has learnt.

Formative Assessment - An assessment conducted during the instruction with primary purpose of providing feedback for improving learning.

Internal Assessment - Range of assessments conducted by the teachers teaching a particular subject with the purpose of knowing what is learnt and how it is learnt. Internal assessment can have both formative and summative functions.

Note - Assessment requires specification of measurable and observable entities. This could be in the form of whole tasks that contribute to one or more competencies or assessment of a competency per se. Another approach is to break down the individual competency into learning objectives related to the domains of knowledge, skills, attitudes, communication etc. and then assess them individually.

Scheduling of Internal Assessment - In Phase II MBBS there will be ONE Internal assessments in theory and practicals.

- In Phase III part 1 MBBS there will be two Internal assessments in theory and practical. One of the test should be prelim or pre-university examination

Theory IA can include: Theory tests, seminars, quizzes, interest in subject, scientific attitude etc. Written tests should have essay questions, short notes and creative writing experiences.

Practical IA can include: practical tests, Objective Structured Practical Examination (OSPE), Directly Observed Procedural Skills (DOPS), records maintenance and attitudinal assessment.

Assessment of Log-book- Log book should record all activities like seminar, symposia, quizzes and other academic activities. It should be assessed regularly and submitted to the department. Up to twenty per cent IA Theorymarks should be for Log book assessment.

Assessment of Practical Record book- Practical book should record all skills and other practical exercises done during the academic programme. It should be assessed regularly and submitted to the department. Up to twenty per cent IA Practical marks should be for Log book assessment

Internal Assessment for AETCOM will include: - Written tests comprising of short notes and creative writing experiences.

OSCE based clinical scenarios and/or viva voce. Skill competencies acquired during the Professional Development Programme (AETCOM) must be tested during the practical and viva voce.

Feedback in Internal Assessment - Feedback should be provided to students throughout the course so that they are aware of their performance and remedial action can be initiated well in time. The feedbacks need to be structured and the faculty and students must be sensitized to giving and receiving feedback.

The results of IA should be displayed on notice board within two weeks of the test and an opportunity provided to the students to discuss the results and get feedback on making their performance better.

It is also recommended that students should sign with date whenever they are shown IA records in token of having seen and discussed the marks.

Internal assessment marks will not be added to University examination marks and will reflect as a separate head of passing at the summative examination. Internal assessment should be based on competencies and skills.

Criteria for appearing in University examination: Learners must secure at least 50% marks of the total marks (combined in theory and practical; not less than 40 % marks in theory and practical separately) assigned for internal assessment in order to be eligible for appearing at the final University examination

Annexure

Teaching Learning Methods

Teaching Learning Methods

- Didactic lectures should be made more interactive by encouraging the more involvement of the students. In the present digital era, student's involvement is more with usage of technology. For examples, many polling sessions, quizzes etc can be done using google slides and other apps like Kahoot, Socrative, menti.com etc.
- Small group discussion (SGD) should be planned properly and discussed among the faculty members before taking the class. As for as possible, uniformity should be maintained in the SGD by various facilitators. Case based learning (CBL) and problem based learning (PBL) may be used to make the learner understand and learn about the various aspects in order to achieve the particular competency.
- Encourage the students learn themselves through self-directed learning (SDL). SDL sessions may be planned with objectives in order to cover the particular competency. These sessions may be conducted by providing learning material (research articles, public news, videos, etc) by a teacher and ask the students to search on a particular topic. Students should learn themselves by going through available resources and come back to classes allotted for SDL sessions where teacher able to connect the learning of students in order to achieve the competency.
- Integrated classes should be planned in order to cover the competency involving the topics from different subjects. These classes can be taken using Nesting, Temporal Coordination or Sharing. Case linkers may be used to link the topic/subject area among different subjects/ departments.
- Skills should be taught using the clinical cases at hospital wards/casualty/EMD, simulation in skills labs and/or departmental demonstration rooms. Case scenarios may be developed while teaching at skills lab and/or demonstration rooms.

Example for teaching the clinical examination in poisoning:

- **Case scenario:** A farmer working in a field was brought with history of breathlessness, vomiting, excessive sweating and muscle twitching. On examination, the pupils were constricted and heart rate was decreased. He had defecated in his cloths. Smell of kerosene was present in his breath. Even the cloths were soiled smelling kerosene.
- **Demonstration of clinical examination:** Mannequins or standardised patients in the skills lab may be used for examination and recording of vital parameters like pulse, BP, RR, SPO2 and state of pupils. Also, response to treatment can be.
- **Diagnosis and management:** Discuss the differential diagnosis, investigations and definitive diagnosis. Discuss the various treatment modalities. The response to drugs used for treatment can be demonstrated using high fidelity mannequins.
- **Medicolegal responsibilities:** The medicolegal responsibilities such as preservation of gastric lavage material, medicolegal documentation, and police intimation should be demonstrated in a simulated environment and using standard formats.

Example for teaching the topic Injuries/ Trauma with integration:

Linker Case: A 30-year-old male while travelling in a motor bike met with an accident with a car coming from opposite side. As a result of this, he sustained multiple injuries (can be displayed in the form of photographs).He was brought by his friend to the hospital. On reaching the hospital, patient

was in semiconscious state with difficulty in breathing.

Subjects for integration: Forensic Medicine, General Surgery.

- Forensic Medicine: Topics covered in this subject include different types of mechanical injuries possible in such accidents and other relevant topics related to mechanical injuries.[Competencies to be covered: FM 3.3, 3.4, 3.8]
- General Surgery: First aid treatment, Basic life support, Transportation of patient, Basic management of injuries at hospital. [Competencies to be covered: SU 17.1, 17.2, 17.3]

Type of Integration:

- Horizontal: Temporal coordination can be done if is done in the same phase.
- Vertical: Nesting can be used if it is done in two different phases.

Additional details to case scenario:

- In addition to linker case, case details need to be added by respective departments depending on the progression of the class (such as clinical features, internal injuries, postmortem findings etc).
- Case details may be introduced step by step in order to involve students in discussion.

Example for teaching the topic Drugs / Substances of abuse with integration:

Linker Case: A 15-year-old student was brought by his parents to the hospital with a history of addiction to drugs and behavioural changes since 6 months.On examination, the patient was anxious, restless and was hesitant to talk.

Subjects for integration: Pharmacology, Forensic Medicine, Psychiatry.

- Pharmacology: Topics covered in this subject include Definitions, List of drugs of abuse, Mechanism of drug addiction. [Competencies to be covered: PH 1.22, 1.23]
- Forensic Medicine: Description of features and management of drugs/substances of abuse.[Competencies to be covered: FM 12.1]
- Psychiatry: Etiology, clinical features, treatment of drugs/substances of abuse. [Competencies to be covered: PS 4.1, 4.2, 4.3, 4.4, 4.6, 4.7]

Type of Integration:

- Horizontal: Temporal coordination/ Sharing can be done if is done in the same phase.
- Vertical: Nesting can be used if it is done in two different phases.

Additional details to case scenario:

- In addition to linker case, case details need to be added by respective departments depending on the progression of the class (such as clinical features, behavioural changes, complications, legal problems etc).
- Case details may be introduced step by step in order to involve students in discussion.

Annexure

Blue Print& Assessment methods - Theory

Type of questions	*Marks per question*	*Number of questions*	*Total marks*
MCQs	1	20	20
Long Essay questions	10	2	20
Short essay questions	5	6	30
Short answer questions	3	10	30

Number of QPs for the subject: One Theory marks 100

Theory Question Paper: Blue print

This shows the weightage given to each chapter in the summative assessment. This improves the content validity by distributing the assessment of learners in the competencies that are represented by learning objectives under each chapter.
Number of QPs for the subject: One.
Only CORE competencies shall be considered for framing questions. Each paper should contain the following distribution of questions (as shown in below table).

Theory Question Paper:

Only CORE competencies shall be considered for framing questions. Each paper should contain the following distribution of questions (as shown in below table).

Distribution of marks in suggested blue print:

Section	Chapters	Marks allotted
Section 1	General information [Dying declaration, Dying deposition, Medical records, Cause of death]	5 marks
Section 2	Forensic Pathology [Thanatology, Medicolegal autopsy, Mechanical asphyxia, Thermal deaths, Death due to starvation and neglect, Infanticide]	25 marks*
Section 3	Clinical Forensic Medicine [Identification, Mechanical injuries, Firearm injuries, Regional injuries, Sexual offences, Virginity, Pregnancy, Abortion, Impotence, Sterility, Sterilization, Artificial Insemination, Torture, Child abuse]	25 marks*
Section 4	Medical Jurisprudence [Medical law and ethics, Euthanasia, Bioethics, Research ethics]	15 marks
Section 5	Forensic Psychiatry, Forensic Laboratory Investigation in medico-legal practice	5 marks
Section 6	General Toxicology, Chemical Toxicology, Pharmaceutical Toxicology, Biotoxicology, Sociomedical Toxicology, Environmental Toxicology	25 marks*
	Total number of questions	**100 marks**

The Long essay questions shall be chosen from any two sections of Sections 2, 3 and 6. The distribution of questions for these sections shall be as follows:

- Two sections should contain 2 MCQs, 1 Long essay question, 2 Short essay questions and 1 Short answer question.
- One section should contain 1 MCQ, 3 Short essay questions and 3 Short answer questions.

One Long Essay question and One Short Essay question should be of Problem solving or on Clinical application.

35% questions should be of the Higher order thinking

This shows the weightage given to each topic in the summative assessment. This improves the content validity by distributing the assessment of learners in the competencies that are represented by learning objectives under each topic.

Annexure

Blue Print& Assessment methods - Practicals

Practicals 80
Viva Voce 20

Practical Question Paper: Blue print

Excercise No.	***Exercise***	***Marks***
Excercise-1	Wound certificate	10
Excercise-2	Age certificate	15
Excercise-3	Skeletal remains	10
Excercise-4 (Any one exercise)	Victim of rape	10
	Accused of rape	
	Drunkenness certificate	
Excercise-5	PM certificate	10
Excercise-6	Spotters	10
Excercise-7	MCCD	10
Excercise-8	Preservation of evidentiary materials in living and dead cases	5

Distribution of exercises among examiners for marking:

Evaluation of practical exercises should be equally distributed among the examiners. Suggested distribution as follows:

Examiner-1: Exercise 1 (10 marks) + Exercise 7 (10 marks)
Examiner-2: Exercise 2 (15 marks) + Exercise 8(5 marks)
Examiner-3: Exercise 3 (10 marks) + Exercise 6 (10 marks)
Examiner-4: Exercise 4 (10 marks) + Exercise 5 (10 marks)

Detailed planning of practical assessment:

Exercise No.	***Exercise***	***Assessment***	***Marks***
Excercise-1	Wound certificate	Option-A: • A case scenario containing the details of a patient, history and part-task trainer with injuries will be given. • Student will be asked to draft a certificate as per the format based on above case details. Option-B: • A case scenario containing the details of a patient, history, multiple photographs of injuries with scale attached (printed in a single page) will be given. • Student will be asked to draft a certificate as per the format based on above case details.	10
Excercise-2	Age certificate	• A case scenario containing the details of a patient / subject, history, findings of General Physical Examination, Tooth eruption (picture of dentition or Orthopantomogram) and X-ray film/s of various joints will be given. • Student will be asked to draft a certificate as per the format based on above case details.	15
Excercise-3	Skeletal remains	• A case scenario containing the history and relevant findings of scene from where the bone/s were recovered will be given. • Student will be asked to examine the bone/s and draft a report as per the format.	10
Excercise-4 (Any one exercise)	Victim of rape	• A case scenario containing the details of a patient / subject, history and findings related to sexual violence (victim of rape) will be given. • Student will be asked to draft a report in a format (as per MOHFW, GOI) based on case details and answer questions related to case scenario.	10
	Accused of rape	• A case scenario containing the details of a patient / subject, history and findings related to sexual violence (accused of rape) will be given.	

		• Student will be asked to draft a report as per the format based on case details and answer questions related to case scenario.	
	Drunkenness certificate	• A case scenario containing the details of a patient / subject, history and findings related to drunkenness will be given. • Student will be asked to draft a report as per the format based on case details and answer questions related to case scenario.	
Excercise-5	PM certificate	• A case scenario containing the details of a deceased, history and postmortem findings will be given. • Student will be asked to draft the PM certificate and give opinion on cause of death, time since death and any other questions related to case scenario.	10
Excercise-6 (Spotters)	Hair, Semen, & other Biological fluids; Blood - Identification of species; Photographs / Specimens; Poisons; Histopathology Slides; Firearm cartridge	• It should contain 10 spotters. • Each spotter will be awarded maximum of one mark for correct responses. • Ideally spotters should contain applied type of questions related to content of the spotter. • Evaluation will be based on the marks allotted to structured questions.	10
Excercise-7	MCCD	• A case scenario containing the details of a patient, history and clinical findings related to MCCD will be given. • Student will be asked to draft a certificate as per the format based on above case details and answer questions related to case scenario and MCCD.	10

Excercise-8	Preservation of evidentiary materials in living and dead cases	• A case scenario containing the details of a living patient or deceased, history and clinical features of any poisoning / disease or injuries condition for histopathology examination / requirement for DNA profiling will be given. • Student will be asked to list the various evidentiary materials to be preserved in such cases, write the labels for such preservation, and write the letters to FSL or concerned laboratory for analysis.	5

Annexure

Integration topics

Integration: The teaching should be aligned and integrated horizontally and vertically recognizing the importance of medico-legal, ethical and toxicological issues as they relate to the practice of medicine.

Integration of Forensic Medicine with Other departments:

The suggested topics, competencies and the subjects/departments for integrated teaching are shown in below table.

Sl. No.	*Topic for integration*	*Subject [Competencies]*
1	Injuries / Trauma	Forensic Medicine [FM 3.3, 3.4, 3.8, 3.9, 3.10] General Surgery [SU 17.1, 17.2, 17.3]
2	Wound healing	General Surgery [SU 5.1, 5.2, 5.3, 5.4] Pathology [PA 5.1] Forensic Medicine [FM 3.6]
3	Regional injuries	Forensic Medicine [FM 3.11, 3.12] General Surgery [SU 17.4, 17.5, 17.6, 17.7, 17.8, 17.9, 17.10]
4	Burns	Forensic Medicine [FM 2.24, 2.25] General Surgery [SU 4.1, 4.2, 4.3, 4.4]
5	Organ transplantation	General Surgery [SU 13.1, 13.2, 13.3, 13.4] Ophthalmology [OP 4.9, 4.10] Forensic Medicine [FM 2.4]
6	Pregnancy and labour	Forensic Medicine [FM 3.19, 3.20] OBG [OG 6.1, 7.1]
7	Abortion	Forensic Medicine [FM 3.27, 3.28] OBG [OG 1.3, 9.1, 9.2, 20.1, 20.2]

8	PCPNDT Act	OBG [OG 20.3] Radiodiagnosis [RD 1.13] Forensic Medicine [FM 3.21]
9	Impotence and Sterility	Forensic Medicine [FM 3.22. 3.23, 3.24, 3.25. 3.26] Pharmacology [PH 1.40] OBG [OG 28.1, 28.2, 28.3, 28.4]
10	Psychiatric disorders	Psychiatry [PS 3.7, 3.8] Forensic Medicine [FM 5.1, 5.2, 5.3, 5.4, 5.5, 5.6]
11	General toxicology	Forensic Medicine [FM 8.1, 8.2, 8.3, 8.4, 8.5, 8.6, 8.7, 8.8] Pharmacology [PH 1.4, 1.5, 1.11] General Medicine [IM 21.1, 21.5, 21.6, 21.7, 21.8]
12	Insecticides	Forensic Medicine [FM 8.6] Pharmacology [PH 1.52] Community Medicine [CM 3.8]
13	Corrosives	Forensic Medicine [FM 9.1] General Medicine [IM 21.3]
14	Heavy metal poisoning	Forensic Medicine [FM 9.2, 9.3] Pharmacology [PH 1.53]
15	Plant poisons	General Medicine [IM 21.2] Forensic Medicine [FM 10.1]
16	Snake, scorpion, insect bites	Forensic Medicine [FM 11.1] General Medicine [IM 20.1, 20.2, 20.3, 20.4, 20.5, 20.6, 20.7, 20.8, 20.9]
17	Alcohol disorders	Pharmacology [PH 1.20, 1.21] Pathology [PA 12.1, 25.4] General Medicine [IM 5.5] Forensic Medicine [FM 9.4]
18	Drugs of abuse	Pharmacology [PH 1.22, 1.23] Forensic Medicine [FM 12.1] Psychiatry [PS 4.1, 4.2, 4.3, 4.4, 4.6, 4.7]

Sl no	**Subject**	**Competency number**	**Competency**	**TL method**	**Assessment**	**Vertical Integration**	**Horizontal Integration**
1	Anatomy	AN14.3	Describe the importance of ossification of lower end of femur & upper end of tibia	Lecture	Viva voce / Practicals	Forensic Medicine	-
2	Pharmacology	PH1.22	Describe drugs of abuse (dependence, addiction, stimulants, depressants, psychedelics, drugs used for criminal offences)	Lecture / SGD	Written / Viva voce	Psychiatry	Forensic Medicine

3		PH5.7	Demonstrate an understanding of the legal and ethical aspects of prescribing drugs	SGD	Short note / viva voce	-	Forensic Medicine
4	Radiodiagnosis	RD1.13	Describe the components of the PC & PNDT act and its medicolegal implications	Lecture / SGD		OBG, Forensic Medicine	-
5	Psychiatry	PS19.3	Describe and discuss the basic legal and ethical issues in psychiatry	Lecture / SGD	Written / Viva voce	Forensic Medicine, AETCOM	-
6	General Medicine	IM20.1	Enumerate the poisonous snakes of your area and describe the distinguishing marks of each	Lecture / SGD	Written / Viva voce	Forensic Medicine, Pharmacology	
7		M20.2	Describe, demonstrate in a volunteer or a mannequin and educate (to other health care workers / patients) the correct initial management of patient with a snake bite in the field	DOAP session	Skill assessment /Written / Viva voce	Forensic Medicine	
8		M20.3	Describe the initial approach to the stabilisation of the patient who presents with snake bite	Lecture / SGD	Written / Viva voce	Forensic Medicine	
9		M20.4	Elicit and document and present an appropriate history, the circumstance, time, kind of snake, evolution of symptoms in a patient with snake bite	Bedside clinic, DOAP session	Skill assessment	Forensic Medicine	
10		IM21.2	Enumerate the common plant poisons seen in your area and describe their toxicology, clinical features, prognosis and	Lecture / SGD	Written / Viva voce	Forensic Medicine, Pharmacology	

			specific approach to detoxification				
11		IM21.3	Enumerate the common corrosives used in your area and describe their toxicology, clinical features, prognosis and approach to therapy	Lecture / SGD	Written / Viva voce	Forensic Medicine, Pharmacology	
12		IM21.4	Enumerate the commonly observed drug overdose in your area and describe their toxicology, clinical features, prognosis and approach to therapy	Lecture / SGD	Written / Viva voce	Forensic Medicine, Pharmacology	
13		IM21.5	Observe and describe the functions and role of a poison centre in suspected poisoning	DOAP Session	Document in log book	Forensic Medicine, Pharmacology	
14		IM21.6	Describe the medico legal aspects of suspected suicidal or homicidal poisoning and demonstrate the correct procedure to write a medico legal report on a suspected poisoning	Lecture / SGD / DOAP Session	Written / Viva voce / Skill assessment	Forensic Medicine, Pharmacology	
15		IM21.7	Counsel family members of a patient with suspected poisoning about the clinical and medico legal aspects with empathy	DOAP Session	Skill assessment	Forensic Medicine, Pharmacology	
16		IM21.8	Enumerate the indications for psychiatric consultation and describe the precautions to be taken in a patient with suspected suicidal ideation / gesture	DOAP Session	Skill assessment	Forensic Medicine, Psychiatry	

17	OBG	OG1.3	Define and Discuss still birth and abortion	Lecture / SGD	Notes	Forensic Medicine	
18		OG9.2	Describe the steps and observe/ assist in the performance of an MTP evacuation	DOAP Session , Bedside clinic	Viva voce	Forensic Medicine	
19		OG20.1	Enumerate the indications and describe and discuss the legal aspects, indications, methods for first and second trimester MTP; complications and management of complications of medical termination of pregnancy	Lecture / SGD	Written / Viva voce	Forensic Medicine	
20		OG20.2	In a simulated environment administer informed consent to a person wishing to undergo medical termination of pregnancy	DOAP Session	Skill assessment	Forensic Medicine	
21		OG20.3	Discuss Pre-conception and Pre Natal Diagnostic Techniques (PC& PNDT) Act 1994 & its amendments	Lecture / SGD	Written / Viva voce	Forensic Medicine	
22	General Surgery	SU8.1	Describe the principles of Ethics as it pertains to surgery	Lecture / SGD	Written / Viva voce/ Skill assessment	Forensic Medicine, AETCOM	
23		SU8.2	Demonstrate Professionalism and empathy to the patient undergoing surgery	Lecture / SGD / DOAP Session	Written / Viva voce/ Skill assessment	Forensic Medicine, AETCOM	
24		SU8.3	Discuss Medico legal issues in surgical practice	Lecture / SGD	Written / Viva voce/ Skill assessment	Forensic Medicine, AETCOM	

Annexure

Topics for Electives

Topics for Electives

- Disaster management
- Medicolegal aspects of healthcare / hospital administration
- Deposing evidence in a Court of Law
- Medicolegal aspects in management of emergency cases
- Forensic odontology
- Disaster victim identification
- Forensic anthropology
- Forensic psychiatry
- Forensic radiology
- Forensic toxicology
- Snake bite – species identification and management
- Crime scene examination
- Forensic ballistics

Annexure

Reference Books and Journals

Suggested references (as per Vancouver style): (Specification mentioned such as edition – subject to change with newer edition)

- **Basic references**

1) Reddy KSN, Murthy OP. The Essentials of Forensic Medicine and Toxicology. 35th edition, 2022. Jaypee Brothers Medical Publishers, New Delhi.
2) Pillay VV. Textbook of Forensic Medicine and Toxicology, 19th edition, 2019, Paras Medical Publishers, Hyderabad.
3) Biswas G. Review of Forensic Medicine & Toxicology, 5th edition, 2021, Jaypee Brothers Medical Publishers, New Delhi.
4) Subrahmanyam BV. Parikh's Textbook of Medical Jurisprudence, Forensic Medicine and Toxicology, 8th edition, 2019, CBS Publishers.
5) Guharaj PV, Gupta SK. Forensic Medicine and Toxicology, 3rd edition, 2019, Universities Press (India) Private Ltd., Hyderabad.
6) Ignatius PC. Forensic Medicine and Toxicology, 4th edition, 2019, Elsevier India.
7) Pillay VV. NACPFMT's Practical Medicolegal Manual: Medical Ethics, Clinical Forensics & Toxicology, 1st edition, 2019, Paras Medical Publishers, Hyderabad.
8) Agarwal SS. NACPFMT's Practical Medicolegal Manual: Forensic Pathology, 1st edition, 2022, CBS Publishers & Distributors Pvt Ltd.
9) Karmakar RN. Forensic Medicine and Toxicology: Theory, Oral and Practical, 5th edition, 2015. Academic Publishers, Kolkata.
10) Nandy A. Principles of Forensic Medicine including Toxicology, 3rd edition, 2010, New Central Book Agency
11) Bardale R. Principles of Forensic Medicine & Toxicology, 2nd edition, 2016, Jaypee Brothers Medical Publishers, New Delhi.
12) Vij K. Textbook of Forensic Medicine and Toxicology: Principles and Practice, 6th edition, 2014, Elsevier Ltd.
13) Bakkannavar SM. Forensic Medicine and Toxicology: Practical manual, 1st edition, 2018, Elsevier India.
14) Borah. Medical Ethics for Students and Doctors, 1st edition, 2014, Ahuja Publishers.

- **Advanced references (may also include journals/ web/ other electronic sources).**

1) Kannan K. Modi's Medical Jurisprudence and Toxicology, 26th edition, 2019, LexisNexis.
2) Karmakar RN. JB Mukherjee's Forensic Medicine and Toxicology, 2007, Academic Publishers.
3) Dogra TD, Rudra A. Lyon's Medical Jurisprudence and Toxicology. 11th edition (reprint), 2018. Delhi Law House, Delhi.
4) Saukko P, Knight B. Knight's Forensic Pathology. 4th edition. 2015, CRC Press
5) Pillay VV. Modern Medical Toxicology, 4th edition, 2013, Jaypee Brothers Medical Publishers Ltd., New Delhi.
6) Journal of Karnataka Medico-Legal Society.
7) Journal of South India Medico-Legal Association.
8) Journal of Indian Academy of Forensic Medicine.
9) Journal of Indian Society of Toxicology
10) Journal of Forensic and Legal Medicine
11) Journal of Forensic Sciences
12) Indian Journal of Medical Ethics

Annexure

Log Book Format

SRI SIDDHARTHA
ACADEMY OF HIGHER EDUCATION

(Deemed to be University, declared u/s 3 of the UGC Act, 1956)

FORENSIC MEDICINE and TOXICOLOGY
LOGBOOK
FOR MBBS

AS PER
Competency-Based Medical Education Curriculum

College Name

College Logo

Constituent College of
Sri Siddhartha Academy of Higher Education, Tumkur

M.B.B.S Log Book
Forensic Medicine and Toxicology

Name of the Student :

University Registration Number :

Academic year :

Signature of the Student :

CERTIFICATE

This is to certify that Ms / Mr …… is student of …….. Medical College, ……..... He / She has participated in the National Medical Commission mandated sessions as a part of the Competency Based Medical Education Curriculum in the subject of Forensic Medicine and Toxicology during the period …… to ……..

Recording of the contents in this Log Book is a bonafide work of the student.

Staff In-charge Head of Department

Date:
Place:

GENERAL INSTRUCTIONS

1) Log book is the record of all the relevant academic/co-curricular activities undertaken by the student in a particular department.
2) The student is responsible for getting the entries in the logbook verified by the Faculty in charge regularly.
3) Entries in the logbook will reflect the activities undertaken in the department and have to be scrutinized by the Head of the Department.
4) The logbook is a record of various activities by the student like:
    a. Overall participation & performance
    b. Attendance
    c. Participation in sessions
    d. Record of completion of pre-determined activities.
    e. Acquisition of selected competencies
5) The logbook is the record of work done by the candidate in that department and should be verified by the college before submitting the application of the students for the University examination.

INDEX

Sl. No.	Type of activity	Page Numbers	
		From	To
1	MBBS Phase II: Seminars, Tutorials, Projects, Case discussion, Debate, Quiz etc		
2	MBBS Phase II: Skill / Practical Sessions, Postmortem/ Clinical case observation		
3	MBBS Phase II: Self-directed learning		
4	MBBS Phase II: AETCOM module		
5	MBBS Phase II: Attendance and Internal Assessment		
6	MBBS Phase III, Part I: Seminars, Tutorials, Projects, Case discussion, Debate, Quiz etc		
7	MBBS Phase III, Part I: Skill / Practical Sessions, Postmortem/ Clinical case observation		
8	MBBS Phase III, Part I: Self-directed learning		
9	MBBS Phase III, Part I: AETCOM module		
10	MBBS Phase III, Part I: Attendance and Internal Assessment		
11	Final Attendance and Internal Assessment marks		
12	Certifiable Skill Acquisition in Forensic Medicine and Toxicology		
13	Achievements, Awards, Conference/ CME/ Workshop attended		
14	Certifiable skills in Internship		

ACTIVITIES DONE IN

MBBS PHASE II

Seminars, Tutorials, Projects, Case discussion, Debate, Quiz etc

Sl No.	Name of Activity	Date	Completed (C) /Repeat (R)	Faculty's signature

Seminars, Tutorials, Projects, Case discussion, Debate, Quiz etc

Sl No.	Name of Activity	Date	Completed (C) /Repeat (R)	Faculty's signature

Seminars, Tutorials, Projects, Case discussion, Debate, Quiz etc

Sl No.	Name of Activity	Date	Completed (C) /Repeat (R)	Faculty's signature

Skill / Practical Sessions, Postmortem/ Clinical case observation

Sl No.	Name of Activity	Date	Completed (C) /Repeat (R)	Faculty's signature

Skill / Practical Sessions, Postmortem/ Clinical case observation

Sl No.	Name of Activity	Date	Completed (C) /Repeat (R)	Faculty's signature

Skill / Practical Sessions, Postmortem/ Clinical case observation

Sl No.	Name of Activity	Date	Completed (C) /Repeat (R)	Faculty's signature

Skill / Practical Sessions, Postmortem/ Clinical case observation

Sl No.	Name of Activity	Date	Completed (C) /Repeat (R)	Faculty's signature

Self-directed learning

Name of the topic:

Objectives:

1.

2.

3.

4.

Reflective narration:

1. What did you learn from the above session?
2. How do you apply your knowledge in a medical / medicolegal situation?
3. What skill do you need to develop to handle a real situation in future?

Signature of Faculty

Self-directed learning

Name of the topic:

Objectives:

1.

2.

3.

4.

Reflective narration:

1. What did you learn from the above session?
2. How do you apply your knowledge in a medical / medicolegal situation?
3. What skill do you need to develop to handle a real situation in future?

Signature of Faculty

Self-directed learning

Name of the topic:

Objectives:

1.

2.

3.

4.

Reflective narration:

1. What did you learn from the above session?
2. How do you apply your knowledge in a medical / medicolegal situation?
3. What skill do you need to develop to handle a real situation in future?

Signature of Faculty

Self-directed learning

Name of the topic:

Objectives:

1.

2.

3.

4.

Reflective narration:

1. What did you learn from the above session?
2. How do you apply your knowledge in a medical / medicolegal situation?
3. What skill do you need to develop to handle a real situation in future?

Signature of Faculty

Self-directed learning

Name of the topic:

Objectives:

1.

2.

3.

4.

Reflective narration:

1. What did you learn from the above session?
2. How do you apply your knowledge in a medical / medicolegal situation?
3. What skill do you need to develop to handle a real situation in future?

Signature of Faculty

AETCOM Session

Module number:

Name of the topic:

Objectives:

1.

2.

3.

4.

Reflective narration:

1. What did you learn from this AETCOM session?
2. How do you apply the knowledge gained in a medical / medicolegal situation?
3. What skill do you need to develop to handle a real situation in future?

Signature of Faculty

AETCOM Session

Module number:

Name of the topic:

Objectives:

1.

2.

3.

4.

Reflective narration:

1. What did you learn from this AETCOM session?
2. How do you apply the knowledge gained in a medical / medicolegal situation?
3. What skill do you need to develop to handle a real situation in future?

Signature of Faculty

AETCOM Session

Module number:

Name of the topic:

Objectives:

1.

2.

3.

4.

Reflective narration:

1. What did you learn from this AETCOM session?
2. How do you apply the knowledge gained in a medical / medicolegal situation?
3. What skill do you need to develop to handle a real situation in future?

Signature of Faculty

AETCOM Session

Module number:

Name of the topic:

Objectives:

1.

2.

3.

Reflective narration:

1. What did you learn from this AETCOM session?

2. How do you apply the knowledge gained in a medical / medicolegal situation?

3. What skill do you need to develop to handle a real situation in future?

Signature of Faculty

Formative Assessment
(Written test/ MCQs/ Viva Voce/ Quiz/ Debate etc)

Sl No.	Name of Activity	Date	Rating	Faculty's signature	Feedback	Student's signature

Rating: *Below Expectations (B) – less than 50 %; Meets Expectations (M) – 51 to 70 %; Exceeds Expectations (E) – above 70 %.*

Formative Assessment
(Written test/ MCQs/ Viva Voce/ Quiz/ Debate etc)

Sl No.	Name of Activity	Date	Rating	Faculty's signature	Feedback	Student's signature

Rating: *Below Expectations (B) – less than 50 %; Meets Expectations (M) – 51 to 70 %; Exceeds Expectations (E) – above 70 %.*

Attendance at the end of MBBS Phase II

Percentage of classes attended				*Student's signature*	*Faculty's signature*
Lecture	*SGD*	*SDL*	*AETCOM*		

Internal Assessment (IA)

Sl. No.	*Type of Assessment*	*Date of Assessment*	*Total marks*	*Marks scored*	*Student's signature*	*Faculty's signature*

In theory marks, certain weightage can be given to up-to-date entries of logbook, AETCOM module reflection, Showing Professionalism during the course, etc.
In practical marks, certain weightage can be given to acquisition of skills and up-to-date entries of practical record book.

ACTIVITIES DONE IN

MBBS PHASE III, Part I

<u>Seminars, Tutorials, Projects, Case discussion, Debate, Quiz etc</u>

Sl No.	**Name of Activity**	**Date**	**Completed (C) /Repeat (R)**	**Faculty's signature**

Seminars, Tutorials, Projects, Case discussion, Debate, Quiz etc

Sl No.	Name of Activity	Date	Completed (C) /Repeat (R)	Faculty's signature

Seminars, Tutorials, Projects, Case discussion, Debate, Quiz etc

Sl No.	Name of Activity	Date	Completed (C) /Repeat (R)	Faculty's signature

Seminars, Tutorials, Projects, Case discussion, Debate, Quiz etc

Sl No.	Name of Activity	Date	Completed (C) /Repeat (R)	Faculty's signature

Seminars, Tutorials, Projects, Case discussion, Debate, Quiz etc

Sl No.	Name of Activity	Date	Completed (C) /Repeat (R)	Faculty's signature

Skill / Practical Sessions, Postmortem/ Clinical case observation

Sl No.	Name of Activity	Date	Completed (C) /Repeat (R)	Faculty's signature

Skill / Practical Sessions, Postmortem/ Clinical case observation

Sl No.	Name of Activity	Date	Completed (C) /Repeat (R)	Faculty's signature

Skill / Practical Sessions, Postmortem/ Clinical case observation

Sl No.	Name of Activity	Date	Completed (C) /Repeat (R)	Faculty's signature

Skill / Practical Sessions, Postmortem/ Clinical case observation

Sl No.	Name of Activity	Date	Completed (C) /Repeat (R)	Faculty's signature

Skill / Practical Sessions, Postmortem/ Clinical case observation

Sl No.	Name of Activity	Date	Completed (C) /Repeat (R)	Faculty's signature

Skill / Practical Sessions, Postmortem/ Clinical case observation

Sl No.	Name of Activity	Date	Completed (C) /Repeat (R)	Faculty's signature

Self-directed learning

Name of the topic:

Objectives:

1.

2.

3.

4.

Reflective narration:

1. What did you learn from the above session?
2. How do you apply your knowledge in a medical / medicolegal situation?
3. What knowledge or skill do you need to develop to handle similar situation in future?

Signature of Faculty

Self-directed learning

Name of the topic:

Objectives:

1.

2.

3.

4.

Reflective narration:

1. What did you learn from the above session?
2. How do you apply your knowledge in a medical / medicolegal situation?
3. What knowledge or skill do you need to develop to handle similar situation in future?

Signature of Faculty

Self-directed learning

Name of the topic:

Objectives:

1.
2.
3.
4.

Reflective narration:

1. What did you learn from the above session?
2. How do you apply your knowledge in a medical / medicolegal situation?
3. What knowledge or skill do you need to develop to handle similar situation in future?

Signature of Faculty

Self-directed learning

Name of the topic:

Objectives:

1.
2.
3.
4.

Reflective narration:

1. What did you learn from the above session?
2. How do you apply your knowledge in a medical / medicolegal situation?
3. What knowledge or skill do you need to develop to handle similar situation in future?

Signature of Faculty

Self-directed learning

Name of the topic:

Objectives:

1.
2.
3.
4.

Reflective narration:

1. What did you learn from the above session?
2. How do you apply your knowledge in a medical / medicolegal situation?
3. What knowledge or skill do you need to develop to handle similar situation in future?

Signature of Faculty

Self-directed learning

Name of the topic:

Objectives:

1.
2.
3.
4.

Reflective narration:

1. What did you learn from the above session?
2. How do you apply your knowledge in a medical / medicolegal situation?
3. What knowledge or skill do you need to develop to handle similar situation in future?

Signature of Faculty

Self-directed learning

Name of the topic:

Objectives:

1.
2.
3.
4.

Reflective narration:

1. What did you learn from the above session?

2. How do you apply your knowledge in a medical / medicolegal situation?

3. What knowledge or skill do you need to develop to handle similar situation in future?

Signature of Faculty

AETCOM Session

Module number:

Name of the topic:

Objectives:

1.
2.
3.

4.

Reflective narration:

1. What did you learn from this AETCOM session?
2. How do you apply the knowledge gained in a medical / medicolegal situation?
3. What skill do you need to develop to handle a real situation in future?

Signature of Faculty

AETCOM Session

Module number:

Name of the topic:

Objectives:

1.

2.

3.

4.

Reflective narration:

1. What did you learn from this AETCOM session?
2. How do you apply the knowledge gained in a medical / medicolegal situation?
3. What skill do you need to develop to handle a real situation in future?

Signature of Faculty

AETCOM Session

Module number:

Name of the topic:

Objectives:

1.

2.

3.

4.

Reflective narration:

1. What did you learn from this AETCOM session?
2. How do you apply the knowledge gained in a medical / medicolegal situation?
3. What skill do you need to develop to handle a real situation in future?

Signature of Faculty

AETCOM Session

Module number:

Name of the topic:

Objectives:

1.

2.

3.

4.

Reflective narration:

1. What did you learn from this AETCOM session?
2. How do you apply the knowledge gained in a medical / medicolegal situation?
3. What skill do you need to develop to handle a real situation in future?

Signature of Faculty

Formative Assessment
(Written test/ MCQs/ Viva Voce/ Quizzes/ Debate etc)

Sl No.	Name of Activity	Date	Rating	Faculty's signature	Feedback	Student's signature

Rating: *Below Expectations (B) – less than 50 %; Meets Expectations (M) – 51 to 70 %; Exceeds Expectations (E) – above 70 %.*

Formative Assessment
(Written test/ MCQs/ Viva Voce/ Quizzes/ Debate etc)

Sl No.	Name of Activity	Date	Rating	Faculty's signature	Feedback	Student's signature

Rating: *Below Expectations (B) – less than 50 %; Meets Expectations (M) – 51 to 70 %; Exceeds*

Expectations (E) – above 70 %.

Formative Assessment
(Written test/ MCQs/ Viva Voce/ Quizzes/ Debate etc)

Sl No.	Name of Activity	Date	Rating	Faculty's signature	Feedback	Student's signature

Rating: *Below Expectations (B) – less than 50 %; Meets Expectations (M) – 51 to 70 %; Exceeds Expectations (E) – above 70 %.*

Attendance at the end of MBBS Phase III, Part I

Percentage of classes attended				*Student's signature*	*Faculty's signature*
Lecture	*SGD*	*SDL*	*AETCOM*		

Internal Assessment (IA)

Sl. No.	*Type of Assessment*	*Date of Assessment*	*Total marks*	*Marks scored*	*Student's signature*	*Faculty's signature*

In theory marks, certain weightage can be given to up-to-date entries of logbook, AETCOM module reflection, Showing Professionalism during the course, etc.
In practical marks, certain weightage can be given to acquisition of skills and up-to-date entries of practical record book.

FINAL ATTENDANCE

Phase	*Percentage of classes attended*			*Eligible for University examination (Yes / No)*	*Student's signature*	*Faculty's signature*
	Theory	*Practical*	AETCOM			
Attendance at the end of MBBS Phase II				Not applicable		
Attendance at the end of MBBS Phase III (Part I)						

FINAL INTERNAL ASSESSMENT MARKS

Sl. No.	*Type of Assessment*	*Total marks*	*Marks scored*	*Student's signature*	*Faculty's signature*
1	Theory				
2	Practical				

<u>Achievements, Awards, Conference/ CME/ Workshop attended</u>
(Related to Forensic Medicine and Toxicology)

Sl	**Date**	**Particulars**	**Faculty's**

No.			signature

ACTIVITIES DONE

During Internship

Skills in Forensic medicine& Toxicology

Skill	Observed		Assisted		Done under Supervision		Able to do independently		Remarks/ Comments
	Date	No	Date	No	Date	No	Date	No	
Documentation and certification of trauma(I)									
Diagnosis and certification of death (D)									
Legal documentation related to emergency cases (D)									
Legal documentation related to emergency cases (D)									

Certification of medical-legal cases - Age estimation,. (D)									
Certification of medical-legal cases - sexual violence etc. (D)									
Certification of medical-legal cases - sexual violence etc. (D)									
Establishing communication in medico-legal cases with police, (D)									
Establishing communication in medico-legal cases with public health authorities, (D)									
Establishing communication in medico-legal cases with other concerned departments (D)									
Skill	**Observed**		**Assisted**		**Done under Supervision**		**Able to do independently**		**Remarks/ Comments**
	Date	**No**	**Date**	**No**	**Date**	**No**	**Date**	**No**	
Prerequisites, Conduction and Opinion writing in Medicolegal Autopsy (D)									
Prerequisites, Conduction and Opinion writing in Medicolegal Autopsy (D)									
Prerequisites, Conduction and Opinion writing in Medicolegal Autopsy (D)									
Prerequisites, Conduction and Opinion writing in Medicolegal Autopsy (D)									

Prerequisites, Conduction and Opinion writing in Medicolegal Autopsy (D)									
Prerequisites, Conduction and Opinion writing in Medicolegal Autopsy (D)									
Prerequisites, Conduction and Opinion writing in Medicolegal Autopsy (D)									

Annexure

Model Question papers

Sri Siddhartha Academy of Higher Education, Tumkur

Forensic Medicine & Toxicology

QP Code – XXXXX

Answer all questions, Illustrate your answer with diagrams wherever relevant
Max Marks 100 (This Question paper has XX pages) Max Time 3 hours
Long Essay: (10 M X 2 = 20 M)

1. A 30 year old agricultural labourer was brought to emergency department of the hospital with symptoms of excessive salivation, tears in the eyes, blurred vision, frequent urination, diarrhea and difficulty in breathing. Relatives accompanying him give history of hespraying some fluid in the fields when they saw him collapsed at the field. The doctor on examination found smell of kerosene emitting from mouth and nostrils, miosis, hypotension, bradycardia.
   a) What is the probable diagnosis of poisoning? Give reasons **2M**
   b) What is the mechanism of action in such poisoning for the expression of different signs and symptoms **2M**
   c) Describe the management of such poisoning cases. **2M**
   d) Describe the postmortem examination features in such poisoning case deaths. **2M**
   e) Describe the Medicolegal importance of such poisoning cases **2M**

2. Classify changes after death. Describe in detail about the mechanism of action, factors affecting, medicolegal importance and conditions mimicking Rigor mortis.

(2+2+2+2+2= 10M)

Short Essay: (5 M X 6= 30 M)

3. The Police found a human hand in a dust bin with intact fingers and tissues without any decomposition. How to identify the owner of this hand by examining the skin findings of the finger

tips only? Describe in detail about this method of identification. What is the medicolegal importance of such method of identification? **(1+2+2= 5M)**

4. Describe in detail the procedure of calculation of time since death by use of features of late changes after death in a dead body. **5M**

5. Describe in detail the procedure of medicolegal autopsy in a case of Custodial death as per NHRC (National Human Rights Commission) guidelines. **5M**

6. Describe the mechanism of action, clinical features, management, postmortem findings and medicolegal aspects of chronic lead poisoning **(1+1+1+1+1= 5M)**

7. Describe the mechanism of action, clinical features, management, postmortem findings and medicolegal aspects of Organophosphorus poisoning **(1+1+1+1+1= 5M)**

8. Define Professional Misconduct, Enlist four examples. What is the disciplinary procedure in such cases by State medical Council? **(1+2+2= 5M)**

Short Answer: (3 M X 10 = 30 M)

9 Define Rape under Section 375 IPC **3M**

10. Descibe the entry wound of a Rifled firearm of a contact shot over the temple region of skull **3M**

11. Name three poisons which can be identified by their characteristic smell / odour in a poisoned person. (Both Poison name and characteristic smell / odour has to be written) **(1+1+1= 3M)**

12. Describe the changes brought out by the MTP Amendment Act of 2021 **3M**

13. What is Privileged Commmunication, Describe with examples **3M**

14. What constitutes Res ipsa loquitor, Describe with examples **3M**

15. Describe the Rights of a registered medical practitioner **3M**

16. Describe three differences between True insanity and Feigned insanity **3M**

17. Describe three acts of Omission for causing Infanticide **3M**

18. Describe three differences between Dying Declaration and Dying Deposition **3M**

MCQ (Multiple choice questions): (1M X 10 = 10 M)

219 .

i. Kleptomania is an example of ……. disorder
a) Delusion b) Impulse c) Hallucination d) Insomnia

ii. Luminal test is used to identify stains of
a) Blood b) Semen c) Feces d) Saliva

iii. Diagnosis of COMA in a dead person is alsoknown as
a) Moment of death b) Mode of death c) Cause of death d) Manner of death

iv. Oochronosis is seen in poisoning of
a) Formic acid b) Nitric acid c) Oxalic acid d) Carbolic acid

v. N-acetyl Cysteine is used as antidote in the poisoning of
a) Paraquat b) Phosphorus c) Paracetomol d) Paraldehyde

22.

i. Certifying Compos mentis by the doctor is done by examining
a) Bicep reflex b) Patellar reflex c) Babinski sign d) Higher mental functions

ii. Suspended animation is also known as
a) Apparent death b) Brain death c) Sudden death d) Instantaneous death

iii. Brush burn is also known as
a) Scalds b) Joule burn c) Dermabrasion d) Grazed abrasion

iv. Penal erasure means
a) Punishment under IPC b) Professional death sentence c) Judicial hanging d) Marking Nut

v. Locard's method is also known as
a) Poroscopy b) Rugoscopy c) Cheiloscopy d) Palatoscopy

CompetencyBased Medical Education

MBBS

Phase III , Part I

CommunityMedicine

(a) **Competencies**:The learner must demonstrate:

1. Understanding of physical, social, psychological, economic and environmental determinants of healthand disease,
2. Ability to recognize and manage common health problems including physical, emotional and social aspects at individual, family and community level in the context of National Health Programmes
3. AbilitytoImplementandmonitorNationalHealthProgrammesintheprimarycaresetting
4. Knowledgeofmaternalandchildwellnessastheyapplytonationalhealthcareprioritiesandprogrammes,
5. Ability to recognize, investigate, report, plan and manage community health problems including malnutrition and emergencies.

(b) **Integration**: The teaching should be aligned and integrated **horizontally** and vertically in order to allow thelearner to understand the impact of environment, society and national health priorities as they relate to thepromotionofhealthandpreventionandcureofdisease.

TEACHINGMETHODS&HOURS

	Large groupTeaching	**Smallgroupteaching/Practical /Tutorials**	**SDL**	AETCOM	**Total**	**Clinical/Field Posting**
1st Professional	20hours	27hours	5hours	-	52hours	-
2nd Professional	20 hours	30hours	10hours	7hours	60 hours	4weeks
3rd Professional	40 hours	60hours	5hours	-	105hours	6weeks
Total	80 hours	117hours	20 hours	7 hours	217hours	10weeks

COMMUNITY MEDICINE SYLLABUS FOR FIRST PROFESSIONAL YEAR

Sl no	TOPIC	LECTURE	SGD/DOAP	SDL	TOT HOURS
1	Concept of Health and Disease (CM 01)	8	13	1	22
2	Relationship of social and behavioural to health and disease (CM 02)	4	3	1	8
3	Nutrition (CM 05)	5	7	2	14
4	Demography and vital statistics (CM 09)	3	4	1	8
	TOTAL HOURS	**20**	**27**	**5**	**52**
	***AETCOM**	**8 HRS**			
	INTEGRATION / AETCOM SUPERVISION				

COMMUNITY MEDICINE SYLLABUS FOR SECOND PROFESSIONAL YEAR

Sl no	TOPIC	LECTURE	SGD/DOAP	SDL	TOTAL HOURS
1	Environmental health problems (CM 3)	2	19	2	23
2	Epidemiology (CM 7)	10	8	2	20
3	Occupational Health (CM 11)	4	0	1	5
4	Disaster Management (CM 13)	2	0	2	4
5	Mental Health (CM 15)	0	2	2	4
6	International health (CM 18)	2	0	0	2
7	Essential Medicine (CM 19)	0	1	1	2
	TOTAL HOURS	**20**	**30**	**10**	**60**

- The number of hours mentioned above are rough guidelines that can be modified to Suit the specific requirements of a medical college.
- It is recommended that didactic teaching be restricted to less than one third of the total time allotted for that discipline.
- Greater emphasis is to be laid on hands-on training, symposia, seminars, small group discussions, problem-oriented and problem-based discussions and self-directed learning.
- Students must be encouraged to take active part in and shared responsibility for their Learning.

COMMUNITY MEDICINE SYLLABUS FOR THIRD PROFESSIONAL YEAR

Sl no	TOPIC	LECTURE	SGD/ DOAP	SDL	TOTAL HOURS
1	Principles of health promotion and education (CM 04)	03	0	0	03
2	Basic statistics and its applications (CM 06)	0	12	0	12
3	Epidemiology of communicable and non-communicable diseases (CM 08)	15	30	01	46
4	Reproductive maternal and child health (CM 10)	10	10	01	21
5	Geriatric services (CM 12)	01	02	0	03
6	Hospital waste management (CM 14)	01	02	01	04
7	Health planning and management (CM 16)	02	02	0	04
8	Health care of the community (CM 17)	06	0	01	07
9	Recent advances in Community Medicine (CM 20)	02	02	01	05
	TOTAL HOURS	**40**	**60**	**05**	**105**

Sl no	Topic
1	Concept of Health and Disease (CM 01)
2	Relationship of social and behavioural to health and disease (CM 02)
3	Environmental health problems (CM 3)
4	Principles of health promotion and education (CM 04)
5	Nutrition (CM 05)
6	Basic statistics and its applications (CM 06)
7	Epidemiology (CM 7)
8	Epidemiology of communicable and non- communicable diseases (CM 08)
9	Demography and vital statistics (CM 09)
10	Reproductive maternal and child health (CM 10)
11	Occupational Health (CM 11)
12	Geriatric services (CM 12)
13	Disaster Management (CM 13)
14	Hospital waste management (CM 14)
15	Mental Health (CM 15)
16	Health planning and management (CM 16)
17	Health care of the community (CM 17)
18	International health (CM 18)
19	Essential Medicine/Integration (CM 19)
20	Recent advances in Community Medicine (CM 20)

ASSESSMENT/UNIVERSITYEXAMINATION

Summative Assessment - An assessment conducted at the end of instruction to check how much the studenthaslearnt.

Formative Assessment - An assessment conducted during the instruction with primary purpose of providingfeedbackforimprovinglearning.

Internal assessment – Range of assessments conducted by the teacher teaching a particular

subject with thepurposeofknowingwhatislearnt.Internalassessmentcanhavebothformativeand summative functions.

Note - Assessment requires specification of measurable and observable entities. This could be in the form ofwhole tasks that contribute to one or more competencies or assessment of a competency per se. Anotherapproach is to break down the individual competency into learning objectives related to the domains ofknowledge,skills, attitudes, communication etc.and then assess themindividually.

SchedulingofInternalAssessment-doneonceattheendofeachprofessionalyear

TheoryIAcaninclude: Writtentestsshouldhaveessayquestions,shortnotes,andcreativewritingexp eriences.

Practical IA can include: Spotters, Problem solving exercises, Objective Structured Practical/ClinicalExamination(OSPE/OSCE),Clinicosocialcasediscussion,andrecordsmaintena nceandlogbookassessment.

AssessmentofLog-book-

Logbookshouldrecordallacademicandcurricularactivitieslikeseminar,symposia, and quizzes. It should be assessed regularly and submitted to the department. Marks should beallotted for logbookassessment and should beincluded as a part of formative assessment marks underpractical's

Assessment of Practical Record book- Practical book should record all skills and other practical exercisesdone during the academic programme. It should be assessed regularly and submitted to the department. Marksshould be allotted for practical record and should be included as a part of formative assessment marks underpractical's

Assessment for AETCOM will include: - Written tests comprising of short notes and creative writingexperiencesonlyin internal assessment.

INTERNALASSESSMENT

- There will be 3 internal assessment examinations in Community Medicine. The structure of the internalassessmentexaminations should belikethestructureofUniversityexaminations.
- Itis mandatoryforthestudentstoappearforalltheinternalassessmentexaminations.
- First internal assessment examination will be held at the end of 1st professional, second internal assessmentexamination will be held at the end of 2ndprofessional and 3rdinternal assessment examination will be heldattheend of3rdprofessional asper University Pattern.
- Pattern of first and second Internal Assessment are left to the discretion of the individual institute. However, third internal assessment as to be conducted in the same pattern of the University exam
- Additional internal assessment examination for absent students can be considered due to genuine reason afterapproval by the head of the department. It should be taken before the submission of internal assessment marks to the University.
- Internal assessment marks allotment for theory and practical for the first and second internal assessment areleft to the discretion of the respective institutes. Marks allotted in the third (final) Internal Assessment should be preferably for 100 marks each for Theory and Practical.
- 20% of the internal assessment marks should be from Formative Assessment in Practical internalassessment

 Feedback in Internal Assessment - Feedback should be provided to students throughout the course so that theyare aware of their performance and remedial action can be initiated well in time. The feedbacks need to bestructuredand thefacultyandstudents must besensitized to givingandreceivingfeedback.

 The results of IA should be displayed on notice board within two weeks of the test and an opportunityprovidedto the studentsto discusstheresults and get feedback onmakingtheir performancebetter.

 It is also recommended that students should sign with date whenever they are shown IA records in token ofhavingseenand discussed the marks.

 Internal assessment marks will not be added to University examination marks and will reflect as a separateheadof passingat thesummative examination.

 Internalassessmentshouldbebasedoncompetenciesandskills.

 Criteria for appearing in University examination: Learners must secure at least 50% marks of the total marks(combined in theory and practical; not less than 40 % marks in theory and practical separately) assigned forinternalassessment in order to beeligibleforappearingat thefinal Universityexamination.

 Averagemarksobtainedinallthreeinternalassessmentsshould becalculatedto40 marks.

 A candidate who has not secured requisite aggregate in the internal assessment may be subjected to remedialassessment by the institution. If he/ she successfully complete the same, he/she is eligible to appear forUniversity Examination. Remedial assessment shall be completed before submitting the internal assessmentmarksonline to the University.

Annexures

BlueprintforTheoryandPracticalassessment

SCHEMEOFEXAMINATION

Internal assessment

TABLE SHOWING SCHEME FOR CALCULATION OF INTERNAL EXAMINATION MARKS

	First Theory IA	**Second Theory IA**	**Third Theory IA ***
Theory paper Marks	80	80	Paper 1- 100 Marks Paper 2- 100Marks
Periodic test 1	5	5	NIL
Periodic test 2	5	5	NIL
Periodic test 3	5	5	NIL
Professionalism	5	5	NIL
Total Marks	100	100	200

THEORY INTERNAL ASSESSMENT

Note: * Subjects having single paper will have one paper for 100 marks only.

**** Subjects taught in more than one year will have an theory IA in each year also**

PRACTICALS INTERNAL ASSESSMENT

	First Practical IA	**Second Practical IA**	**Third Practical IA**
Marks	80	80	100 (University pattern, including viva voce)
Formative Assessment	20 (record+ log book)	20 (record+ log book)	NIL
Total	100	100	100

****Subjects with clinical postings in more than one year will have an end-of-posting after each clinical posting in addition**

3.Guidelines for Remedial measures for students who are unable to score qualifying marks and attendance :

Academic council of respective institutes / Colleges to provide the guidelines for remedial measures

GENERALINSTRUCTIONS

- Questionsineachpapershouldbeasperdistributionofcompetenciesineachprofessionalyear.
- TheSLOtobereferredwhilesettingthequestionpaper
- Repetitionofquestionsfrom thesameSLOto beavoided
- Themarksallottedtothe different topics &sectionstobeadhered
- Therewillbe at least one question onAETCOM in thetheorypapers.
- Internalassessment needs to be for 40marks in theory and 40marks for Practical
- Internalassessment fortheorymayconstituteLongessay, Short essay,and short answers
- 20%oftheinternalassessmentmarkswillbecontributedbyformativeassessmentinboththeory
- Total internal assessment marks of 40 will be 32 for internal assessment and 8 for formative assessment conducted. (32+8=40)
- Marks allocated for record and logbook maintenance will be added to practical internal

assessmentmarks.

FORMATIVEASSESSMENT

- CBMEmandatesconductofformativeassessments, institutionscanconductformativeassessments as per their convenience however the formative assessment would contribute towardstheinternal assessments.
- Institutions can select from the suggested methods of formative assessment that are given belowhowever theinstitutions can adapt methods that complywith that of theMCIregulations.
- Feedback to students regarding formative assessment have to be documented and should be thebasisformarkallocation.
- The logbook in community medicine is a record of all activities of the students. Allcompetenciesat a "Shows How" level in the Miller's pyramid should be documented in the logbook. In addition,logbook also contains documentation of attendance, involvement in departmental academic andextracurricular activities and feedback given to the student. The logbook should be signed byfacultyona regular basis.Atotalof 10 marksshouldbe allotted to logbookinthe secondprofessionalyear. Thisshould bereduced andadded to formativeassessment marks.
- The practical record in community medicine contains documentation of the practical sessions headduring the course.A total of 10 marks should be allotted to practical record and should be reducedandadded to formativeassessment marks inthe second professionalyear.
- SuggestedmethodsforFormativeAssessmentsare:
    - MCQs
    - Essays
    - Assignments
    - Seminarpresentations
    - Projectwork
    - OSCE
    - OSPE

UniversityExaminationMarks

Total marks	UniversityExaminationMarks			Internal Assessment	
	Theory	Clinical/ Practical	Viva	Theory	Practical
Theory Two papers 200 Practicals 80	Paper1=100 Paper2=100 Long Essay 10X2 Short essay 5x6=30 marks Short answer 10x3=30marks MCQs 10x2=10marks	• Case Discussion (35) • Epidemiological Exercises (35) • Spotters (10) **=80**	20	100	100
Passmarks	Mandatory50% in theory and Practical				50% combined in theory and Practical (notlessthan40% in each) for eligibility ofappearing the University Examination

SSAHE

Distribution of Topics/Competencies for Paper 1 & Paper 2 Community Medicine for the University Examination

Paper 1		Paper 2	
Competency No.	**Topic**	**Competency No.**	**Topic**
CM 01	Concept of Health and Disease	**CM 02**	Relationship of social and behavioural to health and disease
CM 03	Environmental health problems	**CM 08**	Epidemiology of communicable and non-communicable diseases
CM 04	Principles of health promotion and education	**CM 10**	Reproductive maternal and child health
CM 05	Nutrition	**CM 12**	Geriatric services
CM 06	Basic statistics and its applications	**CM 13**	Disaster Management
CM 07	Epidemiology	**CM 15**	Mental Health
CM 09	Demography and vital statistics	**CM 16**	Health planning and management
CM 11	Occupational Health	**CM 17**	Health care of the community
CM 14	Hospital waste management	**CM 19**	Essential Medicine
CM 18	International Health	**CM 20**	Recent advances in Community Medicine

Sl No.	Classes	Teaching method	Competency	Integration	Misc.	Assessment
PRINCIPLES OF HEALTH PROMOTION AND EDUCATION (CM 04)						
1	Describe the models of Health education&Describe variousmethodsofhealtheducationwiththeiradvantagesandlimitations	LGT	CM4.1			Written/ Viva-voce
2	Describe the methods of organizing health promotion andeducationand counselingactivitiesatindividualfamilyandcommunity	SGT	CM4.2			Written/ Viva-voce
3	Demonstrateanddescribethestepsinevaluation ofhealthpromotionandeducationprogram	SGT	CM4.3			Written/ Viva-voce/ Skill Assessment
Note: L- Lecture (03); SGD- Small group discussion (00); SDL-Self-directed learning (0)						

	BASIC STATISTICS AND ITS APPLICATIONS [CM 6 - 6.1 TO 6.4]					
1.	Discuss and introduce the topic of biostatistics and its applications. Formulate a research question for a study	SGD -1	CM 6.1	V.I with General Medicine &Paediatrics	Practical	Written/ Viva-voce/ Skill Assessment
2.	Describe and discuss the principles and demonstrate the methods of collection and classification of statistical data	SGD -2	CM 6.2	V.I with General Medicine &Paediatrics	Practical	Written/ Viva-voce/ Skill Assessment
3.	Enumerate, discuss and demonstrate common sampling techniques	SGD -3	CM 6.4	V.I with General Medicine &Paediatrics	Practical	Written/ Viva-voce/ Skill Assessment
4.	Describe and discuss the principles and demonstrate the methods of analysis and interpretation	SGD -4	CM 6.2	V.I with General Medicine &Paediatrics	Practical	Written/ Viva-voce/ Skill Assessment
5.	Describe and discuss the principles and demonstrate the methods of presentation of statistical data using frequency distribution and	SGD -5	CM 6.2 & 6.4	V.I with General Medicine &Paediatrics	Practical	Written/ Viva-voce/ Skill Assessment

	other appropriate methods					
6.	Describe and discuss the elementary statistical methods - central tendency and dispersion	SGD -6	CM 6.4	V.I with General Medicine &Paediatrics	Practical	Written/ Viva-voce/ Skill Assessment
7.	Demonstrate the application of measures of central tendency and dispersion for discrete data	SGD -7	CM 6.4	V.I with General Medicine &Paediatrics	Practical	Written/ Viva-voce/ Skill Assessment
8.	Demonstrate measures of central tendency and dispersion for continuous data	SGD -8	CM 6.4	V.I with General Medicine &Paediatrics	Practical	Written/ Viva-voce/ Skill Assessment
9.	Describe, discuss and demonstrate the application of test of significance in various study designs – normal distribution and significance of '*P*'-value.	SGD -9	CM 6.3	V.I with General Medicine &Paediatrics	Practical	Written/ Viva-voce/ Skill Assessment
10	Demonstrate the application of test of significance for large samples	SGD -10	CM 6.3	V.I with General Medicine &Paediatrics	Practical	Written/ Viva-voce/ Skill Assessment
11	Demonstrate the application of test of significance for small samples	SGD -11	CM 6.3	V.I with General Medicine &Paediatrics	Practical	Written/ Viva-voce/ Skill Assessment
12	Demonstrate the application of test of significance – Chi square test	SGD -12	CM 6.3	V.I with General Medicine &Paediatrics	Practical	Written/ Viva-voce/ Skill Assessment

THIRD PROFESSIONAL YEAR

Sl No.	Classes	Teaching method	Competency	Integration	Misc.	Assessment method
EPIDEMIOLOGY OF COMMUNICABLE AND NON- COMMUNICABLE DISEASES [CM 8 - 8.1 TO 8.7]						
1.	cuss the lessons learnt from Smallpox eradication. cribe and discuss the epidemiological and control measures including the use of essential laboratory tests at the primary care level for Chickenpox.	Lecture-1	CM 8.1	V.I with General Medicine &Paediatrics H.I with Microbiology & Pathology		Written/ Viva-voce
2.	cribe and discuss the epidemiological and control measures including the use of essential laboratory tests at the primary care level for, Mumps and Rubella	Lecture-2	CM 8.1	V.I with General Medicine &Paediatrics H.I with Microbiology & Pathology		Written/ Viva-voce
3.	cribe and discuss the epidemiological and control measures including the use of essential laboratory tests at the primary care level for Influenza	Lecture-3	CM 8.1	V.I with General Medicine &Paediatrics H.I with Microbiology & Pathology		Written/ Viva-voce
4.	cribe and discuss the epidemiological and control measures including the use of essential laboratory tests at the primary care level for Diphtheria, Whooping Cough and Meningococcal Meningitis	Lecture-4	CM 8.1	V.I with General Medicine &Paediatrics H.I with Microbiology & Pathology		Written/ Viva-voce
5.	cribe and discuss the epidemiological and control measures including the use of essential laboratory	SGD-1	CM 8.1 & 8.3	V.I with General Medicine &Paediatrics H.I with Microbiology & Pathology	Epidemiological exercise	Written/ Viva-voce

	tests at the primary care level for Measles and ARI					
6.	cribe and discuss the epidemiological and control measures including the use of essential laboratory tests at the primary care level for SARS including novel Corona Virus.	SGD-2	CM 8.1	V.I with General Medicine &Paediatrics H.I with Microbiology & Pathology	Epidemiological exercise/ CSCD	Written/ Viva-voce
7.	cribe and discuss the epidemiology of TB up to Tuberculin test	SGD-3	CM 8.1	V.I with General Medicine &Paediatrics H.I with Microbiology & Pathology	Epidemiological exercise	Written/ Viva-voce
8.	Describe and discuss the prevention and control measures including the use of essential laboratory tests at the primary care level for Tuberculosis	SGD-4	CM 8.1	V.I with General Medicine &Paediatrics H.I with Microbiology & Pathology	Epidemiological exercise	Written/ Viva-voce
9.	Describe and discuss NTEP	SGD-5	CM 8.1 & 8.3	V.I with General Medicine &Paediatrics H.I with Microbiology &Pathology	Epidemiological exercise & Visit	Written/ Viva-voce
10.	Describe and discuss the epidemiological and control measures including the use of essential laboratory tests at the primary care level for Poliomyelitis	Lecture-5	CM 8.1	V.I with General Medicine &Paediatrics H.I with Microbiology & Pathology		Written/ Viva-voce
11.	Describe and discuss NPSP	SGD-6	CM 8.1 & 8.3	V.I with General Medicine &Paediatrics H.I with Microbiology & Pathology	Epidemiological exercise/ CSCD	Written/ Viva-voce
12.	Describe and discuss the epidemiological and control measures including the use of essential laboratory tests at the primary care level for Viral Hepatitis	Lecture-6	CM 8.1	V.I with General Medicine &Paediatrics H.I with Microbiology & Pathology		Written/ Viva-voce
13.	Describe and discuss the epidemiological and control measures including the use of	SGD-7	CM 8.1 & 8.3	V.I with General Medicine &Paediatrics H.I with Microbiology & Pathology	Epidemiological exercise	Written/ Viva-voce

	essential laboratory tests at the primary care level for Acute Diarrheal Diseases & ADD control Programme					
14.	Describe and discuss the epidemiological and control measures including the use of essential laboratory tests at the primary care level for Cholera, Food Poisoning	SGD-8	CM 8.1	V.I with General Medicine &Paediatrics H.I with Microbiology & Pathology	Epidemiological exercises	Written/ Viva-voce
15.	Describe and discuss the epidemiological and control measures including the use of essential laboratory tests at the primary care level for Typhoid fever	SGD-9	CM 8.1	V.I with General Medicine &Paediatrics H.I with Microbiology & Pathology	CSCD	Written/ Viva-voce
16.	Describe and discuss the epidemiological and control measures including the use of essential laboratory tests at the primary care level for Amoebiasis, Soil Transmitted Helminthiasis &Dracunculiasis with its related programme	Lecture-7	CM 8.1	V.I with General Medicine &Paediatrics H.I with Microbiology & Pathology		Written/ Viva-voce
17.	cribe and discuss the epidemiological and control measures including the use of essential laboratory tests at the primary care level for The Dengue Syndrome	SGD-10	CM 8.1	V.I with General Medicine &Paediatrics H.I with Microbiology & Pathology	Epidemiological exercise	Written/ Viva-voce
18.	Describe and discuss the epidemiology of Malaria till approaches and strategies of malaria control	SGD-11	CM 8.1	V.I with General Medicine &Paediatrics H.I with Microbiology & Pathology	Epidemiological exercise/ CSCD	Written/ Viva-voce
19.	Describe and discuss the control measures including the use of essential laboratory tests at the primary care	SGD-12	CM 8.1	V.I with General Medicine &Paediatrics H.I with Microbiology & Pathology	Epidemiological exercise/ CSCD	Written/ Viva-voce

	level for malaria control including the diagnosis and treatment of malaria in India as per 2013 guidelines					
20.	cribe and discuss the control measures including the use of essential laboratory tests at the primary care level for Lymphatic Filariasis and National filarial control programme	Lecture-8	CM 8.1	V.I with General Medicine &Paediatrics H.I with Microbiology & Pathology		Written/ Viva-voce
21.	cribe and discuss the control measures including the use of essential laboratory tests at the primary care level for Japanese encephalitis, Chikungunya, Yellow Fever, Zika Virus disease	Lecture-9	CM 8.1	V.I with General Medicine &Paediatrics H.I with Microbiology & Pathology		Written/ Viva-voce
22.	cribe and discuss the control measures including the use of essential laboratory tests at the primary care level for KFD	SGD-13	CM 8.1	V.I with General Medicine &Paediatrics H.I with Microbiology & Pathology	Epidemiological exercise	Written/ Viva-voce
23.	cribe and discuss the epidemiological and control measures including the use of essential laboratory tests for Nipah Virus, Brucellosis and Human Salmonellosis	Lecture-10	CM 8.1	V.I with General Medicine &Paediatrics H.I with Microbiology & Pathology		Written/ Viva-voce
24.	cribe and discuss the epidemiological and control measures including the use of essential laboratory tests for Rabies	SGD-14	CM 8.1	V.I with General Medicine &Paediatrics H.I with Microbiology & Pathology	Epidemiological exercise	Written/ Viva-voce
25.	cribe and discuss the epidemiological and control measures including the use of essential laboratory tests for Leptospirosis,	Lecture-11	CM 8.1	V.I with General Medicine &Paediatrics H.I with Microbiology & Pathology		Written/ Viva-voce

	Plague, Rickettsialdiseases					
26.	cribe and discuss the epidemiological and control measures including the use of essential laboratory tests for Trachoma and Tetanus	SGD-15	CM 8.1	V.I with General Medicine &Paediatrics H.I with Microbiology & Pathology	Epidemiological exercise	Written/ Viva-voce
27.	cribe and discuss the epidemiological and control measures including the use of essential laboratory tests for Taeniasis, Hydatid disease and Leishmaniasis	Lecture-12	CM 8.1	V.I with General Medicine &Paediatrics H.I with Microbiology & Pathology		Written/ Viva-voce
28.	cribe and discuss the epidemiologyof Leprosy till diagnosis	SGD-16	CM 8.1	V.I with General Medicine &Paediatrics H.I with Microbiology & Pathology	Epidemiological exercise/ CSCD	Written/ Viva-voce
29.	cribe and discuss the epidemiological and control measures for Leprosy and describe and discuss NLEP	SGD-17	CM 8.1 & 8.3	V.I with General Medicine &Paediatrics H.I with Microbiology & Pathology	Epidemiological exercise/ CSCD	Written/ Viva-voce
30.	cribe and discuss the epidemiological and control measures including the use of essential laboratory tests for STD along with syndromic approach	SGD-18	CM 8.1 & 8.3	V.I with General Medicine &Paediatrics H.I with Microbiology &Pathology	Epidemiological exercise	Written/ Viva-voce
31.	cribe and discuss the epidemiological and control measures including the use of essential laboratory tests for endemic treponematosis – Yaws eradication programme	Lecture-13	CM 8.1	V.I with General Medicine &Paediatrics H.I with Microbiology & Pathology		Written/ Viva-voce
32.	cribe and discuss the epidemiology of HIV/AIDS including the use of essential laboratory tests	SGD-19	CM 8.1	V.I with General Medicine &Paediatrics H.I with Microbiology & Pathology	Epidemiological exercise	Written/ Viva-voce
33.	cribe and discuss the epidemiological and control measures for	SGD-20	CM 8.1	V.I with General Medicine &Paediatrics H.I with Microbiology	Epidemiological exercise	Written/ Viva-voce

	HIV/AIDS			& Pathology		
34.	cribe and discuss NACP	SGD-21	CM 8.1 & 8.3	V.I with General Medicine &Paediatrics H.I with Microbiology & Pathology	Epidemiological exercise	Written/ Viva-voce
35.	cribe and discuss emerging and re-emerging Infectious diseases.	SGD-22	CM 8.1	V.I with General Medicine &Paediatrics H.I with Microbiology & Pathology	Epidemiological exercise	Written/ Viva-voce
36.	cribe and discuss Hospital acquired infections	SGD-23	CM 8.1	V.I with General Medicine &Paediatrics H.I with Microbiology & Pathology	Epidemiological exercise	Written/ Viva-voce
37.	cribe and discuss the epidemiological and control measures including the use of essential laboratory tests for Cardiovascular diseases and Coronary heart disease	SGD-24	CM 8.2	V.I with General Medicine	Epidemiological exercise/ CSCD	Written/ Viva-voce
38.	cribe and discuss the epidemiological and control measures including the use of essential laboratory tests for Diabetes Mellitus and Obesity	SGD-25	CM 8.2	V.I with General Medicine	Epidemiological exercise/ CSCD	Written/ Viva-voce
39.	cribe and discuss the epidemiological and control measures including the use of essential laboratory tests for Hypertension	SGD-26	CM 8.2	V.I with General Medicine	Epidemiological exercise/ CSCD	Written/ Viva-voce
40.	cribe and discuss the epidemiological and control measures including the use of essential laboratory tests for Stroke, RHD and Cancer	Lecture-14	CM 8.2	V.I with General Medicine		Written/ Viva-voce
41.	cribe and discuss NPCDCS	Lecture-15	CM 8.2 & 8.3	V.I with General Medicine		Written/ Viva-voce
42.	cribe and discuss the epidemiological and control measures forVisual Impairment and Blindness along with control programme	SGD-27	CM 8.2 & 8.3	V.I with General Medicine	Epidemiological exercise	Written/ Viva-voce

43.	cribe and discuss the epidemiological and control measures for Accidents and Injuries	SGD-28	CM 8.2	V.I with General Medicine	Epidemiological exercise	Written/ Viva-voce
44.	Describe and discuss the principles of planning, implementing and evaluating control measures for disease at community level bearing in mind the public health importance of the disease	SGD-29	CM 8.5	V.I with General Medicine &Paediatrics	PBL	Written/ Viva-voce
45.	Describe the principles of management of information systems.	Lecture-16	CM 8.7			Written/ Viva-voce
46.	Educate and train health workers in disease surveillance, control & treatment and health education.	SGD-30	CM 8.6		Family Study	Skill-assessment
47.	Observe the reporting of IDSP in our hospital and health centres	SDL-1	CM 8.6		Assignment	Written/ Viva-voce

Note: SGD- Small group discussion (12)

Note: L- Lecture (15); SGD- Small group discussion (30); SDL-Self-directed learning (1)

Sl No.	Classes	Teaching method	Competency	Integration	Misc.	Assessment method
REPRODUCTIVE MATERNAL AND CHILD HEALTH [CM 10 - 10.1 TO 10.9]						
1.	Describe the current status of Reproductive, maternal, newborn and Child Health	Lecture-1	CM 10.1	V.I with OBG &Paediatrics		Written/ Viva-voce
2.	Enumerate and describe the methods of screening high risk groups and common health problems	Lecture-2	CM 10.2	V.I with OBG &Paediatrics		Written/ Viva-voce
3.	Describe local customs and practices during pregnancy, childbirth, lactation and child feeding practices	SGD-1	CM 10.3	V.I with OBG &Paediatrics	Family Study	Written/ Viva-voce

4.	Describe the reproductive, maternal, newborn& child health (RMNCH); child survival and safe motherhood interventions	SGD-2	CM 10.4	V.I with OBG &Paediatrics	CSCD	Written/ Viva-voce
5.	Describe Universal Immunization Program; Integrated Management of Neonatal and Childhood Illness (IMNCI) and other existing Program including RBSK, BFHI, IYCF	SGD-3	CM 10.5	V.I with Paediatrics	Epidemiological exercise	Written/ Viva-voce
6.	Observe and classify neonatal and childhood illnesses in our hospital/ health centres according to IMNCI	SDL-1	CM 10.5	V.I with Paediatrics	Assignment	Written/ Viva-voce
7.	Describe the physiology, clinical management and principles of adolescent health including ARSH, RKSK, WIFS	SGD-4	CM 10.8		Tutorial	Written/ Viva-voce
8.	Describe and discuss gender issues and women empowerment including gender bias	SGD-5	CM 10.9		Tutorial	Written/ Viva-voce
9.	Describe and discuss NRHM	SGD-6	CM 10.5	V.I with Paediatrics	Tutorial	Written/ Viva-voce
10.	Describe and discuss NUHM	SGD-7	CM 10.5	V.I with Paediatrics	Tutorial	Written/ Viva-voce
11.	Describe and discuss NHM	Lecture-3	CM 10.5	V.I with Paediatrics		Written/ Viva-voce
12.	Describe and discuss Ayushman Bharat	Lecture-4	CM 10.5	V.I with Paediatrics		Written/ Viva-voce
13.	Describe and discuss INAP	Lecture-5	CM 10.5	V.I with Paediatrics		Written/ Viva-voce
14.	Describe and discuss various public health legislations MTP Act and PNDT Act, PFA Act and CP Act	SGD-8	CM 10.5 & 20.4	V.I with Paediatrics	Tutorial	Written/ Viva-voce
15.	Describe and discuss School health program	Lecture-6	CM 10.4 & 10.5	V.I with OBG &Paediatrics		Written/ Viva-voce
16.	Describe and discuss	Lecture-7	CM	V.I with OBG		Written/

	Behavioral problems and Handicapped children and ICF		10.4 & 10.5	&Paediatrics		Viva-voce
17.	Describe and discuss prevention of congenital malformations and describe and discuss rights of persons with disabilities bill-2016,	Lecture-8	CM 10.4	V.I with OBG &Paediatrics		Written/ Viva-voce
18.	Describe and discuss children in difficult circumstances, battered baby syndrome, the children act 1960 and National policy for children, rights of women and children	Lecture-9	CM 10.4	V.I with OBG &Paediatrics		Written/ Viva-voce
19.	Describe and discuss Juvenile delinquency and Juvenile justice act 1986, 2000 & 2015	Lecture-10	CM 10.4	V.I with OBG &Paediatrics		Written/ Viva-voce
20.	Describe and discuss Street children, Refugee and displaced children, Child labor and child exploitation, child trafficking, child marriage, Child abuse	SGD-9	CM 10.4	V.I with OBG &Paediatrics	Tutorial	Written/ Viva-voce
21.	Describe and discuss Child guidance clinic and child placement	SGD-10	CM 10.4	V.I with OBG &Paediatrics	Tutorial	Written/ Viva-voce
22.	Describe and discuss MNP and 20 pointprogramme	Lecture-11	CM 10.5	V.I with Paediatrics		Written/ Viva-voce
23.	Describe and discuss tribal Health	Lecture-12	CM 10.4 & 10.5	V.I with OBG &Paediatrics		Written/ Viva-voce

Note: L- Lecture (10); SGD- Small group discussion (10); SDL-Self-directed learning (1)

Sl No.	**Classes**	**Teaching method**	**Competency**	**Integration**	**Misc.**	**Assessment**
GERIATRIC SERVICES [CM 12 - 12.1 TO 12.4]						

1.	Define and describe the concept of Geriatric services	Lecture-1	CM 12.1	V.I with General Medicine		Written/ Viva-voce
2.	Describe health problems of aged population	SGD-1	CM 12.2	V.I with General Medicine	CSCD	Written/ Viva-voce
3.	Describe the prevention of health problems of aged population. Describe National program for elderly	SGD-2	CM 12.3 & 12.4	V.I with General Medicine	CSCD	Written/ Viva-voce

Note: L- Lecture (1); SGD- Small group discussion (2)

Sl No.	**Classes**	**Teaching method**	**Competency**	**Integration**	**Misc.**	**Assessment**
HOSPITAL WASTE MANAGEMENT [CM 14 - 14.1 TO 14.3]						
1.	Define and classify hospital waste	Lecture-1	CM 14.1	H.I with Microbiology		Written/ Viva-voce
2.	Describe various methods of treatment of hospital waste	SGD-1	CM 14.2	H.I with Microbiology	Field visit	Written/ Viva-voce
3.	Describe laws related to hospital waste management	SGD-2	CM 14.3	H.I with Microbiology	Field visit	Written/ Viva-voce
4.	Observe the hospital waste management done at hospital/ Maridi	SDL-1	CM 14.2	H.I with Microbiology	Assignment	Written/ Viva-voce

Note: L- Lecture (1); SGD- Small group discussion (2); SDL-Self-directed learning (1)

Sl No.	Classes	Teaching method	Competency	Integration	Misc.	Assessment
HEALTH PLANNING AND MANAGEMENT [CM 16 - 16.1 TO 16.4]						
1.	Define and describe the concept of Health planning	Lecture-1	CM 16.1			Written/ Viva-voce
2.	Describe planning cycle	Lecture-2	CM 16.2			Written/ Viva-voce
3.	Describe Health management techniques	SGD-1	CM 16.3		Tutorial	Written/ Viva-voce
4.	Describe health planning in India and National policies related to health and health planning	SGD-2	CM 16.2		Tutorial	Written/ Viva-voce

Note: L- Lecture (2); SGD- Small group discussion (2)
Note: L- Lecture (6); SDL-Self-directed learning (1)

Sl No.	Classes	Teaching	Competency	Integration	Misc.	Assessment

Sl No.	Classes	Teaching method	Competency	Integration	Misc.	Assessment
HEALTH CARE OF THE COMMUNITY [CM 17 - 17.1 TO 17.5]						
1.	Define and describe the concept of health care to community	Lecture-1	CM 17.1			Written/ Viva-voce
2.	Describe community diagnosis	Lecture-2	CM 17.2			Written/ Viva-voce
3.	Describe primary health care, its components and principles	Lecture-3	CM 17.3			Written/ Viva-voce
4.	Describe National policies related to health and health planning and millennium development goals	Lecture-4	CM 17.4			Written/ Viva-voce
5.	Describe Sustainable development goals	Lecture-5	CM 17.4			Written/ Viva-voce
6.	Describe health care delivery in India	Lecture-6	CM 17.5			Written/ Viva-voce
7.	Observe the health care delivery in different level of health systems at primary, secondary and tertiary	SDL-1	CM 17.5		Assignment	Written/ Viva-voce

		method				
RECENT ADVANCES IN COMMUNITY MEDICINE [CM 20 - 20.1 TO 20.4]						
1.	List important public health events of last five years	SDL-1	CM 20.1		Assignment	Written/ Viva-voce
2.	Describe various issues during outbreaks and their prevention	SGD-1	CM 20.2		Tutorials	Written/ Viva-voce
3.	Describe any event important to Health of the Community	Lecture-1	CM 20.3			Written/ Viva-voce
4.	Discuss the laws pertaining to practice of medicine	Lecture-2	CM 20.4			Written/ Viva-voce
5.	Demonstrate awareness about laws pertaining to practice of medicine such as Clinical establishment Act and Human Organ Transplantation Act and its implications	SGD-2	CM 20.4		Tutorials	Written/ Viva-voce

Note: L- Lecture (2); SGD- Small group discussion (2); SDL-Self-directed learning (1)

Specific Learning Objectives for 3rd Professional, Part - I

CM 4 - Principles of Health Promotion & Education

Competency4.1:

Describe various methods of health education with their advantages and limitations
Level: Knows How

Specific Learning Objectives

At the end of the session, the learner should be able to:

1. Define health education
2. Describe the various methods of health education
3. Describe the advantages and limitations of each health education method

Content and TL methods

Sl No	Content	TL methods	Time allotted
1	efinition of health education	Lecture discussion	05 minutes
2	ethods of health education	Lecture discussion	30 minutes
3	lvantages and limitations of each health education method	Lecture discussion	10 mins

Evaluation

1. Long essay (example)
    a. Discuss in brief the different methods of 'Group Health Education'

2. Short essay (example)
    a. Health education and health propaganda
    b. Socratic and didactic methods in communication

3. Multiple choice questions (example)

a) In which method of group teaching, there is no active participation from learners:
    i. Lecture
    ii. Group discussion
    iii. Symposium
    iv. Role play

Competency 4.2

Describe the methods of organizing health promotion and education and counselling activities at individual family and community settings

Level: Knows How

Specific Learning Objectives

At the end of the course, the learner should be able to:

1. Describe the methods of organizing health promotion and education and counselling activities at Individual, family and community settings

2. Plan a health education session at Individual/ family / community settings by selecting appropriate methods

3. Conduct a training session for given scenarios /target audience on the given topic

Content and TL methods

Sl No	Content	TL methods	Time allotted
1.	ief description of the methods of health promotion and counselling activities at Individual, family and community settings	Interactive discussion	15 minutes

2.	Allocation of scenarios for batches of 10 students each. Students are asked to prepare a training plan under the following headings: • Topic • Pre test • Set induction • Key messages • Methodology to deliver the key messages • Training material and other resources needed • Time scheduling • Post test	Interactive discussion	15 minutes
3	Development of training material by students	Group work	30 minutes
4	Implementation of the training program	Group presentation	1 hour

Evaluation

1. Scores for the training program by faculty using a structured checklist that may include the following
    a. Quality of the training plan
    b. Session objectives
    c. Design of pretest and post test questions
    d. Key messages
    e. Implementation of the training program
    f. Training material
    g. Team work and coordination
    h. Audience involvement

2. Similar scoring to be used for health education program during ROP and CHAP

Competency 4.3:

Demonstrate and describe the steps in evaluation of health promotion and education program

Level: Shows How

Specific Learning Objectives

At the end of the session, the learner should be able to:
1.Enumerate the steps in evaluation of health education program
2.Describe the steps in evaluation of health education program
3.Demonstrate and Apply the steps in evaluation of a health program

Content and TL methods

Sl No	Content	TL methods	Time allotted
1.	Steps in evaluation of health education program	Interactive discussion	15 minutes
2.	Application of the steps in evaluation of health promotion program : Following implementation of training program (Competency4.2), Students are asked to evaluate the sessions conducted by them	Interactive discussion	30 minutes
3	Debriefing by faculty	Interactive discussion	05 minutes

Evaluation

1. Scores for the evaluation session using a structured checklist

CM 06 - BASIC STATISTICS AND ITS APPLICATIONS

Competency 6.1: (1hr)

Formulate research question for the study.
Level – know how

Specific Learning Objectives

At the end of the session, the learner should be able to:

a)Introduction to health research and biostatistics
b)Difference between qualitative and quantitative approaches to research
c)Elements of research question
d)Steps in framing a research question, criteria in framing research question.

Evaluation:

Describe various steps in research methodology.

Competency 6.2:

Small group field activity **(2hrs)**
Level – Know how

Describe and discuss the principles and the methods, classification, interpretation and presentation of statistical data.

Specific Learning Objectives

At the end of the session, the learner should be able to:

a) Making of questionnaire based on research
b) They will do the data collection using data questionnaire
c) How to classify the data.
d) Steps in analysis and interpretation

Competency 6.3:

Describe, discuss and demonstrate the application of elementary statistical methods including test of significance in various study designs.

Level – Show how

Specific Learning Objectives

At the end of the session, the learner should be able to:

a) Able to calculate Mean, Median and Mode, Standard deviation, Standard error.
b) To know various methods of graphical representation of data.
c) To know various data entry tools- MS excel, Epinfo, Google forms, Google sheets.

EVALUATION:

1) Calculate mean,median and mode.
2) Describe Normal distribution curve.

Competency 6.4:

Enumerate, discuss and demonstrate common sampling techniques, simple statistical methods, frequency distribution, measures of central tendency and dispersion.

Level – Show how

Specific Learning Objectives

At the end of the session, the learner should be able to:

a)To know various sampling techniques and sample error.
b)To know correlation and regression
c)Able to calculate chisquare test

EVALUATION:

1) Describe various sampling techniques.
2) Chisquare test

Epidemiology of Communicable and Non- Communicable diseases (CM 08)

Competency 8.1

Describe and discuss the epidemiological and control measures including the use of essential laboratory tests at the primary care level for communicable diseases

Specific Learning Objectives

At the end of the course, the learner should be able to:

1. Describe the epidemiology of the following groups of communicable diseases
    - Respiratory diseases
    - Gastrointestinal infections
    - Vector borne diseases
    - Surface infections
2. Apply the concept of dynamics of disease control to the communicable disease under the above groups
3. Describe the salient features of national programs for the prevention and control of communicable diseases

Content

Theory

1. Overview of communicable diseases
2. Epidemiology of the following communicable diseases…….
    - Respiratory diseases
        - Measles
        - Tuberculosis
        - Influenza
        - Diphtheria
        - Pertusis
    - Gastrointestinal infections
        - Cholera
        - Typhoid
        - Poliomyelitis
        - Viral hepatitis
        - Helminthiasis
    - Vector borne diseases
        - Malaria
        - Dengue
    - Surface infections
        - HIV
        - Leprosy
        - Tetanus
    - Zoonotic diseases
    - Emerging and reemerging diseases
    - Hospital acquired infections

……under the following headings

- Burden
- Epidemiological triad
- Chain of transmission for that disease
- How to break the chain of transmission

3. Explain the following national health programs……..
    - Revised national tuberculosis control program
    - National polio surveillance program
    - National vector borne disease control program
    - National AIDS control program

.....under the following headings

- Relevance and need for the program
- Objectives
- Strategies
- Infrastructure for service delivery
- Monitoring and evaluation indicators

Practical

Discuss public health scenarios on the following:

- Respiratory diseases
- Gastrointestinal infections
- Vector borne diseases
- Surface infections

Clinico-social case discussions

1. Dengue
2. Typhoid
3. Acute respiratory tract infection
4. Acute diarrheal disease
5. HIV
6. Rabies

For the above diseases, focus on the following:

- Clinical features
- Assessment of determinants
- Recommendations at individual, family and community level

Assessment questions

1. Which of the following disease is covered under the national vector borne disease control program
    a. Sleeping sickness
    b. Kala azar
    c. Yellow fever
    d. Tick typhus
2. The population covered by a Tuberculosis Unit (TU) under RNTCP is
    a. 500,000
    b. 100,000
    c. 50,000
    d. 30,000
3. Purified Chick Embryo Cell Rabies vaccine is given by which of the following ways
    a. Infiltration locally into the wound
    b. Intramuscularly in the deltoid
    c. Intramuscularly in the gluteal region
    d. Subcutaneously in the abdomen
4. A district is classified under the category "Neonatal Tetanus Elimination" if it meets which of the following criteria:
    a. NNT rate <0.1/1000 live births, TT coverage >90% and attended deliveries >75%
    b. NNT rate <1/1000 live births, TT coverage >90% and attended deliveries >75%
    c. NNT rate <1/1000 live births, TT coverage >70% and attended deliveries >50%
    d. NNT rate <1/1000 live births, TT coverage >70% and attended deliveries >75%
5. What is the WHO clinical staging of HIV disease in a in a person who is HIV positive and has pulmonary tuberculosis?
    a. Clinical stage 1
    b. Clinical stage 2
    c. Clinical stage 3
    d. Clinical stage 4

Competency 8.2

Describe and discuss the epidemiological and control measures including the use of essential laboratory tests at the primary care level for Non Communicable diseases (diabetes, Hypertension, Stroke, obesity and cancer etc.)

Specific Learning Objectives

At the end of the course, the learner should be able to:

1. Explain the characteristics of a non communicable disease
2. Explain the meaning of the term "risk factor"
3. Describe the epidemiology of the following non communicable diseases
    - Hypertension
    - Diabetes
    - Coronary heart disease
    - Cancers
    - Blindness
    - Accidents
4. Apply the concept of levels of prevention to the above non communicable disease
5. Describe the salient features of national programs for the prevention and control of NCDs

Essential content

Theory

2. Introduction to NCDs
    - What are NCDs
    - Characteristics
    - Risk factor
    - Prevention and control

3. Epidemiology, prevention and control of the following diseases…….
    - Hypertension
    - Diabetes
    - Coronary heart disease
    - Cancers
    - Blindness
    - Accidents

    ……..under the following headings
    - Burden
    - Time trends
    - Place and person distribution
    - Risk factors (and web of causation)
    - Primordial, primary and secondary and tertiary prevention
    - Key initiatives at international and national level

Practical

Case studies on diabetes, RHD and stroke

Clinico-social case discussions

1. Hypertension
2. Diabetes
3. Coronary heart disease

4. Stroke

For the above diseases, focus on the following:

- Clinical features
- Assessment of risk factors
- Anthropometric measurements
- Recommendations at individual, family and community level

Assessment questions

1. Tracking of hypertension is an example for :
   a. Treatment Strategy
   b. Evaluation Strategy
   c. High Risk Strategy
   d. Diagnostic Strategy

2. The true statement regarding a "Risk Factor" is:
   a. Risk factors are the same as an agent in a non communicable disease
   b. Risk factors are observable only after the onset of disease
   c. Risk factors are significantly associated with the development of disease.
   d. If a risk factor is modified, the probability of occurrence of the disease will not change.

3. Which of the following statements is TRUE :
   A. HPV is implicated in the development of cancer cervix
   B. Mycobacterium tuberculosis is implicated in the development of lung cancer
   C. Plasmodium falciparum is implicated in the development of blood cancer
   D. Infective agents are not implicated in the development of cancers

4. The type of time trend seen in coronary heart disease is:
   A. Secular Trend
   B. Cyclic Trend
   C. Seasonal Trend
   D. Periodic Trend

Competency 8.3

Enumerate and describe disease specific National Health Programs including their prevention and treatment of a case

Specific Learning Objectives

At the end of the course, the learner should be able to:

1. List the national health programs in India
2. Describe the objectives and strategies for the following national health programs
    a. RMNCH+A
    b. RNTCP
    c. NVBDCP
    d. NACP
    e. NLEP
    f. ICDS
    g. NPCDCS
    h. NBCP

Contents: (linked to competency 8.7)

Describe the salient features of the following national programs

a. RMNCH+A
b. RNTCP
c. NVBDCP
d. NACP
e. NLEP
f. ICDS
g. IDSP
h. NPCDCS
i. NBCP
j. NHM

…. under the following headings

- Need for national program (in terms of burden of problem)
- Objectives
- Strategies
- Infrastructure for service delivery and personnel at each level of care
- Monitoring indicators

Evaluation

Long essay (example)

1. Describe the strategies under RMNCH+A to prevent maternal deaths in India.

Short essay (example)

1. Daily drug regimen under RNTCP

Competency 8.4

Describe the principles and enumerate the measures to control a disease epidemic

Specific Learning Objectives

At the end of the session, the learner should be able to:

1. To be able to list the definition of epidemic
2. To be able to list the steps of investigation out break
3. To be able to list the factors leading to an outbreak in the community

Content:

1. Definition of epidemic, endemic and sporadic
2. Objectives of an epidemic investigation
3. 10 Steps of an outbreak investigation with example
4. Epidemiological case sheet
5. Epidemic curve
6. Report writing
7. List the control measures based on the epidemic with actual examples

Assessment:

1. Prepare an epidemiological case sheet for an outbreak of food poisoning in the hostel

Competency 8.5:

Describe and discuss the principles of planning, implementing and evaluating control measures for disease at community level bearing in mind the public health importance of the disease

Level: Knows

Specific Learning Objectives

At the end of the session, the learner should be able to:

4. Describe the meaning of the terms "control", "elimination" and "eradication" of disease
5. List the problems of public health importance in India
6. Describe the steps of the planning cycle (Link to competency 16.2 on planning cycle) and apply the steps of the planning cycle to common problems of public health importance
7. Describe the methods to prevent and control disease with two examples (one communicable and one non communicable disease)
8. Describe the strategies being used in the corresponding national program for the control of the two diseases chosen in SLO 5 (Link to competency 8.3 on national health programs)
9. Describe the steps in evaluation of a health program
10. Apply the steps in evaluation of a health program

Content and TL methods

Sl No	Content	TL methods	Time allotted
1	Meaning of "control", "elimination" and "eradication" of disease	Lecture discussion (Theory, 2nd Professional)	30 minutes
2	Problems of public health importance in India	Lecture discussion (Theory, 2nd Professional)	30 minutes

3	Application of the steps of planning cycle to a public health problem	Large group activity and interactive discussion (Theory, 2nd Professional)	2 hours
4	Prevention and control of disease (with two examples - one communicable and one non communicable disease)	Small group activity (UOP, 2nd Professional)	1 hour
5	Strategies used in the corresponding national program for the control of the two diseases chosen in SLO 4	Small group activity (UOP, 2nd Professional)	1 hour
6	Steps in evaluation of a health program	Small group activity (Practicals,3rdProfessional)	30 minutes
7	Application of steps in evaluation of a health program to a health program	Small group activity (Practicals3nd Professional)	1 hour

Evaluation

4. Long essay (example)
    a. Describe the epidemiology, prevention and control of tuberculosis
    b. You are the district health officer of Kolar district. Describe the steps in evaluating a campaign for the prevention and control of cardiovascular diseases your district.

5. Short essay (example)
    a. National immunization day
    b. Steps to be followed by ANM to plan a VHSND in a village

6. Multiple choice questions (example)
    a. Use of chemoprophylaxis in malaria is an example for
        i. Primordial prevention
        ii. Primary prevention
        iii. Secondary prevention
        iv. Tertiary prevention

Integration

- Medicine
- Microbiology
- Pharmacology

Competency 8.6

Educate and train health workers in disease surveillance, control &treatment and health education

Level: Shows how

Specific Learning Objectives

At the end of the course, the learner should be able to:

4. Conduct a training session for health workers on the given topic

5. Conduct a health education program for a target audience (Link to competency 4.2 on health promotion. Covered as a part of a) ROP – community program b) ROP – child to child program and c) CHAP – health education in school)

Note :

a) Heath workers to include nursing aids, nurses, workers from allied health departments like housekeeping, laundry etc, ASHAs, Anganwadi workers etc
b) The sessions will involve prior preparation by faculty to identify the target audience, topic, evaluation material, chart paper, markers, permissions etc
c) The topic for health education will depend on the audience and will be allotted by faculty. Suggested topics include handwashing, dengue, healthy lifestyle, tobacco control etc

Content and TL methods

Sl No	Content	TL methods	Time allotted
1	Allocation of topic and division into groups of 10 students each. Students are asked to prepare a training plan on the allotted topic under the following headings: • Topic • Pre test • Set induction • Key messages • Methodology to deliver the key messages • Training material and other resources needed • Time scheduling • Post test	Interactive discussion Practical, 3nd Professional	15 minutes
2	Development of training material by students	Group work Practical, 3nd Professional	1 hour
3	Review of training plan by faculty	Group presentation Practical, 3nd Professional	45 minutes
4	Implementation of the training program for the target audience	Group presentation Practical, 3nd Professional	1 hour
5	Debriefing by faculty	Interactive discussion	30 minutes

Evaluation

3. Scores for the training program by faculty using a structured checklist that may include the following
    a. Quality of the training plan
    b. Session objectives

c. Design of pretest and post test questions
d. Key messages
e. Implementation of the training program
f. Training material
g. Team work and coordination
h. Audience involvement

4. Similar scoring to be used for health education program during ROP and CHAP

Integration

- Nursing & allied health sciences
- Government functionaries

Competency 8.7:

Describe the principles of management of information systems

Specific Learning Objectives

At the end of the session, the learner should be able to:

1. Define health management information system [HMIS]
2. List the uses of HMIS
3. Describe the flow of data in HMIS in the public health system in India
4. List the sources of health information in India

Content

1. Definition of HMIS
2. Distinction between data and information
3. WHO requirements for health information systems
4. Uses of HMIS
5. Sources of health information
6. HMIS in public health system in India

TL methods

Lecture discussion, 3nd Professional

Evaluation

1. Short essay (example)
    a. Describe the uses of health information
    b. Sample registration system
2. Multiple choice question (example)
    a. Which of the following is an advantage of hospital records?
        i. They are a good guide to the estimation of disease frequency in the community
        ii. They provide good data on association between different diseases
        iii. They provide data from patients from a defined catchment area
        They provide uniform data from different types of hospitals

Reproductive Maternal and Child Health (CM 10)

Competency 10.1:

Describe the current status of Reproductive, maternal, newborn and child health
Level: Knows

Specific Learning Objectives

At the end of the session, the learner should be able to:

a) Enumerate and discuss the indicators to measure the status of Maternal and child health- MMR, PMR, NMR, PNMR, IMR and Under 5 Mortality rate
b) Define Maternal mortality rate and maternal mortality ratio.
c) Discuss the approaches for measuring maternal mortality.
d) Discuss the status of maternal mortality in India and rest of the world
e) Discuss the direct and indirect causes of maternal mortality
f) Discuss the global strategy for women's , children's and adolescents health(2016-2030)
g) Describe the various interventions to prevent and reduce maternal mortality
h) Define foetal deaths
i) Define still birth rate
j) Define Perinatal Mortality rate, neonatal and post neonatal mortality rate
k) Discuss causes of PMR, NMR and PNMR

Content and TL methods

Sl No	Content	TL methods	Time allotted
1	Current status of Reproductive, maternal, new born and child health	Lecture	1 hour

Evaluation

1. Define maternal mortality ratio and list the causes and preventive measures of MMR.
2. Enumerate causes of PMR, NMR and PNMR

Integration

Obstetrics and Gynaecology
Paediatrics

Competency 10.2:

Enumerate and describe the methods of screening high-risk groups and common health problems.
Level: Knows

Specific Learning Objectives

At the end of the session, the learner should be able to:

a) Enumerate the screening methods for high-risk groups among antenatal women.
b) Describe high risk approach in antenatal care

c) Discuss the preventive services for antenatal mother- Antenatal checkup, investigations and prenatal advices.
d) Enumerate common health problems among antenatal women and its management and prevention- Iron deficiency anemia, PIH, GDM, Rh incompatibility
e) Discuss the complications of post- partal period and its management

Content and TL methods

Sl No	Content	TL methods	Time allotted
1	The methods of screening high-risk groups among antenatal women	Lecture	30 minutes
2	Common health problems among antenatal women	Lecture	30 minutes

Evaluation
1) Describe the screening methods for high risk antenatal women
2) Enumerate the common health problems among infants

Integration
Obstetrics and Gynaecology

Competency 10.3:
Describe local customs and Practices during Pregnancy, Child birth, Lactation and Child feeding practices
Level: Knows
Specific Learning Objectives
At the end of the session, the learner should be able to:
a) Describe the Dietary Practices for a pregnant woman
b) List the Pre-natal customs and Practices in detail
c) List the Child Bearing Practices that a mother should know
d) Enumerate the importance of Institutional delivery
e) Enumerate the Advantages and Disadvantages of the Practice of Domiciliary Mid wifery services
f) Describe the Nutritional Practices of a Post-natal mother
g) Describe the practice of Post-natal exercises as well as the Psychological and Social support in a Post-natal women
h) Enumerate the Benefits of the Practice of "Rooming In"
i) Enlist the Advantages of Practice of Breast Feeding both Exclusive Breast Feeding and later

j) Describe the various Family Planning Practices that a mother should adopt, according to her convenience.

Content and TL methods

Sl No	Content	TL methods	Time allotted
1	Prenatal customs and practices	Lecture	30 minutes
2	Child bearing practices and Child care	Lecture	30 minutes

Evaluation

1) Enlist the Advantages of Practice of Breast Feeding both Exclusive Breast Feeding and later
2) Enumerate the Benefits of the Practice of "Rooming In"

INTEGRATION

Obstetrics and Gynaecology
Paediatrics

Competency 10.4:

Describe the RMNCH and CSSM interventions
Level: Knows
Specific Learning Objectives
At the end of the session, the learner should be able to:

I REPRODUCTIVE

1)Enlist causes of STI
2)Describe the syndromic approach
3)Enumerate various FP methods

II MATERNAL HEALTH

1) Enlist objectives of Antenatal Care
2) Enlist objectives of Intra natal Care and Postnatal Care
3) Define Maternal Mortality Rate (MMR) and describe causes of maternal mortality
4) List out preventive services for mothers
5) Describe High Risk Approach
6) Describe Essential and Emergency Obstetric Care

III NEWBORN

1)Describe Essential New Born Care
2)Discuss Baby Friendly Hospital Initiative
3)Define Exclusive Breastfeeding

IV CHILD

1)Define IMR and discuss causes of infant mortality and its prevention.
2)Discuss causes of Under-five mortality
3)Discuss causes and prevention of ARI and diarrhoeal diseases
4)List objectives of Under-five clinics

5)Demonstrate ORS preparations
6)Classify ARI and diarrhoeal diseases

V ADOLESCENT

1)Enlist adolescent health problem
2)Describe adolescent health program

Content and TL methods

Sl No	Content	TL methods	Time allotted
1	STI and Family planning methods	Lecture	60 minutes
2	Antenatal, Intranatal and Postnatal care	Lecture	90 minutes
3	Newborn care, Child and Adolescent health	Lecture	90 minutes

Evaluation

1) Describe Essential New Born Care and Discuss Baby Friendly Hospital Initiative
2) Discuss causes and prevention of ARI and diarrhoeal diseases

Integration

Obstetrics and Gynaecology
Paediatrics

Competency 10.5:

Level: Shows how

Specific Learning Objectives

A. UNIVERSAL IMMUNIZATION PROGRAMME

At the end of the session, the learner should be able to:

11. Outline the National Immunization Schedule .
12. Explain goals and targets of Mission Indradhanush and Intensified Mission Indradhanush.
13. Describe schedule, dose, route, site of administration, storage and AEFI of different vaccines.
14. Identify different components of Cold Chain.

Content and TL methods

Sl No	Content	TL methods	Time allotted
1	National immunization schedule	Small group discussion	30minutes
2	Visit to UHTC and Demonstrate steps in vaccine administration and storage	Small group activity and interactive discussion	60 minutes

3	Steps in surveillance of AFP and reporting and management of AEFI	Small group discussion	30 minutes

Evaluation

7. Long essay (example)
    a. Describe universal immunization programme. Explain components of cold chain maintenance. Add a brief note on vaccine vial monitoring (VVM).
    b. For a case of Acute Flaccid Paralysis (AFP) , describe the steps for AFP surveillance and measures for prevention and control of further cases.

8. Short essay (example)
    a. National immunization day.
    b. Write a brief note on AEFI.

9. Multiple choice questions (example)
    a. Which of the following is the most heat sensitive vaccine among the below :
        i. OPV
        ii. JE Vaccine
        iii. DPT
        iv. DT

Integration

- Paediatrics
- Obstetrics

B.INTEGRATED MANAGEMENT OF NEONATAL AND CHILDHOOD ILLNESS (IMNCI)

At the end of the session, the learner should be able to:

- Enlist the principles of IMNCI.
- Classify the childhood illnesses according to colour coding of IMNCI.
- Describe salient features of NavjatShishu Suraksha Karyakram, Janani Shishu Suraksha Karyakram, Baby Friendly Hospital Initiative
- Interpretation of growth charts.

Content and TL methods

Sl No	Content	TL methods	Time allotted
1	IMNCI-STRATEGY, STEPS, COMPONENTS	SMALL GROUP DISCUSSION	30 Minutes
2	IMNCI CASE MANAGEMENT WITH SCENARIO	SMALL GROUP ACTIVITY AND INTERACTIVE DISCUSSION	30 minutes
3	NEWBORN & CHILD HEALTH PROGRAMS	SMALL GROUP DISCUSSION	30 minutes
4	GROWTH MONITORING & GROWTH CHART	SMALL GROUP DISCUSSION	30 minutes

Evaluation

1. Visit to uhtcpaediatricopd to classify of illness of children according to color coding of IMNCI.
2. Interpreting growth charts.

Long Essay:

1. Describe the strategy, steps and components of IMNCI.

Short Essay:

1. Note on Baby Friendly Hospital Initiative.

Multiple choice:

1. NavjatShishu Suraksha karyakram addresses the below except:
    a) Care of baby at birth
    b) Care of antenatal mother
    c) Prevention of hypothermia
    d) Transport of neonates

Integration

- PAEDIATRICS

CM10.6 Enumerate and describe various family planning methods, their advantages and shortcomings

Domain – Knowledge,
Level - Knows How,
Core competency – Y

Specific Learning objectives

At the end of the session the learner should be able to

1. Classify and enumerate the different Family planning methods / contraception (Spacing methods and Permanent methods)
2. Describe the various family planning methods – including ideal candidates for each method
3. Enumerate the disadvantages and failure rates for the family planning methods
4. Explain the concept of failure rates of contraceptives (Pearl index) and the method of calculating the same
5. Describe Medical termination of Pregnancy, its legal basis. The circumstances/ indications under which it can be performed. The setting where it can be performed and qualifications to perform the same. The role of MTP in Reproductive and Child health care
6. Explain the concept of emergency contraception and various methods.

Content and teaching learning methods

Sl	Content	Teaching Method	Time Allotted
1	List the contraceptive methods. Describe 'Condom', 'Mala N/Mala D', 'Saheli' & 'Antara' under the following headings (a) Description (b) Method of use (c) Advantages (d) Disadvantages (e)Failure Rate (f) Social Marketing	SGD	1 hour

2	Describe Contraceptive Methods 'Copper T 380A', 'No Scalpel Vasectomy' & 'Minilap' under the following headings (a) Description (b) Method of use (c) Advantages (d) Disadvantages (e)Failure Rate (f) Incentives	SGD	1 hour
3	Describe the various methods of emergency contraceptive methods. Describe the various methods of Medical Termination of Pregnancy (MTP). Describe the circumstances under which MTP can be performed. Describe the settings & qualifications required to perform MTP.	Lecture	1 hour
			3 hrs

Evaluation

LONG ESSAY

1. Describe the contraceptive methods used for spacing under RCH.
2. Describe the terminal contraceptive methods.

SHORT ESSAY

1. Describe 'Condom' under the following headings (a) Description (b) Method of use (c) Advantages (d) Disadvantages (e)Failure Rate (f) Social Marketing
2. Describe 'Mala N/Mala D' under the following headings (a) Description (b) Method of use (c) Advantages (d) Disadvantages (e)Failure Rate (f) Social Marketing
3. Describe 'Saheli' & 'Antara' under the following headings (a) Description (b) Method of use (c) Advantages (d) Disadvantages (e)Failure Rate
4. Describe 'Copper T 380A' under the following headings (a) Description (b) Method of use (c) Advantages (d) Disadvantages (e)Failure Rate
5. Describe 'No Scalpel Vasectomy' under the following headings (a) Description (b) Method of use (c) Advantages (d) Disadvantages (e)Failure Rate (f) Incentives
6. Describe 'Minilap' under the following headings (a) Description (b) Method of use (c) Advantages (d) Disadvantages (e)Failure Rate (f) Incentives
7. Describe the various methods of emergency contraceptive methods.
8. Describe the various methods of Medical Termination of Pregnancy (MTP).
9. Describe the circumstances under which MTP can be performed.
10. Describe the settings & qualifications required to perform MTP.

MCQs

1)What is the maternal mortality rate (MMR) of India according to SRS(2018-2020)?

a) 113/1, 00,000 live births

b) 173/100,000 live births

C] 188/100,000 live births

D] 211/100,000 live births

2) What is the Infant Mortality Rate[IMR] of India according to SRS(2018-20)?

a) 57/ 1000 live births

b) 57/one lakh live births

c) 32/1000 live births

d) 32/one lakh live births

3) All the following are prelacteal feeds EXCEPT
a) Honey
b) zamzam
c) Sugar
d) Colostrums

4) According to WHO Exclusive breast feeding to be continued till
a) 1 year
b) 6 months
c) 5 months
d) 4 months

5) What is the route of administration of Rotaviral vaccine ?
a)Intramuscular
b) Subcutaneous
c) Intradermal
d) Oral

Integration – no integration has been suggested in the NMC document

CM 10.7 Enumerate and describe the basis and principles of the Family Welfare Program including the organization, technical and operational aspects

Domain – Knowledge,
Level - Knows How,
Core competency – Y

Specific Learning objectives

At the end of the session the learner should be able to

1. Describe the historical evolution of family planning/ family welfare programme in India
2. Define family planning. Explain the sociological and demographical basis of family planning
3. Explain how family planning programme is planned at various levels (National, State, District and PHC level, including various fertility related statistics)
4. Explain how family planning programme is implemented at the district level and below
5. Explain basics of evaluation of family planning programme (needs, plans, performance, effects and impact)
6. Explain the National Population Policy – historical evolution, current NPP2000. Goals, objectives and targets

Content and teaching learning methods

Sl No	Content	TL methods	Time allotted
1	Definition, demographic & Sociological basis of family planning in India and evolution of FP/FW program	Lecture	30 mins
2	Indicators used for calculation of Family welfare targets. Actual calculation of eligible couple number, indenting of FP methods	Practical / Lecture	60 mins

3	Organizational pattern of Family planning Program at District level and below.	SDL	30 mins
4	Community needs assessment survey. Types & Steps of health program evaluation	Lecture	60 Mins
5	NPP 2000 Historical evolution, current NPP2000. Goals, objectives and targets	Lecture	30 mins
			3 hrs 30 mins

Evaluation

Long Essay

Describe the goals, objectives and targets of National Population policy 2000. (2+3+5)

Short Essay

MCQs

1) Failure rate of Copper- T is
a) 0.8%
b) 0.5%
c) 1%
d) 2%

2) The IUD used in PHC under the National Programme is
a) Copper T 220C
b) Copper T 380A
c) Copper T 200B
d) Multiload 375

3) Mechanism of action of OCPS is
a) Prevent the release of ovum form the ovary
b) Cervical mucus thickening
c) Inhibit tubal motility
d) All of the above

4) The drugs used as post coital pills EXCEPT
a) Levonorgestrol 0.75mg
b) Ethinyl estradiol 50mcg
c) Mifepristone 10mg
d) Misoprostol 35mcg

5) The effectiveness of MALA D and MALA N is
a) 100%
b) 80%
c) 90%
d) 70%

Integration – no integration has been suggested in the NMC document

CM 10.8 Describe the physiology, clinical management and principles of adolescent health including ARSH (total hrs of teaching required 2 hrs 30 mins)

Domain – Knowledge,
Level - Knows How,
Core competency – Y

Specific Learning objectives

At the end of the session the learner should be able to

1. Enumerate the physiological changes taking place during adolescence in male and females and how it is assessed
2. List the priority interventions under Adolescent Health Programme and describe the various services provided at clinic, outreach/ sub center, family and community level
3. Explain the need for a separate adolescent reproductive and sexual healthprogramme(ARSH) under RMNCH+A and how it is to be delivered.
4. Explain the topics to be covered while counseling for adolescent health.
5. Describe the global strategy for women's, children's and adolescents's health 2016-2030

Content and teaching learning methods

Sl No	Content	TL methods	Time allotted
1	Physiological changes in adolescence and its assessment	Lecture	15 min
2	Adolescent health programme – components and services delivered	Lecture, SGD, Field visits	30 min
3	Sensitivity involved in delivering reproductive and sexual health programme for adolescents, components of ARSH, service delivery in PHCs, CHCs, THs and District Hospitals	SGD	45 min
4	Counselling Adolescents – steps in counselling, contents of adolescent health education (physiological changes, changes in personality, both males and females, general health, reproductive and sexual health, counselling regarding not using habit forming substances)	SGD	45 mins
5	Global strategy for Women's, children's and adolescents' health 2016-2030	Lecture	15 mins
			2hrs 30mins (total)

Evaluation
Long Essay
Describe Health needs and problems of adolescents. (5+5)
Short Essay
MCQs
1) Under the MTP Act Medical termination is allowed up to
a) 18 weeks
b) 20 weeks
c) 24 weeks
d) 28 weeks

2) How many days after normal delivery can copper T be inserted?
a) Immediately after delivery
b) After 1& half months
c) After 3 months
d) After 9 months

3) Content of MALA D is
a)Ethinyl Estradiol 0.03mg &Levonorgestrol 0.3mg
b) Ethinyl Estradiol 0.3mg &Levonorgestrol 0.03mg
c) Ethinyl Estradiol 0.1mg &Levonorgestrol 0.33mg
d) Ethinyl Estradiol 0.03mg &Levonorgestrol 0.1mg

4) What is cafeteria approach in National Family Welfare Programme?
a) Giving the option to couples to choose for contraceptives
b)Advising them to choose a right contraceptive
c) Giving the advantages and disadvantages of different contraceptives and giving them option to choose
d) none of the above

5) The present National Family Welfare Programme is under
a) NRHM
b) RMNCHA
c) National Family Planning Programme
d) NHM
Integration – no integration has been suggested in the NMC document

CM10.9 Describe and discuss gender issues and women empowerment

Domain – Knowledge,
Level - Knows How,
Core competency – Y

Specific Learning objectives

At the end of the session the learner should be able to

1. Explain the difference between “sex” and “gender” in terms of biological and social perspective.
2. Explain the difference between patriarchal and matriarchal societies with positive and negative aspects of both.

3. Explain how "gender" is a determinant of health and why it has been mentioned (specifically women and children) in the Directive principles of state policy of the Constitution of India
4. Describe the concept of women empowerment with examples

Content and teaching learning methods

sl.no	Content	TL Methods	Time allocated
1	Explain the difference between sex and gender in terms of biological and social perspective	Lecture/SGD	30minutes
2	Explain the difference between patriarchal and matriarchal society and its adv and disadvantages	SGD	30minutes
3	Explain how gender is the determinant of health and why the importance of girl child have been mentioned as the directive policy of constitution of India	Lecture	1 hour
4	Discuss the concept of women empowerment and role of self help group in empowering women	Small group discussion	30 minutes
5	Explain about gender bias and medical and social problem faced by girl child at different ages	Group discussion	30 minutes
			3 hrs

Evaluation

Long Essay

Define sex ratio. Describe socio-cultural determinants of sex ratio in India. Add a note on steps taken for women empowerment. (2+4+4).Short Essay

MCQs

1)Habit disorders are all EXCEPT
a)Thumb sucking
b) bed wetting
c) nail-biting
d)day-dreaming

2) Juvenile means a boy who has not attained the age of
a) 16 years
b) 18 years
c) 21 years
d)25 years

3. Beneficiaries of Integrated child development scheme are all EXCEPT
a) Pregnant women
b) Children less than 6 years of age
c) Children 7-14 years of age
d) Nursing mothers

4. Components of UJJAWALA scheme to combat child trafficking are
a) Rescue
b) Rehabilitate
c) Reintegrate
d) Repatriation
e) All of the above

5. All are ACTS to preserve the rights of the children in India except
a) Child labour (prohibition and regulation) ACT
b) Child Placement ACT
c) Juvenile justice ACT
d) Children ACT
Integration – no integration has been suggested in the NMC document

For CM 10.1 to CM 10.9 (total 21 hrs – Lecture 10 hrs and SGD/ Practicals/ SDL – 11hrs)

GERIATRIC SERVICES [(CM 12) - 12.1 TO 12.4]

Sl No.	Classes	Teaching method	Competency	Integration	Misc.	Assessment
GERIATRIC SERVICES [CM 12 - 12.1 TO 12.4]						
1	Define and describe the concept of Geriatric services	Lecture-1	CM 12.1	V.I with General Medicine		Written/ Viva-voce
2	Describe health problems of aged population	SGD-1	CM 12.2	V.I with General Medicine	CSCD	Written/ Viva-voce
3	Describe the prevention of health problems of aged population. Describe National program for elderly	SGD-2	CM 12.3 & 12.4	V.I with General Medicine	CSCD	Written/ Viva-voce

Competency 12.1:
Define and describe the concept of Geriatric services
Specific Learning Objectives
At the end of the session, the learner should be able to:
1. Delineate the age group that is described as elderly.
2. Discuss the characteristic features of geriatric health care services
3. Discuss the challenges in providing geriatric health care services.

Content
1. Who can be called an elderly?
2. Classify the elderly as young old, old old and old older.
3. Discuss the impact of demographic and epidemiologic transition on providing geriatric health care services
4. Discuss accessibility, availability, acceptability and quality of health care services with respect to geriatric health services

5. Discuss the economic, logistic, psychosocial, socio cultural challenges in providing geriatric health care services.
6. Discuss comprehensive geriatric health care services.

TL methods
Lecture discussion or SGD 6th term
Evaluation

3. Short essay(example)

Discuss the implications of demographic transition on health services.

4. Multiple choice question (example)

Proportion of elderly in India as per 2011 census is

a. 7.4%
b. 8.0%
c. 8.6%
d. 9.0%

Ans: c

Competency 12.2:

Describe health problems of aged population
Specific Learning Objectives
At the end of the session, the learner should be able to:

1. Classify the problems faced by the elderly.
2. Discuss the health problems of the elderly

Content

1. Health problems due to ageing
2. Problems due to chronic illness.
3. Health problems specific to gender.

TL methods
Lecture discussion or SGD 6th term
Evaluation

1. Short essay(example)

Discuss the health problems of the elderly.

2. Multiple choice question (example)

Of the following diseases select the one that is not the primary disease of elderly age group.
(a) Parkinsonism (b) Alzheimer's (c) Multiple sclerosis (d) Cerebrovascular disease

Ans: C

Competency 12.3 & 4:

Describe the prevention of health problems of aged population.
Describe National program for elderly
Specific Learning Objectives
At the end of the session, the learner should be able to:

1. Explain the concept of healthy ageing

2. Describe the multipronged approach to prevention of health problems of the elderly
3. State the objectives and strategies of National health program for the aged.

Content

1. Multipronged approach for prevention of health problems of the elderly including health, social sectors.
2. Concept of healthy ageing
3. Explain the policies and welfare programs applicable to elderly
4. Objectives, strategies and implementation of national program for the elderly
5. Importance of creation of elderly friendly environment in terms of elderly friendly walkways, elderly friendly homes, elderly friendly public transport system
6. Discuss the policies for the elderly.

TL methods

Lecture discussion or SGD 6th term

Evaluation

1. Short essay(example)

   State the objectives and discuss the strategies of National program for the elderly.

2. Multiple choice question (example)

   Health communication regarding prevention and control of health problems of elderly should be targeted to:

   (a) Elderly (b) People in late adulthood (c) Younger people (d) All of the above

   Ans: d

HOSPITAL WASTE MANAGEMENT [CM 14 - 14.1 TO 14.3]

Sl No.	Classes	Teaching method	Competency	Integration	Misc.	Assessment
1	Define and classify hospital waste	Lecture-1	CM 14.1	H.I with Microbiology		Written/ Viva-voce
2	Describe various methods of treatment of hospital waste	SGD-1	CM 14.2	H.I with Microbiology	Field visit	Written/ Viva-voce
3	Describe laws related to hospital waste management	SGD-2	CM 14.3	H.I with Microbiology	Field visit	Written/ Viva-voce
4	Observe the hospital waste management done at hospital and Common Biomedical Waste Treatment Facility(CBWTF)	SDL-1	CM 14.2	H.I with Microbiology	Assignment	Written/ Viva-voce

Competency 14.1:

Define and classify hospital waste

Specific Learning Objectives

At the end of the session, the learner should be able to:

5. Define Biomedical Waste
6. Differentiate between Biomedical waste, Health care waste and Hospital waste
7. Describe effects of improper management of biomedical waste on environment and human health.
8. Enlist the different types of waste generated in the hospital
9. Classify biomedical waste

Content

7. Definition of Biomedical waste, Health care waste and Hospital waste
8. Effect of improper management of Biomedical waste on the environment such as Air, water and soil pollution.
9. Effect of Persistent organic pollutants on human health in terms of cancers and endocrine disorders.
10. List the different types of waste generated in the Hospital
11. Classification of biomedical waste as per WHO classification and BMWM Rules 2016

TL methods

Lecture discussion or SDL, 6th term

Evaluation

5. Short Answer (example)
    - Define Biomedical waste
    - Enlist the different categories of waste generated in a hospital
    - Classify biomedical waste

6. Multiple choice question (example)

Competency 14.2:

Describe various methods of treatment of hospital waste

Specific Learning Objectives

At the end of the session, the learner should be able to:

1. Enlist the various methods of treatment of Biomedical waste.
2. Explain the advantages and disadvantages between burn and non burn technologies for treatment of biomedical waste
3. Explain the importance of pre-treatment of certain categories of Biomedical waste.

Content

1. Describe the available technologies for treatment of various categories of biomedical waste such as- Chemical treatment, Incineration, disinfection and shredding.
2. Describe the working of incineration and the difference between incineration and burning.
3. Describe the working of autoclave and microwave. Discuss the difference between sterilization and disinfection.
4. Discuss the advantages and disadvantages of autoclave and microwave over incineration
5. Discuss the treatment methods available for waste water treatment from the hospital

6. Discuss specifically the treatment to be followed as per the BMWM Rules 2016 for the various categories of waste.

TL methods

Lecture discussion6th term

Evaluation

7. Short essay(example)

Describe the process of incineration for Biomedicalwaste treatment

8. Multiple choice question (example)

Microwave is not suitable for treatment of _____

a. Clinical lab wastes
b. Chemotherapeutic wastes
c. Sample collection containers
d. Items contaminated with blood

Answer: b. Chemotherapeutic wastes

The sources of waste water from the hospital are _____.

i. Laundry
ii. Laboratories
iii. Operation theaters
iv. Hospital kitchen

a. i and iii
b. ii and iv
c. i,ii and iii
d. All of the above

Answer: c. i,ii and iii

The environmental risks of waste water from the hospital are _____

a. Pollute the water bodies
b. Emergence of microbial resistance.
c. Outbreaks of water borne diseases
d. All of the above

Ans d. All of the above

Competency 14.3:

Describe laws related to hospital waste management

Specific Learning Objectives

At the end of the session, the learner should be able to:

1. Describe the scope and applicability of BMWM Rules 2016.
2. Discuss the processes of segregation, collection, transportation and final disposal mechanisms as per BMWM Rules 2016
3. Discuss the roles and responsibilities of Regulatory authorities in implementation of BMWM Rules 2016

Content

1. Describe the Scope and applicability of BMWM Rules 2016
2. Explain the role and process of segregation in Biomedical waste management as per BMWM 2016.
3. Describe the process of collection and transportation as per BMWM Rules 2016
4. Describe the role of bar coding and tracking of waste as described in BMWM Rules 2016.
5. Describe the roles of various committees such as Infection control committee or Biomedical waste management
6. Describe Spill management process.

TL methods

Lecture discussion6th term

Evaluation

9. Short essay(example)

   Justify Segregation of biomedical waste is the heart of biomedical waste management.

10. Multiple choice question (example)

1. Identify the statement that correctly represents segregation of biomedical waste? Select the correct answer.
   a. Putting different categories of biomedical waste into single bin
   b. Putting different categories of biomedical waste into appropriate color coded bin
   c. Putting same category of biomedical waste into different color coded bin
   d. None of the above

Answer: b. Putting different categories of waste into different color coded bin

Competency 14.4:

Observe the Biomedical waste management done at hospital or Common Biomedical Waste Treatment Facility(CBWTF)

Specific Learning Objectives

At the end of the observation session, the learner should be able to:

1. Identify the steps involved in biomedical waste management in a hospital as per BMWM Rules 2016
2. Enlist the documents that are to be maintained at the hospital as per BMWM Rules 2016

Content

1. Student will use an observation check list and observe the segregation, collection, in house transportation, temporary storage, documentation process and use of personal protective equipment by the personnel.
2. Student will visit various locations in the hospital to observe the biomedical waste management process.

TL methods

Demonstration of Biomedical waste management processes in the hospital. Interaction with nursing personnel.

Evaluation

Evaluate the report of the visit submitted by the student

Topic: Health planning and management (CM 16)

Total time allotted - 4 hours (2 hours large group and 2 hours small group learning)

Competency No	Competency	Domain K/S/A/C	Level	Phase	TL method	Integration	Assessment*	Remarks
16.1	Define and describe the concept of Health Planning	K	K	3	Interactive lecture		SAQ SEQ	
16.2	Describe planning Cycle	K	K	3	Interactive lecture		LAQ SEQ SAQ	
16.3	Describe Health Management Techniques	K/S	KH/SH	2 and 3	SGD Practical PHC/ DHO visit		LAQ SEQ SAQ MCQ Assignment and log book entry Reflection writing	
16.4	Describe Health planning in India and National policies related to health and health planning	K	KH	3	Interactive lecture		SAQ SEQ MCQ	Pandemic module, PM 2.4) FC 3.1 (foundation course

*Formative Assessment tools for Interactive lecture

- Quiz/MCQ test (app or google form)
- One minute paper
- Directed paraphrasing
- Muddiest point
- Buzz groups
- Exit slip/ticket
- Yes/No response (color cards)
- Log book/portfolio

Formative assessment for small group learning (some of them are used both for teaching and assessment)

- Checklist completion
- Peer assessment
- Think, Pair and share
- Round robin charts

- Jigsaw method
- Feedback forms
- Informal presentations
- Group discussions
- Poster making
- Role play
- Debates
- Logbook/practical record/portfolio

CM 16.1- Define and Describe the concept of Health Planning

SLOs: *At the end of teaching learning session the student should be able to*

1. Define Health planning as per WHO
2. Identify the purpose of health planning
3. Define health needs (Postings during second year/family survey)
4. Define health demands (Postings during second year/family survey)
5. Differentiate between Goal, Target and Objective using suitable examples.

Content:

- Need for planning in health
- Pre requisites for planning
- Examples of planning in health care (national programs, hospitals and during health crisis)
- Health needs and demands

Assessment:

Sample Short answer Question:

Differential between goal, target and objective using suitable examples- 3 marks

CM 16.2- Describe planning cycle

SLOs: *At the end of teaching learning session the student should be able to*

1. Define Planning Cycle
2. Describe the 8 steps of the Planning Cycle in the correct order with an example

Content:

- Planning cycle at various levels with examples'
- Gantt chart
- Types of planning

Assessment:

Sample Long answer question:

Describe the steps of planning cycle with an example – 10 marks

CM 16.3- Describe Health management techniques

SLOs: *At the end of teaching learning session the student should be able to*

1. Define health management
2. Describe the principles of health management
3. Differentiate between management, organisation and administration in health
4. Describe the modern health management techniques with suitable examples

Content:

- Management and administration
- Organisational control
- Budgeting
- Inventory management
- Network analysis
- Time management

Assessment:

Sample Long answer question- 10 marks

As a new medical officer of the primary health centre of a tribal area, you are planning to implement the mother and child health programmes as per the needs of the community.

Answer the following questions in the context of the above scenario

a) What is the importance of planning?
b) Describe your plan of action using planning cycle.

Sample Short answer: 3 marks

What is Cost-benefit and Cost- effective Analysis?

Sample Long Essay: 10 marks

Describe Inventory management techniques with example

Sample MCQ

Which of the following is NOT a inventory management technique?

1. ABC analysis
2. FSN analysis
3. VED analysis
4. PHC analysis

Key- 4

CM 16.4- Describe health planning in India and National policies related to health and health planning

SLOs: *At the end of teaching learning session the student should be able to*

1. Describe the steps to prepare a micro plan for vaccination activity at PHC level (Pandemic module, PM 2.4)
2. List the goal, key principles and objectives of National Health Policy 2017
3. Demonstrate the understanding of the national health goals and policies FC 3.1 (foundation course)
4. Describe the thrust areas under National Health Policy 2017
5. Enumerate the recommendations of the various Health Committees in India
6. List the functions of NITI in Health planning in India
7. Describe role of Five-year plans with respect to health care in India

Content:

- NITI AYOG and health
- Five-year plans and health
- Health committee recommendations
- National Health policy 2017 highlights

Assessment:

Sample Short Essay- 5 marks

- Describe the key features of national health policy 2017

Faculty Guide:

Sample lesson plan

Topic: Health Planning

Competency:

CM16.1- Define and describe the concept of Health planning

CM16.2- Describe planning cycle

Specific Learning Objective:

At the end of teaching learning session, a Phase 3 student should be able to

1. Define Health planning correctly as per WHO definition.
2. Identify the purpose of health planning correctly.
3. Define health needs and health demands.
4. Differentiate between Goal, Target and Objective correctly using examples.

5. Define the Planning Cycle correctly.
6. Describe the steps of the Planning Cycle correctly.

Domain - Knowledge
Level – Knows, Knows how
Core – Yes
Integration: NIL

LESSON PLAN

Sl. No.	Content	TL Method	TL Media	Time
1.	Set induction- Need/ Purpose for Health Planning	Brainstorming	Black/white board	5 min
2.	Define Health planning as per WHO definition	Lecture	PPT	5 min
3.	Differentiate between Goal, Target and Objective using examples	Lecture	PPT	5 min
4.	Define planning Cycle	Lecture	PPT	5 min
5.	Formative assessment	MCQ	Kahoot	5 min
6.	Describe the steps of the Planning Cycle	Lecture	PPT	20 min
7	Assessment	Summative: Q&A session		5 min
8	Summary	Brainstorming	PPT, White/ Black board	5 min
9	Attendance			5 min

Faculty guide:

Assessment of small group learning:

Rubric for Small group Discussion

Score	Criteria for assessment
5	Is a proactive participant showing a balance between listening, initiating, and focusing discussion. Displays a proactive use of the whole range of discussion skills to keep discussion going and to involve everyone in the group. Understands the purpose of the discussion and keeps the discussion focused and on topic. Applies skills with confidence, showing leadership and sensitivity.
4	Is an active participant showing a balance between listening, initiating, and focusing discussion. Demonstrates all the elements of discussion skills but uses them less frequently and with less confidence than the above level. Keeps the discussion going but more as a supporter than a leader. Tries to involve everyone in the group. Demonstrates many skills but lacks the confidence to pursue them so that the group takes longer than necessary to reach consensus. Demonstrates a positive approach but is more focused on getting done than on having a positive discussion.
3	Is an active listener but defers easily to others and lacks confidence to pursue personal point of view even when it is right. Participates but doesn't use skills such as summarizing and clarifying often enough to show confidence. Limits discussion skills to asking questions, summarizing, and staying on topic. Lacks balance between discussion and analytical skills. Either displays good analysis skills and poor discussion skills or good discussion skills and poor analysis skills.
2	Is an active listener but defers easily to others and tends not pursue personal point of view, lacking confidence. Limits discussion skills to asking questions, summarizing, and staying on topic. Rarely demonstrates analysis skills because doesn't understand the purpose of the discussion, and as a result, offers little evidence to support any point of view.
1	Demonstrates no participation or effort. Participates only when prompted by the teacher. Only responds to others and initiates nothing. Provides limited responses that are often off topic. Participates minimally so that it is impossible to assess analysis skills or understanding of the issues.

1 to 3 =Below Expectations
4 =Meets Expectations
5 =Above Expectations

Competency 17.1/2/3

Define and describe the concept of health care to community/ Describe community diagnosis/ Describe primary health care, its components and principles.

Specific learning Objectives

At the end of the session the learner will be able to:

a. Define Health care.
b. Classify levels of health care.
c. Definite Primary Health Care.
d. Describe Principles and Elements of Primary Health Care.
e. Define community diagnosis

Competency 17.4

Describe National policies related to health and health planning and millennium development goals.

Specific learning Objectives

At the end of the session the learner will be able to:

a. Describe National PopulationPolicy.
b. Describe National ChildrenPolicy.
c. Describe National policy for olderpersons.
d. Describe Sustainable Development Goals (SDG) and targets.

Competency 17.5

Describe health care delivery in India.

Specific learning Objectives

At the end of the session the learner will be able to:

a. Describe Health Systems in India – Centre, State,
b. District Level: Panchayati Raj and Rural Development
c. Describe Health Care Systems, Indigenous systems of medicine and its advantages and disadvantages in India.
d. Describe the IPHS standards for PHC and Health and wellness centre, subcentre
e. Describe the voluntary health agencies working in India
f. Define evaluation
g. Describe steps involved in evaluation of Health Service
h. Describe Health Systems Research and Health Forecasting

LONG ESSAY

1. Define primary health care. Describe principals and elements of primary healthcare.
2. Describe Primary health care inIndia.

Short essay

1. Levels of health care inIndia
2. Enumerate functions of primary healthcentre
3. Primary Health careworkers
4. Describe IPHS standards forPHC.

Short notes :

1. Appropriate technology withexample
2. List 4 functions of ASHAworker
3. List 4 functions of anganwadiworker.
4. List 4 voluntary health agency working inIndia
5. Enumerate 4 functions of Medical officer ofPHC.

MCQ :

1. The population covered by a Primary health centre in rural areais a) 15000 b) 20000 c) 25000 d)30000

2. Thepopulationcoveredbyahealthandwellnesscentre, subcentreinatribalareais a) 5000 b) 30000 c)4000 d)6000

   Ans : 3000

3. Treatment of locally endemic diseases is a job responsibility of PHC MO a). true b).false

   Ans : True

Recent advances in Community Medicine
(CM 20)
Total time allotted – 2 hours

Competency No	Competency	Domain K/S/A/C	Level	Phase	TL method	Assessment*	Remarks
CM 20.1	List important public health events of last five years	K	KH	3	SGD SDL	Reflective writing	Participate in the public health events in their college or state
CM 20.2	Describe various issues during outbreaks and their prevention	K	KH	3	SGD	SAQ	Reflective writing by the previous pandemic experiences • To be covered in Pandemic module
CM 20.3	Describe any event important to Health of the Community	K	KH	3	SGD	Assignment and log book entry Reflection writing	Participate in the public health events in their college or state
CM 20.4	Demonstrate awareness about laws pertaining to practice of medicine such as Clinical establishment	K	KH	3	SGD SDL	MCQ	

	Act and Human Organ Transplantation Act and its implications						

Formative assessment for small group learning (some

- Checklist completion
- Peer assessment
- Think, Pair and share
- Feedback forms
- Informal presentations
- Group discussions
- Poster making
- Role play
- Debates
- Logbook/practical record/portfolio

CM 20.1- List important public health events of last five years

SLOs: *At the end of teaching learning session the student should be able to*

6. List the important public health events
7. Know the importance of it and the theme of that year
8. Events conducted in their college or district and participate

Assessment:

Log book – Reflective writing

CM 20.2- Describe various issues during outbreaks and their prevention

SLOs: *At the end of teaching learning session the student should be able to*

3. Define Pandemic and should be able to describe the steps taken in containment of the pandemic
4. Should know the various government bodies and non Govt agencies which help in the outbreaks
5. Various problems faced by the health care professionals in during pandemic

Assessment:

Log book – reflective writing

CM 20.3 - Describe any event important to Health of the Community

SLOs: *At the end of teaching learning session the student should be able to*

1. List the important health event
2. Know the importance of it and participate in it

Assessment:

Log book – reflective writing

CM 20 .4- Demonstrate awareness about laws pertaining to practice of medicine such as Clinical establishment Act and Human Organ Transplantation Act and its implications

SLOs: *At the end of teaching learning session the student should be able to*

8. Demonstrate awareness about various laws in the state and in India
9. And the implications on health

Assessment:

Log book – reflective writing

3.1 The Foundations of Communication- 3

A. Healthcare as a right:

1) What are the implications of healthcare as a right?

2) What are social and economic implications of healthcare as a right?

3) What are the implications of doctor?

Evaluation:

Write a short note on barriers of implementation of healthcare as a universal right.

B. Working In a healthcare team:

1) Demonstrate ability to work in a team of peers and superiors.

2) Demonstrate respect in relationship with patients, fellow team members, superiors and other healthcare workers.

C. Doctor-patient relationship

1) Demonstrate empathy in patient encounters.

2) Communicate care options to patient and family with a terminal illness in a simulated environment.

3.3 The Foundations of Communication-4

(For Assessment of AETCOM competency please refer "AETCOM-Competency for the Indian medical Graduate 2018, MCI New Delhi Document)

ELECTIVES:

Electives : Department of Community Medicine

Name of Block	Block 1
Name of Elective	Assessment of client satisfaction of ANC services in urban and rural health center
Location of hospital Lab or research facility	Urban/Rural health training center of ----
Name of internal preceptor(s)	Dr. Dr. Dr. Dr.
Name of external preceptor(s)	NA
Learning objectives of elective	1. Writing objectives of the study 2. Sample size calculation, sampling method 3. Review of literature Study tool designing 4. Data collection methods and techniques 5. Data analysis 6. Report writing

Number of students that can be accommodated	10
Prerequisites	Good communication skills
List of activities of student participation	1. Orientation to research methods 2. Protocol writing 3. Review of literature 4. Preparing questionnaire 5. Data collection 6. Data analysis and interpretation 7. Project report writing and presentation
Learning resources	Books on Research methodology Books on biostatistics Antenatal mothers
Portfolio	Activity Book with photos
Logbook	Satisfactory completion of posting with a "meets expectation '(M)' grade"
Assessment	Attendance: Successful completion of objectives and log book entry
Comments	

Name of Block	Block 1
Name of Elective	Community based research
Location of hospital Lab or research facility	Urban/Rural field practice area of ----
Name of internal preceptor(s)	Dr. Dr. Dr. Dr.
Name of external preceptor(s)	
Learning objectives of elective	1. To select the research topic 2. To frame objectives of research topic 3. To write methodology for research 4. To collect data and analyze the results. 5. To present abstract to the group.
Number of students that can be accommodated	10
Prerequisites	Communication skills

List of activities of student participation	1. Work with supervisor in selecting the topic, framing the objectives 2. Write up the Introduction, Review of literature. 3. Work up with statistician to write up methodology and to do analysis to the data collected 4. Present abstract of the research done
Learning resources	Leon Gordis: Clinical Epidemiology
Portfolio	Data collection notes Statistical work sheet Abstract created
Logbook	Satisfactory completion of posting with a "meets expectation '(M)' grade"
Assessment	Attendance Successful completion of objectives and log book entry
Comments	

LOGBOOK:
(Refer SSAHE 2 nd Professional Document ordinance.)

Reference Books
(Refer SSAHE 2 nd Professional Document ordinance.)
REFERENCEBOOK

1. K.Park,Park'stextbookofpreventive and social medicine, M/s BanarasidasBha not Publishers, Jabalpur.-
2. B.K.Mahajan&M.Gupta Text book of preventive and social medicine, Jaypee Brothers.
3. Mahajan's Methods in Biostatistics for Medical Students and Research

Workers. Jaypee Publishers

4).D.KMahabalaraju., Essentials of CommunityMedicine, Practicals.

5) Sundar Lal,Textbook of Community Medicine, CBS Publishers.

LevelII
1) AM Kadri. IAPSM's Textbook of Community Medicine.
2) J Kishore. Kishore's National Health Programs of India
3) RajvirBhalwar ,Textbook of Public Health and Community

Medicine, Published in Collaboration with WHO.

3) Principles of Medical Education: Dr.TSingh
4) AHSurya kanth Community Medicine with Recent Advances.

5) PSS Sundar Rao.Introduction to biostatistics and research methods

Level-III

1. DonaldHunter,(2018)TheDiseaseofOccupations,LatestEdition,Hodder&StoughtonLondon,Sydney,Auckland,Toronto.
2. InternationalLabourOrganization,EncyclopaediaofOccupationalHealthandSafety, Volume1&2.ILO,Geneva,Switzerland
3. Jallifee,ClinicalNutrition,WHO.,Geneva

Sri Siddhartha Academy of Higher Education, Tumkur

UNDERGRADUATE LOG BOOK

For1st 2nd and3rd Professional Year MBBS Students

DEPARTMENT OF COMMUNITY MEDICINE

Name of College, address & Logo

PREFACE

TheMedicalCouncilofIndiahasrevisedtheundergraduatemedicaleducationcurriculumso that the Indian Medical Graduate (IMG) is able to recognize "Health for all" as a national goal.He/sheshouldalsobeabletofulfilhis/hersocietalobligations.Therevisedcurriculumhasspecified the competencies that a student must attain and clearly defined teaching learning strategiesfor the same. With this goal in mind, integrated teaching, skill development, AETCOM and self-directed learning have been introduced. There would be emphasis on communication skills, basicclinicalskills,andprofessionalism.Thereisaparadigmshiftfromthetraditionaldidacticclassroom-basedteachingtolearningenvironmentswherethereisemphasisonlearningbyexploring, questioning, applying, discussing, analysing, reflecting, collaborating, and doing. Therecognition of this need is enshrined by a greatly enhanced allocation of time to these methods andalso the assessment techniques. With this view in mind the logbook has been designed as per theguidelinesofCompetencyBased Curriculum.

INSTRUCTIONS

1) The logbook is a record of the academic and co-curricular activities of thedesignated student,whowould be responsibleformaintaininghis/herlogbook.

2) Thestudentisresponsiblefor

3) Gettingthe entriesin thelogbook verified bythefacultyinchargeregularly.

4) Entries in the logbook will reflect the activities undertaken in the department &have to bescrutinized bythe Head of theconcerned department.

5) Thelogbookis arecordofvarious activities bythestudent like:

- Overallparticipation&performance
- Attendance
- Participationinsessions
- Recordofcompletionof pre-determinedactivities.
- Acquisitionofselectedcompetencies

6) The logbook is the record of work done by the candidate in that department /specialty andshould be verified by the college before submitting the application ofthe students for theuniversityexamination.

BASICINFORMATION

Passportsize photo

Name	
RollNo	
UniversityRegistrationNumber	
Batch	
ContactNo	
Email Id	
Guardian/Parent Name ContactNumber	
FacultyMentor NameDepartment	

LOGBOOK CERTIFICATE

This is to certify that this log book is the bonafide record ofMr./Ms… ..... Registrationnumber …..... and admitted to this Institution in the academic year .....whoseparticularsaregivenabove.His/Herlogo ofcompetenciesacquired, are as noted in the entries in this log book in the subject of COMMUNITYMEDCINE and related AETCOM modules as per the Competency Based UndergraduateMedicalEducationCurriculum,GraduateMedicalRegulation2019,duringthe period

……..to……..

She / He is not eligible / eligible to appear for the summative (University) assessment as onthe dategiven below.

Signature

of FacultyMentorNameand

Designation

CountersignedbyHeadoftheDepartment

Place:

Date:

INDEX

Topic	PageNos.	Signatureof Faculty
CoreActivities		
Attendanceextract	-------	
Internalassessmentmarks	Withrecord feedback	
Communicationactivity		
Familystudy		
Clinico-socialCase		
Seminar		
Self-DirectedLearning		
RecordMaintenance		
HealthDays		
VolunteeringinNationalHealthProgramRelatedField Activities		
FieldVisit		
AETCOM		
Research		
InvestigationofanEpidemic*		
Non-CoreActivities		
Co-CurricularActivities (Quiz,Poster,Debate,Essay,Skits)		
CME/Conference/Workshop		
Awards/recognition		
Overallassessmentofstudent		

ATTENDANCEEXTRACT

Professional year	Classesconducted		Classesattended		Percentage	
	Theory	Practical	Theory	Practical	Theory	Practical
First						
Second						
Third						
Total						

Signatureoffacultyanddate

Note:

Every candidate shouldhave**attendance not less than 75%ofthe total classes conducted intheory which includes didactic lectures and self-directed learning and not less than 80% of thetotal classes conducted in practical which includes small group teaching, tutorials, integratedlearning and practical sessions** in each calendar year calculated from the date of commencement ofthe term to the last working day as notified by the University in each of the subjects prescribed to beeligibleto appearfortheuniversityexamination.

ThePrincipalshouldnotifyattheCollegetheattendancedetails attheendofeachterm withoutfailunderintimation to thisUniversity

INTERNALASSESSMENTMARKS

Professionalyear	Theory		Practicals	
	Totalmarks	Obtained	Total	Obtained
First				
Feedbackgiven Date Signatureoffaculty Signatureofstudent				
Second				
Feedbackgiven Date Signatureoffaculty Signatureofstudent				
Third				
Feedbackgiven Date Signatureoffaculty Signatureofstudent				

SUMMARY OF FORMATIVE ASSESSMENT FOR THE ENTIREYEAR

Sl. No.	TypeofAssessment	Total marks	Marks scored	Signatureof student	Signatureof Teacherwithdate
1	Seminars/Tutorials/otheractivities/SGD	10			
2	Professionalism	10			
	TOTAL	20			

Note: Learners must secure at least 50% marks of the total marks (combined in theoryandpractical / clinical; not less than 40 % marks in theory and practical separately)assignedforinternalassessmentin aparticularsubjectin ordertobeeligibleforappearingatthefinal University examination of that subject. Internal assessment marks will reflectasseparatehead of passingat thesummativeexamination.

RUBRICFORASSESSINGTHEPROFESSIONALISM

Phase	**Areasassessed**					**Signature of student**	**Signature ofteacher**
	Regular forClasses (5)	Submission ofrecords (5)	Behaviourin class anddiscipline (5)	Dresscodeandpresentability (5)	Total (20)		
At theend of 1st IA							
At theend of 2ndIA							
At theend of 3rdIA							
Average score atthe endofthe year							

COMMUNICATIONACTIVITY

Competenciescovered

: Demonstratetheroleofeffective communicationskillsinhealthinasimulatedenvironment

: Demonstrate the important aspects of the doctor patient relationship in a simulatedenvironment

4.3: Demonstrate and describe the steps in evaluation of health promotion and educationprogram

Competency #addressed	**Name ofActivity**	**Datecompleted**	**Attempt atactivity FirstorOnly (F)Repeat (R)Remedial(Re)**	**Rating Below (B)expectationsMeets (M)expectations Exceeds (E)expectations**	**Decision offaculty Completed (C)Repeat (R)Remedial(Re)**	**Initial offacultyanddate**	**Feedbackreceived Initialoflearner**

FAMILYSTUDY

Competenciescovered

:Describe the steps and perform clinic-socio-cultural and demographic assessment of the individual, family, and community

:Describe the socio-cultural factors, family (types), its role in health and disease & demonstrate in a simulated environment the correct assessment of socio-economicstatus

:Describe and demonstrate in a simulated environment the assessment of barriers to good health and health seeking behaviour

5.2: Describe and demonstrate the correct method of performing a nutritional assessment of individuals, families, and the community by using the appropriate method

5.4: Plan and recommend a suitable diet for the individuals and families based on local availability of foods and economic status, etc in a simulated environment

Competency #addressed	**Name ofActivity**	**Datecompleted**	**Attempt atactivity FirstorOnly (F)Repeat (R)Remedial(Re)**	**Rating Below (B)expectationsMeets (M)expectationsExceeds (E)expectations**	**Decision offaculty Completed (C)Repeat (R)Remedial(Re)**	**Initial offacultyanddate**	**Feedbackreceived Initialoflearner**

CLINICO–SOCIALCASE

Competenciescovered

:Describe the steps and perform clinic-socio-cultural and demographic assessment of the individual, family, and community

:Describe the socio-cultural factors, family (types), its role in health and disease & demonstrate in a simulated environment the correct assessment of socio-economicstatus

:Describe and demonstrate in a simulated environment the assessment of barriers to good health and health seeking behaviour

5.2: Describe and demonstrate the correct method of performing a nutritional assessment of individuals, families, and the community by using the appropriate method

5.4: Plan and recommend a suitable diet for the individuals and families based on local availability of foods and economic status, etc in a simulated environment

Competency #addressed	**Name ofActivity**	**Datecompleted**	**Attempt atactivity FirstorOnly(F)Repeat (R)Remedial(Re)**	**Rating Below (B)expectationsMeets (M)expectationsExceeds(E) expectations**	**Decision offaculty Completed (C)Repeat (R)Remedial(Re)**	**Initial offacultyanddate**	**Feedback received Initialoflearner**

SEMINAR

Competenciescovered

1.9:
Demonstratetheroleofeffectivecommunicationskillsinhealthinasimulatedenvironment

4.3: Demonstrate and describe the steps in evaluation of health promotion and educationprogram

Competency #addressed	**Topic**	**Datecompleted**	**Attempt atactivity FirstorOnly (F)Repeat (R)Remedial(Re)**	**Rating Below (B)expectationsMeets (M)expectations Exceeds (E)Expectations**	**Decision offaculty Completed (C)Repeat (R)Remedial(Re)**	**Initial offacultyanddate**	**Feedbackreceived Initialoflearner**

STUDENTSEMINAREVALUATIONRUBRIC

Nameof thestudent:_____

_____Reg.No._____

Nameof theTopic:_____DateofPresentation:

_____

Please tick mark (□) the response which best represents your answer for the followingquestions.

S. No.		Strongly Disagree(1)	Disagree(2)	Uncertain(3)	Agree (4)	Strongly Agree(5)
	Content:					
1.	Thetopicchosen wasrelevantto thecourse					
2.	Theobjectivesofthetopicwere Clearlystated.					
3.	Therewasadequatereviewofthe literature.					
4.	Thestudent maintainedgood Continuityofthoughtsthroughou tthepresentation.					
5	Thestudentdemonstratedagood Understandingofthetopic.					
6.	The material presented wasappropriateforthetimeallo tted.					
	Presentation:					
1.	Thepresentationwaswell organized.					
2.	Theaudiovisualswerewell prepared.					
3.	Thevoicewasclear andaudible.					
4.	Thestudent maintainedregulareyeContactwith theaudience.					
5.	The student adhered to the expectedstyleofascientifictalk.					
6.	The student maintained the interestof the audience throughout thepresentation.					
7.	Thestudent maintainedproper pace Duringthepresentation.					
8.	The student andledallthequestionswell.					
9.	The student summarized the topicwellemphasizingatake home.					

SuggestionsforImprovement:

AnyotherComments :

Overall Score: | **Evaluatedby:NameoftheFaculty:**_____

SMALL GROUP DISCUSSION–ASSESSMENT AND FEEDBACK

Module#	**Name of SGD/SDLActivity**	**Datecompleted**	Score	**InitialOffacultyanddate**	**Feedback Receive**d Initial oflearner

Thes mall group discussions will be scored based on the following criteria.Marks to be given

Score	Criteriaforassessment
5	Is a proactive participant showing a balance between listening, initiating, and focusing discussion. Displays a proactive use of the whole range of discussion skills to keep discussion going and to involve every one in the group.Underst and the purpose of the discussion and keeps the discussion focused and o ntopic. Applies skills with confidence, showing leader ship and sensitivity.
4	Is an active participant showing a balance between listening, initiating, and focusing discussion. Demonstrates all the elements of discussion skills but uses them less frequently and with less confidence than the above level. Keeps thediscussiongoingbut moreasasupporterthana leader.Tries to involve every one in the group. Demonstrates many skills but lacks the confidence to pursue themso that the group takes longer than necessary to reach consensus. Demonstrates appositive approachbut is more focused on getting done than on having a positive discussion.
3	Is an active listener but defers easily to others and lacks confidence to pursue personal point of view even when it is right. Participates but doesn't use skillssuch as summarizing and clarifying often enough to show confidence. Limits discussion skills to asking questions, summarizing, and staying on topic.Lacks balance between discussion and analytical skills. Either displays good analys is skills and poor discussion skills or good discussion skills and pooranalysis skills.
2	Isanactivelistenerbut deferseasily to others and tends not pursue personal point of view, lacking confidence. Limits discussion skills to asking questions,summarizing, and staying on topic. Rarely demonstrates analysis skills because doesn't understand the purpose of the discussion, and as a result,offers little Evidence to support any point of view.
1	Demonstrates no participation or effort. Participates only when prompted by theteacher. Only responds to others and initiates nothing. Provides limited responses that are often off topic.Participates minimally so that it is impossible to assess Analysis skill sorunder standing of the issues.

EVALUATION OF SGLSESSIONS

COURSE TITLE: _____

PHASE_____DATE: _____

Scale:1-Never
2- Occasionally
3- Some times
4- Often
5- Always

1 2 3 45

1.	Assembles for the session in time					
2.	Contributes relevant information in discussions					
3.	Shares learning resources relevant to the topic					
4.	Give scritical feedback					
5.	Take scriticis min a healthy manner					
6.	Seeks answers to learning questions					
7.	Integrates old and new knowledge (across the courses)					
8.	Shows consideration for group process					
9.	Shows confidence in areas of understanding					
10.	Shows commitment to correct deficiencies					
	Total					

STUDENT TUTOR

SIGNATURE	SIGNATURE
NAME:	NAME:
REG.NO.	DEPARTMENT:

Documentation and feedback for Self-Directed Learning

Sl no	Date	TopicofSDL	Feedback	Signature of faculty/mentor
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				

Reflection on Self-directed learning Experience

Topic:

Date:

Signature of Teacher-in- charge

RECORD MAINTAINANCE

Scoring: Excellent(8-10) Good(6-7) Average(4-5)Poor(<4)

Criterion	Rating	Signature of faculty and date
Completion		
Quality of content		
Appropriate diagrams where required		
Neatness		
Total		

WORLD HEALTH DAY

Health day observed		
Date		
Location		
Role o fthe student	Participated	Observed
Details of the program		
Reflection by student		

Signature of faculty and date

VOLUNTEERING IN NATIONAL HEALTH PROGRAM RELATED FIELD ACTIVITIES

NameoftheNationalHealthProgram		
Date		
Location		
Roleofthe student	Participated	Observed
Details of theactivity		
Reflection bystudent		

Signatureoffacultyanddate

FIELD OR CLINIC VISIT

Nameof thevisit	Date	Reportwritteninr ecord	Signature offaculty

The following are there commended field visits for undergraduate students

1. PHC
2. Anganwadi
3. DOTSCentre
4. HospitalWaste Management Facility
5. WaterTreatmentPlant
6. ART/ ICTCCentre

CheckListforEvaluationofFieldVisitReport

Field Visit Report will be marked on five-point Likert Scale:
1=Strongly Disagree,2=Disagree,3=Neutral,4=Agree,5=Strongly Agree

	1	2	3	4	5
1.There is a comment on whether the objectives of the visit have been fulfilled, if not which objective has not been covered					
2. There is Clear Description of student observation/ skill learned.					
3.Analysis of strengths and weaknesses of the services in light of theory and key concepts of the course					
4.Report include information that supports student analysis [Pictures,maps,forms]					
5.There is evidence of active participation of student during the visit					
6.There is statement of Limitation/suggestions					

AETCOM

Competency #addressed	NameofActivity	Date	Signature offaculty	Feedback Received Initial of learner

RESEARCH

Competencies covered

: Describe and discuss the principles and demonstrate the methods of collection, classification, analysis, interpretation, and presentation of statistical data

: Describe, discuss, and demonstrate the application of elementary statistical methods including test of significance in various study designs

: Enumerate, discuss, and demonstrate Common sampling techniques, simple statistical methods, frequency distribution, measures of central tendency and dispersion

7.9: Describe and demonstrate the application of computers in epidemiology

Activity	
Objectives	
Studydesign and samplesize	
Studytool	
Mainresults	
Results presented in conference/ department	
Signature of faculty guide	

INVESTIGATION OF EPIDEMIC

Competencies covered

7.7: Describe and demonstrate the steps in the Investigation of an epidemic of communicable disease and describe the principles of control measures/ If this activityis not possible a case scenario/ simulated event may be given for completion of this activity

Nameof the exercise	Date	Documentation in record	Signature of faculty

CME/CONFERENCE/ WORK SHOP

Nameofevent	Date	Role	Learnings	Signature of faculty

CO-CURRICULAR ACTIVITIES

Details of event	Date	Role	Learnings	Signature of faculty

AWARDS/ RECOGNITION

SlNo	Details

OVER ALL ASSESSMENT OF THE STUDENT

STRENGTHS	
SUGGESTIONS	

Signatureof Mentor **Signature of HOD**

Sri Siddhartha Academy of Higher Education, Tumkur

Ophthalmology Curriculum

as per

Competency-Based Medical Education Curriculum

SSAHE Ophthalmology Curriculum as per the new Competency Based Medical Education Preamble

The NMC envisages that the Indian Medical Graduate, should function as the Physician of first contact in the community, to provide holistic health care to the evolving needs of the nation and the world. To fulfil this the IMG should be able to perform the following roles: a clinician, a communicator, a lifelong learner, a professional and a team leader.

Competency-based medical education (CBME) is an outcomes-based training model that has become the new standard of medical education internationally. This new curriculum is being implemented across the country and the first batch has been enrolled since the academic year 2019. The regulatory and accrediting body NMC had started the process by training faculty across the country in the key principles of CBME and developing key competencies for each speciality with the input from expert groups under each speciality.

Ophthalmology is one of the most advanced specialities in the field of medicine. Ophthalmology deals with preserving vision, the most important special sense. The eye is a unique organ, with none other to match it in structure, function, and gross appearance. Most disorders of the eye lend itself to direct visualisation. The advances in ophthalmology are frequent both in diagnostics and treatment options. It is an interesting area of study. The Ophthalmology undergraduate curriculum provides the IMG the requisite knowledge, essential skills, and appropriate attitudes to be able to diagnose and treat common ocular disorders and to be able to recognise serious eye conditions and refer appropriately.

The NMC, in the Graduate medical regulations 2019, has provided the list of ophthalmology competencies required for an IMG and these have been included in this ophthalmology curriculum document. The Specific learning objectives (SLO's) to achieve each competency has been listed along with the suggested Teaching-Learning methods and preferred assessment methods both formative and summative.
Following this is a detailed **blueprint** showing the weightage and the assessment tool for a particular chapter. This blueprint will ensure that there is an alignment between the SLOs', TL methods and the assessment. A **question paper layout** has also been added to ensure that there is consistency among different paper setters. Finally, the list of practical skills along with the most appropriate TL and assessment methods has been laid out.

Goals and Objectives of the SSAHE Ophthalmology Curriculum

Goals

The broad goal of the ophthalmology curriculum is to equip the IMG with sufficient knowledge, skills and attitude to diagnose and appropriately treat common ophthalmic disorders affecting our population.

Objectives

A) Knowledge

At the end of the course student should be able to:

a. Describe the applied anatomy, physiology and biochemical attributes of the normal eye and adnexa.
b. Describe the pathophysiology, clinical features, and management of diseases of the eye, orbit and adnexa.
c. Demonstrate the ability to apply the knowledge in a clinical setting.

(B) Skills

At the end of the course the student should be able to:

a. Elicit a detailed clinical history and perform an ocular examination in both outpatient and ward setting.
b. Apply the elicited history and examination to arrive at correct diagnosis and plan treatment.
c. Perform minor diagnostic and therapeutic procedures in an emergency situation prior to referral to higher centres

C) Attitude and communication skills

At the end of the course the student should be able to:

a. Communicate effectively with patients, their families and the public at large.
b. Communicate effectively with peers and teachers demonstrate the ability to work effectively with peers in a team.
c. Demonstrate professional attributes of punctuality, accountability and respect for teachers and peers.
d. Appreciate the issues of equity and social accountability while undergoing all clinical encounters

List of all Ophthalmology Competencies with their specific learning objectives, with suggested teaching-learning and assessment methods

	Competencies	**Specific learning objectives**	**Teaching learning methods**	**When T-L will be done**	**Formative assessment**	**Summative assessment**
Topic: Refractive errors						
OP 1.1	Describe the physiology of vision	Anatomy of retina and fovea Visual pathway Mechanism of vision Theories of color vision	Lecture	6th term	MCQs at the end of lecture	Short essay/viva voce
OP 1.2	Define, classify and describe the types and methods of correcting refractive errors.	Definition of myopia, hypermetropia and astigmatism Describe the Types of myopia Describe Types of hypermetropia Describe Types of astigmatism Enumerate the Treatment options for myopia Enumerate the retinal findings in myopia Enumerate the Treatment options of hypermetropia Describe the treatment of astigmatism List the indications and advantages, complications of contact lenses	Lectures Tutorial to reinforce learning and prevent decay	6th term	MCQs/SAQ's at the end of lecture or a group of lectures	Essay/SAQ/ viva voce
OP 1.3	Demonstrate the steps in performing the visual acuity assessment for distance vision,nearvision,colourvision,the pin hole test and the	Assess visual acuity using Snellen's chart Demonstrate use of pin hole in visual acuity testing and interpret the findings Assess near vision using Times new	DOAP session during clinical posting	1st posting	Skill assessment during clinics Logbook	End of 1st posting – OSCE or short case

	menace and blink reflexes	Roman charts Elicit the blink reflex and menace reflex in an adult patient Assess color vision using Isihara'scolor plates				
OP 1.4	Enumerate the indications and describe the principles of refractive surgery	Enumerate the types of refractive surgery Enumerate the indication for refractive surgery Briefly describe the priciple of LASIK	Lecture	6th term	MCQ's/SAQ/ Viva voce at the end of lecture	Short essay/viva voce
OP 1.5	Define, enumerate the types and the mechanism by which strabismus leads to amblyopia	Define amblyopia Enumerate the types of amblyopia Describe briefly the mechanism of strabmismic amblyopia	Lecture	6th term	MCQ's/SAQ/ Viva voce at the end of lecture	Short essay/viva voce
Topic: Lids and Adnexa, Orbit Number of Competencies: (08)						
OP 2.1	Enumerate the causes, describe and discuss the aetiology, clinical presentations and diagnostic features of common conditions of the lid and adnexa	Describe the etiology, clinical features of common conditions of the lid and adnexa including Hordeolum externum/ internum, blepharitis, preseptal cellulitis, dacryocystitis, hemangioma, dermoid, ptosis,entropion, lid lag, lagopthalmos	Lecture, Small group discussion like tutorials, PBL or CBL	6th term	MCQs/SAQ / Viva voce	Short essay/viva voce
OP 2.2	Demonstrate the symptoms & clinical signs of conditions enumerated in OP2.1	Elicit signs and symptoms of common eyelid conditions Diagnose accurately common lid conditions based on the elicited signs and symptoms Accurately prescribe the local medication for common lid conditions Counsel a patient with	DOAP session during clinical posting	1st clinical posting	Skill Assessment during clinics Logbook	End of 1st posting – OSCE or short case

		lagophthalmos the need for tarrsoraphy				
OP 2.3	Demonstrate under supervision clinical procedures performed in the lid including: bells phenomenon, assessment of entropion/ectropion, perform the regurgitation test of lacrimal sac. Massage technique in cong. dacryocystitis, and trichiatic cilia removal by epilation	Elicit Bell's phenomenon perform lacrimal sac regurgitation test Demonstrate the correct technique of lacrimal sac massage for congenital nasolacrimal duct obstruction to the mother	DOAP sessionduring clinical posting	1st clinical posting	Skill Assessment during clinics Logbook	End od 1st posting – OSCE or short case
OP 2.4	Describe the aetiology, clinical presentation. Discuss the complications and management of orbital cellulitis	Discuss the etiopathogenesis of orbital cellulitis Describe the clinical features of OC Discuss the management of OC	Lecture, Small group discussion	7th term	MCQs/ SAQ/ Viva voce	Short essay/viva voce
OP 2.5	Describe the clinical features on ocular examination and management of a patient with cavernous sinus thrombosis	Enumerate the predisposing factors for cavernous sinus thrombosis Compare and contrast clinical features of OC and cavernous sinus thrombosis Describe the management of CST	Lecture	7th term	MCQs/SAQ / Viva voce	Short essay/viva voce
OP 2.6	Enumerate the causes and describe the differentiating features, and clinical features and management of proptosis	Discuss causes of unilateral proptosis Enumerate the causes of bilateral proptosis	Lecture, SGD	7th term	MCQs/ SAQ/ Viva voce	Short essay/viva voce
OP 2.7	Classify the various types of orbital tumours. Differentiate the symptoms and signs of the presentation		Lecture, SGD	7th term	Written/ Viva voce	Short essay/viva voce

	of various types of ocular tumours					
OP 2.8	List the investigations helpful in diagnosis of orbital tumours.Enumerate the indications for appropriate referral		Lecture, SGD	7th term	Written/ Viva voce	Short essay/viva voce
Topic: Conjunctiva Number of Competencies (09)						
OP 3.1	Elicit document and present an appropriate history in a patient presenting with a “red eye” including congestion, discharge, pain	Elicit appropriate history in a patient presenting with "Red eye" Perform ocular examination including vision assessment, pupil examination in a patient with "red eye" Counsel a patient with conjunctivitis on appropriate hand hygiene to prevent spread of infection	DOAP session during clinical posting Logbook	1st clinical posting	Skill assessment Logbook	End of 1st posting – OSCE or short case
OP 3.2	Demonstrate document and present the correct method of examination of a “red eye” including vision assessment, corneal lustre, pupil abnormality, ciliary tenderness	Demonstrate correct method of digital tonometry Discuss the differential diagnosis of "red eye"	DOAP session	1st clinical posting	Skill assessment Logbook	End of 1st posting – OSCE or short case
OP 3.3	Describe the aetiology, pathophysiology, ocular features, differential diagnosis, complications. and management of various causes of conjunctivitis	Describe the clinical features of ophthalmia neonatorum according to the pathogenetic agent Describe the management of Ophthalmia neonatorum Compare the clinical features of conjunctivitis of different aetiologies Describe the	Lecture	6th term	SAQ Viva voce	Essay/SAQ

		management of bacterial conjunctivitis				
OP 3.4	Describe the aetiology, pathophysiology, ocular features, differential diagnosis, complications, and management of trachoma.	Describe the clinical features of Trachoma Describe the management of Trachoma Describe the WHO classification og Trachoma Discuss the National programme for control of blindness due to Trachoma	Lecture	6th term	MCQs/SAQ / Viva voce	Essay/SAQ
OP 3.5	Describe the aetiology, pathophysiology, ocular features, differential diagnosis, complications and management of vernal catarrh	Describe the clinical features of vernal catarrh How will you manage a patient with vernal catarrh	Lecture,	6therm	Written/ Viva voce	Essay/SAQ
OP 3.6	Describe the aetiology, pathophysiology, ocular features, differential diagnosis, complications and management of pterygium	Elicit appropriate history and clinical signs of pterygium Enumerate causes of decreased vision due to pterygium Describe the different surgical options for pterygium	Lecture	6th term	Skill assessment SAQs	Essay/SAQ
OP 3.7	Describe the aetiology, pathophysiology, ocular features, differential diagnosis, complications and management of symblepharon	Enumerate causes and complications of symblepharon	Lecture	6th term	MCQs/SAQ / Viva voce	SAQ
OP 3.8	Demonstrate correct technique of removal of foreign body from the eye in a simulated environment	Demonstrate correct technique of removal of foreign body from the eye in a simulated environment	DOAP session during clinical posting Logbook	1st clinical posting	Skill assessment Logbook	

OP 3.9	Demonstrate the correct technique of instillation of eye drops in a simulated environment	Demonstrate the correct technique of instillation of eye drops in a simulated environment	DOAP session during clinical posting Logbook	1st clinical posting	Skill assessment Logbook	
OP 3.10	Demonstrate the correct technique of applying an eye pad	Demonstrate the correct technique of applying an eye pad	DOAP session during clinical posting Logbook	1st clinical posting	Skill assessment Logbook	
Topic: Cornea Number of Competencies: (10)						
OP 4.1	Enumerate, describe and discuss the types and causes of corneal ulceration	Discuss the pathogenesis of corneal ulcer Discuss the clinical features based on etiological agent Elicit signs and symptoms of corneal ulcer Describe the general principles of management of corneal ulcers	Lecture	6th term	MCQs/SAQ / Viva voce Skill assessment	Essay/SAQ
OP 4.2	Enumerate and discuss the differential diagnosis of infective keratitis	Enumerate the causes of infective keratitis Compare and contrast the clinical features of bacterial and fungal corneal ulcer	Lecture, SGD	6th term	Written/ Viva voce	Essay/SAQ
OP 4.3	Enumerate the causes of corneal edema	Enumerate the causes of corneal edema	Lecture	6th term	Written/ Viva voce	SAQ
OP 4.4	Enumerate the causes and discuss the management of dry eye	Describe briefly the Physiology of Tear film Describe briefly the tests done to detect dry eyes Enumerate different modalities of treatment of dry eyes	Lecture, SGD	6th term	SAQs/ Viva voce	Essay/SAQ
OP 4.5	Enumerate the causes of corneal blindness	Enumerate the causes of corneal blindness	Lecture, SGD	6th term	Written/ Viva voce	SAQ

OP 4.6	Enumerate the indications and the types of keratoplasty	Enumerate the indications and the types of keratoplasty	Lecture, SGD	6th term	Viva voce	Essay/SAQ
OP 4.7	Enumerate the indications and describe the methods of tarsorraphy	Enumerate the indications and describe the methods of tarsorraphy	Lecture	6th term	Written/ Viva voce	Essay/SAQ
OP 4.8	Demonstrate technique of removal of foreign body in the cornea in a simulated environment	Demonstrate technique of removal of foreign body in the cornea in a simulated environment	DOAPduring clinical posting	6th term	Logbook	SAQ
OP 4.9	Describe and discuss the importance and protocols involved in eye donation and eye banking	Enumerate the contraindications for eye donation List all methods of corneal button storage	Lecture	6th term	Written/ Viva voce	Essay/SAQ
OP 4.10	Counsel patients and family about eye donation in a simulated environment	Counsel patients and family about eye donation in a simulated environment	DOAPduring clinical posting	1st clinical posting	Logbook	
Topic: Sclera Number of competencies: (02)						
OP 5.1	Define, enumerate and describe the aetiology, associated systemic conditions, clinical features complications indications for referral and management of episcleritis	Define scleritis Discuss the etiology of scleritis	Lecture, SGD	6th term	Written/ Viva voce	Essay/SAQ
OP 5.2	Define, enumerate, and describe the aetiology, associated systemic conditions, clinical features, complications, indications for referral and management of scleritis	Describe the clinical features, and treatment of scleritis Enumerate the complications of scleritis	Lecture, SGD	6th term	Written/ Viva voce	Essay/SAQ
Topic: Iris and Anterior chamber Number of Competencies (10)						

OP 6.1	Describe clinical signs of intraocular inflammation and enumerate the features that distinguish granulomatous from non-granulomatous inflammation. Identify acute iridocyclitis from chronic condition	Describe the etiology, clinical features of iridocyclitis Describe the distinguishing features of granulomatous and non-granulomatous iridocyclitis What is the etiology of granulomatous iridocyclitis	Lecture , SGD	6th term	MCQs/SAQ / Viva voce	Essay/ SAQ
OP 6.2	Identify and distinguish acute iridocyclitis from chronic iridocyclitis	Define acute and chronic iridocyclitis Mention the differentiating features between acute and chronic iridocyclitis	Lecture , SGD	6th term	MCQs/SAQ / Viva voce	Essay/ SAQ
OP 6.3	Enumerate systemic conditions that can present as iridocyclitis and describe their ocular manifestations	Enumerate the systemic conditions associated with iridocyclitis Enumerate the other ocular manifestations	Lecture , SGD	6th term	MCQs/SAQ / Viva voce	Essay/ SAQ
OP 6.4	Describe and distinguish hyphema and hypopyon	What is hyphema and what are its causes How will you manage a case of hyphema What is a hypopyon and what are its causes	Lecture	6th term	MCQs/SAQ / Viva voce	Essay/ SAQ
OP 6.5	Describe and discuss the angle of the anterior chamber and its clinical correlates	Describe the anatomy of the angle of the anterior chamber How will you grade the angle of the anterior chamber	Lecture	6th term	MCQs/SAQ / Viva voce	Essay/ SAQ
OP 6.6	Identify and demonstrate the clinical features and distinguish and diagnose common clinical conditions affecting the anterior chamber	Describe the clinical features of Primary open angle glaucoma Describe the management of POAG What is Trabeculectomy and describe its steps Describe the clinical features and management of Primary angle closure glaucoma Describe the clinical features and management of congenital glaucoma	Lecture , SGD	6th term	MCQs/SAQ / Viva voce	Essay/ SAQ

OP 6.7	Enumerate and discuss the aetiology, the clinical distinguishing features of shallow and deep anterior chamber. Choose appropriate investigations for patients with above conditions of the anterior chamber	What are the causes of shallow and deep anterior chamber What is gonioscopy What is perimetry and what are the visual field changes in glaucoma What is tonometry and how is it measured Demonstrate digital tonometry	Lecture , SGD	6th term	MCQs/SAQ / Viva voce	Essay/ SAQ
OP 6.8	Enumerate and choose the appropriate investigation for patients with conditions affecting the Uvea	Describe the investigations in a patient with iridocyclitis	Lecture , SGD	6th term	MCQs/SAQ / Viva voce	Essay/ SAQ
OP 6.9	Choose the correct local and systemic therapy for conditions of the anterior chamber and enumerate their indications, adverse events and interactions	Describe the management of a patient with iridocyclitis Enumerate the side effects of steroid use Discuss various routes of administration of steroids in ocular disease	Lecture , SGD	6th term	MCQs/SAQ / Viva voce	Essay/ SAQ

OP 6.10	Counsel patients with conditions of the iris and anterior chamber about their diagnosis, therapy and prognosis in an empathetic manner in a simulated environment	Counsel a patient with uveitis regarding the need for compliance	DOAP during clinical posting	1st posting	OSCE	OSCE/ short case examination
Topic: Lens Number of Competencies: (06)						
OP 7.1	Describe the surgical anatomy and the metabolism of the lens	Describe the anatomy of the lens Describe the metabolism of the lens	Lecture	6th term	MCQs/SAQ/ Viva voce	Essay/SAQ
OP 7.2	Describe and discuss the etio-pathogenesis, stages of maturation and complications of cataract	Describe the etiopathogenesis of senile cataract Stages of cortical and nuclear cataract Complications of senile cataract Discuss etiology and morphology of complicated cataract	Lecture/SGD	6th term	MCQs/SAQ/ Viva voce	Essay/SAQ
OP 7.3	Demonstrate the correct technique of ocular examination in a patient with a cataract	Differentiate between immature, mature and hypermature cataract Demonstrate the presence of iris shadow Macular function tests	DOAP during clinical posting	1st posting	OSCE	OSCE/short case examination
OP 7.4	Enumerate the types of cataract surgery and describe the steps,intra-operative and post-operative	Describe the steps of cataract surgery Mention the intraoperative complications Mention the early and late postoperative complications Treatment of After cataract	SGD/Lectures	6th term	MCQs/SAQ/ Viva voce	Essay/SAQ

	complications of extracapsular cataract extraction surgery.					
OP 7.5	To participate in the team for cataract surgery	Discuss the preoperative preparation of the patient for cataract surgery Experience a walkthrough of a single patient from advising for surgery till discharge of the patient	Learner-doctor	2nd posting	OSCE	OSCE/short case examination
OP 7.6	Administer informed consent and counsel patients for cataract surgery in a simulated environment	Administer informed consent and counsel patients for cataract surgery in a simulated environment	DOAP during clinical posting	2nd posting	OSCE	OSCE/short case examination
Topic: Retina & optic Nerve Number of Competencies (05)						
OP 8.1	Discuss the aetiology, pathology, clinical features and management of vascular occlusions of the retina	Describe the etiology, pathology, clinical features, and management of Retinal Vein occlusions Describe the etiology, pathology, clinical features, and management of Retinal artery occlusions What is cherry red spot and what are its causes	Lecture/SGD	7th term	MCQs/SAQ/ Viva voce	Essay/SAQ
OP8.2	Enumerate the indications for laser therapy in the treatment of retinal diseases (including retinal detachment, retinal degenerations, diabetic retinopathy & hypertensive retinopathy)	What is the pathogenesis of diabetic retinopathy What are the stages of diabetic retinopathy and maculopathy What is the managemnt for each of the stages What are the grades of hypertensive retinopathy?What is Keith Wagner classification Enumerate the types of retinal detachment and its management What is age related macular degeneration? What are the clinical features and management	Lecture/SGD	7th term	MCQs/SAQ/ Viva voce	Essay/SAQ

OP8.3	Demonstrate the correct technique of a fundus examination and describe and distinguish the funduscopic features in a normal condition and in conditions causing an abnormal retinal exam	Demonstrate the correct technique of using a direct ophthalmoscope. Describe a normal fundus with the help of a diagram	DOAP in skills lab	6-7th term	OSCE	
OP8.4	Enumerate and discuss treatment modalities in management of diseases of the retina	Enumerate the various disease conditions of the retina Enumerate the treatment modalities of the above conditions	Lecture/SGD	7th term	MCQs/SAQ/ Viva voce	Essay/SAQ
OP8.5	Describe and discuss the correlative anatomy, aetiology, clinical manifestations, diagnostic tests, imaging and management of diseases of the optic nerve and visual pathway	Describe the anatomy of the Optic nerve Describe the clinical features, investigations and management of Optic neuritis Describe the clinical features,stages and fundus picture, investigations, and management of Papilledema Describe the clinical features,classification, investigations and management of Optic Atrophy Describe the anatomy of the visual pathway Describe the visual field defects occurring in diseases affecting the visual pathway Describe the pupillary pathway Describe the clinical features of the various pupillary abnormalities-Hutchisonspupil,ARP,AdiesPupil,Marcus Gunn Pupil Demonstrate swinging flashlight test	Lecture/SGD	7th term	MCQs/SAQ/ Viva voce	Essay/SAQ
PA 36.1	Describe the etiology, genetics,	Discuss the pathogenesis, histopathology and genetics of retinoblastoma	Lecture/SGD	7th term	MCQs/SAQ/ Viva	Essay/SAQ

	pathogenesis, pathology, presentation, sequelae, and complications of retinoblastoma	Enumerate the causes of leukocoria Describe the staging and clinical features of retinoblastoma Discuss the treatment options for the various stages of retinoblastoma			voce	
Topic: Miscellaneous Number of Competencies (05) Number of procedures that require certification: (01)						
OP9.1	Demonstrate the correct technique to examine extra ocular movements (Uniocular & Binocular)	List the extraocular muscles, their insertions, and their actions Demonstrate the correct technique to examine extra ocular movements (Uniocular & Binocular)	DOAP during clinical posting	1st&2nd posting	Logbook	
OP9.2	Classify, enumerate the types, methods of diagnosis and indications for referral in a patient with heterotropia/ strabismus	List the types of strabismus What are the differences between Paralytic squint and Concomitant squint Enumerate and demonstrate the tests done in a case of Squint (Hirschberg's test, Head posture) List the conditions in which a patient with strabismus has to be referred	Lecture/SGD	7th term	MCQs/SAQ/ Viva voce	Essay/SAQ
OP9.2	Describe the role of refractive error correction in a patient with headache and enumerate the indications for referral	Enumerate the causes of headache and list the differentiating features to suggest an ocular cause List the type of headaches which require referral	Lecture/SGD	7th term	MCQs/SAQ/ Viva voce	Essay/SAQ
OP9.4	Enumerate, describe and discuss the causes of avoidable blindness and the National Programs for Control of	What are the causes of avoidable blindness What is NPCB. What are the diseases included in this What is vision 2020 Define legal blindness, social blindness and economical blindness	Lecture/SGD	7th term	MCQs/SAQ/ Viva voce	Essay/SAQ

	Blindness (including vision 2020)					
OP9.5	Describe the evaluation and enumerate the steps involved in the stabilisation, initial management and indication for referral in a patient with ocular injury	List the types of ocular injuries List the effects of blunt trauma to the eye List the steps of initial management of chemical injuries Demonstrate the correct method of eye irrigation List the steps of initial management of an open globe injury	Lecture/SGD	7th term	MCQs/SAQ/ Viva voce	Essay/SAQ
Integration – Anatomy						
AN 30.5	Explain effect of pituitary tumours on visual pathway	Describe the visual field changes in pituitary tumors Discuss the anatomical basis of VF changes in pituitary lesions	Lecture/SGD	7th term	MCQs/SAQ/ Viva voce	Essay/SAQ
AN31.3	Describe anatomical basis of Horner's syndrome	What is Horner's syndrome? Differentiate acquired from congenital HS Describe the anatomical basis for HS due to various causes	Lecture/SGD	7th term	MCQs/SAQ/ Viva voce	Essay/SAQ
AN 31.5	Explain the anatomical basis of oculomotor, trochlear and abducent palsy	Describe the anatomy of the 3rd,4th and 6th cranial nerves Enumerate the causes of 3rd,4th and 6th cranial nerve palsies	Lecture/SGD	7th term	MCQs/SAQ/ Viva voce	Essay/SAQ
AN 41.1	Describe & demonstrate parts and layers of eyeball		Lecture/SGD	7th term	MCQs/SAQ/ Viva voce	Essay/SAQ
AN 41.2	Describe the anatomical aspects of cataract, glaucoma & central		Lecture/SGD	7th term	MCQs/SAQ/ Viva voce	Essay/SAQ

AN 41.3	Describe the position, nerve supply and actions of intraocular muscles		Lecture/SGD	7th term	MCQs/SAQ/ Viva voce	Essay/SAQ
Integration- Physiology						
PY 10.17	Describe and discuss functional anatomy of eye, physiology of image formation, physiology of vision including colour vision, Refractive errors, colour blindness, Physiology of pupil and light reflex	Describe the theories of color vision Describe the pupillary pathway Describe the clinical features of the various pupillary abnormalities	Lecture/SGD	7th term	MCQs/SAQ/ Viva voce	Essay/SAQ
PY 10.18	Describe and discuss the physiological basis of lesion in visual pathway	Draw a neat, labelled diagram of the visual pathway Describe the field defects of lesions affecting the visual pathway	Lecture/SGD	7th term	MCQs/SAQ/ Viva voce	Essay/SAQ
PY 10.19	Describe and discuss auditory & visual evoke potentials		Lecture/SGD	7th term	MCQs/SAQ/ Viva voce	Essay/SAQ
PY 10.20	Demonstrate testing of visual acuity, colour and field of vision in a simulated environment	Assess visual acuity, colour vision and visual field in a simulated patient	Lecture/SGD	7th term	MCQs/SAQ/ Viva voce	Essay/SAQ
PH 1.58	Describe drugs used in	Describe the mechanism of action, dosage, duration, modes of delivery and side effects of the	Lecture/SGD	7th term	MCQs/SAQ/ Viva	Essay/SAQ

	Ocular disorders	following groups of drugs used in Ophthalmology Anti-glaucoma drugs, antibiotics, antifungals, mydriatic and cycloplegics, steroids			voce	
IM 24.15	Describe and discuss the aetiopathogenesis, clinical presentation, identification, functional changes, acute care, stabilization, management and rehabilitation of vision and visual loss in the elderly	List the causes of acute painless loss of vision in the elderly and their systemic causes List the causes of acute painful loss of vision in the elderly and their systemic causes Discuss the systemic investigations thatis required in acute loss of vision in the elderly Discuss the treatment of acute loss of vision in the elderly	Lecture/SGD	7th term	MCQs/SAQ/ Viva voce	Essay/SAQ

Summary of course content, teaching and learning methods and student assessment for the undergraduate (MBBS) Curriculum in Ophthalmology

Course content

The course content been given in detail in the above Table, which includes competencies, specific learning objectives for each competency and the suggested Teaching-Learning methods and assessment methods both formative and summative. The competencies have been developed by an expert group nominated by NMC, while the SLOs, T-L methods and assessments methods have written by the expert committee constituted by Sri Siddhartha Academy of Higher Education.

Teaching-Learning methods and Time allotted

	Lectures	Small group discussion	Self-directed learning	Total hours	Clinical postings
Ophthalmology	30hours	60hours	10hours	100 hours	Two postings of 4 weeks each. First posting in 3-4th terms (15hours/week) and Second posting in 6-7th terms (18hours/week)

- Teaching-learning methods shall be learner centric and shall predominantly include small group learning, interactive teaching methods and case-based learning. Didactic lectures not to exceed one-third of the total teaching time. The teaching learning activity focus should be on application of knowledge rather than acquisition of knowledge.
- The curricular contents shall be vertically and horizontally aligned and integrated to the maximum extent possible to enhance learner's interest and eliminate redundancy and overlap. The

integration allows the student to understand the structural basis of ophthalmologic problems, their management and correlation with function, rehabilitation, and quality of life

- Acquisition and certification of skills shall be through experiences in patient care, diagnostic and skill laboratories. Use of skill lab to train undergraduates in Direct Ophthalmoscopy although not mandatory, but it is desirable.
- The clinical postings in the second professional shall be 15 hours per week (3 hrs per day from Monday to Friday)
- The clinical postings in the third professional part II shall be 18 hours per week (3 hrs per day from Monday to Saturday)
- Newer T-L method like Learner-doctor method (Clinical clerkship) should be mandatorily implemented, from 1st clinical postings in ophthalmology itself.
- The goal of this type of T-L activity is to provide learners with experience in longitudinal patient care, being part of the health care team, and participate in hands-on care of patients in outpatient and inpatient setting. During the 1st clinical postings, the students are oriented to the working of the department. During the second clinical posting the students are allotted patients, whom they follow-up through their stay in the hospital, participating in that patient's care including case work-up, following-up on investigations, presenting patient findings on rounds, observing surgeries if any till patient is discharged.
- The development of ethical values and overall professional growth as integral part of curriculum shall be emphasized through a structured longitudinal and dedicated programme on professional development including attitude, ethics, and communication which is called the AETCOM module. The purpose is to help the students apply principles of bioethics, systems-based care, apply empathy and other human values in patient care, communicate effectively with patients and relatives and to become a professional who exhibits all these values. This will be a longitudinal programme spread across the continuum of the MBBS programme including internship. MBBS Phase 3 Part 1, has to complete 5 modules of 5hours each. The Ophthalmology faculty will have the responsibility of conducting 1-2 modules as per the decision and logistics of each institution.

Assessment

Eligibility to appear for university examinations is dependent on fulfilling criteria in two main areas – attendance and internal assessment marks

Attendance

Attendance requirements are 75% in theory and 80% in clinical postings for eligibility to appear for the examinations in Ophthalmology.

75% attendance in AETCOM Module is required for eligibility to appear for final examination in 3rd professional year 3 part 1.

Internal Assessment

- Progress of the medical learner shall be documented through structured periodic assessment that includes formative and summative assessments. Logs of skill-based training shall be also maintained.
- There shall be no less than three internal assessment examinations in Ophthalmology. An end of posting clinical assessment shall be conducted for each of the Ophthalmology clinical posting.
- Day to day records and logbook (including required skill certifications) should be given importance in internal assessment. Internal assessment should be based on competencies and skills.
- Learners must secure at least 50% marks of the total marks (combined in theory and clinical; not less than 40 % marks in theory and practical separately) assigned for internal assessment in Ophthalmology in order to be eligible for appearing at the final University examination.
- Internal assessment marks will reflect as separate head of passing at the summative examination.

- The results of internal assessment should be displayed on the notice board within 1-2 weeks of the test.
- Remedial measures should be offered to students who are either not able to score qualifying marks or have missed on some assessments due to any reason.
- Learners must have completed the required certifiable competencies for that phase of training and Ophthalmology logbook entry completed to be eligible for appearing at the final university examination.
- AETCOM assessment will include: (a) Written tests comprising of short notes and creative writing experiences, (b) OSCE based clinical scenarios / viva voce.

University examinations

Third Professional Part I shall be held at end of third Professional part 1 of training (12 months) in the subjects of Ophthalmology, Otorhinolaryngology, Community Medicine and Forensic Medicine and Toxicology

University examinations are to be designed with a view to ascertain whether the candidate has acquired the necessary knowledge, minimal level of skills, ethical and professional values with clear concepts of the fundamentals which are necessary for him/her to function effectively and appropriately as a physician of first contact. Assessment shall be carried out on an objective basis to the extent possible.

Marks allotted

Ophthalmology	Theory	Clinical examination
Total marks	100 marks	100 marks
	Long essay 2X10= 20	Two cases x40marks=80marks
	Short essay 8x5=40 marks	Viva voce 2x10=20marks
	Short answer question 10x3=30marks	
	MCQs 10x1=10marks	

The theory paper should include different types such as structured essays, short essays, Short Answers Questions (SAQ) and MCQs (Multiple Choice Questions). Marks for each part should be indicated separately.

All the question papers to follow the suggested **blueprint(APPENDIX 1). It is desirable that t**he marks allotted to a particular topic are adhered to.

A minimum of **80%** of the marks should be from the **must know** component of the curriculum. A maximum of **20%** can be from the **desirable to know** component. All **main essay questions** to be from the **must know component** of the curriculum.

One main essay question to be of the **modified variety** containing a clinical case scenario. At least 30% of questions should be clinical case scenario based. Questions to be constructed to test higher cognitive levels.

Clinical examinations will be conducted in the hospital wards. Clinical cases kept in the examination must be common conditions that the learner may encounter as a physician of first contact in the community. Selection of rare syndromes and disorders as examination cases is to be discouraged. Emphasis should be on candidate's capability to elicit history, demonstrate physical signs, write a case record, analyze the case and develop a management plan.

Viva/oral examination should assess approach to patient management, emergencies, attitudinal, ethical and professional values. Candidate's skill in interpretation of common investigative data, X-rays, identification of specimens, ECG, etc. is to be also assessed.

At least one question in each paper of the clinical specialties in the University examination should test knowledge competencies acquired during the professional development programme. Skill competencies acquired during the Professional Development Programme must be tested during the clinical, practical and

viva voce.
There shall be one main examination in an academic year and a supplementary to be held not later than 90 days after the declaration of the results of the main examination.

Pass criteria

Internal Assessment: 50% combined in theory and practical (not less than 40% in each) for eligibility for appearing for University Examinations

University Examination: Mandatory 50% marks separately in theory and clinicals (clinicals = clinical + viva)

The grace marks up to a maximum of five marks may be awarded at the discretion of the University to a learner for clearing the examination as a whole but not for clearing a subject resulting in exemption.

Appointment of Examiners

Person appointed as an examiner in the subject must have at least four years of total teaching experience as assistant professor after obtaining postgraduate degree in the subject in a college affiliated to a recognized/approved/permitted medical college.

For the Practical/ Clinical examinations, there shall be at least four examiners for 100 learners, out of whom not less than 50% must be external examiners. Of the four examiners, the senior-most internal examiner will act as the Chairman and coordinator of the whole examination programme so that uniformity in the matter of assessment of candidates is maintained.

Where candidates appearing are more than 100, two additional examiners (one external & one internal) for every additional 50 or part there of candidates appearing, be appointed.

All eligible examiners with requisite qualifications and experience can be appointed as internal examiners by rotation

External examiners may not be from the same University.

There shall be a Chairman of the Board of paper-setters who shall be an internal examiner and shall moderate the questions.

All theory paper assessment should be done as central assessment program (CAP) of concerned university.

APPENDIX 1: Blueprint for Ophthalmology theory Examinations

Topics	Marks allotted
Eyelids disorders	6
Conjunctival diseases	10
Corneal disorders	10
Refractive errors	6
Lacrimal Drainage system	6
Tear Film abnormalities	5
Diseases of Sclera	3
Diseases of Lens	8
Glaucoma	10
Uveitis	5
Diseases of Retina and choroid	10
Orbital diseases	5
Neuroophthalmological conditions	8
Community Ophthalmology	5
Strabismus	3
Total	100

Sample Ophthalmology Question Paper
Ophthalmology Paper
Time: 3 hours
Marks: 100
Your answers should be specific to the questions asked.
Draw neat, labelled diagrams wherever necessary.

Long essays (2 X 10 = 20 marks)

1. A 42year old male, farmer by profession seeks treatment for painful loss of vision in the left eye 1 week duration after he sustained trauma with vegetable matter while working. On examination his visual acuity is CF 3meters with a central whitish lesion on the cornea.

What is the most likely diagnosis? Describe the clinical features of this condition? Discuss the investigations and treatment for this condition. Describe briefly the complications associated with this condition (1+3+4+2=10)

2. Describe the staging of diabetic retinopathy with the clinical features and treatment of each stage. Add a note on anti-VEGF treatment (8+2=10)

Short essays (8x5=40marks)

3. A 3month old male child was brought with complaints of watering of right eye since birth with intermittent yellowish-white discharge. What is the most probable diagnosis and how will you manage this child?

4. Describe the WHO classification of vitamin A deficiency. Add a note on treatment of vitamin A deficiency

5. Discuss the etiological classification of entropion. Discuss the etiopathogenesis and management of senile entropion

6. Describe the visual field changes in Primary open angle glaucoma

7. Describe the Classification of Hypermetropia and management

8. A 48year old female presents with gradually progressive loss of vision in the right eye since 8months. What is the probable differential diagnosis and how will you investigate and manage this patient?

9.Enumerate the causes and discuss the investigations and treatment of non-granulomatous iridocyclitis.

10. Discuss the etiology, clinical features and management of optic neuritis

Short answer questions (10x3=30marks)

11. What is Paracentesis? Enumerate the indications

12. Enumerate the Differential diagnosis of Leukocoria

13. Briefly describe the tests for dry eyes

14. Causes of Anisocoria

15. Describe briefly the actions and nerve supply of Extraocular muscles

16. Write a short note on the uses of Atropine in Ophthalmology

17. Classification of scleritis

18. Write briefly on the Treatment of trachoma

19. Write a note on clinical features of orbital cellulitis

20. Enumerate the indications for keratoplasty

Multiple choice questions (10x1=10marks, with no negative marking)

21. (i) Corneal perforation is an expected complication of

A) Hypopyon ulcer
B) Fasicular ulcer
C) Mooren's ulcer
D) Dendritic ulcer

21. (ii) Surgery of choice in "Buphthalmos" is

A) cyclocryo therapy
B) iridectomy
C) trabeculectomy
D) trabeculotomy

21. (iii) A vertically oval mid-dilated pupil unresponsive to light is diagnostic of

A) acute anterior uveitis
B) acute mucopurulent conjunctivitis
C) acute congestive glaucoma
D) acute nodular scleritis

21. (iv) Orbicularis oculi is innervated by which cranial nerve?

A) 4^{th}
B) 5^{th}
C) 6^{th}
D) 7^{th}

21. (v) Proptosis is measured using

A) Keratometer
B) Tonometer
C) Exophthalmometer
D) Gonioscope

22. (i) Formation of a "Cyclitic membrane" leads to all the following **EXCEPT**

A) Hypotony
B) Glaucoma
C) Loss of vision
D) Pthisis bulbi

22, (ii) In an adult male presenting with acute severe purulent conjunctivitis, preauricular lymph node enlarged and tender with associated constitutional symptoms the treatment of choice is

A) Ceftriaxone 1gm intramuscularly with intensive topical penicillin therapy
B) Intensive topical penicillin therapy alone
C) Fluoroquinolones 500mg BID intravenously with topical tetracycline therapy
D) Intensive topical tetracycline therapy alone

22. (iii) Topical Mitomycin C is used in the treatment of pterygium to

A) Prevent malignant transformation
B) Improve circulation
C) Prevent recurrence
D) Prevent calcification

22. (iv) "Pizza pie" appearance is typically seen in

A) Retinitis pigmentosa
B) CMV retinitis
C) Toxoplasma retinitis
D) Tuberculous retinitis

22. (v) "Homonymous hemianopia with macular sparing" is seen in lesions of

A) Occipital cortex
B) Optic radiation
C) Optic chiasm
D) Optic nerve

Sri Siddhartha Academy of Higher Education, Tumkur

OPHTHALMOLOGY

LOGBOOK

FOR

PHASE III MBBS

AS PER
Competency-Based Medical Education Curriculum

Insert institution logo	Name and address of the college	Student photo

Ophthalmology
Logbook

Name of the student:

Contact Number:

Email id:

Date of admission to MBBS course:

Date of beginning of the current phase:

Reg. No. (College ID):

Reg. No. (University ID):

INDEX

Sl NO.	CONTENT	PAGE NUMBER
1	**BONAFIDE CERTIFICATE**	1
2	**PREFACE**	2
3	**GENERAL INSTRUCTIONS**	3
4	**SUMMARY OF ATTENDANCE**	4
5	**SUMMARY OF INTERNAL ASSESSMENT (IA)**	5
6	**SECTION- 1** CBME CURRICULUM IN OPHTHALMOLOGY 1A. COMPETENCIES IN KNOWLEDGE DOMAIN 1B. COMPETENCIES IN SKILL DOMAIN	 6 7
7	**SECTION-2** AETCOM MODULES	8
8	**SECTION-3** FORMATIVE ASSESSMENTS 3A. SCHEME OF FORMATIVE ASSESSMENT 3B. SUMMARY OF FORMATIVE ASSESSMENT	 12 13 -15
9	**SECTION-4** ESSENTIAL SKILLS-CERTIFIABLE non- CERTIFIABLE	 16 17-18
10	**SECTION-5** **ADDITIONAL ACTIVITIES** 5.1 CO-CURRICULAR ACTIVITIES 5.2 EXTRACURRICULAR ACTIVITIES 5.3 ACHIEVEMENTS AND AWARDS	 19
11	**SUMMARY PAGE**	20

Page.

BONAFIDE CERTIFICATE

ST. JOHN'S MEDICAL COLLEGE

This is to certify that the candidate ……

Reg No……..... has satisfactorily completed all requirements mentioned in this Logbook for Phase III MBBS in OPHTHALMOLOGY including related AETCOM modules as per the Competency-Based Undergraduate Medical Education Curriculum, Graduate Medical Regulation 2019 during the period from ……... …….to ……...

He/She is eligible to appear for the summative (University) assessment.

Faculty Mentor: **Head of Department:**

Name: **Name:**

Signature: **Signature:**

Place:
Date:

PREFACE

This logbook is designed to follow and record your academic journey through the Ophthalmology course. The knowledge, skills and desirable attitudes you acquire in order to function as a primary care physician of first contact will be documented and certified in this logbook.

Section1 contains the **CBME competencies in Ophthalmology**. It includes the competencies that would be covered during the course.

Section 2 records your participation in **Attitude, Ethics and Communication (AETCOM)** modules related toOphthalmology.

Section 3 consists of the **schemeand summary of formative assessments**in Ophthalmology, including the internal assessments.

Section 4 documents the **procedures that require certification** and **those that do not require certification** but **only need to be maintainedinthe logbook**.

Section 5 documents **additional-curricular activities** (Seminars, conference, workshops attended, scientific project presentations, outreach activities, etc.) and **extracurricular activities.**

We hope that this logbook serves as a guide and facilitates your progress through the year.

GENERAL INSTRUCTIONS

1. This logbook is a record of the academic/co-curricular activities in Ophthalmology of the designated student.
2. The student is responsible for getting the entries in the logbook verified by the faculty in-charge regularly.
3. Entries in the Logbook will reflect the activities performed by you in the department of Ophthalmology during your course.
4. The student has to get this logbook verified by the mentor and the Head of the department before submitting the application of the University examination.
5. All signatures must be done with a date stamp.

SUMMARY OF ATTENDANCE

Block/Phase	***Percentage of classes attended***		***Eligible for University examination (Yes / No)***	***Signature of student with date***	***Signature of teacher with date***
	Theory	***Practical***			
First Block					
Second Block					
Third Block					
Attendance at the end of MBBS Phase II					

SUMMARY OF INTERNAL ASSESSMENT (IA)

Sl. No.	***Internal Assessment***	***Date of Assessment***	***Total marks***		***Marks scored***		***Signature of student with date***	***Signature of teacher with date***
			Theory	*Practical*	*Theory*	*Practical*		
1	First							
2	Second							
3	Third							
4	Remedial							

Note: A candidate who has not secured requisite aggregate in the internal assessment may be subjected to remedial assessment by the institution. If he/she successfully completes the same, he/she is eligible to appear for University Examinations. The remedial assessment shall be completed before submitting the internal assessment marks online to the University.

SECTION: 1

Competencies in Ophthalmology

Competency-Based Medical Education (CBME) curriculum in Ophthalmology

Competencies in Ophthalmology:

There are **60** competencies in ophthalmology that have been listed in the CBME curriculum by the MCI (***Refer Annexure 1***). They can be categorized into knowledge, skills and affect domains as given below. There are 43 competencies in the knowledge domain

1.A Competencies in the knowledge domain

Sl no	Topic	Competency
1	Visual acuity assessment	OP 1.1, 1.2, OP1.4, 1.5
2	Lids, adnexa and orbit	OP 2.1, OP2.4 to 2.8
3	Conjunctiva	OP 3.3 to 3.7
4	Cornea	OP4.1 to 4.7, OP 4.9
5	Sclera	OP5.1, 5.2
6	Iris and anterior chamber	OP 6.1 to 6.5, OP6.7 to 6.9
7	Lens	OP 7.1, 7.2
8	Retina and optic nerve	OP 8.1, 8.2 OP8.4, 8.5
9	Miscellaneous	OP 9.2 to 9.5

Competencies in Skills: There are **15** competencies in this domain. These are as given below.

1.B Competencies in Skills

Topics	Competency	Description
Visual acuity	OP 1.3	Demonstrate steps in visual acuity assessment- distance, near, colour vision and pinhole
Lids, adnexa and orbit	OP 2.2	Demonstrate clinical signs of hordeolum, ptosis, lagophthalmos
	OP 2.3	Demonstrate (under supervision) clinical procedures: bells phenomenon, assessment of entropion/ectropion, perform the regurgitation test of lacrimal sac, massage technique in congenital dacryocystitis and trichiatic cilia removal by epilation
Conjunctiva	OP 3.1	Elicit detailed history for red eye
	OP 3.2	Demonstrate clinical examination of a patient with red eye- corneal lustre, pupil, anterior chamber depth
	OP 3.8	Removal of FB in simulated environment
	OP 3.9	Demonstrate eyedrop instillation in simulated environment
Cornea	OP 4.8	Removal of FB in simulated environment
Iris and anterior chamber	OP 6.6?	Identify and demonstrate the clinical features and distinguish and diagnose common clinical conditions affecting the anterior chamber
Lens	OP 7.3	Demonstrate technique of examination in cataract
	OP 7.4	Enumerate types, explain steps, complications of cataract surgery
	OP 7.5	To participate in the team of cataract surgery
	OP 7.6	Administer informed consent and counsel patients of cataract surgery in a simulated environment
Retina and optic nerve	OP 8.3	Demonstrate the correct technique of fundus examination in normal fundus and in abnormal retinal exam- skills lab
Miscellaneous	OP 9.1	Demonstrate the correct technique to examine the extra-ocular movements(Uniocular& binocular)

SECTION 2:

FORMAT OF AETCOM Modules Report

AETCOM Module Number:

Date:

Topic:

Competencies:

1.
2
3.

Reflections (100 words):

1. What did you learn from this AETCOM session based on the objectives?
2. What change did this session make in your learning?
3. How will you apply this knowledge in future?

Remarks by Facilitator

Signature of facilitator with date

AETCOM Module Number:

Date:

Topic:

Competencies:

1.
2
3.

Reflections (100 words):

1. What did you learn from this AETCOM session based on the objectives?
2. What change did this session make in your learning?
3. How will you apply this knowledge in future?

Remarks by Facilitator

Signature of facilitator with date

SECTION: 3
Formative Assessment 1

	Maximum marks	**Marks obtained**	**Feedback and Signature**
Formative assessment Theory	50		
Formative assessment Practical	25		

Formative Assessment 2

	Maximum marks	**Marks obtained**	**Feedback and Signature**
Formative assessment Theory	50		
Formative assessment Practical	25		

Formative Assessment 3

	Maximum marks	**Marks obtained**	**Feedback and Signature**
Formative assessment Theory	100		
Formative assessment Practical	25		

Rubric for Assessing Professionalism

Phase	***Areas assessed***					***Signature of student***	***Signature of teacher***
	Regular for classes (5marks)	*Regular in completing assignments (5marks)*	*Behaviour in class and discipline (5marks)*	*Dress code and presentation (5marks)*	*Total (20marks)*		
At the end of 1st IA							
At the end of 2nd IA							
At the end of 3rd IA							
Average score at the end of the year							

Note: Parameters will be assessed at the Departmental level to consider eligibility (Minimum of 50% at the end of the year) of the candidate to appear for the university examination. Not considered for internal assessment marks.

Evaluation and feedback
on self-directed learning (SDL)- 10 hours

Sl no.	Date	Topic of SDL	Feedback	Signature of faculty/mentor
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

Section 4
Essential skills both Certifiable and non-certifiable skills

Certifiable skill 1

Skill: Demonstrate the correct technique to examine the extra-ocular movements (Uniocular& binocular)

Domain: Skills and knowledge
Level of competency: Perform
Core: Yes

The student must perform this activity **twice** to be certified

Date	Attempt			Faculty decision		Faculty signature with date	Rating		
	First F	Repeat R	Remedial Re	Completed	Not Completed		Below expectation B	Meets expectation M	Exceeds expectation E

Overall remarks:

In-charge faculty signature with date:

	Competency # **SLO**	**Attempt at activity** First or Only (F) Repeat (R) Remedial (Re)	**Rating** (B): Below expectations (M) : Meets expectations (E): Exceeds expectations Or Numerical Score	**Decision of faculty** Completed (C) Repeat (R) Remedial (Re)*	Initial of faculty & date
OP 6.6& 7.3	Demonstrate the technique of examining the eye in anterior segment disorders including cataract, uveitis and glaucoma				
OP 7.5 & 7.6	OP 7.6: Administer informed consent and counsel patients of cataract surgery in a simulated environment				
OP 8.3	OP 8.3: Demonstrate the correct technique of fundus examination in the skills lab				

Competency #		Attempt at activity	Rating	Decision of faculty
		First or Only (F)	(B): Below expectations	Completed (C)
		Repeat (R)	(M): Meets expectations	Repeat (R)
		Remedial (Re)	(E): Exceeds expectations	Remedial (Re)*
			Or Numerical Score	
OP1.3	Measure visual acuity including - distance, near, colour vision and pinhole			
OP2.2	Elicit the clinical signs of common eyelid disorders including Bell's phenomenon			
OP2.3	Perform the lacrimal regurgitation test of lacrimal sac, and lacrimal sac massage technique in congenital dacryocystitis			
OP 3.1	Elicit detailed history in a patient with red eye			
OP 3.2	Demonstrate clinical examination of a patient with red eye- corneal lustre, pupil, anterior chamber depth			
OP 3.8	Demonstrate removal of FB in simulated environment			
OP 3.9	Demonstrate the correct technique of eyedrop instillation in simulated environment			

Case presentation 1st posting

No.	ıme of patient	agnosis	esented/ rticipated	culty signature

Case presentation 2nd posting

No.	ıme of patient	agnosis	esented/ rticipated	culty signature

Section 5:Additional Curricular and extracurricular Activities

5.1 Additional curricular activities
(Seminar, conferences, outreach activities, Workshops etc.)

Sl no	Date	Particulars	Signature of the faculty

5.2 Extracurricular activities

Sl no	Date	Particulars	Signature of the faculty

5.3 Achievements/awards

Sl no	Date	Particulars	Signature of the faculty

FINAL SUMMARY

Sl no.	Description	Dates		Attendance in percentage	Status *	Signature of the teacher with date
		From	To			
1	Certifiable skills					
2	AETCOM Modules					
3	Internal assessment Marks					

Signature of Head of department Date:

* Status: Complete/Incomplete: For skills and AETCOM modules
Eligible/Ineligible: For Internal marks

Learner doctor method

Posting 1

One patient will be allotted to the student at the beginning of the posting. The patient is assessed at admission and followed up. The student will interact with the patient and the treating team to make daily notes of the following aspects of patient's progress in hospital.

History taking, physical examination, assessment of change in clinical status , communication and patient education.

A brief summary is to be written at the end of the patient's stay in hospital.

Reflection on the learner doctor method of learning;

What happened?

So what ?

What next?

Signature of faculty: Date :

Learner doctor method

Posting 1

One patient will be allotted to the student at the beginning of the posting. The patient is assessed at admission and followed up. The student will interact with the patient and the treating team to make daily notes of the following aspects of patient's progress in hospital.

History taking, physical examination, assessment of change in clinical status , communication and patient education.

A brief summary is to be written at the end of the patient's stay in hospital.

Learner doctor method

Learner doctor method

Reflection on the learner doctor method of learning;

What happened?

So what ?

What next?

Signature of faculty: Date :

Sri Siddhartha Academy of Higher Education, Tumkur

Otorhinolaryngology Curriculum

as per

Competency-Based Medical Education

Preamble

The NMC envisages that the Indian Medical Graduate shouldfunction as the Physician of first contact in the community, to provide holistic health care to the evolving needs of the nation and the world. To fulfil this, the IMG should be able to perform the following roles: a clinician, a communicator, a lifelong learner, a professional and a team leader.

Competency-based medical education (CBME) is an outcome-based training model that has become the new standard of medical education internationally. This new curriculum is being implemented across the country and the first batch has been enrolled since the academic year 2019. The regulatory and accrediting body NMC had started the process by training faculty across the country in the key principles of CBME and developing key competencies for each speciality with the input from expert groups under each speciality.

The field of Otorhinolaryngology (ENT) came to be recognized as a separate entity in medicine at the end of the 19thcentury. It has been evolving as aseparate surgical speciality since then owing to the contributions of pioneers in understanding the disease processes.

ENT as a speciality has been steered into new heights today due to the many technological advances in microsurgery by stalwarts in this field. Otology, Laryngology, Rhinology, Endoscopic Skull Base Surgery, Head and Neck Surgery, Facial Plastic Surgery, Neuro-otology, Pediatric ENT and Phonosurgery are the various sub-specialities that ENT has ramified into. ENT related medical problems are commonly encountered at a primary care and for this, an MBBS graduate requires a basic knowledge and skill in the speciality of ENT. The new CBME curriculum equips the undergraduate students with the skill and knowledge to face these challenges using innovative teaching learning methods.

Goals and Objectives of the SSAHE Otorhinolaryngology Curriculum

Goals

The Goal of training in this subject is to make the candidate familiar with common ENT problems. The IMG should be competent enough to diagnose and treat routine ENT diseases and should be able to identify the cases, which require specialist care and identify deaf individuals at the earliest and refer them for proper rehabilitation

Competencies

The Learner must demonstrate :-

1. Knowledge of the common Otorhinolaryngological(ENT) emergencies and problems
2. Ability to recognize, diagnose and manage common ENT emergencies and problems in primary care setting
3. Ability to perform simple ENT procedures as applicable in a primary care setting
4. Ability to recognize hearing impairment and refer to the appropriate Hearing impairment rehabilitation programme.

Skills

1. Examine and diagnose common disorders of the Ear, Nose and Throat region and manage at first level of care.
2. Recognize premalignant and malignant cases of head and neck region at an early stage.
3. Remove foreign bodies in the ear and nose.
4. Perform life saving surgical procedures in patients with airway emergencies.
5. Should be familiar with drainage of intra oral and neck abscesses.
6. Able to do anterior and posterior nasal packing to control Epistaxis

Integration

The teaching should be aligned and integrated horizontally and vertically in order to allow the learner to understand the structural basis of ENT problems, their management and correlation with function, rehabilitation and quality of life

Attitude and communication skills

At the end of the course the student should be able to:

e. Communicate effectively with patients, their families and the public at large.
f. Communicate effectively with peers and teachers; demonstrate the ability to work effectively with peers in a team.
g. Demonstrate professional attributes of punctuality, accountability and respect for teachers and peers.
h. Appreciate the issues of equity and social accountability while undergoing early clinical exposure**.**

Interactive Lectures – 25 hours
Proposed topics

Sl No	Topics
1	**Anatomy & Physiology of Ear**
2	**Anatomy & Physiology of Nose**
3	**Anatomy & Physiology of Throat**
4	**Anatomy &Physiologyof Head & Neck**
5	**Diseases of the External Ear**
6	**Non-infectious disordersof Middle Ear**
7	**Infections of Middle Ear**
8	**Diseases of Inner Ear**
9	**Hearing Loss & Tinnitus**
10	**Vertigo & Balance Disorders**
11	**Facial Nerve Paralysis**
12	**Diseases of Nasal Septum**
13	**Non-infectious Rhinitis**
14	**Acute & Chronic Rhinosinusitis**
15	**Epistaxis &Head & neck Trauma**
16	**Tumors of Nose & PNS**
17	**Tumors of Nasopharynx & JNA**
18	**Diseases of Salivary glands**
19	**Acute & chronic Pharyngitis& Tonsillitis**
20	**Head & Neck Space Infections**
21	**Laryngeal Infections &Benign disorders of Larynx**
22	**Malignancy of Larynx &Hypopharynx**
23	**Stridor & management ofAirway Emergencies**
24	**Diseases of Oesophagus**
25	**HIV manifestationsof the ENT**

Small Group Teaching– 40 hours
Proposed topics

Sl No	Topics	No of hours	SG TL methods
1	Anatomy & Physiology of Ear	2	Seminars & Model/chart making
3	Otoscopic examination of the Tympanic membrane	2	Simulation (DOAP)
4	Otomicroscopic examination in a simulated environment	2	Simulation (DOAP)
5	Tuning fork Tests	2	DOAP
6	Foreign body removal from ear / Syringing wax from ear	2	Simulation (DOAP)
7	Assessment & Rehabilitation of Hearing impaired & NPPCD	2	Seminars & SGD (DOAP)
8	Interpretation of Pure Tone Audiograms & Impedance audiograms	2	SGD (Discussion of patient reports)
9	Surgical Procedures of the Ear	3	Seminars & Video demonstration
10	Diagnostic nasal endoscopy & anatomy of Nose	3	Seminars, Video demonstration & Simulation
11	Smell and taste perception	2	Seminars, SGD – chart making
12	Epistaxis & Anterior Nasal packing	3	Seminars, Video demonstration & Simulation
13	Foreign bodies in the nose & Upper respirator tract & their management	3	Video demonstration & Simulation
14	Surgical procedures of the Nose	2	Seminars & Video demonstration
15	Anatomy & Physiology of throat	2	Seminars & Model/chart making
16	Surgical procedures of the throat	2	Seminars & Video demonstration
17	Airway emergencies & management of Stridor (including Tracheostomy)	3	Seminars, Video demonstration & Simulation
18	Counsel &Administer informed consent	1	Simulation -DOAP
19	Malignant & pre- malignant ENT diseases	1	Seminars, SGD
20	The national programs for prevention of deafness, cancer, noise & environmental pollution	1	Seminars, Awareness activities (Poster making)

Topics for Integration with Otorhinolaryngology from other Departments

Sl. No	Integrated Teaching	Integrated with (Department)
1	Describe the (1) morphology, relations, blood supply and applied anatomy of palatine tonsil and (2) composition of soft palate	Human Anatomy
2	Describe the components and functions of waldeyer's lymphatic ring	Human Anatomy
3	Describe the boundaries and clinical significance of pyriform fossa	Human Anatomy
4	Describe the anatomical basis of tonsillitis, tonsillectomy, adenoids and peri-tonsillar abscess	Human Anatomy
5	Describe the clinical significance of Killian's dehiscence	Human Anatomy
6	Describe & demonstrate features of nasal septum, lateral wall of nose, their blood supply and nerve supply	Human Anatomy
7	Describe location and functional anatomy of paranasal sinuses	Human Anatomy
8	Describe anatomical basis of sinusitis & maxillary sinus tumours	Human Anatomy
9	Describe the morphology, identify structure of the wall, nerve supply, blood supply and actions of intrinsic and extrinsic muscles of the larynx	Human Anatomy
10	Describe the anatomical aspects of laryngitis	Human Anatomy
11	Describe anatomical basis of recurrent laryngeal nerve injury	Human Anatomy
12	Explain the anatomical basis of hypoglossal nerve palsy	Human Anatomy
13	Describe & identify the parts, blood supply and nerve supply of external ear	Human Anatomy
14	Describe & demonstrate the boundaries, contents, relations and functional anatomy of middle ear and auditory tube	Human Anatomy
15	Describe the features of internal ear	Human Anatomy
16	Explain anatomical basis of otitis externa and otitis media	Human Anatomy
17	Explain anatomical basis of myringotomy	Human Anatomy
18	Describe and discuss perception of smell and taste sensation	Physiology
19	Describe and discuss functional anatomy of ear and auditory pathways & physiology of hearing	Physiology
20	Describe and discuss pathophysiology of deafness. Describe hearing tests	Physiology
21	Demonstrate (i) hearing (ii) testing for smell and (iii) taste sensation in volunteer/ simulated environment	Physiology
22	Describe the health hazards of air, water, noise, radiation and pollution.	Community Medicine
23	Discuss the prevalence of oral cancer and enumerate the common types of cancer that can affect tissues of the oral cavity	Dentistry

24	Discuss the role of etiological factors in the formation of precancerous /cancerous lesions	Dentistry
25	Identify potential pre-cancerous /cancerous lesions	Dentistry
26	Counsel patients to risks of oral cancer with respect to tobacco, smoking, alcohol and other causative factors	Dentistry
27	Describe and discuss the etiopathogenesis, clinical presentation, identification, functional changes, acute care, stabilization, management and rehabilitation of hearing loss in the elderly	General Medicine
28	Discuss the risk factors, clinical features, Diagnosis and management of Kerosene ingestion	Paediatrics/General Medicine
29	Discuss the etio-pathogenesis, clinical features and management of Naso pharyngitis	Paediatrics
30	Discuss the etio-pathogenesis of Pharyngo Tonsillitis	Paediatrics
31	Discuss the clinical features and management of Pharyngo Tonsillitis	Paediatrics
32	Discuss the etio-pathogenesis, clinical features and management of Acute Otitis Media (AOM)	Paediatrics
33	Discuss the etio-pathogenesis, clinical features and management of Epiglottitis	Paediatrics
34	Discuss the etio-pathogenesis, clinical features and management of Acute laryngo-trachea-bronchitis	Paediatrics
35	Discuss the etiology, clinical features and management of Stridor in children	Paediatrics
36	Discuss the types, clinical presentation, and management of foreign body aspiration in infants and children	Paediatrics
37	Elicit, document and present age appropriate history of a child with upper respiratory problem including Stridor	Paediatrics
38	Perform otoscopic examination of the ear	Paediatrics
39	Perform throat examination using tongue depressor	Paediatrics
40	Perform examination of the nose	Paediatrics
41	Interpret X-ray of the paranasal sinuses and mastoid; and /or use written report in case of management. Interpret CXR in foreign body aspiration and lower respiratory tract infection, understand the significance of thymic shadow in pediatric chest X-rays	Paediatrics
42	Describe the etio-pathogenesis, management and prevention of Allergic Rhinitis in Children	Paediatrics
43	Describe the etio-pathogenesis, clinical features and management of Atopic dermatitis in children	Paediatrics
44	Describe etiopathogenesis of oral cancer, symptoms and signs of pharyngeal cancer. Enumerate the appropriate investigations and discuss the principles of treatment.	General Surgery

Self-Directed Learning

Proposed topics

Sl. No	Topics
1	**Hearing Loss**
2	**Vertigo**
3	**Allergy**
4	**Rhinosinusitis**
5	**Head & Neck Tumors**

OTORHINOLARYNGOLOGY

Core competencies – color Blue **Non - Core competencies – color Green**

TOPIC: ANATOMY AND PHYSIOLOGY OF EAR, NOSE, THROAT, HEAD & NECK

Number of competencies:(02) Number of procedures that require certification:(NIL)

EN1.1Describe the Anatomy & physiology of ear, nose, throat, head & neck

Domain – K **Level - KH**

Vertical Integration – Human Anatomy

Number	Specific Learning objective	Teaching-Learning methods	Assessment methods
EN1.1.1	Describe the Anatomyof ear	Lecture, Demonstration	Written, viva-voce
EN1.1.2	Describe the Anatomy of nose	Lecture, Demonstration	Written, viva-voce
EN1.1.3	Describe the Anatomy of throat	Lecture, Demonstration	Written, viva-voce
EN1.1.4	Describe the Anatomy of head & neck	Lecture, Demonstration	Written, viva-voce
EN1.1.5	Describe the Physiology of ear	Lecture, Demonstration	Written, viva-voce
EN1.1.6	Describe the Physiology of nose	Lecture, Demonstration	Written, viva-voce
EN1.1.7	Describe the Physiology of throat	Lecture, Demonstration	Written, viva-voce
EN1.1.8	Describe the Physiology of head & neck	Lecture, Demonstration	Written, viva-voce

EN1.2 Describe the patho-physiology of common diseasesin ENT
Domain – K **Level - KH**
Vertical Integration – Pathology

Number	Specific Learning objective	Teaching-Learning methods	Assessment methods
EN1.2.1	Describe the patho-physiology of common diseases of the ear	Lecture, Demonstration, Bedside clinics	Written, viva-voce
EN1.2.2	Describe the patho-physiology of common diseases of the nose	Lecture, Demonstration, Bedside clinics	Written, viva-voce
EN1.2.3	Describe the patho-physiology of common diseases of the throat	Lecture, Demonstration, Bedside clinics	Written, viva-voce
EN1.2.4	Describe the patho-physiology of common diseases of the head & neck	Lecture, Demonstration, Bedside clinics	Written, viva-voce

TOPIC: CLINICAL SKILLS

Number of competencies: (15)
Number of procedures that require certification: (NIL**)**
To be taught and assessed in bed-side clinics and / or simulated environment.

EN2.1 Elicit document and present an appropriate history in a patientpresenting with an ENT complaint
Domain – K/S/A/C **Level – SH**

EN2.2 Demonstrate the correct use of a headlamp in the examination of theear, nose and throat
Domain – S **Level – SH**

EN2.3 Demonstrate the correct technique of examination of the ear includingOtoscopy
Domain – K/S/A **Level – SH**

EN2.4 Demonstrate the correct technique of performance and interpret tuningfork tests
Domain – K/S/A **Level – SH**

EN2.5 Demonstrate the correct technique of examination of the nose &paranasal sinuses including the use of nasal speculum
Domain – S **Level – SH**

EN2.6 Demonstrate the correct technique of examining the throat including theuse of a tongue depressor
Domain – S **Level – SH**

EN2.7 Demonstrate the correct technique of examination of neck includingelicitation of laryngeal crepitus
Domain – S **Level – SH**

EN2.8 Demonstrate the correct technique to perform and interpret pure toneaudiogram& impedance audiogram
Domain –K/S **Level – SH**

EN2.9 Choose correctly and interpret radiological, microbiological &histological investigations relevant to the ENT disorders
Domain –K/S **Level – SH**

EN2.10 Identify and describe the use of common instruments used in ENT surgery
Domain –K **Level – SH**

EN2.11 Describe and identify by clinical examination malignant & pre- malignantENT diseases
Domain –K/S **Level – SH**

EN2.12 Counsel and administer informed consent to patients and their familiesin a simulated environment
Domain –S/A/C **Level – SH**

EN2.13 Identify, resuscitate and manage ENT emergencies in a simulatedenvironment (including tracheostomy, anterior nasal packing, removalof foreign bodies in ear, nose, throat and upper respiratory tract)
Domain –K/S/A **Level – SH**

EN2.14 Demonstrate the correct technique to instilling topical medications intothe ear, nose and throat in a simulated environment
Domain –K/S **Level – SH**

EN2.15 Describe the national programs for prevention of deafness, cancer,noise& environmental pollution
Domain –K **Level – KH**

TOPIC: DIAGNOSTIC AND THERAPEUTIC PROCEDURES IN ENT

Number of competencies:(06) Number of procedures that require certification: (NIL)

To be taught and assessed in bed-side clinics and / or simulated environment.

EN3.1 Observe and describe the indications for and steps involved in the performance of Oto-microscopic examination in a simulated environment
Domain –S **Level – KH**

EN3.2 Observe and describe the indications for and steps involved in theperformance of diagnostic nasal Endoscopy
Domain –S **Level – KH**

EN3.3 Observe and describe the indications for and steps involved in theperformance of Rigid/Flexible Laryngoscopy
Domain –K **Level – KH**

EN3.4 Observe and describe the indications for and steps involved in the removal of foreign bodies from ear, nose & throat
Domain –K **Level – KH**

EN3.5 Observe and describe the indications for and steps involved in thesurgical procedures in ear, nose & throat
Domain –K **Level – KH**

EN3.6 Observe and describe the indications for and steps involved in the skillsof emergency procedures in ear, nose & throat
Domain –K **Level – KH**

TOPIC: MANAGEMENT OF DISEASES OF EAR, NOSE & THROAT

Number of competencies: (53) Number of procedures that require certification: (NIL)
EN4.1 Elicit, document and present a correct history, demonstrate and describe the clinical features, choose the correct investigations and describe the principles of management of Otalgia
Domain – K/S **Level - SH**

Number	Specific Learning objective	Teaching-Learning methods	Assessment methods
EN4.1.1	List the causes of Otalgia	Lecture	Written, viva-voce
EN4.1.2	Elicit correct history in patients with Otalgia	Bedside clinic	Skill assessment
EN4.1.3	Document and present correct history in patients with Otalgia	Bedside clinic	Skill assessment

EN4.1.4	Describe the clinical features in a patient presenting with Otalgia	Bedside clinic	Skill assessment
EN4.1.5	Choose the correct investigations in a patient presenting with Otalgia	Bedside clinic	Viva voce
EN4.1.6	Describe the principles of management of Otalgia	Lecture ,Bedside clinic	Viva voce

EN4.2 Elicit document and present a correct history, demonstrate and describe the clinical features, choose the correct investigations and describe the principles of management of diseases of the external Ear

Domain – K/S **Level - SH**

Number	Specific Learning objective	Teaching-Learning methods	Assessment methods
EN4.2.1	List the diseases of external ear	Lecture	Written, viva-voce
EN4.2.2	Elicit correct history in patients presenting with disease of the external Ear	Bedside clinic	Skill assessment
EN4.2.3	Document and present correct history in patients with diseases of the external Ear	Bedside clinic	Skill assessment
EN4.2.4	Describe the clinical features in a patient presenting with diseases of the external Ear	Bedside clinic	Skill assessment
EN4.2.5	Choose the correct investigations in a patient presenting with diseases of the external Ear	Bedside clinic	Viva voce
EN4.2.6	Describe the principles of management of diseases of the external Ear	Lecture ,Bedside clinic	Viva voce

EN4.3Elicit document and present a correct history, demonstrate and describe the clinical features, choose the correct investigations and describe the principles of management of ASOM

Domain – K/S **Level - SH**

Number	Specific Learning objective	Teaching-Learning methods	Assessment methods
EN4.3.1	Elicit correct history in patients presenting with ASOM	Bedside clinic	Skill assessment

EN4.3.2	Document and present correct history in patients with ASOM	Bedside clinic	Skill assessment
EN4.3.3	Describe the clinical features in a patient presenting with ASOM	Bedside clinic	Skill assessment
EN4.3.4	Choose the correct investigations in a patient presenting with ASOM	Bedside clinic	Viva voce
EN4.3.5	Describe the principles of management of ASOM	Lecture ,Bedside clinic	Viva voce/Written

EN4.4 Demonstrate the correct technique to hold visualize and assess the mobility of the tympanic membrane and its mobility and interpret and diagrammatically represent the findings

Domain – K/S/A **Level - SH**

Number	Specific Learning objective	Teaching-Learning methods	Assessment methods
EN4.4.1	Describe the normal appearance of Tympanic membrane	Lecture	Viva voce
EN4.4.2	Demonstrate the correct technique to hold & visualize the tympanic membrane	DOAP session	Skill assessment
EN4.4.3	Demonstrate the correct technique to assess the mobility of the tympanic membrane	DOAP session	Skill assessment
EN4.4.4	Interpret and diagrammatically represent the findings of the tympanic membrane assessment	Bedside clinics	Viva voce

EN4.5 Elicit document and present a correct history, demonstrate and describe the clinical features, choose the correct investigations and describe the principles of management of OME

Domain – K/S **Level - SH**

Number	Specific Learning objective	Teaching-Learning methods	Assessment methods
EN4.5.1	Elicit correct history in patients presenting with OME	Bedside clinics	Skill assessment
EN4.5.2	Document and present correct history in patients with OME	Bedside clinics	Skill assessment
EN4.5.3	Describe the clinical features in a patient presenting with OME	Lecture, Bedside clinics	Skill assessment
EN4.5.4	Choose the correct investigations in a patient presenting with OME	Bedside clinics	Viva voce

EN4.5.5	Describe the principles of management of OME	Lecture	Written, viva voce

EN4.6 Elicit document and present a correct history, demonstrate and describe the clinical features, choose the correct investigations and describe the principles of management of Discharging ear

Domain – K/S **Level - SH**

Number	Specific Learning objective	Teaching-Learning methods	Assessment methods
EN4.6.1	List the causes of Discharging ear	Lecture	Written, viva-voce
EN4.6.2	Elicit correct history in patients presenting with Discharging ear	Bedside clinic	Skill assessment
EN4.6.3	Document and present correct history in patients with Discharging ear	Bedside clinic	Skill assessment
EN4.6.4	Describe the clinical features in a patient presenting with Discharging ear	Bedside clinic	Skill assessment
EN4.6.5	Choose the correct investigations in a patient presenting with Discharging ear	Bedside clinic	Viva voce
EN4.6.6	Describe the principles of management of Discharging ear	Lecture ,Bedside clinic	Written, Viva voce

EN4.7 Elicit document and present a correct history demonstrate and describe the clinical features, choose the correct investigations and describe the principles of management of mucosal type of CSOM

Domain – K/S **Level - SH**

Number	Specific Learning objective	Teaching-Learning methods	Assessment methods
EN4.7.1	Elicit correct history in patients presenting with mucosal type of CSOM	Bedside clinic	Skill assessment
EN4.7.2	Document and present correct history in patients with mucosal type of CSOM	Bedside clinic	Skill assessment
EN4.7.3	Describe the clinical features in a patient presenting with mucosal type of CSOM	Bedside clinic	Skill assessment

EN4.7.4	Choose the correct investigations in a patient presenting with mucosal type of CSOM	Bedside clinic	Viva voce, written
EN4.7.5	Describe the principles of management of mucosal type of CSOM	Lecture ,Bedside clinic	Written, Viva voce

EN4.8 Elicit document and present a correct history, demonstrate and describe the clinical features, choose the correct investigations and describe the principles of management of squamosal type of CSOM

Domain – K/S **Level - SH**

Number	Specific Learning objective	Teaching-Learning methods	Assessment methods
EN4.8.1	Elicit correct history in patients presenting with squamosal type of CSOM	Bedside clinic	Skill assessment
EN4.8.2	Document and present correct history in patients with squamosal type of CSOM	Bedside clinic	Skill assessment
EN4.8.3	Describe the clinical features in a patient presenting with squamosal type of CSOM	Bedside clinic	Skill assessment
EN4.8.4	Choose the correct investigations in a patient presenting with squamosal type of CSOM	Bedside clinic	Viva voce, written
EN4.8.5	Describe the principles of management of squamosal type of CSOM	Lecture ,Bedside clinic	Written, Viva voce

EN4.9 Demonstrate the correct technique for syringing wax from the ear in a simulated environment

Domain –S **Level - SH**

Number	Specific Learning objective	Teaching-Learning methods	Assessment methods
EN4.9.1	Describe the correct technique for syringing wax from the ear	DOAP	Skill assessment
EN4.9.2	Demonstrate the correct technique for syringing wax from the ear in a simulated environment	DOAP	Skill assessment

EN4.10 Observe and describe the indications for and steps involved in myringotomy and myringoplasty

Domain –S **Level - KH**

Number	Specific Learning objective	Teaching-Learning methods	Assessment methods
EN4.10.1	Enumerate the indications for myringotomy	Lecture	Written , viva voce
EN4.10.2	Describe the steps of myringotomy	Lecture, video demonstration	Written , viva voce
EN4.10.3	Observe steps involved in myringotomy	Clinical (OT)	Written , viva voce
EN4.10.4	Enumerate the indications for myringoplasty	Lecture	Written , viva voce
EN4.10.5	Describe the steps of myringoplasty	Lecture, video demonstration	Written , viva voce
EN4.10.6	Observe steps involved in myringoplasty	Clinical (OT)	Written , viva voce

EN4.11Enumerate the indications describe the steps and observe a Mastoidectomy

Domain – K/S **Level - KH**

Number	Specific Learning objective	Teaching-Learning methods	Assessment methods
EN4.11.1	Enumerate the indications for Mastoidectomy	Lecture	Written , viva voce
EN4.11.2	Describe the steps of Mastoidectomy	Lecture	Written , viva voce
EN4.11.3	Observe steps involved in Mastoidectomy	Clinical (OT)	Written , viva voce

EN4.12 Elicit document and present a correct history demonstrate and describe the clinical features, choose the correct investigations and describe the principles of management of Hearing loss

Domain – K/S **Level - SH**

Number	Specific Learning objective	Teaching-Learning methods	Assessment methods
EN4.12.1	List the causes of Hearing loss	Lecture	Written, viva-voce
EN4.12.2	Elicit correct history in patients presenting with Hearing loss	Bedside clinic	Skill assessment
EN4.12.3	Document and present correct history in patients with Hearing loss	Bedside clinic	Skill assessment
EN4.12.4	Describe the clinical features in a patient presenting with Hearing loss	Bedside clinic	Skill assessment
EN4.12.5	Choose the correct investigations in a patient presenting with Hearing loss	Bedside clinic	Viva voce
EN4.12.6	Describe the principles of management of Hearing loss	Lecture ,Bedside clinic	Written, Viva voce

EN4.13 Describe the clinical features, investigations and principles of management of Otosclerosis

Domain – K **Level - KH**

Number	Specific Learning objective	Teaching-Learning methods	Assessment methods
EN4.13.1	Describe the clinical features of Otosclerosis	Lecture	Written
EN4.13.2	Describe the investigations required for patient with Otosclerosis	Bedside clinic	Viva voce
EN4.13.3	Describe the principles of management of Otosclerosis	Lecture ,Bedside clinic	Written, Viva voce

EN4.14 Describe the clinical features, investigations and principles of management of Sudden Sensorineural Hearing Loss

Domain – K **Level - KH**

Number	Specific Learning objective	Teaching-Learning methods	Assessment methods
EN4.14.1	Describe the clinical features of Sudden Sensorineural Hearing Loss	Lecture	Written
EN4.14.2	Describe the investigations required for patient presenting with Sudden Sensorineural Hearing Loss	Bedside clinic	Viva voce
EN4.14.3	Describe the principles of management of Sudden Sensorineural Hearing Loss	Lecture ,Bedside clinic	Written, Viva voce

EN4.15 Describe the clinical features, investigations and principles of management of Noise Induced Hearing Loss

Domain – K **Level - KH**

Number	Specific Learning objective	Teaching-Learning methods	Assessment methods
EN4.15.1	Describe the clinical features of Noise Induced Hearing Loss	Lecture	Written
EN4.15.2	Describe the investigations required for patient presenting with Noise Induced Hearing Loss	Bedside clinic	Viva voce
EN4.15.3	Describe the principles of management of Noise Induced Hearing Loss	Lecture ,Bedside clinic	Written, Viva voce

EN4.16 Observe and describe the indications for and steps involved in the performance of pure tone audiometry

Domain –S **Level - KH**

Number	Specific Learning objective	Teaching-Learning methods	Assessment methods
EN4.16.1	Enumerate the indications for pure tone audiometry	Lecture	Written, viva voce
EN4.16.2	Describe the steps involved in the performance of pure tone audiometry	DOAP	viva voce
EN4.16.3	Observe the steps involved in the performance of pure tone audiometry	DOAP	viva voce

EN4.17 Enumerate the indications and interpret the results of an audiogram

Domain –S **Level - SH**

Number	Specific Learning objective	Teaching-Learning methods	Assessment methods
EN4.17.1	Enumerate the indications for an audiogram	Bedside clinics, DOAP	Viva voce
EN4.17.2	Interpret the results of an audiogram	DOAP	Skill assessment

E

N4.18 Describe the clinical features, investigations and principles of management of Facial Nerve palsy

Domain – K **Level - KH**

Number	Specific Learning objective	Teaching-Learning methods	Assessment methods
EN4.18.1	Describe the clinical features of Facial Nerve palsy	Lecture	Written, viva voce

EN4.18.2	Describe the investigations required for patient presenting with Facial Nerve palsy	Bedside clinics	Written, viva voce
EN4.18.3	Describe the principles of management of Facial Nerve palsy	Lecture ,Bedside clinic	Written, Viva voce

EN4.19 Describe the clinical features, investigations and principles of management of Vertigo
Domain – K **Level - KH**

Number	Specific Learning objective	Teaching-Learning methods	Assessment methods
EN4.19.1	Describe the clinical features of patient presenting with Vertigo	Lecture	Written, viva voce
EN4.19.2	Describe the investigations required for patient presenting with Vertigo	Bedside clinics	Written, viva voce
EN4.19.3	Describe the principles of management of Vertigo	Lecture ,Bedside clinic	Written, Viva voce

EN4.20 Describe the clinical features, investigations and principles of management of Meniere's Disease
Domain – K **Level - KH**

Number	Specific Learning objective	Teaching-Learning methods	Assessment methods
EN4.20.1	Describe the clinical features of patient presenting with Meniere's Disease	Lecture	Written, viva voce
EN4.20.2	Describe the investigations required for patient presenting with Meniere's Disease	Bedside clinics	Written, viva voce
EN4.20.3	Describe the principles of management of Meniere's Disease	Lecture ,Bedside clinic	Written, Viva voce

EN4.21 Describe the clinical features, investigations and principles of management of Tinnitus
Domain – K **Level - KH**

Number	Specific Learning objective	Teaching-Learning methods	Assessment methods
EN4.21.1	Describe the clinical features of patient presenting with Tinnitus	Lecture	Written, viva voce
EN4.21.2	Describe the investigations required for patient presenting with Tinnitus	Bedside clinics	Written, viva voce
EN4.21.3	Describe the principles of management of Tinnitus	Lecture ,Bedside clinic	Written, Viva voce

EN4.22 Elicit document and present a correct history demonstrate and describe the clinical features, choose the correct investigations and describe the principles of management of Nasal Obstruction
Domain – K/S **Level - SH**

Number	Specific Learning objective	Teaching-Learning methods	Assessment methods
EN4.22.1	List the causes of Nasal obstruction	Lecture	Written, viva-voce
EN4.22.2	Elicit correct history in patients presenting with Nasal obstruction	Bedside clinic	Skill assessment
EN4.22.3	Document and present correct history in patients with Nasal obstruction	Bedside clinic	Skill assessment
EN4.22.4	Describe the clinical features in a patient presenting with Nasal obstruction	Bedside clinic	Skill assessment
EN4.22.5	Choose the correct investigations in a patient presenting with Nasal obstruction	Bedside clinic	Viva voce
EN4.22.6	Describe the principles of management of Nasal obstruction	Lecture ,Bedside clinic	Written, Viva voce

EN4.23 Describe the clinical features, investigations and principles of management of DNS
Domain – K **Level - KH**

Number	Specific Learning objective	Teaching-Learning methods	Assessment methods
EN4.23.1	Describe the clinical features of patient presenting with DNS	Lecture	Written, viva voce
EN4.23.2	Describe the investigations required for patient presenting with DNS	Bedside clinics	Written, viva voce
EN4.23.3	Describe the principles of management of DNS	Lecture ,Bedside clinic	Written, Viva voce

EN4.24 Enumerate the indications observe and describe the steps in a septoplasty
Domain –S **Level - KH**

Number	Specific Learning objective	Teaching-Learning methods	Assessment methods
EN4.24.1	Enumerate the indications for septoplasty	Lecture	Written , viva voce
EN4.24.2	Describe the steps of septoplasty	DOAP - video demonstration	Written , viva voce
EN4.24.3	Observe steps involved in septoplasty	DOAP - Clinical (OT)	Written , viva voce

EN4.25 Elicit document and present a correct history, demonstrate and describe the clinical features, choose the correct investigations and describe the principles of management of Nasal Polyps
Domain – K/S **Level - SH**

Number	Specific Learning objective	Teaching-Learning methods	Assessment methods
EN4.25.1	Elicit correct history in patients presenting with Nasal polyps	Bedside clinic	Skill assessment
EN4.25.2	Document and present correct history in patients with Nasal polyps	Bedside clinic	Skill assessment
EN4.25.3	Describe the clinical features in a patient presenting with Nasal polyps	Bedside clinic	Skill assessment
EN4.25.4	Choose the correct investigations in a patient presenting with Nasal polyps	Bedside clinic	Viva voce
EN4.25.5	Describe the principles of management of Nasal polyps	Lecture ,Bedside clinic	Written, Viva voce

EN4.26 Elicit document and present a correct history, demonstrate and describe the clinical features, choose the correct investigations and describe the principles of management of Adenoids
Domain – K/S **Level - SH**

Number	Specific Learning objective	Teaching-Learning methods	Assessment methods
EN4.26.1	Elicit correct history in patients presenting with Adenoids	Bedside clinic	Skill assessment
EN4.26.2	Document and present correct history in patients with Adenoids	Bedside clinic	Skill assessment
EN4.26.3	Describe the clinical features in a patient presenting with Adenoids	Bedside clinic	Skill assessment
EN4.26.4	Choose the correct investigations in a patient presenting with Adenoids	Lecture, DOAP	Viva voce
EN4.26.5	Describe the principles of management of Adenoids	Lecture ,Bedside clinic	Written, Viva voce

EN4.27 Elicit document and present a correct history, demonstrate and describe the clinical features, choose the correct investigations and describe the principles of management of Allergic Rhinitis
Domain – K/S **Level - SH**

Number	Specific Learning objective	Teaching-Learning methods	Assessment methods
EN4.27.1	Elicit correct history in patients presenting with Allergic Rhinitis	Bedside clinic	Skill assessment
EN4.27.2	Document and present correct history in patients with Allergic Rhinitis	Bedside clinic	Skill assessment
EN4.27.3	Describe the clinical features in a patient presenting with Allergic Rhinitis	Bedside clinic	Skill assessment
EN4.27.4	Choose the correct investigations in a patient presenting with Allergic Rhinitis	Lecture, DOAP	Viva voce
EN4.27.5	Describe the principles of management of Allergic Rhinitis	Lecture ,Bedside clinic	Written, Viva voce

EN4.28 Elicit document and present a correct history, demonstrate and describe the clinical features, choose the correct investigations and describe the principles of management of Vasomotor Rhinitis
Domain – K/S **Level - SH**

Number	Specific Learning objective	Teaching-Learning methods	Assessment methods
EN4.28.1	Elicit correct history in patients presenting with Vasomotor Rhinitis	Bedside clinic	Skill assessment
EN4.28.2	Document and present correct history in patients with Vasomotor Rhinitis	Bedside clinic	Skill assessment
EN4.28.3	Describe the clinical features in a patient presenting with Vasomotor Rhinitis	Bedside clinic	Skill assessment
EN4.28.4	Choose the correct investigations in a patient presenting with Vasomotor Rhinitis	Lecture, DOAP	Viva voce
EN4.28.5	Describe the principles of management of Vasomotor Rhinitis	Lecture ,Bedside clinic	Written, Viva voce

EN4.29 Elicit document and present a correct history demonstrate an describe the clinical features, choose the correct investigations and describe the principles of management of Acute & Chronic Rhinitis
Domain – K/S **Level - SH**

Number	Specific Learning objective	Teaching-Learning methods	Assessment methods
EN4.29.1	Elicit correct history in patients presenting with Acute Rhinitis	Bedside clinic	Skill assessment
EN4.29.2	Document and present correct history in patients with Acute Rhinitis	Bedside clinic	Skill assessment
EN4.29.3	Describe the clinical features in a patient presenting with Acute Rhinitis	Bedside clinic	Skill assessment
EN4.29.4	Choose the correct investigations in a patient presenting with Acute Rhinitis	Lecture, DOAP	Viva voce
EN4.29.5	Describe the principles of management of Acute Rhinitis	Lecture ,Bedside clinic	Written, Viva voce
EN4.29.6	Elicit correct history in patients presenting with Chronic Rhinitis	Bedside clinic	Skill assessment
EN4.29.7	Document and present correct history in patients with Chronic Rhinitis	Bedside clinic	Skill assessment
EN4.29.8	Describe the clinical features in a patient presenting with Chronic Rhinitis	Bedside clinic	Skill assessment
EN4.29.9	Choose the correct investigations in a patient presenting with Chronic Rhinitis	Lecture, DOAP	Viva voce
EN4.29.10	Describe the principles of management of Chronic Rhinitis	Lecture ,Bedside clinic	Written, Viva voce

EN4.30 Elicit document and present a correct history, demonstrate and describe the clinical features, choose the correct investigations and describe the principles of management of Epistaxis

Domain – K/S **Level - SH**

Number	Specific Learning objective	Teaching-Learning methods	Assessment methods
EN4.30.1	Enumerate the causes of Epistaxis	Lecture	Written, Viva voce
EN4.30.2	Elicit correct history in patients presenting with Epistaxis	Bedside clinic	Skill assessment
EN4.30.3	Document and present correct history in patients with Epistaxis	Bedside clinic	Skill assessment
EN4.30.4	Describe the clinical features in a patient presenting with Epistaxis	Bedside clinic	Skill assessment
EN4.30.5	Choose the correct investigations in a patient presenting with Epistaxis	Lecture, DOAP	Viva voce
EN4.30.6	Describe the principles of management of Epistaxis	Lecture ,Bedside clinic	Written, Viva voce

EN4.31Describe the clinical features, investigations and principles ofmanagement of trauma to the face & neck

Domain – K/S **Level - KH**

Number	Specific Learning objective	Teaching-Learning methods	Assessment methods
EN4.31.1	Describe the clinical features in a patient presenting with trauma to face	Lecture	Written, Viva voce
EN4.31.2	Choose the correct investigations in a patient presenting with trauma to face	Lecture, DOAP	Viva voce
EN4.31.3	Describe the principles of management of trauma to face	Lecture ,Bedside clinic	Written, Viva voce
EN4.31.4	Describe the clinical features in a patient presenting with trauma to neck	Lecture	Written, Viva voce
EN4.31.5	Choose the correct investigations in a patient presenting with trauma to neck	Lecture, DOAP	Viva voce
EN4.31.6	Describe the principles of management of trauma to neck	Lecture ,Bedside clinic	Written, Viva voce

EN4.32 Describe the clinical features, investigations and principles ofmanagement of nasopharyngeal Angiofibroma

Domain – K **Level - KH**

Number	Specific Learning objective	Teaching-Learning methods	Assessment methods
EN4.32.1	Describe the clinical features in a patient presenting with nasopharyngeal Angiofibroma	Lecture	Written, Viva voce
EN4.32.2	Choose the correct investigations in a patient presenting with nasopharyngeal Angiofibroma	Lecture, DOAP	Viva voce
EN4.32.3	Describe the principles of management of nasopharyngeal Angiofibroma	Lecture ,Bedside clinic	Written, Viva voce

EN4.33 Elicit document and present a correct history demonstrate and describethe clinical features, choose the correct investigations and describe the principles of management of Acute &ChronicSinusitis

Domain – K/S **Level - SH**

Number	Specific Learning objective	Teaching-Learning methods	Assessment methods
EN4.33.1	Elicit correct history in patients presenting with Acute Sinusitis	Bedside clinic	Skill assessment
EN4.33.2	Document and present correct history in patients with Acute Sinusitis	Bedside clinic	Skill assessment
EN4.33.3	Describe the clinical features in a patient presenting with Acute Sinusitis	Bedside clinic	Skill assessment
EN4.33.4	Choose the correct investigations in a patient presenting with Acute Sinusitis	Lecture, DOAP	Viva voce
EN4.33.5	Describe the principles of management of Acute Sinusitis	Lecture ,Bedside clinic	Written, Viva voce
EN4.33.6	Elicit correct history in patients presenting with Chronic Sinusitis	Bedside clinic	Skill assessment
EN4.33.7	Document and present correct history in patients with Chronic Sinusitis	Bedside clinic	Skill assessment
EN4.33.8	Describe the clinical features in a patient presenting with Chronic Sinusitis	Bedside clinic	Skill assessment
EN4.33.9	Choose the correct investigations in a patient presenting with Chronic Sinusitis	Lecture, DOAP	Viva voce
EN4.33.10	Describe the principles of management of Chronic Sinusitis	Lecture ,Bedside clinic	Written, Viva voce

EN4.34 Describe the clinical features, investigations and principles of management of Tumors of Maxilla

Domain – K **Level - KH**

Number	Specific Learning objective	Teaching-Learning methods	Assessment methods
EN4.34.1	Describe the clinical features in a patient presenting with Tumors of Maxilla	Lecture	Written, Viva voce
EN4.34.2	Choose the correct investigations in a patient presenting with Tumors of Maxilla	Lecture, DOAP	Viva voce
EN4.34.3	Describe the principles of management of Tumors of Maxilla	Lecture ,Bedside clinic	Written, Viva voce

EN4.35 Describe the clinical features, investigations and principles of management of Tumors of Nasopharynx

Domain – K **Level - KH**

Number	Specific Learning objective	Teaching-Learning methods	Assessment methods
EN4.35.1	Describe the clinical features in a patient presenting with Tumors of Nasopharynx	Lecture	Written, Viva voce
EN4.35.2	Choose the correct investigations in a patient presenting with Tumors of Nasopharynx	Lecture, DOAP	Viva voce
EN4.35.3	Describe the principles of management of Tumorsof Nasopharynx	Lecture ,Bedside clinic	Written, Viva voce

EN4.36 Describe the clinical features, investigations and principles ofmanagement of diseases of the Salivary glands

Domain – K **Level - KH**

Number	Specific Learning objective	Teaching-Learning methods	Assessment methods
EN4.36.1	Describe the clinical features in a patient presenting with Diseases of salivary glands	Lecture	Written, Viva voce
EN4.36.2	Choose the correct investigations in a patient presenting with Diseases of salivary glands	Lecture, DOAP	Viva voce
EN4.36.3	Describe the principles of management of Diseases of salivary glands	Lecture ,Bedside clinic	Written, Viva voce

EN4.37 Describe the clinical features, investigations and principles of management of Ludwig's angina

Domain – K **Level - KH**

Number	Specific Learning objective	Teaching-Learning methods	Assessment methods
EN4.37.1	Describe the clinical features in a patient presenting with Ludwig's angina	Lecture	Written, Viva voce
EN4.37.2	Choose the correct investigations for a patient presenting with Ludwig's angina	Lecture, DOAP	Viva voce
EN4.37.3	Describe the principles of management of Ludwig's angina	Lecture ,Bedside clinic	Written, Viva voce

EN4.38 Elicit document and present a correct history demonstrate and describethe clinical features, choose the correct investigations and describe theprinciples of management of type of dysphagia

Domain – K/S **Level - SH**

Number	Specific Learning objective	Teaching-Learning methods	Assessment methods
EN4.38.1	Enumerate the causes of Dysphagia	Lecture	Written, Viva voce
EN4.38.2	Elicit correct history in patients presenting with Dysphagia	Bedside clinic	Skill assessment
EN4.38.3	Document and present correct history in patients with Dysphagia	Bedside clinic	Skill assessment
EN4.38.4	Describe the clinical features in a patient presenting with Dysphagia	Bedside clinic	Skill assessment
EN4.38.5	Choose the correct investigations for a patient presenting with Dysphagia	Lecture, DOAP	Viva voce
EN4.38.6	Describe the principles of management of Dysphagia	Lecture ,Bedside clinic	Written, Viva voce

EN4.39 Elicit document and present a correct history, demonstrate and describe the clinical features, choose the correct investigations and describe theprinciples of management of Acute &ChronicTonsillitis

Domain – K/S **Level - SH**

Number	Specific Learning objective	Teaching-Learning methods	Assessment methods
EN4.39.1	Elicit correct history in patients presenting with Acute Tonsillitis	Bedside clinic	Skill assessment
EN4.39.2	Document and present correct history in patients with Acute Tonsillitis	Bedside clinic	Skill assessment
EN4.39.3	Describe the clinical features in a patient presenting with Acute Tonsillitis	Bedside clinic	Skill assessment
EN4.39.4	Choose the correct investigations in a patient presenting with Acute Tonsillitis	Lecture, DOAP	Viva voce
EN4.39.5	Describe the principles of management of Acute Tonsillitis	Lecture ,Bedside clinic	Written, Viva voce
EN4.39.6	Elicit correct history in patients presenting with Chronic Tonsillitis	Bedside clinic	Skill assessment
EN4.39.7	Document and present correct history in patients with Chronic Tonsillitis	Bedside clinic	Skill assessment
EN4.39.8	Describe the clinical features in a patient presenting with Chronic Tonsillitis	Bedside clinic	Skill assessment
EN4.39.9	Choose the correct investigations in a patient presenting with Chronic Tonsillitis	Lecture, DOAP	Viva voce
EN4.39.10	Describe the principles of management of Chronic Tonsillitis	Lecture ,Bedside clinic	Written, Viva voce

EN4.40 Observe and describe the indications for and steps involved in a tonsillectomy / adenoidectomy

Domain – S **Level – KH**

Number	Specific Learning objective	Teaching-Learning methods	Assessment methods
EN4.40.1	Enumerate the indications for tonsillectomy	Lecture, Bedside clinic	Written, Viva voce
EN4.40.2	Observe the steps involved in a tonsillectomy	Video demonstration, DOAP (OT)	Viva voce
EN4.40.3	Describe the steps involved in a tonsillectomy	DOAP (OT), Bedside clinic	Viva voce
EN4.40.4	Enumerate the indications for adenoidectomy	Lecture, Bedside clinic	Written, Viva voce
EN4.40.5	Observe the steps involved in an adenoidectomy	Video demonstration, DOAP (OT)	Viva voce
EN4.40.6	Describe the steps involved in an adenoidectomy	DOAP (OT), Bedside clinic	Viva voce

EN4.41 Describe the clinical features, investigations and principles of management of Acute & chronic abscesses in relation to Pharynx

Domain – K/S **Level - KH**

Number	Specific Learning objective	Teaching-Learning methods	Assessment methods
EN4.41.1	List the abscesses in relation to pharynx	Lecture, Bedside clinic	Written, Viva voce
EN4.41.2	Describe the clinical features of acute abscesses in relation to pharynx	Bedside clinic	Viva voce
EN4.41.3	Choose the correct investigations in a patient presenting with an acute abscess related to the pharynx	DOAP, Bedside clinic	Viva voce
EN4.41.4	Describe the principles of management of a patient presenting with an acute abscess related to the pharynx	Lecture, DOAP	Viva voce
EN4.41.5	Describe the clinical features of chronic abscesses in relation to pharynx	Bedside clinic	Viva voce

EN4.41.6	Choose the correct investigations in a patient presenting with chronic abscess related to the pharynx	DOAP, Bedside clinic	Viva voce
EN4.41.7	Describe the principles of management of a patient presenting with chronic abscess related to the pharynx	Lecture, DOAP	Viva voce

EN4.42 Elicit, document and present a correct history, demonstrate and describe the clinical features, choose the correct investigations and describe the principles of management of hoarseness of voice

Domain – K/S **Level – SH**

Number	Specific Learning objective	Teaching-Learning methods	Assessment methods
EN4.42.1	Enumerate the causes of hoarseness of voice	Lecture	Written, Viva voce
EN4.42.2	Elicit correct history in patients presenting with hoarseness of voice	Bedside clinic	Skill assessment
EN4.42.3	Document and present correct history in patients with hoarseness of voice	Bedside clinic	Skill assessment
EN4.42.4	Describe the clinical features in a patient presenting with hoarseness of voice	Bedside clinic	Skill assessment
EN4.42.5	Choose the correct investigations for a patient presenting with hoarseness of voice	Lecture, DOAP	Viva voce
EN4.42.6	Describe the principles of management of a patient with hoarseness of voice	Lecture ,Bedside clinic	Written, Viva voce

EN4.43Describe the clinical features, investigations and principles of management of Acute & Chronic Laryngitis

Domain – K **Level - KH**

Number	Specific Learning objective	Teaching-Learning methods	Assessment methods
EN4.43.1	Describe the clinical features in a patient presenting with Acute Laryngitis	Lecture ,Bedside clinic	Written, Viva voce
EN4.43.2	Choose the correct investigations in a patient presenting with Acute Laryngitis	Lecture, DOAP	Viva voce
EN4.43.3	Describe the principles of management of Acute Laryngitis	Lecture ,Bedside clinic	Written, Viva voce
EN4.43.4	Describe the clinical features in a patient presenting with Chronic Laryngitis	Lecture ,Bedside clinic	Written, Viva voce
EN4.43.5	Choose the correct investigations in a patient presenting with Chronic Laryngitis	Lecture, DOAP	Viva voce

EN4.43.6	Describe the principles of management of Chronic Laryngitis	Lecture ,Bedside clinic	Written, Viva voce

EN4.44 Describe the clinical features, investigations and principles of management of benign lesions of the vocal cord

Domain – K **Level – KH**

Number	Specific Learning objective	Teaching-Learning methods	Assessment methods
EN4.44.1	Enumerate the benign lesions of the vocal cord	Lecture ,Bedside clinic	Written, Viva voce
EN4.44.2	Describe the clinical features in a patient presenting with benign lesions of the vocal cord	Lecture ,Bedside clinic	Written, Viva voce
EN4.44.3	Choose the correct investigations for a patient presenting with benign lesions of the vocal cord	Lecture, DOAP	Viva voce
EN4.44.4	Describe the principles of management of benign lesions of the vocal cord	Lecture ,Bedside clinic	Written, Viva voce

EN4.45 Describe the clinical features, investigations and principles of management of Vocal cord palsy

Domain – K **Level – KH**

Number	Specific Learning objective	Teaching-Learning methods	Assessment methods
EN4.45.1	Enumerate the causes of Vocal cord palsy	Lecture ,Bedside clinic	Written, Viva voce
EN4.45.2	Describe the clinical features in a patient presenting with Vocal cord palsy	Lecture ,Bedside clinic	Written, Viva voce
EN4.45.3	Choose the correct investigations for a patient presenting with Vocal cord palsy	Lecture, DOAP	Viva voce
EN4.45.4	Describe the principles of management of Vocal cord palsy	Lecture ,Bedside clinic	Written, Viva voce

EN4.46 Describe the clinical features, investigations and principles of management of Malignancy of the Larynx & Hypopharynx

Domain – K **Level – KH**

Number	Specific Learning objective	Teaching-Learning methods	Assessment methods
EN4.46.1	Describe the clinical features in a patient presenting with Malignancy of the Larynx	Lecture ,Bedside clinic	Written, Viva voce
EN4.46.2	Choose the correct investigations for a patient presenting with Malignancy of the Larynx	Lecture, DOAP	Viva voce

EN4.46.3	Describe the principles of management of Malignancy of the Larynx	Lecture ,Bedside clinic	Written, Viva voce
EN4.46.4	Describe the clinical features in a patient presenting with Malignancy of the Hypopharynx	Lecture ,Bedside clinic	Written, Viva voce
EN4.46.4	Choose the correct investigations for a patient presenting with Malignancy of the Hypopharynx	Lecture, DOAP	Viva voce
EN4.46.4	Describe the principles of management of Malignancy of the Hypopharynx	Lecture ,Bedside clinic	Written, Viva voce

EN4.47 Describe the clinical features, investigations and principles of management of Stridor
Domain – K **Level – KH**

Number	Specific Learning objective	Teaching-Learning methods	Assessment methods
EN4.47.1	Enumerate the causes of Stridor	Lecture ,Bedside clinic	Written, Viva voce
EN4.47.2	Describe the clinical features in a patient presenting with Stridor	Lecture ,Bedside clinic	Written, Viva voce
EN4.47.3	Choose the correct investigations for a patient presenting with Stridor	Lecture, DOAP	Viva voce
EN4.47.4	Describe the principles of management of Stridor	Lecture ,Bedside clinic	Written, Viva voce

EN4.48 Elicit document and present a correct history, demonstrate and describe the clinical features, choose the correct investigations and describe the principles of management of Airway Emergencies
Domain –S **Level - SH**

Number	Specific Learning objective	Teaching-Learning methods	Assessment methods
EN4.48.1	Enumerate the causes of Airway emergencies	Bedside clinic, DOAP	Viva voce
EN4.48.2	Elicit correct history in patients presenting with Airway emergencies	Bedside clinic	Skill assessment
EN4.48.3	Document and present correct history in patients with Airway emergencies	Bedside clinic	Skill assessment
EN4.48.4	Describe the clinical features in a patient presenting with Airway emergencies	Bedside clinic	Skill assessment
EN4.48.5	Choose the correct investigations for a patient presenting with Airway emergencies	DOAP	Viva voce
EN4.48.6	Describe the principles of management of Airway emergencies	Bedside clinic	Viva voce

EN4.49 Elicit document and present a correct history, demonstrate and describe the clinical features, choose the correct investigations and describe the principles of management of foreign bodies in the air & food passages

Domain –S **Level - SH**

Number	Specific Learning objective	Teaching-Learning methods	Assessment methods
EN4.49.1	Elicit correct history in patients presenting with foreign bodies in the air passages	Bedside clinic	Skill assessment
EN4.49.2	Document and present correct history in patients presenting with foreign bodies in the air passages	Bedside clinic	Skill assessment
EN4.49.3	Describe the clinical features in a patient presenting with foreign bodies in the air passages	Bedside clinic	Skill assessment
EN4.49.4	Choose the correct investigations in a patient presenting with foreign bodies in the air passages	DOAP	Viva voce
EN4.49.5	Describe the principles of management of foreign bodies in the air passages	Bedside clinic	Viva voce
EN4.49.6	Elicit correct history in patients presenting with foreign bodies in the food passages	Bedside clinic	Skill assessment
EN4.49.7	Document and present correct history in patients presenting with foreign bodies in the food passages	Bedside clinic	Skill assessment
EN4.49.8	Describe the clinical features in a patient presenting with foreign bodies in the food passages	Bedside clinic	Skill assessment
EN4.49.9	Choose the correct investigations in a patient presenting with foreign bodies in the food passages	DOAP	Viva voce
EN4.49.10	Describe the principles of management of foreign bodies in the food passages	Bedside clinic	Viva voce

EN4.50 Observe and describe the indications for and steps involved in tracheostomy

Domain – S **Level - KH**

Number	Specific Learning objective	Teaching-Learning methods	Assessment methods
EN4.50.1	Enumerate the indications for Tracheostomy	Bedside clinics	Viva voce
EN4.50.3	Observe steps involved in Tracheostomy	DOAP - Clinical (OT), video demonstration	Viva voce

EN4.50.3	Describe the steps of Tracheostomy	DOAP - video demonstration	Viva voce

EN4.51 Observe and describe the care of the patient with a tracheostomy
Domain – S **Level – KH**

Number	Specific Learning objective	Teaching-Learning methods	Assessment methods
EN4.51.1	Observe steps involved in care of the patient with a tracheostomy	DOAP - Clinical (OT), video demonstration	Viva voce
EN4.51.2	Describe the steps involved in care of the patient with a tracheostomy	DOAP - video demonstration	Viva voce

EN4.52 Describe the Clinical features, Investigations and principles of management of diseases of Oesophagus
Domain – K **Level – KH**

Number	Specific Learning objective	Teaching-Learning methods	Assessment methods
EN4.52.1	Enumerate the Diseases of Oesophagus	Lecture ,Bedside clinic	Written, Viva voce
EN4.52.2	Describe the clinical features in a patient presenting with Disease of Oesophagus	Lecture ,Bedside clinic	Written, Viva voce
EN4.52.3	Choose the correct investigations for a patient presenting with Disease of Oesophagus	Lecture, DOAP	Viva voce
EN4.52.4	Describe the principles of management of Diseases of Oesophagus	Lecture ,Bedside clinic	Written, Viva voce

EN4.53 Describe the clinical features, investigations and principles of management of HIV manifestations of the ENT (vertical integration- General Medicine)
Domain – K **Level – KH**

Number	Specific Learning objective	Teaching-Learning methods	Assessment methods
EN4.53.1	Enumerate the HIV manifestations of the ENT	Lecture ,Bedside clinic	Written, Viva voce
EN4.53.2	Describe the clinical features in a patient presenting with HIV manifestations of the ENT	Lecture ,Bedside clinic	Written, Viva voce

EN4.53.3	**Choose the correct investigations for a patient presenting with HIV manifestations of the ENT**	**Lecture, DOAP**	**Viva voce**
EN4.53.4	**Describe the principles of management of HIV manifestations of the ENT**	**Lecture ,Bedside clinic**	**Written, Viva voce**

Summary of course content, teaching and learning methods and student assessment for the undergraduate (MBBS) Curriculum in Otorhinolaryngology

Teaching-Learning methods and Time allotted -Otorhinolaryngology

Lectures	Small group discussion	Self-directed learning	Total hours	Clinical postings
25 hours	40 hours	5 hours	70 hours	Two postings of 4 weeks each. First posting in II MBBS(15hours /week) and Second posting II MBBS Part I(18hours/week)

Teaching-learning methods shall be learner centric and shall predominantly include small group learning, interactive teaching methods and case-based learning. Didactic lectures not to exceed one-third of the total teaching time. The teaching learning activity focus should be on application of knowledge rather than acquisition of knowledge.

The curricular contents shall be vertically and horizontally **aligned and integrated** to the maximum extent possible to enhance learner's interest and eliminate redundancy and overlap. Acquisition and certification of skills shall be through experiences in patient care, diagnostic and skill laboratories.

The **clinical postings** in the second professional shall be 15 hours per week (3 hrs per day from Monday to Friday)

The clinical postings in the third professional part II shall be 18 hours per week (3 hrs per day from Monday to Saturday)

Newer T-L method like Learner-doctor method (Clinical clerkship) should be mandatorily implemented, from 1st clinical postings in Otorhinolaryngology itself. The goal of this type of T-L activity is to provide learners with experience in longitudinal patient care, being part of the health care team, and participate in hands-on care of patients in outpatient and inpatient setting.During the 1st clinical postings, the students are oriented to the working of the department. During the second clinical posting the students are allotted patients, whom they follow-up through their stay in the hospital, participating in that patients care including case work-up, following-up on investigations, presenting patient findings on rounds, observing surgeries if any till patient is discharged.

AETCOM module. Thepurpose is to help the students apply principles of bioethics, systems based care, apply empathy and other human values in patient care, communicate effectively with patients and relatives and to become a professional who exhibits all these values.

Assessment

Eligibility to appear for University examinations is dependent on fulfilling criteria in two main areas – attendance and internal assessment marks

Attendance

Attendance requirements are 75% in theory and 80% in clinical postings for eligibility to appear for the

examinations in Otorhinolaryngology.
75% attendance in AETCOM Module is required for eligibility to appear for final examination in 3rd professional year 3 part 1.

Internal Assessment

Formative and summative assessments should be carried out periodically. Log book of skill-based training shall be also maintained.

There shall be no less than three internal assessment examinations (Theory and Clinical) in Otorhinolaryngology. Learners must secure at least 50% marks of the total marks (combined in theory and clinical; not less than 40 % marks in theory and practical separately) assigned for internal assessment in Otorhinolaryngology in order to be eligible for appearing at the final University examination.

Learners must have completed the required certifiable competencies for that phase of training and Otorhinolaryngology logbookentry completed to be eligible for appearing at the final university examination.

University examinations

Third Professional Part I shall be held at end of third Professional part 1 of training (12 months) in the subjects of Ophthalmology, Otorhinolaryngology, Community Medicine and Forensic Medicine and Toxicology

Marks allotted

Otorhinolaryngology	**Theory**	**Clinical examination**
Total marks	100	100
	Long essay 2X10= 20	Two cases x40marks=80marks
	Short essay 8x5=40 marks	Viva voce 2x10=20marks
	Short answer question 10x3=30marks	
	MCQs 10x1=10marks	

Theory Blueprint

Sl No	Competency No - Topics	**Marks allotted**
1	**EN1.1 - Anatomy & Physiology of Ear, Nose & throat**	**5**
2	**EN4.2 - Diseases of the External Ear**	**3**
3	**EN4.5, 4.13 - Non-infectious disorders of Middle Ear** **EN4.13-Otosclerosis** **EN4.5-Serous Otitis Media** **EN4.18 - Facial Nerve Paralysis**	**8**
4	**EN4.6, 4.7, 4.8 - Infections of Middle Ear** **EN4.10 Myringotomy, Myringoplasty, Mastoidectomy**	**10**
5	**EN4.14, 4.15 - Diseases of Inner Ear** **EN4.20-Meniere's Disease**	**5**
6	**EN4.12, 4.21 - Hearing Loss & Tinnitus** **EN4.19, 4.20 - Vertigo & Balance Disorders**	**3**
7	**EN4.22, 4.23, 4.24 - Diseases of Nasal Septum** **EN4.27, 4.28 - Non-infectious Rhinitis** **EN4.27-Allergic Rhinitis**	**8**

8	**EN4.29, 4.33 - Acute & Chronic Rhinosinusitis including complications EN4.25 Nasal polyps**	**8**
9	**EN4.30, 4.31 - Epistaxis & Head & neck Trauma**	**10**
10	**EN4.34 - Tumors of Nose & PNS EN4.35, 4.32 - Tumors of Nasopharynx & JNA**	**6**
11	**EN4.26 – Adenoids EN4.39-EN4.42 - Acute & chronic Pharyngitis & Tonsillitis EN4.37 -Head & Neck Space Infections EN4.36 - Diseases of Salivary glands**	**10**
12	**EN4.43, 4.44 - Laryngeal Infections & Benign disorders of Larynx EN4.46 - Malignancy of Larynx & Hypopharynx EN4.45- Vocal cord Palsy**	**8**
13	**EN4.47, 4.48 - Stridor & management of Airway Emergencies EN4.50 Tracheostomy**	**10**
14	**EN4.38 Dysphagia,EN4.49 FB Bronchus EN4.52 - Diseases of Oesophagus EN4.53 - HIV manifestations of the ENT**	**6**
	Total	**100**

The theory paper should include different types such as structured essays, short essays, Short Answers Questions (SAQ) and MCQs (Multiple ChoiceQuestions). Marks for each part should be indicated separately.

A minimum of **80%** of the marks should be from the **must know** component of the curriculum. A maximum of **20%** can be from the **desirable to know** component. All **main essay questions** to be from the **must know component** of the curriculum.

One main essay question to be of the **modified variety** containing a clinical case scenario. At least 30% of questions should be clinical case scenario based. Questions to be constructed to test higher cognitive levels.

Clinical examinations will be conducted in thehospital wards. Clinical cases kept in the examination must be common conditions that thelearner may encounter as a physician of first contact in the community. Emphasis should be oncandidate's capability to elicit history, demonstrate physical signs, write a case record, analyze thecase and develop a management plan.

Viva/oral examination should assess approach to patient management, emergencies, and attitudinal,ethical and professional values. Candidate's skill in interpretation of common investigative data,X-rays, identification of specimens, etc. is to be also assessed.

Pass criteria

Internal Assessment: 50% combined in theory and practical (not less than 40% in each) for eligibility for appearing for University Examinations

University Examination: Mandatory 50% marks separately in theory and clinicals (clinicals = clinical + viva)

Sample Otorhinolaryngology Question Paper

Otorhinolaryngology Paper

Time: 3 hours
Marks: 100

Your answers should be specific to the questions asked.
Draw neat, labelled diagrams wherever necessary.

Long essays **(2 X 10 = 20 marks)**

1. A 14 year old adolescent boy presents with left nasal obstructions and recurrent episodes of spontaneous, profuse and self limiting epistaxis. On examination pinkish mass was found in left nasal cavity along with fullness of left cheek
    a) What is the most likely diagnosis?
    b) Describe the etiopathogenesis of this condition?
    c) Discuss the laboratory investigations for diagnosing the above condition.
    d) Write a note on various modalities of treatment.

    (1+3+2+4)

2. A 35year old woman complaints of bilateral hearing loss for 5 years, which had worsened during her pregnancy 1 year back. She does not give any past history of ear discharge.
    a) What is the most likely disease she is suffering from?
    b) Discuss the etiopathogenesis & types of this disease?
    c) Describe the investigations for confirming the diagnosis?
    d) Discuss the treatment modalities along with their contraindications?

    (1+3+3+3)

Short essays **(8x5=40marks)**

3. A 38 year old female complains of fever, sore throat and pain during swallowing Since3 days. On examination, the left tonsil is congested and enlarged and bulge in the soft palate on left side, and uvula pushed to the right.
    a) What is the diagnosis of this condition?
    b) What are the symptoms and signs of this condition?
    c) How do you manage this patient? (1+2+2)
4. Write a note on Graft materials for tympanoplasty.
5. Discuss Vocal rehabilitation following total laryngectomy.
6. Describe the Clinical features & management of acute Epiglottits.
7. Discuss the Causes & management of nasal septal perforation.
8. Write a note on Corticosteroids in ENT.
9. Discuss the Clinical features & management of Post Covid-19 mucormycosis -.
10. A 27 year old male patient who met with a road traffic accident was seen in the emergency room with complaint of clear watery nasal discharge.
    a) What are the bed side clinical tests to diagnose this condition?
    b) What are the investigations that need to be done for this patient?
    c) What is the treatment for this condition?

    (1+2+2

Short answer questions (10x3=30)

11. Write a note on Siegles speculum.

12. Enumerate three causes for Bell's palsy.

13. Write three Topodiagnostic tests for facial nerve palsy.

14. Constrictions of Oesophagus.

15. Write a note on Objective tests of hearing.

16. Blood supply of Adenoids.

17. Three causes forReferred Otalgia

18. Removal of Ear foreign body.

19. Stylalgia.

20. Informed consent for tracheostomy.

MCQ's (10 x 1=10)

21. (i) Cart wheel appearance of tympanic membrane is seen in

a) ASOM
b) Glomus tumor
c) OME
d) CSOM

(ii) Cricothyroid muscle is supplied by :

a) External laryngeal nerve
b) Recurrent laryngeal nerve
c) Internal laryngeal nerve
d) Glossopharyngeal nerve

(iii) Which of the following is known as gateway of tears

a) Killian's dehiscence
b) Rathke's pouch
c) Waldeyer ring
d) Sinus of Morgagni

(iv) Bony septal perforation is seen in :

a) TB
b) Syphilis
c) Leprosy
d) Sarcoidosis

(v) Which of the following is not the component of Gradenigotriad :

a) Involvement of Vth and VIth cranial nerve
b) Persistent otorrhea
c) Palatal palsy
d) Retro- orbital pain

(vi) Laryngocele arises from

a) Anterior commissure
b) True cords
c) Saccule of ventricle
d) False cords

(vii) Woodruff's plexus is located at :

a) Posterior end of middle turbinate
b) Posterior end of inferior turbinate
c) Posterior end of superior turbinate
d) None of the above

(viii) Steeple sign is seen in :

a) Quinsy
b) Larngomalacia
c) Acute epiglottitis
d) Croup

(ix) Grommet insertion with myringotomy is done at

a) Antero-inferior quadrant
b) Postero- inferior quadrant
c) Antero superior quadrant
d) Postero superior quadrant

(x) Caldwell view is done for :

a) Sphenoid sinus
b) Ethmoid sinus
c) Maxillary sinus
d) Frontal sinus

References:

1. Diseases of Ear, Nose & Throat. Mohan Bansal, 3rd Edition.
2. Diseases of Ear, Nose and Throat & Head and Neck Surgery. P L Dhingra, 8th Edition.

Sri Siddhartha Academy of Higher Education, Tumkur

ENT LOGBOOK

For

MBBS PHASE II and III

As Per

Competency-Based Medical Education Curriculum

NAME OF THE CANDIDATE :

NAME OF THE COLLEGE :

UNIVERSITY REGISTER NUMBER :

ACADEMIC YEAR :

BASIC PROFORMA OF THE STUDENT

Photo

PARTICULARS OF THE STUDENT:

Name of the student :

MBBS Batch :

Father's name :

Mother's name :

Roll No :

SSAHE Reg No :

Address :

Contact number :

Email-ID :

Signature:.....

INDEX

Page.

Sl. No.	CONTENT	PAGE NO
01	BONAFIDE CERTIFICATE	04
02	GENERAL INFORMATION AND GUIDELINES FOR LOG BOOK	05 - 07
03	ATTENDANCE EXTRACT	08
04	INTERNAL ASSESSMENTS	09
05	FORMATIVE ASSESSMENT	10
06	COMPETENCY ASSESSMENT- CERTIFIABLE SKILLS	11 -18
07	CERTIFICATION OF SKILLS	19 – 20
08	COMPETENCY ASSESSMENT– NON CERTIFIABLE (SHOWS HOW) ACTIVITIES	21 - 23
09	AETCOM MODULES	24 – 26
10	SMALL GROUP DISCUSSION	27 – 30
11	SELF-DIRECTED LEARNING (SDL)	31
12	VERTICAL INTEGRATION	32
13	CONFERENCE/CME/WORKSHOPS ATTENDED	33
14	SCIENTIFIC PROJECT LIKE ICMR/ PRESENTATIONS/ OUT REACH ACTIVITIES	34
15	ACHIVEMENTS / EXTRA CURRICULAR ACTIVITIES	35
16	FINAL SUMMARY	36

Page.

INSTITUTE OF MEDICAL SCIENCES

DEPARTMENTOF ENT

BONAFIDE CERTIFICATE

This is to certify that the candidate ……Reg No……..... has satisfactorily completed all requirements mentioned in this Logbook for Phase III MBBS in ENT including related AETCOM modules as perthe Competency-Based Undergraduate Medical Education Curriculum, GraduateMedical Regulation 2019 during the period from ……... …….to ……... He/She is eligible to appear for the summative (University) assessment.

Faculty Incharge: **Head of Department:**

Name: **Name:**

Signature: **Signature:**

Place: **Place:**

Date: Date:

PREFACE

This logbook is designed to follow and record your academic journey through the ENT course. The knowledge, skills and desirable attitudes you acquire in order to function as a primary care physician of first contact will be documented and certified in this logbook.

This logbook contains the **CBME competencies in ENT**. It includes the topics that would be covered during the course, records your participation in **Attitude, Ethics and Communication (AETCOM)** modules related toENT.

This logbook consists of the **schemeand summary of formative assessments**in ENT, including the internal assessments and documents the **procedures that require certification** and **those that do not require certification** but **only need to be maintainedinthe logbook**.

This logbook also contains **additional-curricular activities** (Seminars, conference, workshops attended, scientific project presentations, outreach activities, etc.) and **extracurricular activities.**

We hope that this logbook serves as a guide and facilitates your progress through the year.

GENERAL INSTRUCTIONS

6. This logbook is a record of the academic/co-curricular activities in ENT of the designated student.
7. The student is responsible for getting the entries in the logbook verified by the faculty in-charge regularly.
8. Entries in the Logbook will reflect the activities undertaken in the department of ENTduring your course.
9. The student has to get this logbook verified by the mentor and the Head of the department before submitting the application of the University examination.
10. All signatures must be done with a date stamp.

SUGGESTED GUIDELINES FOR

LOGBOOK:
GENERAL INFORMATION:

1) The logbook is a record of the academic/co-curricular activities of the designated student, who would be responsible for maintaining his/her logbook.

2) The student is responsible for getting the entries in the logbook verified by the Faculty In-charge regularly.

3) Entries in the logbook will reflect the activities undertaken in the department & have to be scrutinized by the Head of the concerned department.

4) The logbook is a record of various activities by the student like:

- **a)** Overall participation & performance
- **b)** Attendance
- **c)** Participation in sessions
- **d)** Record of completion of pre-determined activities.
- **e)** Acquisition of selected competencies

5) The logbook is the record of work done by the candidate in that department/specialty and should be verified by the college before submitting the application of the students for the University examination.

SUMMARY OF ATTENDANCE

	Clinical Postings			Theory Classes			Signature of student	Signature of Faculty
	Total Conducted	**Total Attended**	**Percentage**	**Total Conducted**	**Total Attended**	**Percentage**		
Phase II								
Phase III Part I								
Attendance at the end of MBBS PhaseIII Part I								

SUMMARY OF INTERNAL ASSESSMENT (IA)

Internal Assessment	Date of Assessment	Total marks		Marks scored		Signature of student	Signature of teacher
		Theory	Practical	Theory	Practical		
First							
Second							
Third							
Remedial							
Average IA							

Note: A candidate who has not secured requisite aggregate in the internal assessment may be subjected to remedial assessment by the institution. If he/ she successfully completes the same, he/she is eligible to appear for University Examination. Remedial assessment shall be completed before submitting the internal assessment marks online to the University.

Formative Assessments

Sl no	Type	Maximum marks	Marks obtained	Feedback	Signature of Student	Signature of the faculty

Competency Assessment- Certifiable Skills

Competency	**Name of the Activity**	**Date Completed**	**Attempt at Activity** First (F) Repeat (R) Remidial	**Rating** Below Expectation(B) Meets Expectations	**Decision of Faculty** Completed (C) Repeat (R)	**Initial of the faculty and date**	**Feed Back Received** Initial of the
EN 2.2	**Demonstrate the correct use of headlamp in examination of Ear, Nose & Throat**						
EN 2.3	**Demonstrate the correct technique of examination of the ear including Otoscopy**						
EN 2.4	**Demonstrate the correct technique of performance and interpret tuning fork tests**						

Competency Assessment- Certifiable Skills

Competency	**Name of the Activity**	**Date Completed**	**Attempt at Activity** First (F) Repeat (R) Remedial	**Rating** Below Expectation(B) MeetsExpectations (M) ExceedsExpectations(E)	**Decision of Faculty** Completed (C) Repeat (R)	**Initial of the faculty and date**	**Feed Back Received** Initial of the learner
EN 2.5	**Demonstrate the correct technique of Examination of the nose & paranasal sinuses including the use of nasal speculum**						
EN 2.6	**Demonstrate the correct technique of examining the throat including the use of a tongue depressor**						
EN 2.7	**Demonstrate the correct technique of examination of neck including elicitation of laryngeal crepitus**						

Competency Assessment- Certifiable Skills

Competency	**Name of the Activity**	**Date Complted**	**Attempt at Activity** First (F) Repeat (R) Remdi al (RE)	**Rating** Below Expectation(B) MeetsEx pectation s (M) Exceeds Expectati ons(E)	**Decision of Faculty** Complete d (C) Repeat (R) Remed	**Initial of the faculty and date**	**Feed Back Received** Initial of the learner
EN 3.1	**Observe and describe the indications for and steps involved in the performance of Otomicroscopic examination in a**						
EN 3.2	**Observe and describe the indications for and steps involved in the performance of diagnostic nasal endoscopy**						
EN 4.9	**Demonstration the correct technique for syringing wax from the ear in a simulated environment**						

Competency Assessment- Certifiable Skills

Competency	**Name of the Activity**	**Date Completed**	**Attempt at Activity** First (F) Repeat	**Rating** Below Expectation(B) MeetsExpectations (M)	**Decision of Faculty** Completed (C)	**Initial of the faculty and date**	**Feed Back Received** Initial of
EN 4.10	**Demonstration the correct technique the indications for and steps involved in myringotomy and myringoplasty**						
EN 4.16	**Observe and describe the indications for and steps involved in the performance of pure tone audiometry**						
EN 4.17	**Enumerate the indications and interpret the results if an audiogram**						

Competency Assessment- Certifiable Skills

Competency	**Name of the Activity**	**Date Completed**	**Attempt at Activity** First (F) Repeat (R) Remedial (RE)	**Rating** Below Expectation(B) MeetsExpectations (M) ExceedsExpectations(E)	**Decision of Faculty** Completed (C) Repeat (R) Remedial (RE)	**Initial of the faculty and date**	**Feed Back Received** Initial of the learner
EN 4.24	**Enumerate the indications observe and describe the steps in a septoplasty**						

EN 4.40	**Observe and describe the indications for and steps involved in a tonsillectomy / adenoidectomy**						
EN 4.49	**Elicit document and present a correct history, demonstrate and describe the clinical features, choose the correct investigations and describe the**						

Competency Assessment- Certifiable Skills

	Name of the Activity	**Date Completed**	**Attempt at Activity** First (F) Repeat	**Rating** Below Expectation(B) MeetsExpectations (M)	**Decision of Faculty** Completed (C)	**Initial of the faculty and date**	**Feed Back Received** Initial of
EN 4.50	**Observe and describe the indications for and steps involved in tracheostomy**						

EN 4.51	**Observe and describe the care of the patient with a tracheostomy**						
PY 10.20	**Demonstrate (i) hearing (ii) testing for smell and (iii) taste sensation in volunteer/simulated environment**						

Competency	Name of the Activity	Date Completed	Attempt at Activity First (F) Repeat	Rating Below Expectation(B) MeetsExpectations (M)	Decision of Faculty Completed (C)	Initial of the faculty and date	Feed Back Received Initial
PE 28.9	**Elicit document and present age appropriate history of a child with upper respiratory problem including stridor**						
PE 28.10	**Perform otoscopic examination of the ear**						
PE 28.11	**Perform throat examination using tongue depressor**						

Competency Assessment- Certifiable Skills

Competency Assessment- Certifiable Skills

Competency	**Name of the Activity**	**Date Completed**	**Attempt at Activity** First (F) Repeat	**Rating** Below Expectation(B) MeetsExpectations (M)	**Decision of Faculty** Completed (C)	**Initial of the faculty and date**	**Feed Back Received** Initial of
PE 28.12	**Perform examination of the nose**						
PE 28.17	**Interpret X-ray of the paranasal sinuses and mastoids; and/or use written report in case of management interpretCXR in foreign body aspiration and lower respiratory tract infection, understand the significance of thymic shadow in peadiatric chest X-rays**						

CERTIFICATIONS OF SKILLS

Sl. No.	Competency No.	Topic	Certification Date	Signature of Faculty
01	**EN 2.2**	Demonstrate the correct use of headlamp in examination of Ear, Nose & Throat		
02	**EN 2.3**	Demonstrate the correct technique of examination of the ear including Otoscopy		
03	**EN 2.4**	Demonstrate the correct technique of performance and interpret tuning fork tests		
04	**EN 2.5**	Demonstrate the correct technique of Examination of the nose & paranasal sinuses including the use of nasal speculum		
05	**EN 2.6**	Demonstrate the correct technique of examining the throat including the use of a tongue depressor		
06	**EN 2.7**	Demonstrate the correct technique of examination of neck including elicitation of laryngeal crepitus		
07	**EN 3.1**	Observe and describe the indications for and steps involved in the performance of Otomicroscopic examination in a simulated environment		
08	**EN 3.2**	Observe and describe the indications for and steps involved in the performance of diagnostic nasal endoscopy		
09	**EN 4.9**	Demonstration the correct technique for syringing wax from the ear in a simulated environment		
10	**EN 4.10**	Demonstration the correct technique the indications for and steps involved in myringotomy and myringoplasty		
11	**EN 4.16**	Observe and describe the indications for and steps involved in the performance of pure tone audiometry		
12	**EN 4.17**	Enumerate the indications and interpret the results if an audiogram		

13	**EN 4.24**	Enumerate the indications observe and describe the steps in a septoplasty		
14	**EN 4.40**	Observe and describe the indications for and steps involved in a tonsillectomy / adenoidectomy		
15	**EN 4.49**	Elicit document and present a correct history, demonstrate and describe the clinical features, choose the correct investigations and describe the principles of management of foreign bodies in the air and food passages		
16	**EN 4.50**	Observe and describe the indications for and steps involved in tracheostomy		
17	**EN 4.51**	Observe and describe the care of the patient with a tracheostomy		
18	**PY 10.20**	Demonstrate (i) hearing (ii) testing for smell and (iii) taste sensation in volunteer/simulated environment		
19	**PE 28.9**	Elicit document and [resent age appropriate history of a child with upper respiratory problem including stridor		
20	**PE 28.10**	Perform otoscopic examination of the ear		
21	**PE 28.11**	Perform throat examination using tongue depressor		
22	**PE 28.12**	Perform examination of nose		
23	**PE 28.17**	Interpret X-ray of the paranasal sinuses and mastoids; and/or use written report in case of management. InterpretCXR in foreign body aspiration and lower respiratory tract infection, understand the significance of thymic shadow in peadiatric chest X-rays		

NON-CERTIFIABLE (SHOWS HOW) ACTIVITIES

#Competency	**Name of Activity**	**Date completed**	**Rating** Below Expectations(C) Meets Expectations(B) Exceeds Expectations(A)	**Decision of faculty** Complete dRepeat Remedial	**Initial of faculty with date**	**FeedbackReceived** Initial of learner

1. Duplicate of this template shall be made depending on the activities planned
2. Activities may be skill sessions, seminars, tutorials, projects, etc.

NON-CERTIFIABLE (SHOWS HOW) ACTIVITIES

#Competency	**Name of Activity**	**Date completed**	**Rating** Below Expectations(C) Meets Expectations(B) Exceeds Expectations(A)	**Decision of faculty** Completed Repeat Remedial	**Initial of faculty with date**	**Feedback Receive**d Initial of learner

1. Duplicate of this template shall be made depending on the activities planned

2. Activities may be skill sessions, seminars, tutorials, projects, etc.

NON-CERTIFIABLE (SHOWS HOW) ACTIVITIES

Competency	**Name of Activity**	**Date completed**	**Rating** Below Expectations(C) Meets Expectations(B) Exceeds Expectations(A)	**Decisioof faculty** Complete dRepeat Remedial	**Initial of faculty with date**	**Feedback Receive**d Initial of learner

1. Duplicate of this template shall be made depending on the activities planned

2. Activities may be skill sessions, seminars, tutorials, projects, etc.

FORMAT OF AETCOM MODULES REPORT

AETCOM Module Number:

Date:

Topic:

Competencies:

1.
2
3.

Reflections (100 words):

4. What did you learn from this AETCOM session based on the objectives?
5. What change did this session make in your learning?
6. How will you apply this knowledge in future?

Remarks by Facilitator

Signature of facilitator with date

AETCOM Module Number:

Date:

Topic:

Competencies:
1.
2
3.

Reflections (100 words):

4. What did you learn from this AETCOM session based on the objectives?
5. What change did this session make in your learning?
6. How will you apply this knowledge in future?

Remarks by Facilitator

Signature of facilitator with date

RUBRIC FOR ASSESSING PROFESSIONALISM

	Areas assessed					**Signature of student**	**Signature of teacher**
	Regular for classes (5marks)	Regular in completing assignments (5marks)	Behaviour in class and discipline (5marks)	Dress code and presentation (5marks)	Total (20 marks)		
At the end of 1st IA							
At the end of 2nd IA							
At the end of 3rd IA							
Average score at the end of the year							

Note: Parameters will be assessed at the Departmental level to consider eligibility (Minimum of 50% at the end of the year) of the candidate to appear for the university examination. Not considered for internal assessment marks.

Small Group Discussion

Sl. No.	Date	Competency and Topic	Level of Participation (Attended /Actively Participated/Presented	Signature of Faculty

Small Group Discussion

Sl. No.	Date	Competency and Topic	Level of Participation (Attended /Actively Participated/Presented	Signature of Faculty

Small Group Discussion

Sl. No.	Date	Competency and Topic	Level of Participation (Attended /Actively Participated/Presented	Signature of Faculty

The small group discussions will be scored based on the following criteria. Marks to be given

Score	Criteria for assessment
5	Is a proactive participant showing a balance between listening, initiating, and focusing on discussion. Displays a proactive use of the whole range of discussion, skills to keep discussion going and to involve everyone in the group. Understands the purpose of the discussion and keeps the discussion focused and on topic. Applies skills with confidence, showing leadership and sensitivity.
4	Is an active participant showing a balance between listening, initiating, and focusing on discussion. Demonstrates all the elements of discussion skills but uses them less frequently and with less confidence than the above level. Keeps the discussion going but more as a supporter than a leader. Tries to involve everyone in the group. Demonstrates many skills but lacks the confidence to pursue them so that the group takes longer than necessary to reach consensus. Demonstrates a positive approach but is more focused on getting done than on having a positive discussion.
3	Is an active listener but defers easily to others and lacks confidence to pursue personal point of view even when it is right. Participates but doesn't use skills such as summarizing and clarifying often enough to show confidence. Limits discussion skills to asking questions, summarizing, and staying on topic. Lacks balanced between discussion and analytical skills. Either displays good analysis skills and poor discussion skills or good discussion skills and poor analysis skills.
2	Is an active listener but defers easily to others and tends not to pursue personal point of view, lacking confidence. Limits discussion skills to asking questions, summarizing and staying on topic. Rarely demonstrates analysis skills because doesn't understand the purpose of the discussion, and as a result, offers little evidence to support any point of view.
1	Demonstrates no participation or effort. Participates only when prompted by the teacher. Only responds to others and initiates nothing. Provides limited responses that are often off topic. Participates minimally so that it is impossible to assess / analyze skills or understanding of the issues.

SELF-DIRECTED LEARNING (SDL)- 5 hours

Sl no.	Date	Topic of SDL	Feedback	Signature of faculty/mentor
1				
2				
3				
4				

5				
6				
7				
8				
9				
10				

Sl. No	**Date**	**Topic**	**Attendance**	**Signature of faculty**

CONFERENCE/CME/WORKSHOPATTENDED

SL NO	DATE	PARTICULARS	REMARK SIFANY	SIGNATURE OF FACULTY

SCIENTIFIC PROJECT PRESENTATIONS/REPORTS/OUTREACH ACTIVITIES

SL.NO	DATE	PARTICULARS	SIGNATURE OFSTAFF

EXTRACURRICULAR ACTIVITIES

Sl no	Date	Particulars	Signature of the faculty

ACHIEVEMENTS/AWARDS

Sl no	Date	Particulars	Signature of the faculty

FINAL SUMMARY

Sl no.	Description	Dates		Attendance in percentage	Status *	Signature of the teacher with date
		From	To			
1	Certifiable skills					
2	AETCOM Modules					
3	Internal assessment Marks					

Signature of Head of department Date:

* Status: Complete/Incomplete: For skills and AETCOM modules
Eligible/Ineligible: For Internal marks

Acknowledging the Contributors to the development of Curriculum of 3rd MBBS Part 1

Subject	Name	College
Forensic Medicine	Dr Jagadeesh N - Vydehi Institute of Medical Sciences & Research Centre, Whitefield, Bangalore Dr Nagesh K R - Father Muller Medical College, Mangalore Dr Hemanth Raj M N - Shridevi Institute of Medical Sciences & Research Hospital, Tumkur Dr Arun M - JSS Medical College, Mysore Dr Pramod Kumar G N - Karwar Institute of Medical Sciences, Karwar Dr Srinivasa Reddy - Sri Devaraj Urs Medical College, Kolar Dr Umesh Babu R - Kodagu Institute of Medical Sciences, Madikeri Dr Raghavendra Babu Y P- Koppal Institute of Medical Sciences, Koppal Dr Vijayamahantesh S N - S Nijalingappa Medical College, Bagalkot Dr Naveen Kumar T - Kempegowda Institute of Medical Sciences, Bangalore Dr Shankar M Bakkannavar - Kasturba Medical College, Manipal Dr Uday Shankar B S - Sapthagiri Institute of Medical Sciences & Research Centre, Bangalore Dr Dayananda R - Mysore Medical College & Research Institute, Mysore Dr Lohith Kumar R and Dr Ravindra Kumar - Chickmagalur Institute of Medical Sciences, Chickmagalur Dr Yadukul S - AIIMS, Bibinagar, Hyderabad	
Community Medicine	Dr Ranganath TS, and Dr Ravish KS - Bangalore Medical College and Research Institute, Bangalore Dr Farah Fatima- St. John's Medical College, Bangalore, Dr Suman, - M.S. Ramaiah Medical College, Bangalore Dr Manjunath SN - Mysore Medical College and Research Institute, Mysore Dr Harish BR and Dr Subash Babu - Mandya Institute of Medical Sciences, Mandya Dr Ramesh Masti - Kempegowda Institute of Medical Sciences, Bangalore Dr Sudhir Prabhu – Fr Muller's Medical College Dr Ajay Kumar - Gulbarga Institute of Medical Sciences, Dr Ashok Dorle – SNMC, Bagalkot	
Ophthalmology	Dr Suneetha Nithyanandam and Dr Shubashree Karat - St. John's Medical College, Bangalore Dr Suresh Babu - Bangalore Medical College and Research Institute, Bangalore	
Otorhinolaryngology	Dr Ravi D, Mandya Institute of Medical Sciences, Mandya Dr Swetha Naidu- Kodagu Institute of Medical Sciences,	

Revised Ordinance Governing

MBBS Degree Course and Curriculum of

Phase-III Part-II Subjects – RS3

SRI SIDDHARTHA
ACADEMY OF HIGHER EDUCATION

(Deemed to be University, declared u/s 3 of the UGC Act, 1956)

Agalakote, B.H. Road, Tumkur – 572107, Karnataka, India

GMER - SECTION I7/15/2022

PREAMBLE

Introduction to CBME based curriculum

The Medical Council of India has revised the undergraduate medical education curriculum so that the Indian Medical Graduate is able to recognize "health for all" as a national goal and should be able to fulfill his/her societal obligations. The revised curriculum has attempted to enunciate the competencies the student must be imparted and should have learnt, with clearly defined teaching-learning strategies and effective methods of assessment. Communicating effectively and sympathetically with patients and their relatives has been visualized as a core area of the revised curriculum. These and other goals identified in the curriculum are to be implemented in all medical colleges under the ambit of Medical Council of India from August 2019 and to smoothen this process Guidelines have been prepared for its effective implementation. In response to the need for a seamless introduction of the curriculum into theUndergraduate system, all medical colleges need to upgrade the teaching-learning skills of their faculty. Earlier experience with implementation of curricular changes suggests that a carefully managed, sustainable approach is necessary to ensure that every college has access to the new skills and knowledge enunciated in the new curriculum. Faculty training and development thus assumes a key role in the effective implementation and sustenance of the envisaged curricular reforms.

INTRODUCTION

The undergraduate medical curriculum of the medical council of India is created to ensure that the medical doctor who emerges from the MBBS training program is capable of assisting the nation to achieve its goal of health for all. In addition, it aspires to ensure that the "graduate" meets or exceeds global bench-mark in knowledge, attitude, skills and communication. This intent is at the core of the Graduate Medical Regulations, 2019.

The Graduate Medical Regulations, 2019 represents the first major revision to the medical curriculum since 1997 and hence incorporates changes in science and thought over two decades. A significant advance is the development of global competencies and subject-wise outcomes that define the roles of the "Indian Medical Graduate". Learning and assessment strategies have been outlined that will allow the learner to achieve these competencies/outcomes. Effective appropriate and empathetic communication, skill acquisition, student-doctor method of learning, aligned and integrated learning and assessment are features that have been given additional emphasis in the revised curriculum.

The revised curriculum is to be implemented by all medical colleges under the ambit of Medical Council of India from August 2019. The roll out will be progressive over the duration of the MBBS course.

This document represents a compilation of the resource material that was used in the Curricular Implementation Support Program (CISP) and has attempted to provide a stepwise and comprehensive approach to implement the curriculum. It details the philosophy and the steps required in a simple andrichly illustrated manner. Teaching slide decks, faculty guides and online resource material supplement this document. The document is to be used in conjunction with the Competency document, AETCOM module and the GMR document.

Indian Medical Graduate Training Programme

The undergraduate medical education programme is designed with a goal to create an "Indian Medical Graduate" (IMG) possessing requisite knowledge, skills, attitudes, values and responsiveness, so that she or he may function appropriately and effectively as a physician of first contact of the community while being globally relevant. To achieve this, the following national and institutional goals for the learner of theIndian Medical Graduate training programme are hereby prescribed: -

National Goals

At the end of undergraduate program, the Indian Medical Graduate should be able to:

(a) Recognize "health for all" as a national goal and health right of all citizens and by undergoing training for medical profession to fulfill his/her social obligations towards realization of this goal.

(b) Learn every aspect of National policies on health and devote her/him to its practical implementation.

(c) Achieve competence in practice of holistic medicine, encompassing promotive, preventive, curativeand rehabilitative aspects of common diseases.

(d) Develop scientific temper, acquire educational experience for proficiency in profession and promotehealthy living.

(e) Become exemplary citizen by observance of medical ethics and fulfilling social and professionalobligations, so as to respond to national aspirations.

Institutional Goals

(1) In consonance with the national goals each medical institution should evolve institutional goals to define the kind of trained manpower (or professionals) they intend to produce. The Indian Medical Graduates coming out of a medical institute should:

(a) be competent in diagnosis and management of common health problems of the individual and the community, commensurate with his/her position as a member of the health team at the primary, secondary or tertiary levels, using his/her clinical skills based on history, physical examination and relevant investigations.

(b) be competent to practice preventive, promotive, curative, palliative and rehabilitative medicine in respect to the commonly encountered health problems.

(c) appreciate rationale for different therapeutic modalities; be familiar with the administration of"essential medicines" and their common adverse effects.

(d) be able to appreciate the socio-psychological, cultural, economic and environmental factors affecting health and develop humane attitude towards the patients in discharging one's professional responsibilities.

(e) possess the attitude for continued self-learning and to seek further expertise or to pursue research in any chosen area of medicine, action research and documentation skills.

(f) be familiar with the basic factors which are essential for the implementation of the National Health Programmes including practical aspects of the following:

(i) Family Welfare and Maternal and Child Health (MCH)

(ii) Sanitation and water supply

(iii) Prevention and control of communicable and non-communicable diseases

(iv) Immunization

(v) Health Education

(vi) Indian Public Health Standards (IPHS), at various levels of service delivery

(vii) Bio-medical waste disposal

(viii) Organizational and/or institutional arrangements.

(g) acquire basic management skills in the area of human resources, materials and resource managementrelated to health care delivery, hospital management, inventory skills and counseling.

(h) be able to identify community health problems and learn to work to resolve these by designing,instituting corrective steps and evaluating outcome of such measures.

(i) be able to work as a leading partner in health care teams and acquire proficiency in communicationskills.

(j) be competent to work in a variety of health care settings.

(k) have personal characteristics and attitudes required for professional life such as personal integrity,sense of responsibility and dependability and ability to relate to or show concern for other individuals.

All efforts must be made to equip the medical graduate to acquire the skills as detailed in Table 11 Certifiable procedural skills – A Comprehensive list of skills recommended as desirable for Bachelor of Medicine and Bachelor of Surgery (MBBS) – Indian Medical Graduate.

Goals and Roles for the Learner

In order to fulfil the goal of the IMG training programme, the medical graduate must be able to functionin the following roles appropriately and effectively

- Clinician who understands and provides preventive, promotive, curative, palliative and holistic carewith compassion.
- Leader and member of the health care team and system with capabilities to collect analyze,synthesize and communicate health data appropriately.
- Communicator with patients, families, colleagues and community.
- Lifelong learner committed to continuous improvement of skills and knowledge.
- Professional, who is committed to excellence, is ethical, responsive and accountable to patients, community and profession.

Competency Based Training Programme of the Indian Medical Graduate

Competency based learning would include designing and implementing medical education curriculum that focuses on the desired and observable ability in real life situations. In order to effectively fulfil the roles as listed in clause 2, the Indian Medical Graduate would have obtained the following set of competencies at thetime of graduation:

Clinician, who understands and provides preventive, promotive, curative, palliative and holistic care with compassion

- Demonstrate knowledge of normal human structure, function and development from a molecular, cellular, biologic, clinical, behavioural and social perspective.
- Demonstrate knowledge of abnormal human structure, function and development from a molecular, cellular, biological, clinical, behavioural and social perspective.
- Demonstrate knowledge of medico-legal, societal, ethical and humanitarian principles that influence health care.
- Demonstrate knowledge of national and regional health care policies including the National Health Mission that incorporates National Rural Health Mission (NRHM) and National Urban Health Mission (NUHM), frameworks, economics and systems that influence health promotion, health care delivery, disease prevention, effectiveness, responsiveness, quality and patient safety.
- Demonstrate ability to elicit and record from the patient, and other relevant sources including relatives and caregivers, a history that is complete and relevant to disease identification, disease prevention and health promotion.
- Demonstrate ability to elicit and record from the patient, and other relevant sources including relatives and caregivers, a history that is contextual to gender, age, vulnerability, social and economic status, patient preferences, beliefs and values.
- Demonstrate ability to perform a physical examination that is complete and relevant to disease identification, disease prevention and health promotion.
- Demonstrate ability to perform a physical examination that is contextual to gender, social and economic status, patient preferences and values.

- Demonstrate effective clinical problem solving, judgment and ability to interpret and integrateavailable data in order to address patient problems, generate differential diagnoses and develop individualized management plans that include preventive, promotive and therapeutic goals.
- Maintain accurate, clear and appropriate record of the patient in conformation with legal andadministrative frame works.
- Demonstrate ability to choose the appropriate diagnostic tests and interpret these tests based on scientific validity, cost effectiveness and clinical context.
- Demonstrate ability to prescribe and safely administer appropriate therapies including nutritional interventions, pharmacotherapy and interventions based on the principles of rational drug therapy, scientific validity, evidence and cost that conform to established national and regional health programmes and policies for the following:

(i) Disease prevention,

(ii) Health promotion and cure,

(iii) Pain and distress alleviation, and

(iv) Rehabilitation.

- Demonstrate ability to provide a continuum of care at the primary and/or secondary level thataddresses chronicity, mental and physical disability.
- Demonstrate ability to appropriately identify and refer patients who may require specialized oradvanced tertiary care.
- Demonstrate familiarity with basic, clinical and translational research as it applies to the care of thepatient.

Leader and member of the health care team and system

- Work effectively and appropriately with colleagues in an inter-professional health care team respecting diversity of roles, responsibilities and competencies of other professionals.
- Recognize and function effectively, responsibly and appropriately as a health care team leader in primary and secondary health care settings.
- Educate and motivate other members of the team and work in a collaborative and collegial fashion that will help maximize the health care delivery potential of the team.
- Access and utilize components of the health care system and health delivery in a manner that is appropriate, cost effective, fair and in compliance with the national health care priorities and policies, as well as be able to collect, analyze and utilize health data.
- Participate appropriately and effectively in measures that will advance quality of health care and patient safety within the health care system.
- Recognize and advocate health promotion, disease prevention and health care quality improvement through prevention and early recognition: in a) life style diseases and b) cancers, in collaboration with other members of the health care team.

Communicator with patients, families, colleagues and community

- Demonstrate ability to communicate adequately, sensitively, effectively and respectfully with patients in a language that the patient understands and in a manner that will improve patient satisfactionand health care outcomes.

- Demonstrate ability to establish professional relationships with patients and families that arepositive, understanding, humane, ethical, empathetic, and trustworthy.
- Demonstrate ability to communicate with patients in a manner respectful of patient's preferences,values, prior experience, beliefs, confidentiality and privacy.
- Demonstrate ability to communicate with patients, colleagues and families in a manner thatencourages participation and shared decision-making.

Lifelong learner committed to continuous improvement of skills and knowledge

- Demonstrate ability to perform an objective self-assessment of knowledge and skills, continuelearning, refine existing skills and acquire new skills.
- Demonstrate ability to apply newly gained knowledge or skills to the care of the patient.
- Demonstrate ability to introspect and utilize experiences, to enhance personal and professionalgrowth and learning.
- Demonstrate ability to search (including through electronic means), and critically evaluate themedical literature and apply the information in the care of the patient.
- Be able to identify and select an appropriate career pathway that is professionally rewarding andpersonally fulfilling.

Professional who is committed to excellence, is ethical, responsive and accountable to patients,community and the profession

- Practice selflessness, integrity, responsibility, accountability and respect.
- Respect and maintain professional boundaries between patients, colleagues and society.
- Demonstrate ability to recognize and manage ethical and professional conflicts.
- Abide by prescribed ethical and legal codes of conduct and practice.
- Demonstrate a commitment to the growth of the medical profession as a whole.

Broad Outline on training format

In order to ensure that training is in alignment with the goals and competencies listed in sub-clause 2 and3 above:

- There shall be a "Foundation Course" to orient medical learners to MBBS programme, and provide them with requisite knowledge, communication (including electronic), technical and language skills.
- The curricular contents shall be vertically and horizontally aligned and integrated to the maximum extent possible in order to enhance learner's interest and eliminate redundancy and overlap.
- Teaching-learning methods shall be learner centric and shall predominantly include small group learning, interactive teaching methods and case-based learning.
- Clinical training shall emphasize early clinical exposure, skill acquisition, certification in essential skills; community/primary/secondary care-based learning experiences and emergencies.
- Training shall primarily focus on preventive and community-based approaches to health and disease, with specific emphasis on national health priorities such as family welfare, communicable and noncommunicable diseases including cancer, epidemics and disaster management.
- Acquisition and certification of skills shall be through experiences in patient care, diagnostic and skill laboratories.
- The development of ethical values and overall professional growth as integral part of curriculum shall be emphasized through a structured longitudinal and dedicated programme on professional development including attitude, ethics and communication.

- Progress of the medical learner shall be documented through structured periodic assessment that includes formative and summative assessments. Logs of skill-based training shall be also maintained.

Appropriate Faculty Development Programmes shall be conducted regularly by institutions to facilitate medical teachers at all levels to continuously update their professional and teaching skills, and align their teaching skills to curricular objectives.

SECTION II

Admission to the Indian Medical Graduate Programme

NATIONAL ELIGIBILITY-CUM-ENTRANCE TEST AND COMMON COUNSELLING

SECTION III

Migration

AS PER MCI GUIDELINES

SECTION IV

REGULATIONS GOVERNING MBBS DEGREE COURSE
[Eligibility for Admission, Duration, Attendance and Scheme of Examination]

1. **ELIGIBILITY**

   As per guidelines of National Medical Council of India

2. **DURATION OF THE COURSE**

Every learner shall undergo a period of certified study extending over 4 ½ academic years, divided into nine semesters from the date of commencement of course to the date of completion of examination which shall be followed by one year of compulsory rotating internship.

Each academic year will have at least 240 teaching days with a minimum of eight hours of working on eachday including one hour as lunch break
The period of 4 ½ years is divided as follows:

- **Pre-Clinical Phase [(Phase I)** - **First Professional phase of 13 months** preceded by Foundation Course of one month]: will consist of preclinical subjects – Human Anatomy, Physiology, Biochemistry, Introduction to Community Medicine, Humanities, Professional development includingAttitude, Ethics & Communication (AETCOM) module and early clinical exposure, ensuring both horizontal and vertical integration.
- **Para-clinical phase [(Phase II)** - **Second Professional of 12 months**]: will consist of Para-clinical subjects namely Pathology, Pharmacology, Microbiology, Community Medicine, Forensic Medicine and Toxicology, Professional development including Attitude, Ethics & Communication (AETCOM) module and introduction to clinical subjects ensuring both horizontal and vertical integration.

- **Clinical Phase – [(Phase III) Third Professional (28 months)]**

(a) **Part I (13 months)** - The clinical subjects include General Medicine, General Surgery, Obstetrics& Gynaecology, Pediatrics, Orthopaedics, Dermatology, Otorhinolaryngology, Ophthalmology, Community Medicine, Forensic Medicine and Toxicology, Psychiatry, Respiratory Medicine, Radiodiagnosis & Radiotherapy and Anaesthesiology & Professional development includingAETCOM module.

(b) **Electives (2 months)** - To provide learners with opportunity for diverse learning experiences, todo research/community projects that will stimulate enquiry, self-directed experimental learning and lateral thinking [9.3].

(c) **Part II (13 months)** - Clinical subjects include:

i. Medicine and allied specialties (General Medicine, Psychiatry, Dermatology Venereology

and Leprosy (DVL), Respiratory Medicine including Tuberculosis)

ii. Surgery and allied specialties (General Surgery, Orthopedics [including trauma]), Dentistry,Physical Medicine and rehabilitation, Anaesthesiology and Radiodiagnosis)

iii. Obstetrics and Gynecology (including Family Welfare)

iv. Pediatrics

v. AETCOM module

The clinical exposure to learners will be in the form of learner-doctor method of clinical training in allphases. The emphasis will be on primary, preventive and comprehensive health care. A part of training during clinical postings should take place at the *primary level* of health care. It is desirable to provide learning experiences in secondary health care, wherever possible**.** This will involve:

(a) Experience in recognizing and managing common problems seen in outpatient, inpatient andemergency settings,

(b) Involvement in patient care as a team member,

(c) Involvement in patient management and performance of basic procedures.

- **A learner shall not be entitled to graduate after 10 years of his/her joining of the first partof the MBBS course**

Calendar for the MBBS Course for the new CBME curriculum

<table>
<tr><td>Jan</td><td>Feb</td><td>Mar</td><td>Apr</td><td>May</td><td>Jun</td><td>Jul</td><td>Aug</td><td>Sep</td><td>Oct</td><td>Nov</td><td>Dec</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>Foundation course</td><td colspan="4">I MBBS</td></tr>
<tr><td colspan="8">I MBBS</td><td>PhaseI exam</td><td colspan="3">II MBBS</td></tr>
<tr><td colspan="8">II MBBS</td><td>Phase II exam</td><td colspan="3">III MBBS PART 1</td></tr>
<tr><td colspan="9">III MBBS PART 1</td><td>Phase III part 1 exam</td><td colspan="2">Electives and skills</td></tr>
<tr><td colspan="12">III MBBS PART 2</td></tr>
<tr><td colspan="2">Phase III part 2 exam</td><td></td><td colspan="9">Internship</td></tr>
<tr><td colspan="3">Internship</td><td colspan="9"></td></tr>
</table>

DISTRIBUTION OF SUBJECTS BY PROFESSIONAL PHASE

Phase andYear of MBBS Training	Subjects and new teaching elements	Duration	University examination
First professionalMBBS	• Foundation course (1month) • Human Anatomy, Physiology&Biochemistry • Introduction of CommunityMedicine, Humanities • Early Clinical Exposure • Attitude. Ethics and Communication Module(AETCOM)	1+13 months	Ist Professional

Second professionalMBBS	• Pathology, Microbiology, Pharmacology, Forensic MedicineAnd Toxicology • Introduction to clinical subjectsincluding community Medicine • Clinical postings • AETCOM	12 months	IInd Professional
Third professionalMBBS-part I	• General Medicine ,General Surgery,OBG, Paediatrics, Orthopaedics, Dermatology, Psychiatry, Otorhinolaryngology, Ophthalmology, Community Medicine, Forensic Medicine and Toxicology, Respiratory Medicine, Radiodiagnosis & Radiotherapy, Anaesthesiology • Clinical Subjects /postings • AETCOM	12 months	IIIrd Professional PartI
Electives	• Electives ,skills and assessment	2 months	
Third professionalMBBS-part II	• General Medicine ,Paediatrics, General Surgery, Orthopaedics, Obstetrics and Gynaecology, including Family welfare and alliedspecialties • Clinical Postings /subjects • AETCOM	13 months	IIIrd Professional PartII

3. ATTENDANCE

- Every candidate should have **attendance not less than 75% of the total classes conducted in theory and not less than 80% of the classes conducted in practical** in each calendar year calculated from the date of commencement of the term to the last working day as notified by the University in each of the subjects prescribed to be eligible to appear for the university examination.
- Seventy five percent (**75%) attendance in Professional Development Programme (AETCOM Module) is required for eligibility to appear for final examination in each professional year** (vide Medical Council of India Notification on Graduate Medical Education (Amendment) Regulations 2019, published in the Gazette of India Part III, Section 4, Extraordinary issued on 4th November 2019)
- In subjects that are taught in more than one phase – the learner must have 75% attendance in theory and 80% in practical in each phase of instruction in that subject.
- If an examination comprises more than one subject (for e.g., General Surgery and allied branches), the candidate must have 75% attendance in each subject and 80%attendance in each clinical posting. Learners who do not have at least 75% attendance in the electives will not be eligible for the Third Professional - Part II examination.

The Principal should notify at the College the attendance details at the end of each term without fail underintimation to this University.

A candidate lacking in the prescribed attendance and progress in any subject(s) in theory or practicalshould not be permitted to appear for the examination in that subject(s).

4. **TEACHING HOURS: <u>Third Professional Part 2</u>**

Subjects	Teaching hours - lectures	Tutorials/seminars Integrated teaching	Self-directed learning	Total
General Medicine	70	125	15	210
General surgery	70	125	15	210
Obstetrics & Gynecology	70	125	15	210
Pediatrics	20	35	10	65
Orthopedics	20	25	5	50
AETCOM	28		15	43
Electives				200
Total	250	435	60	1780

- Teaching and learning shall be aligned and integrated across specialties both vertically and horizontally for better learner comprehension. Learner centered learning methods should include problem oriented learning, case studies, community-oriented learning, self- directed and experiential

- Didactic lectures shall not exceed one third of the schedule; two third of the schedule shall include interactive sessions, practicals, clinical or/and group discussions. The learning process should include clinical experiences, problem-oriented approach, case studies and community health care activities.

Table : Clinical postings for all clinical Subjects

Subjects	Period of training in weeks			Total (weeks)
	II MBBS	III MBBS Part 1	III MBBS Part 2	
Electives			8(4weeks clinical postings to continue)	
General Medicine	4	4	8+4	20
General Surgery	4	4	8+4	20
Obstetrics and Gynecology	4	4	8+4	20
Pediatrics	2	4	4	10
Orthopaedics including Trauma	2	4	2	8
Community Medicine	4	6	-	10
Otorhinolaryngology	4	4	-	8
Ophthalmology	4	4	-	8
Dermatology	2	2	2	6
Psychiatry	2	2	-	4
Respiratory Medicine	2	-	-	2
Radiodiagnosis	2	-	-	2
Dentistry & Anesthesiology	-	2	-	2
Casualty	-	2	-	2
Total	36	42	44	126

AETCOM modules in 3rd MBBS Part 2

AETCOM Module number	Title	Department
4.1	The foundations of communication - 5	General Surgery
4.2	Case studies in medico-legal and ethical situations	Obstetrics and Gynaecology
4.3	Case studies in medico-legal and ethical situations	Internal Medicine
4.4	Case studies in ethics empathy and the doctor-patient relationship	General Surgery
4.5	Case studies in ethics: the doctor-industry relationship	Paediatrics
4.6	Case studies in ethics and the doctor - industry relationship	Orthopaedics
4.7	Case studies in ethics and patient autonomy	Paediatrics
4.8	Dealing with death	Internal Medicine
4.9	Medical Negligence	Obstetrics and Gynaecology

SCHEME OF EXAMINATION

INTERNAL ASSESSMENT:

- Regular periodic examinations shall be conducted throughout the course. There shall be no less than three examinations in each clinical subject in the final professional year (3rd MBBS Part2) and one in each of the other years that the clinical subjects are taught in.
- The **third internal examination** should be conducted on the lines of the university examination(Preliminary examination).
- An end of posting clinical assessment shall be conducted for each clinical posting in each professional year.
- When subjects are taught in more than one phase, the internal assessment must be done in each phase and must contribute proportionately to final assessment. For example, General Medicine must be assessed in second Professional, third Professional Part I and third Professional Part II, independently.
- Day to day records and log book (including required skill certifications) should be given importance in internal assessment. Internal assessment should be based on competencies and skills.
- The final internal assessment in a broad clinical specialty (e.g., Surgery and allied specialties etc.) shall comprise of marks from all the constituent specialties. The proportion of the marks for each constituent specialty shall be determined by the time of instruction allotted to each.
- An **average of the marks scored in all internal assessment examinations and the** average of all marks scored in the end of posting clinical assessment will be considered as the final internal assessment scores and eligibility for University examinations.
- Learners must secure at least 50% marks of the total marks (combined in theory and practical / clinical; not less than 40 % marks in theory and practical separately) assigned for internal assessment in a particular subject in order to be eligible for appearing at the final University

examination of that subject.

- **Internal assessment marks will reflect under separate head in the marks card of the university examination. The internal assessment marks (theory and practical) will not be added to the marks secured (theory/practical) in the university examination for consideration of pass criteria, pass percentage, award of first class/distinction/gold medal.**
- The results of internal assessment should be displayed on the notice board within a 1-2 weeks of the test.
- Colleges should formulate policies for remedial measures for students who are either not able to score qualifying marks or have missed on some assessments due to any reason.
- Learners must have completed the required certifiable competencies for that phase of training and completed the log book appropriate for that phase of training to be eligible for appearing at the final university examination of that subject.

5. UNIVERSITY EXAMINATION

Examination schedule

<table>
<tr><th>Jan</th><th>Feb</th><th>Mar</th><th>Apr</th><th>May</th><th>Jun</th><th>Jul</th><th>Aug</th><th>Sep</th><th>Oct</th><th>Nov</th><th>Dec</th></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>Foundation course</td><td colspan="4">I MBBS</td></tr>
<tr><td colspan="8">I MBBS</td><td>Phase I exam</td><td colspan="3">II MBBS</td></tr>
<tr><td colspan="8">II MBBS</td><td>Phase II exam</td><td colspan="3">III MBBS PART 1</td></tr>
<tr><td colspan="9">III MBBS PART 1</td><td>Phase III part 1 exam</td><td>Electives and skills</td></tr>
<tr><td colspan="12">III MBBS PART 2</td></tr>
<tr><td colspan="2">Phase III part 2 exam</td><td></td><td colspan="9">Internship</td></tr>
<tr><td colspan="3">Internship</td><td colspan="9"></td></tr>
</table>

General guidelines

- University examinations are to be designed with a view to ascertain whether the candidate has acquired the necessary knowledge, minimal level of skills, ethical and professional values with clear concepts of the fundamentals which are necessary for him/her to function effectively and appropriately as a physician of first contact. Assessment shall be carried out on an objective basisto the extent possible.
- Nature of questions will include different types such as structured essays (Long Answer Questions - LAQ), Short Essays, Short Answers Questions (SAQ) and Multiple-choice questions (MCQs). Marks for each part should be indicated separately.
- The learner **must secure at least 40% marks in each of the two papers with minimum**

50% of marks in aggregate (both papers together) to pass, in subjects with more than one paper.

- In subjects with one question paper the learner must secure a minimum of 50% marks to pass.
- Clinical examinations will be conducted at the bedside in the hospital wards. The objective will be to assess proficiency and skills to elicit a detailed history, perform clinical examination, interpret data and form logical conclusion, wherever applicable.
- **There shall be one main examination in an academic year and a supplementary to be held not later than 90 days after the declaration of the results of the main examination.**
- **A learner shall not be entitled to graduate after 10 years of his/her joining of the first part of the MBBS course.**
- **A maximum number of four permissible attempts would be available to clear the first Professional University examination, whereby the first Professional course will have to be cleared within 4 years of admission to the said course. Partial attendance at any University examination shall be counted as an availed attempt.**

- **THIRD PROFESSIONAL PART 2 EXAMINATION:**
  This examination shall be held at the end of the fourth-year of training(13 months), in the subjects of Internal medicine, General Surgery including Orthopaedics, Obstetrics and Gynaecology, and Paediatrics.

Table: Examination components, Subjects and Distribution of Marks

THEORY	**Internal Medicine**	**Surgery & Orthopedics**	**Obstetrics & Gynecology**	**Pediatrics**
Written Paper				
No. of Papers & Maximum Marks for each paper.	**2×100=200**	**2×100=200**	**2×100=200**	**1x100=100**
Total theory	**200**	**200**	**200**	**100**
PRACTICAL				
1. Practical exam	**160**	**160**	**160**	**80**
2. Viva-voce	**40**	**40**	**40**	**20**
Total practical	**200**	**200**	**200**	**100**
Internal assessment*				
Internal Assessment (Theory)	**100**	**100**	**100**	**100**
Internal assessment (Practical)	**100**	**100**	**100**	**100**

*** Internal assessment marks will reflect under separate head in the marks card of the universityexamination.**

Type, number of questions and distribution of marks for written paper

TYPES OF QUESTION	NUMBER OF QUESTIONS	MARKS FOR EACH QUESTION
Long essay	**2**	**10**
Short essay	**6**	**5**
Short answers	**10**	**3**
MCQs	**20**	**1**
Total		**100**

A blueprint for theory paper indicating the topics and marks allotted for each are given for each of the subjects below. The blueprint provided is an estimate only, the spirit of the blueprint must be honoured while setting the paper. This document will guide teachers/ students and evaluators on what to focus on. The focus should be on providing clinical oriented questions rather than purely theoretical questions.

The distribution of topics in paper 1 and paper 2, are also given in clinical subjects with more than one theory paper. The given division of topics is only a guideline, as the topics are often a continuum, making clear demarcation difficult.

6. SUBMISSION OF LOGBOOK

a. At the time of Clinical Examination each candidate shall submit to the Examiners his/her logbook record duly certified by the Head of the Department as a bona fide record of the workdone by the candidate.

7. ELIGIBILITY TO APPEAR FOR EXAMINATION

The following criteria to be met by the students to be eligible for the university exams:

a. Shall have undergone satisfactorily the approved course of study in the subject/subjects for theprescribed duration.
b. Shall have attended not less than 75% of the total classes conducted in theory and not less than 80%of the total classes conducted in practical separately to become eligible to appear for examination inthat subject/subjects.
c. Minimum of 40% marks to be obtained **separately** in theory and practical AND at least 50% marksof the total marks **combined** in theory and practical assigned for internal assessment is to be obtained in a particular subject to appear for university exam. (average of 3 internal assessments theory and practical separately)
d. Learners must have completed the required certifiable competencies for that phase of training andcompleted the logbook appropriate for that phase of training to be eligible for appearing at the final university examination of that subject.

8. CRITERIA FOR PASS

For declaration of pass in any subject in the University examination, a candidate shall pass both inTheory and Practical examination components separately as stipulated below:

- The Theory component consists of marks obtained in University Written papers only. For a pass intheory, a candidate must secure at least 40% marks in each of the two papers with minimum 50% of marks in aggregate (both papers together).
- For a pass in practical examination, a candidate shall secure not less than 50% marks in aggregate, i.e., marks obtained in university practical examination and viva voce added together.
- **Internal assessment marks will reflect as a separate head of passing at the university examination.**
- **The IA marks will not be added to the marks obtained in the University examination and will NOT be used to calculate pass percentage, award of class, distinction and GOLD medal.**
- A candidate not securing 50% marks in aggregate in Theory or Practical examination + viva in a subject shall be declared to have failed in that subject and is required to appear for both Theory and Practical again in the subsequent examination in that subject.

9. DECLARATION OF CLASS

a. A candidate having appeared in all the subjects in the same examination and passed that examination in the first attempt and secures 75% of marks or more of **grand total marks (universityexamination + internal assessment)** prescribed will be declared to have passed the examination with distinction.

b. A candidate having appeared in all the subjects in the same examination and passed that examination in the first attempt and secures 65% of marks or more but less than 75% of **grand totalmarks (university examination + internal assessment)** prescribed will be declared to have passed the examination in First Class.

c. A candidate having appeared in all the subjects in the same examination and passed that examination in the first attempt and secures 50% of marks or more but less than 65% of **grand totalmarks (university examination + internal assessment)** prescribed will be declared to have passed the examination in Pass Class.

d. A candidate passing a university examination in more than one attempt shall be placed in Pass class irrespective of the percentage of marks secured by him/her in the examination.

Note: Please note fraction of marks will not be rounded off for clauses (a), (b) and (c)

Appointment of Examiners

a. Person appointed as an examiner in the particular subject must have at least four years of total teaching experience as assistant professor after obtaining postgraduate degree in the subject in a collegeaffiliated to a recognized/approved/permitted medical college.

b. For the Practical/ Clinical examinations, there shall be at least four examiners for 100

learners, outof whom not less than 50% must be external examiners. Of the four examiners, the senior-most internal examiner will act as the Chairman and coordinator of the whole examination programme so that uniformity in the matter of assessment of candidates is maintained. Where candidates appearing are more than 100, two additional examiners (one external & one internal) for every additional 50 or part there of candidates appearing, be appointed.

c. External examiners may not be from the same University.

d. The internal examiner in a subject shall not accept external examinership for a college from whichexternal examiner is appointed in his/her subject.

e. A University having more than one college shall have separate sets of examiners for each college, with internal examiners from the concerned college.

f. External examiners shall rotate at an interval of 2 years.

g. There shall be a Chairman of the Board of paper-setters who shall be an internal examiner and shall moderate the questions.

h. All eligible examiners with requisite qualifications and experience can be appointed internal examiners by rotation in their subjects.

i. All theory paper assessment should be done as central assessment program (CAP) of concerned university.

j. Internal examiners should be appointed from same institution for unitary examination insame institution. For pooled examinations at one centre approved internal examiners from same university may be appointed.

The grace marks up to a maximum of five marks may be awarded at the discretion of the University to a learner for clearing the examination as a whole but not for clearing a subject resulting in exemption

Sri Siddhartha Academy of Higher Education, Tumkur

Internal Medicine Curriculum including Respiratory Medicine

as per

Competency Based Curriculum

SSAHE Internal Medicine Curriculum as per the new Competency Based Curriculum

Preamble

The NMC envisages that the Indian Medical Graduate should function as the Physician of first contact in the community, to provide holistic health care to the evolving needs of the nation and the world. To fulfil this, the IMG should be able to perform the following roles: a clinician, a communicator, a lifelong learner, a professional and a team leader.

Competency-based medical education (CBME) is an outcomes-based training model that has become the new standard of medical education internationally. This new curriculum is being implemented across the country and the first batch has been enrolled since the academic year 2019. The regulatory and accrediting body NMC had started the process by training faculty across the country in the key principles of CBME and developing key competencies for each specialty with the input from expert groups under each specialty.

The NMC, in the Graduate medical regulations 2019, has provided the list of internal medicine competencies required for an IMG and these have been included in this document.

The document begins with the goals and objectives of the medicine curriculum, then a summary of phase wise hours allotted to internal medicine and their distribution across didactic lecture, small group discussion and self-directed learning. Subsequently, this document suggests phase wise topics in the 4 clinical postings , directory of minimum cases to be seen, and suggested clinical assessment methods for the postings. The blueprint for theory exams and sample question paper is also included.

This is followed by the competencies to be delivered, along with the SLOs, suggested TL methods, and suggested assessment methods.

The document also Includes the competencies of Respiratory medicine. They have been divided Into the three main domains of teaching-learning.

Goals and Objectives of the medicine curriculum

Goals

The broad goal of the medicine curriculum is to equip the IMG with sufficient knowledge, skills and attitude to diagnose and appropriately treat common disorders affecting the adult population.

Objectives

A) Knowledge

At the end of the course student should be able to:

a. Describe the pathophysiology of common diseases of adults
b. Describe the clinical features, diagnosis and management of the above
c. Be well versed with the preventive aspects of the internal medical curriculum, specifically patient education, lifestyle modification and adult vaccination.

(B) Skills

At the end of the course the student should be able to:

a. Demonstrate the ability to elicit a detailed clinical history and perform a general physical and systemic examination, in outpatient and inpatient settings.
b. Demonstrate the ability to apply the elicited history and examination to arrive at correct diagnosis and plan treatment.
c. Demonstrate the ability to deliver immediate care to commonly seen emergencies prior to referral to higher centre.

C) Attitude and communication skills

At the end of the course the student should be able to:

a. Communicate effectively with patients, their families and the public at large
b. Communicate effectively with peers and teachers demonstrate the ability to work effectively with peers in a team.
c. Demonstrate professional attributes of punctuality, accountability and respect for teachers and peers.
d. Appreciate the issues of equity and social accountability

Summary of course content, teaching and learning methods and student assessment for the undergraduate (MBBS) Curriculum in Internal medicine –

Distribution of hours :

Phase	Lecture	Small group discussion	Self-directed learning
Phase 2	25		
Phase 3, part 1	25	35	5
Phase 3, part 2	70	125	15

Time allotted excludes time reserved for internal / University examinations, and vacation.

Teaching-learning methods shall be learner centric and shall predominantly include small group learning, interactive teaching methods and case-based learning. Didactic lectures not to exceed one-third of the total teaching time. 25% of allotted time (non-clinical time) of third Professional shall be utilized for integrated learning with pre- and para- clinical subjects. This will be included in the assessment of clinical subjects.

The teaching learning activity focus should be on application of knowledge rather than acquisition of knowledge.

The curricular contents shall be vertically and horizontally aligned and integrated to the maximum extent possible to enhance learner's interest and eliminate redundancy and overlap.

Small group discussion (SGD) may include the following

1.Tutorials

2.Case based discussion

3. Skill lab sessions

Unless otherwise mentioned, in the TL methods suggested in the competency table, SGD sessions are for 2 hours, and lectures for 1 hour and skill lab sessions are for 4 hours

Phase wise competencies suggested

Phase 2 : Introduction to history taking, introduction to systems

Phase 3 part 1 : 4,6,9,11,12,16,25

Phase 3 part 2 : remaining competencies and pandemic module

Suggested SDL topics, both Phases together. The individual institutions can modify according to their need.

Topics for self-directed learning in Phase 1 (1 hour each)

1. KFD/ JE
2. Acromegaly & hyperprolactinemia
3. Posterior pituitary disorders
4. Sideroblastic anemia
5. Haemolytic anemias

Topics for SDL in phase 2

1. Introduction to cardiovascular disease in adults
2. Cardiomyopathies
3. Pneumoconiosis
4. Nephrotic syndrome
5. Epilepsy
6. Drug induced liver injury
7. Hepatic transplantation
8. physiologic effects of acute blood and volume loss
9. therapy of bee sting allergy
10. Heat stroke
11. medico legal aspects of suspected suicidal or homicidal poisoning
12. multiple endocrine neoplasia syndrome
13. Autoimmune hepatitis
14. Systemic sclerosis
15. Primary biliary cirrhosis

Clinical posting, certifiable skills, case matrix, clinical skills assessment , clerkship , skill lab topics
Acquisition and certification of skills shall be through experiences in patient care, diagnostic and skill laboratories. Use of skill lab to train undergraduates in listed skills should be done mandatorily.

The clinical postings in the second professional shall be 15 hours per week (3 hrs per day from Monday to Friday)
The clinical postings in the third professional part II shall be 18 hours per week (3 hrs per day from Monday to Saturday)

Acquisition and certification of skills shall be through bedside clinics, clerkship (student doctor) , diagnostic and skill laboratories.

Clinical postings – phase wise objectives
Posting 1 : The student , at the end of the posting, would have practiced the following
A. Building a rapport with the patient
Eliciting history in native language of patient
Examining vital signs – pulse, blood pressure, temperature, jugular venous pressure
General physical examination – pallor, icterus, cyanosis, lymphadenopathy, edema
Observation of systemic examination
Posting 2
Practice of skills attained in posting 1
Systemic examination (inspection, palpation, percussion, auscultation) of cardiovascular system, respiratory system, abdomen, and central nervous system
Posting 3
Practice of skills attained in posting 1 and 2
Fluent, confident systemic examination
Ability to distinguish between normal and abnormal physical findings
Collating history and examination findings to arrive at differential diagnoses

Posting 4
Practice and refinement of skills attained in postings 1, 2 and 3

Certifiable skills

	Perform and interpret a capillary blood glucose test	IM 11.12
2	Perform and interpret a urinary ketone estimationwith a dipstick	IM 11.13
3	Describe and discuss the indications for and insert a peripheral intravenous catheter	IM10.21
4	Perform and interpret a 12 lead ECG	IM 1.18, IM 2.10, IM 8.17
5	Describe and discuss the indications to perform an ABG and to interpret the results. to perform arterial blood gas analysis: interpret the data	IM 10.20
6	Perform and demonstrate in a mannequin BLS	IM 2.22
7	Perform and interpret a gram stain and AFB stain	IM 3.14, IM6.14
8	Describe, perform and interpret a peripheral smear and stool occult blood	IM 9.10

Case matrix

Sl. No.	Topic/System	Case
1.	Cardiovascularsystem	Heart Failure Coronary Artery Disease Hypertension Valvular heart disease
2.	Respiratory System	Pneumonia Pleural effusion Fibrosis COPD
3.	Gastrointestinal andhepatobiliary System	Hepatitis GI Bleed Diarrheal disorders
4.	Central NervousSystem	Cerebrovascular accident Movement disorders Peripheral Neuropathy Spinal Cord Disorders
5.	Endocrine system	Diabetes Mellitus Thyroid disorders Obesity
6.	Infectious diseases	Fever and febrile disorders HIV Miscellaneous Infections
7.	Musculoskeletal System	Rheumatological disorders
8.	Nutrition	Anemia Nutrition and vitamin deficiencies

9.	Geriatrics	Comprehensive geriatric assessment
10.	Renal System	Acute kidney injury and chronic kidney disease
11.	Miscellaneous	Common Malignancies Envenomation Poisoning

Clerkship: should be mandatorily implemented, from 1st clinical postings in Medicine .
The goal of this type of T-L activity is to provide learners with experience in longitudinal patient care, being part of the health care team, and participate in hands-on care of patients in outpatient and inpatient setting. During the 1st clinical postings, the students are oriented to the working of the department. During the subsequent clinical posting the students are allotted patients, whom they follow-up through their stay in the hospital, participating in that patient's care including case work-up, following-up on investigations, presenting patient findings on rounds, observing surgeries if any till patient is discharged.

Goal: To provide learners with experience in:

(a) Longitudinal patient care,

(b) Being part of the health care team,

(c) Hands-on care of patients in outpatient and inpatient setting.

(d) No learner will be given independent charge of the patient

(e) The supervising physician will be responsible for all patient care decisions

The learner will function as a part of the health care team with the following responsibilities:

Be part of the unit's outpatient services on admission days,
Remain with the admission unit until 6 PM except during designated class hours,

Be assigned patients admitted during each admission day for whom he/she will undertake responsibility, under the supervision of a senior resident or faculty member,

Participate in the unit rounds on its admission day and will present the assigned patients to the supervising physician,

Perform simple tasks, including nebulisation, patient education

Follow the patient's progress throughout the hospital stay until discharge,

Participate, under supervision, in procedures, surgeries, deliveries etc. of assigned patients

Participate in unit rounds on at least one other day of the week excluding the admission day, Discuss ethical and other humanitarian issues during unit rounds,
Attend all scheduled classes and educational activities,
Document his/her observations in a prescribed log book / case record.

Clerkship phase wise

Year of Curriculum	Focus of Learner - Doctor programme
Year 1	Introduction to hospital environment, early clinical exposure, understanding perspectives of illness
Year 2	History taking, physical examination, assessment of change in clinical status, communication and patient education
Year 3	All of the above and choice of investigations, basic procedures and continuity of care
Year 4	All of the above and decision making, management and outcomes

Eligibility to appear for Professional examinations

(a) Attendance

1. Attendance requirements are 75% in theory and 80% in practical /clinical for eligibility to appear for the examinations in that subject. In subjects that are taught in more than one phase – the learner must have 75% attendance in theory and 80% in practical in each phase of instruction in that subject.
2. If an examination comprises more than one subject (for e.g., Internal Medicine and allied branches), the candidate must have 75% attendance in each subject and 80% attendance in each clinical posting.
3. Learners who do not have at least 75% attendance in the electives will not be eligible for the Third Professional - Part II examination.

(b) Internal Assessment:

Theory assessment

A 100-mark question paper covering the topics of part 1 may be conducted. Mark division will be as follows:

100 marks
Long essay 2X10= 20
Short essay 6x5=30 marks
Short answer question 10x3=30marks
MCQs 20x1=20marks

A minimum of 80% of the marks should be from the must know component of the curriculum. A maximum of 20% can be from the desirable to know component. All main essay questions to be from the must know component of the curriculum.
One main essay question to be of the modified variety containing a clinical case scenario. At least 30% of questions should be clinical case scenario based. Questions to be constructed to test higher cognitive levels.

Internal Assessment
Progress of the medical learner shall be documented through structured periodic assessment that includes formative and summative assessments. Logs of skill-based training shall be also maintained.

Log book

1. (a) A designated faculty member in each unit will coordinate and facilitate the activities of the learner, monitor progress, provide feedback and review the log book/ case record.
2. (b) The log book/ case record must include the written case record prepared by the learner including relevant investigations, treatment and its rationale, hospital course, family and patient discussions, discharge summary etc.
3. (c) The log book should also include records of patients assigned. Submission of the log book/ case record to the department is required for eligibility to appear for the final examination of the subject.

There shall be no less than four theory internal assessment (One each in 2nd MBBS and 3rd MBBS Part1 and Two in 3rd MBBS Part2) excluding the prelims in Medicine. An end of posting clinical assessment shall be conducted for each of the clinical postings in Medicine. Internal assessment may be conducted as follows

AETCOM assessment will include: (a) Written tests comprising of short notes and creative writing experiences, (b) OSCE based clinical scenarios / viva voce

The competencies to be delivered in AETCOM have been summarized at the end of the competency table. The question paper must include a least one question based on AETCOM competencies covered in that phase. AETCOM competencies must also be tested in the viva voce.

Internal assessment at the end of clinical postings

Internal assessment marks at the end of each posting will be a sum of log book (documentation of skills practiced, clerkship, assessment of behaviour in posting) and clinical internal assessment marks. Internal assessment may be conducted as follows in postings

Posting 1 – long case focusing on history, vital signs and general physical examination

Posting 2 – OSCE with the following stations – history, vital signs, general physical examination, CVS, RS, Abdomen, CNS, diagnostic skills, communication

Posting 3 – Long case or OSLER (Objective Structured Long Examination Record)

Posting 4 – short case and/or long case

There will be one Theory and Clinical preliminary exam before the student is eligible for university exams.

Day to day records and logbook (including required skill certifications) should be given importance in internal assessment. Internal assessment should be based on competencies and skills.

Learners must secure at least 50% marks of the total marks (combined in theory and clinical; not less than 40 % marks in theory and practical separately) assigned for internal assessment in Medicine to be eligible for appearing at the final University examination.

Internal assessment marks will reflect as separate head of passing at the summative examination.

The results of internal assessment should be displayed on the notice board within 1-2 weeks of the test.

Remedial measures should be offered to students who are either not able to score qualifying marks or have missed on some assessments due to any reason.

Learners must have completed the required certifiable competencies for that phase of training and Medicine logbook entry completed to be eligible for appearing at the final university examination.

.

University examinations

University examinations Third Professional Part II - (Final Professional) examination shall be at the end of training (14 months including 2 months of electives) in the subjects of General Medicine, General Surgery, Obstetrics & Gynaecology and Paediatrics.

The discipline of Psychiatry and Dermatology, Venereology and Leprosy (DVL), Respiratory Medicine including Tuberculosis will constitute 25% of the total theory marks in General Medicine incorporated as a separate section in paper II of General Medicine.

University examinations are to be designed with a view to ascertain whether the candidate has acquired the necessary knowledge, minimal level of skills, ethical and professional values with clear concepts of the fundamentals which are necessary for him/her to function effectively and appropriately as a physician of first contact. Assessment shall be carried out on an objective basis to the extent possible.

Marks allotted

Medicine	Theory	Clinical examination
Total marks	2 papers of 100 marks each for Medicine . The pattern of each question paper is given below	200 marks
	Long essay 2X10= 20	One long case for 80 marks
	Short essay 6x5=30 marks	Two short cases for 40 marks each
	Short answer question 10x3=30marks	Viva-voce for 40 marks. Station-1: Xray & ECG Station-2: Instruments Station-3: Specimens Station-4: Drugs & case scenarios
	MCQs 20x1=20marks	

The theory paper should include different types such as structured essays, short essays, Short Answers Questions (SAQ) and MCQs (Multiple Choice Questions). Marks for each part should be indicated separately.

.

A minimum of **80%** of the marks should be from the **must know** component of the curriculum. A maximum of **20%** can be from the **desirable to know** component. All **main essay questions** to be from the **must know component** of the curriculum.

One main essay question to be of the **modified variety** containing a clinical case scenario. At least 30% of questions should be clinical case scenario based. Questions to be constructed to test higher cognitive levels.

Clinical examinations will be conducted in the hospital wards. Clinical cases kept in the examination must be of common conditions that the learner may encounter as a physician of first contact in the community. Selection of rare syndromes and disorders as examination cases is to be discouraged. Emphasis should be on candidate's capability to elicit history, demonstrate physical signs, write a case record, analyse the case and develop a management plan.

Viva/oral examination should assess approach to patient management, emergencies, attitudinal, ethical, and professional values. Candidate's skill in interpretation of common investigative data, X-rays, identification of specimens, ECG, etc. is to be also assessed.

At least one question in each paper of the clinical specialties in the University examination should test knowledge competencies acquired during the professional development programme. Skill competencies acquired during the Professional Development Programme must be tested during the clinical, practical and viva voce.

There shall be one main examination in an academic year and a supplementary to be held not later than 90 days after the declaration of the results of the main examination.

Pass criteria

Internal Assessment: 50% combined in theory and practical (not less than 40% in each) for eligibility for appearing for University Examinations

University Examination: Mandatory 50% marks separately in theory and clinicals (clinicals = clinical + viva)

The grace marks up to a maximum of five marks may be awarded at the discretion of the University to a learner for clearing the examination as a whole but not for clearing a subject resulting in exemption.

Appointment of Examiners

Person appointed as an examiner in the subject must have at least four years of total teaching experience as assistant professor after obtaining postgraduate degree in the subject in a college affiliated to a recognized/approved/permitted medical college.

For the Practical/ Clinical examinations, there shall be at least four examiners for 100 learners, out of whom not less than 50% must be external examiners. Of the four examiners, the senior-most internal examiner will act as the Chairman and coordinator of the whole examination programme so that uniformity in the matter of assessment of candidates is maintained.

Where candidates appearing are more than 100, two additional examiners (one external & one internal) for every additional 50 or part there of candidates appearing, be appointed.

All eligible examiners with requisite qualifications and experience can be appointed as internal examiners by rotation

External examiners may not be from the same University.

There shall be a Chairman of the Board of paper-setters who shall be an internal examiner and shall moderate the questions.

All theory paper assessment should be done as central assessment program (CAP) of concerned university.

BLUEPRINT FOR ASSESSMENT

RATIONALE BEHIND THE BLUEPRINTING WITH EXCERPTS FROM NMC DOCUMENT ON ASSESSMENT

As per NMC guidelines, a balance should be drawn between the action verbs which are specified in the Bloom's taxonomy along with a balance of the topics of the curriculum

Levels of Bloom's Taxonomy with Suggested Verbs in the questions are specified below.

Knowledge	Define, Describe, Draw, Find, Enumerate, Cite, Name, Identify, List, label, Match, Sequence, Write, State
Comprehension	Discuss, Conclude, Articulate, Associate, Estimate, Rearrange, Demonstrate understanding, Explain, Generalise, Identify, Illustrate, Interpret, Review, Summarise
Application	Apply, Choose, Compute, Modify, Solve, Prepare, Produce, Select, Show, Transfer, Use
Analysis	Analyse, Characterise, Classify, Compare, Contrast, Debate, Diagram, Differentiate, Distinguish, Relate, Categorise
Synthesis	Compose, Construct, Create, Verify, Determine, Design, Develop, Integrate, Organise, Plan, Produce, Propose, rewrite
Evaluation	Appraise, Assess, Conclude, Critic, Decide, Evaluate, judge, Justify, Predict, Prioritise, Prove, Rank

The blueprint for Internal Medicine theory paper indicating the topics and marks allotted for each are given below. The blueprinting provided is an estimate only, the spirit of the blueprint must be honoured while setting the paper. This document will guide teachers/ students and evaluators on what to focus on. The focus should be on providing clinical oriented questions rather than purely theoretical questions

The distribution of topics in paper 1 and paper 2 in Internal Medicine is also given below. The given division of topics is only a guideline, as the topics are often a continuum, making clear demarcation difficult.

Number	Topic	Marks on 200
1	Heart failure	10
2	Acute Myocardial infarction	9
3	Pneumonia	9
4	Basic sciences including Pharmacology	10
5	Fever and febrile syndromes (miscellaneous infections)	12
6	Liver disease	6
7	HIV	4
8	Rheumatological disease	6
9	HTN	10
10	Anaemia and other blood disorders	8
11	AKI/CKD	8
12	DM	10
13	Thyroid and other endocrine disorders	5
14	Common malignancies	4
15	obesity	5
16	GI bleeding	4

17	Diarrhoeal diseases	5
18	Headache	6
19	Cerebrovascular accidents	10
20	Envenomation	4
21	Movement disorder	2
22	Poisonings	7
23	Mineral, Fluid Electrolyte and Acid base Disorder	10
24	Nutritional and Vitamin Deficiencies	5
25	Geriatrics	6
26	Chronic respiratory diseases	10
27	Dermatology	7
28	Psychiatry	8
	Total marks	200

Distribution of topics In Paper 1 and Paper 2 for University Examination

Internal Medicine Paper 1		**Internal Medicine paper 2**	
	Topic		**Topic**
1	Basic sciences including pharmacology	1	Psychiatry
2	Nutrition including obesity	2	Dermatology
3	Cardiovascular disorders	3	Respiratory diseases including Pneumonia and Tuberculosis
4	Gastrointestinal disorders including diarrheal diseases	4	Geriatrics
5	Immunology including rheumatology	5	Central nervous system including Headache, movement disorder
6	Diabetes and other endocrine disorders	6	Infectious diseases including PUO and HIV
7	Hypertension	7	Nephrology
8	Poisoning, envenomation and environmental disorders	8	Haematology- oncology including Anemia and other malignancies

Competency & SLO table : competencies in 3rd MBBS Part 1 : 4,6,9,11,12,16,25. All others in 3rd MBBS Part 2. The following are guidelines, and modifications may be made in SLOs, TL methods and assessment based on institution infrastructure and practices.

Number	COMPETENCY The student should be able to	SLOs	Suggested Learning methods	Suggested Assessment methods	Vertical Integration
Topic: Heart Failure					
IM1.1	Introduction to cardiovascular disease in adults	1. Describe and discuss the epidemiology of common causes of heart disease including: rheumatic/ valvular, ischemic, hypertrophic inflammatory	SDL	Short essay	Pathology, Physiology
IM1.2,1.4,1.5 1.6	Heart failure	1. Describe and discuss the genetic basis of forms of heart failure 2. Stage heart failure 3. Describe ,discuss and differentiate the processes involved in heart failure with reduced Vs preserved ejection fraction 4. Describe and discuss the compensatory mechanisms involved in heart failure including cardiac remodeling and neurohormonal adaptations	Lecture	EQ	Pathology, Physiology
1.7,1.23,1.26 1.27	Treatment of heart failure	1. Develop management plan for patient with heart failure 2. Enumerate, describe and discuss the factors that exacerbate heart 3. Describe, prescribe and communicate non pharmacologic management of heart failure including sodium restriction, physical activity and limitations	Case based discussion	MEQ	
1.24	Pharmacotherapy of heart failure	1. Describe and discuss the pharmacology of drugs including indications, contraindications in the management of heart failure including diuretics, ACE inhibitors, Beta blockers,	Small group discussion	Short essay Viva voce	

		aldosterone antagonists and cardiac glycosides			
IM1.3,1.9,1.27	Rheumatic fever	1. Describe and discuss the etiopathogenesis & clinical evolution of rheumatic fever, modified Jones criteria, and rheumatic valvular heart disease and its complications including infective endocarditis 2. Describe and discuss the clinical presentation and features, diagnosis, recognition and management of acute rheumatic fever 3. Describe and discuss the role of penicillin prophylaxis in the prevention of rheumatic heart disease	Lecture	SEQ Viva voce	Pathology
IM1.8	Arrhythmias	1. Describe and discuss the pathogenesis and development of common arrythmias 2. Discuss the classification, etiopathogenesis, clinical features diagnosis and management of atrial fibrillation	Lecture	1. Short essay question 2. ECG interpretation in OSCE station 3. Viva voce	Pathology, Physiology

Number	COMPETENCY The student should be able to	SLOs	Suggested Learning methods	Suggested Assessment methods	Vertical Integration
IM1.10,1.11	History and examination in cardiovascular disease	1. Elicit document and present an appropriate history that will establish the diagnosis, cause and severity of heart failure including: presenting complaints, precipitating and exacerbating factors, risk factors exercise tolerance, changes in sleep patterns, features suggestive of infective endocarditis 2.Perform and demonstrate a systematic examination based on the history that will help establish the diagnosis and estimate its severity including	Small group discussion followed by Bedside clinic	Long case	
IM1.12,1.13,1.14,1.15	Vital signs and their interpretation in CVS case Cardiovascular examination	1. Demonstrate peripheral pulse, volume, character, quality and variation in various causes of heart failure 2. Measure the blood pressure accurately, recognize and discuss alterations in blood pressure in valvular heart disease and other causes of heart failure and cardiac tamponade 3. Demonstrate and measure jugular venous distension 4. Identify and describe the timing, pitch quality conduction and significance of precordial murmurs and their variations	Small group discussion Bedside clinic	Physical examination station in OSCE Short case	
IM1.16,1.17, 1.19	Investigations in heart disease	1. Generate a differential diagnosis based on the clinical presentation and prioritize it based on the most likely diagnosis 2. Order and interpret diagnostic testing based on the clinical diagnosis including 12 lead ECG, Chest radiograph, blood cultures 3. Enumerate the indications for and describe the findings of heart	Clerkship Small group discussion	Documentation in logbook Problem based short essay question	

		failure with the following conditions including: 2D echocardiography, brain natriuretic peptide, exercise testing, nuclear medicine testing and coronary angiogram			
IM1.18,2.10	Perform and interpret a 12 lead ECG		Small group discussion Clerkship	Documentation in logbook	

Number	COMPETENCY The student should be able to	SLOs	Suggested Learning methods	Suggested Assessment methods	Vertical Integration
IM1.20, 1.25	Introduction to Valvular heart disease	1. Determine the severity of valvular heart disease based on the clinical and laboratory and imaging features and determine the level of intervention required including surgery 2. Enumerate the indications for valvuloplasty, valvotomy, coronary revascularization and cardiac transplantation	Lecture	Short case Examination station in OSCE	
	Mitral valve disease	1.Discuss the haemodynamics, etiopathogenesis , clinical features of mitral stenosis 2. Discuss the haemodynamics, etiopathogenesis , clinical features of mitral regurgitation	Lecture		
	Aortic valve disease	1.Discuss the haemodynamics, etiopathogenesis , clinical features of aortic stenosis 2. Discuss the haemodynamics, etiopathogenesis , clinical features of aortic regurgitation	Lecture		
IM1.21	Infective endocarditis	1. Describe the clinical features of acute and subacute endocarditis, echocardiographic findings, blood culture and sensitivity and therapy	Lecture	SEQ	
IM1.22	Phlebotomy and collecting specimen for culture	Assist and demonstrate the proper technique in collecting specimen for blood culture	DOAP session Clerkship	Skill assessment in OSCE station	Microbiology

IM1.28	Congenital heart disease in adults	1. Enumerate common adult presentations of congenital heart disease and describe the distinguishing features between cyanotic and acyanotic heart disease 2. Discuss etiopathogenesis and prevention of congenital heart disease	Lecture	Short essay Short answer	
	ASD	1. Discuss the embryology, haemodynamics , pathophysiology of ASD 2. Discuss the management of ASD	Lecture		
	VSD,	1. Discuss the embryology, haemodynamics , pathophysiology of VSD Discuss the management of VSD	Lecture		
IM 1.29	PDA	1. Describe haemodynamics, clinical features, complications and management of patent ductus arteriosus	Lecture	Short essay Viva voce	

Number	COMPETENCY The student should be able to	SLOs	Suggested Learning methods	Suggested Assessment methods	Vertical Integration
IM1.30	Intramuscular injection	1. Administer an intramuscular injection with aseptic precautions and appropriate explanation to the patient	Task trainer	Log book	Pharmacology
IM2.1,2.2,2.4,2.5, 2.9	Ischemic heart disease	1. Discuss the epidemiology of coronary artery disease 2. Discuss the aetiology of risk factors - modifiable & non-modifiable - of atherosclerosis and IHD 3. Discuss and describe the pathogenesis natural history, evolution and complications of atherosclerosis and IHD 4. Describe the approach to a case of stable angina	Lecture	Short essay	Pathology, Physiology, Community Medicine
IM2.3	Lipid cycle	Discuss and describe the lipid cycle and the role of dyslipidemia in the pathogenesis of atherosclerosis	Lecture	Viva voce	Physiology, Biochemistry
IM2.6,2.7,2.8	Examination of patient with IHD	1. Elicit appropriate history including onset evolution, presentation risk factors, family history, comorbid conditions, complications, medication 2. Perform, demonstrate and document a physical examination including a vascular and cardiac examination that is appropriate for the clinical presentation 3. Generate and present a differential diagnosis based on clinical presentation and prioritize based on “cannot miss”, most likely diagnosis and severity	Small group discussion followed by bedside clinics	Physical examination station in OSCE Short case	
IM2.9		1. Distinguish and differentiate between stable and unstable angina and AMI based on the clinical presentation 2. Discuss emergent management of a case of acute coronary syndrome prior to referral to a tertiary centre	Case based discussion	History station in OSCE	

Number	COMPETENCY The student should be able to	SLOs	Suggested Learning methods	Suggested Assessment methods	Vertical Integration
IM2.11,2.12, 2.13	Investigations in IHD	1.Order and interpret markers of acute myocardial infarction 2. Choose and interpret a lipid profile and identify the desirable lipid profile in the clinical context 3. Discuss and enumerate the indications for and findings on echocardiogram, stress testing and coronary angiogram	Small group discussion Case based discussion	Data interpretation station I OSCE Viva voce	
IM2.14,2.15, 2.16, 2.18, 2.19, 2.20 ,2.23	Acute coronary syndrome	1. Discuss pathogenesis, recognition and management of ACS & its complications 2. Discuss indications for admission to a CCU 3. Discuss indications for acute thrombolysis, PTCA and CABG 4. Discuss indications, formulations, doses, side effects and monitoring for drugs used in the management of dyslipidemia 5. Describe indications for nitrates, anti-platelet agents, gpIIb IIIa inhibitors, beta blockers, ACE inhibitors etc. in the management of coronary syndromes	Lecture	SEQ MEQ	
IM2.17	Discuss and describe the indications and methods of cardiac rehabilitation		Small group discussion Interdisciplinary learning with physiotherapy team	Short answer	
IM2.20	Discuss and describe the assessment and relief of pain in acute coronary syndromes		Lecture	Short answer	Pharmacology
IM2.21	Observe and participate in a		Skill lab session	NA	

	controlled environment an ACLS program				
IM2.22	Perform and demonstrate in a mannequin BLS		Skill lab session	Skill assessment	

Number	COMPETENCY The student should be able to	SLOs	Suggested Learning methods	Suggested Assessment methods	Vertical Integration
IM2.24	Counselling	1. Counselling patient with IHD 2. Communication with empathy of lifestyle changes in patients with atherosclerosis	Small group discussion Clerkship	Counselling station in OSCE	AETCOM
IM3.1,3.2,3.3,	Pneumonia	1. Define community acquired pneumonia, nosocomial pneumonia and ventilator associated pneumonia 2.Discuss etiology of pneumonia depending on setting and patient immune status 3. Describe pathogenesis, clinical features and complications of pneumonia	Lecture	Short essay	Human Anatomy, Pathology, Microbiology
3.11, 3.12, 3.13, 3.15, 3.16	Investigations and treatment of pneumonia	1. Enumerate indications for HRCT, Viral cultures, PCR 2. Select appropriate empirical antimicrobial based on the likely etiology 3.. Describe and enumerate the indications for hospitalization in patients with pneumonia 4. Describe and enumerate the indications for isolation and barrier nursing in patients with pneumonia	Lecture	Case based MCQ Short answer	
IM3.4,3.5.3.6,3.7	History and examination in pneumonia	1.Elicit document and present an appropriate history including the	Small group discussion Bedside clinic	Short case	

		evolution, risk factors including immune status and occupational risk 2.Demonstrate general & systemic examination to confirm diagnosis, severity and complications 3. Generate differential diagnosis based on history and examination 4. Order and interpret diagnostic tests based on the clinical presentation			

Number	COMPETENCY The student should be able to	SLOs	Suggested Learning methods	Suggested Assessment methods	Vertical Integration
IM3.8	Perform ABG	Demonstrate in a mannequin & interpret results of an arterial blood gas examination	Skill lab	Skill assessment	
IM3.9	Perform pleural aspiration	Demonstrate in a mannequin and interpret results of a pleural fluid aspiration	Skill lab	Skill assessment	
IM3.10	Blood culture	Demonstrate the correct technique in a mannequin and interpret results of a blood culture	DOAP session	Skill assessment	Microbiology
IM3.14	Gram stain & AFB	Perform and interpret a sputum gram stain and AFB	Clerkship (side lab)	Documentation in logbook	Microbiology
IM3.17	Oxygen therapy	Discuss advantages & disadvantages of methods of supplemental oxygen delivery Choose method of supplemental oxygen delivery b	Lecture	Short answer	
IM3.18 IM3.19	Counselling	Communicate and counsel patient and family on the diagnosis and therapy of pneumonia Educate and motivate patients for pneumococcal and influenza vaccine	Small group discussion Clerkship	Documentation in logbook	

Number	COMPETENCY The student should be able to	SLOs: By the end of the session the student will be able to describe/discuss/demonstrate	TL methods	Suggested Assessment methods	Vertical Integration
IM4.1,4.2,4.4 4.5	Describe and discuss the febrile response	1. The influence of host immune status, risk factors and comorbidities on the febrile response 2. The influence of special populations on the febrile response including: the elderly, immune suppression, malignancy and neutropenia, HIV 3. The pathophysiology and manifestations of inflammatory causes of fever 4. The pathophysiology and manifestations of malignant causes of fever including hematologic and lymph node malignancies	Lecture	1. LEQ 2. MEQ	Microbiology
IM4.3	Discuss and describe the common causes, pathophysiology and manifestations of fever in various regions in India	1. Pathophysiology, clinical features of Dengue 2. Pathophysiology, clinical features of Chikungunya 3. Pathophysiology, clinical features of typhus	Lecture	SEQ	Microbiology, Community Medicine
IM4.6, 4.23,4.26	Discuss and describe the pathophysiology clinical features, diagnosis and treatment of malaria	1. Epidemiology, etiopathogenesis of malaria 2. Diagnosis of malaria 3. Complications and treatment of malaria 4. Prescribe drugs for malaria based on the species identified, prevalence of drug resistance and national programs. 5. Discuss the pharmacology, indications, drug reactions, and basis of resistance in antimalarial drugs 6. Counsel the patient on malarial prevention	Lecture followed by Case based learning	SEQ	Microbiology Pharmacology
IM4.7	Discuss and describe the pathophysiology and manifestations of the sepsis syndrome	1. Etiopathogenesis of sepsis 2. Clinical features and Diagnosis of sepsis	Lecture	EQ	

		3. Management of sepsis : antibiotics, vasopressors, mechanical ventilation			
IM4.8, 4.16	Discuss and describe the pathophysiology, aetiology and clinical manifestations of fever of unknown origin (FUO) including in a normal host, neutropenic host, nosocomial host and a host with HIV disease	1. Definition of FUO 2. Causes of PUO, as relevant to India 3. Investigation and Diagnosis of PUO 4. Enumerate the indications and describe the findings in tests of inflammation and specific rheumatologic tests, serologic testing for pathogens including HIV, bone marrow aspiration and biopsy	Lecture followed by Small group discussion	Written	Microbiology
IM4.9,4.10,	History and examination in fever case	1. evolution and pattern of fever 2. associated symptoms 3. immune status, comorbidities, risk factors, exposure 4. Perform physical examination in a case of fever : including skin mucosae, lymph node examination, chest, liver, spleen	Case based discussion Bedside clinic	History station in OSCE	Microbiology

Number	**COMPETENCY** **The student should be able to**	**SLOs**	**TL methods**	**Suggested Assessment methods**	**Vertical Integration**
IM4.11,4.21,4.24, 4.25	Generate a differential diagnosis and prioritize based on clinical features that help distinguish between infective, inflammatory, malignant and rheumatologic causes	5. List differentials for PUO after history and examination 6. Develop and present an appropriate diagnostic plan based on the clinical presentation, most likely diagnosis in a prioritized and cost-effective manner 7. Develop an appropriate empiric treatment plan based on the patient's clinical and immune status pending definitive diagnosis	Case based discussion Bedside clinic	EQ Viva Communication station in OSCE	

		8. Communicate diagnosis and treatment to patient family			
IM4.12,4.18	Order and interpret the following diagnostic tests based on the differential diagnosis	1. CBC with differential, peripheral smear, urinary analysis with sediment, Chest X ray, blood and urine cultures, sputum gram stain and cultures, sputum AFB and cultures, CSF analysis, pleural and body fluid analysis, stool routine and culture and QBC 2. Enumerate the indications for use of imaging in the diagnosis of febrile syndromes	Small group discussion Clerkship(learner doctor)	SEQ Viva Log book	Pathology, Microbiology
IM4.13,4.14, 4.15, 4.17,4.19 ,4.20	Perform and interpret relevant investigations in case of fever	1.sputum gram stain 2. sputum AFB 3. malarial smear 4. Observe & assist in performance of bone marrow aspiration & biopsy in simulated environment 5. Assist in the collection of blood and wound cultures 6. Interpret a PPD	Clerkship(learner doctor)	Log book	Microbiology

Number	COMPETENCY The student should be able to	SLOs	Suggested Learning methods	Suggested Assessment methods	Vertical Integration
IM5.1	Hyperbilirubinemia	Describe and discuss the physiologic and biochemical basis of hyperbilirubinemia	Lecture	Written/viva voce	
IM5.2 IM5.3	Hepatic injury	1.Describe and discuss the aetiology and pathophysiology of liver injury 2.Describe and discuss the pathologic changes in various forms of liver disease	Lecture	Written/viva voce	
IM5.4	Hepatitis	1.Describe and discuss the epidemiology, microbiology, immunology and clinical evolution of infective (viral) hepatitis 2. Discuss the management of Hepatitis B & C	Lecture	Written/viva voce	
IM5.5	Alcoholic liver disease	Discuss the etiopathogenesis, clinical features, diagnosis & management of alcoholic liver disease	Lecture	Written/viva voce	
IM5.6	Cirrhosis & PHT	Describe and discuss the pathophysiology, clinical evolution and complications of cirrhosis and portal hypertension including ascites, spontaneous bacterial peritonitis, hepatorenal syndrome and hepatic encephalopathy	Lecture	Written/viva voce	
IM5.16	Management of cirrhosis with PHT	Describe management of hepatitis, cirrhosis, portal hypertension, ascites spontaneous, bacterial peritonitis and hepatic encephalopathy	Lecture	Written/viva voce	

IM5.7	Drug induced liver injury	Enumerate and describe the causes and pathophysiology of drug induced liver injury	SDL	Short answer	
IM5.8	Cholecystitis, cholelithiasis	Describe and discuss the pathophysiology, clinical evolution and complications cholelithiasis and cholecystitis	Lecture	Essay Viva voce	General Surgery
IM5.9 5.10 5.11	History & examination in liver disease	1. Elicit medical history in a case of liver disease including clinical presentation, risk factors, drug use, sexual history, vaccination history and family history 2.Perform a systematic examination that establishes the diagnosis and severity and complications of liver disease 3.Generate a differential diagnosis and prioritize based on clinical features that suggest a specific aetiology for the presenting symptom	Small group discussion Bedside clinic	Skill assessment	
IM5.12 5.13 5.14	Investigations in liver disease	Choose and interpret appropriate diagnostic tests including: CBC, bilirubin, function tests, Hepatitis serology and ascitic fluid examination in patient with liver diseases. Enumerate modalities of investigations in liver disease and discuss indications , advantages and disadvantages of each Outline a diagnostic approach to liver disease based on hyperbilirubinemia, liver function changes and hepatitis serology	Lecture	Skill assessment	Pathology

Number	COMPETENCY The student should be able to	SLOs	Suggested Learning methods	Suggested Assessment methods	Vertical Integration
IM5.15	Ascitic tap	1. Assist in the performance of an ascitic fluid analysis interpret the findings of ascitic fluid analysis	DOAP session Clerkship	documentation in log book	
IM5.17	Vaccination in liver disease	1. Enumerate the indications for vaccination in liver disease 2. counsel patients for vaccination in liver disease	1. Visit to immunization clinic 2. Clerkship	1. Viva voce 2. documentation in log book	Microbiology
IM5.18	Hepatic transplantation	Enumerate the indications for hepatic transplantation	Lecture SDL	Written/ Viva voce	

Number	**COMPETENCY** **The student should be able to**	**SLOs**	**Suggested TL methods**	**Suggested Assessment methods**	**Vertical Integration**
IM6.8,6.9, , 6.10, 6.11,6.16, 6.12, 6.17, 6.18,6.13	Diagnosis and management of HIV AIDS , and opportunistic infections	1.Enumerate the indications and describe the findings for CT , MRI, ABG, CXR 2. Describe and enumerate the indications and side effects of drugs for bacterial, viral and other types of diarrhoea 3. Discuss and describe the principles of HAART, the classes of antiretrovirals used, adverse reactions and interactions 4.Discuss and describe the principles and regimens used in post exposure prophylaxis	Lecture	Short answer MCQ	

		5.Enumerate the indications and discuss prophylactic drugs used to prevent HIV related opportunistic infections			
IM6.14	Perform and interpret AFB sputum		DOAP session	Skill assessment	Microbiology
IM6.15	Demonstrate in a model the correct technique to perform a lumbar puncture		Simulation	Skill assessment	Microbiology

Number	**COMPETENCY** **The student should be able to**	**SLOs**	**Suggested Learning methods**	**Suggested Assessment methods**	**Vertical Integration**
IM6.19,6.20,6.21 6.22,6.23	Counsel patients at diagnosis of HIV, and prevention of HIV transmission	1. Communicate diagnosis, treatment plan and subsequent follow up plan to patients 2. Communicate with patients on the importance of medication adherence 3. Demonstrate understanding of ethical and legal issues regarding patient confidentiality and disclosure in patients with HIV 4. Demonstrate a non-judgmental attitude to patients with HIV and to their lifestyles	Small group discussion Clinical clerkship Tag along	Communication station of OSCE	AETCOM

s

	Competencies	SLOs	Suggested TL methods	Suggested assessment	Vertical Integration
IM7.1 IM7.2 7.15	Introduction to autoimmunity	1.Describe the pathophysiology of autoimmune disease 2. Describe the genetic basis of autoimmune disease 3. Enumerate the indications for and interpret the results of : CBC, anti- CCP, RA, ANA, DNA and other tests of autoimmunity	Lecture	Short essay Viva voce	Pathology
7.22 7.23 7.19	Rheumatoid arthritis	1.Describe the systemic manifestations of rheumatoid arthritis 2.Etiopathogenesis, clinical features, diagnosis of rheumatoid arthritis 3.Select, prescribe and communicate treatment option for rheumatoid arthritis 4.Describe the basis for biologic and disease modifying therapy in rheumatoid arthritis 5.Develop an appropriate treatment plan for patients with rheumatoid arthritis	Lecture	Essay question MEQ	Pathology
	SLE	1.Describe the systemic manifestations of Systemic Lupus Erythematosus 2.Etiopathogenesis, clinical features, diagnosis of Systemic Lupus Erythematosus 3.Select, prescribe and communicate treatment option for Systemic Lupus Erythematosus 4.Describe the therapy of Systemic Lupus Erythematosus 5.Develop an appropriate treatment plan for patients with Systemic Lupus Erythematosus	Lecture		
	Systemic sclerosis	Etiopathogenesis, clinical features & management of systemic sclerosis	Lecture		
IM7.3 7.4 7.5 7.6 7.7	Approach to joint pain	1.Classify cause of joint pain based on the pathophysiology 2.Develop a systematic clinical approach to joint pain 3.Describe and discriminate acute, subacute and	Lecture	Written/ Viva voce	

7.8 7.10		chronic causes of joint pain 4.Discriminate, describe and discuss arthralgia from arthritis and mechanical from inflammatory causes of joint pain 5.Discriminate articular from periarticular complaints 6.Determine the potential causes of join pain based on the presenting features of joint involvement 7.Describe the common signs and symptoms of articular and periarticular diseases			

Number	COMPETENCY The student should be able to	SLOs	Suggested Learning methods	Suggested Assessment methods	Vertical Integration
IM7.11 IM7.12 IM7.13 7.14	History & examination in Rheumatoid arthritis	Elicit document and present a medical history that will differentiate the etiologies of disease 2. Perform a systematic examination of all joints, muscle and skin that will establish the diagnosis and severity of disease 3. Generate a differential diagnosis and prioritize based on clinical features that suggest a specific aetiology 4. the appropriate diagnostic work up based on the presumed aetiology	Bedside clinic Small group discussion	Physical examination station in ISCE Short case	
IM7.16,7.17	Investigations in rheumatologic disease	Enumerate the indications for arthrocentesis Enumerate the indications and interpret plain radiographs of joints	Case based discussion	Written/ Viva voce	
IM7.18-7.27	Management & counselling in autoimmune diseases	1.Communicate diagnosis, treatment plan and subsequent follow up plan to patients 2.Select, prescribe and communicate appropriate medications for relief of joint pain 3.Select, prescribe and communicate preventive therapy for crystalline arthropathies 4.Communicate and incorporate patient preferences in the choice of therapy 5.Develop and communicate appropriate follow up and monitoring plans for patients with rheumatologic conditions 6. Demonstrate an understanding of the impact of rheumatologic conditions on quality of life, well-being, work and family 7.. Determine the need for specialist consultation	Clerkship Case based discussion	Communication station in OSCE Short answer	
	Competency	SLOs	Suggested TL	Suggested assessment	Integration
IM8.1, IM8.2 IM8.3 IM8.4 IM8.5 8.7	Hypertension	1. Discuss the epidemiology, aetiology and the prevalence of primary and secondary hypertension 2. Discuss the pathophysiology of hypertension 3.define and classify hypertension and discuss the differences between primary and secondary hypertension	Lecture	Long essay	Pathology, physiology

IM8.20 8.14		4. discuss etiology and clinical features of secondary HTN 5. Develop an appropriate treatment plan for essential hypertension 6..determine the need for specialist consultation			
IM8.6 IM8.8 IM 8.15	Acute & chronic complications of HTN	1. Discuss and recognize hypertensive urgency and emergency 2. Manage hypertensive emergencies 3. Discuss and identify target organ damage due to hypertension	Lecture	Clinical scenario based short essay	

Number	Competency The student should be able to	SLOs	Suggested learning methods	Suggested assessment methods	Vertical integration	
IM8.9 IM8.10 IM8.11 IM8.12	Examination of a case of hypertension	1.elicit medical history in a case of HTN 2.perform systematic including measurement of bp, fundus, examination of vasculature and heart 3. Generate a differential diagnosis 4. Describe the appropriate diagnostic work up based on the presumed aetiology	Small group discussion Bedside clinics	Short case		
IM8.16 IM8.18 IM8.19		1.develop and communicate to the patient lifestyle modification including weight reduction, moderation of alcohol intake, physical activity and sodium intake 2. Incorporate patient preferences in the management of HTN 3. Demonstrate understanding of the impact of hypertension on quality of life, well-being, work and family	Small group discussion Clerkship	Documentation in log book		
IM8.17	Perform and interpret a 12 lead ECG		DOAP session	Documentation in log book/ skills station		

IM9.1, 9.2, ,9.6, 9.7,9.8, 9.9,9.12 9.13	Iron deficiency anemia	1.Define & classify anemia 2. Describe morphology, aetiology and prevalence of various causes of anemia 3. Describe the diagnostic work up of anemia 4.describe the interpretation of the hemogram and the tests for iron deficiency	Lecture	Essay question	Pathology
IM9.3	Elicit, document and present medical history in a case of anemia	1. Enquire for symptoms of anemia 2. Possible causes : GI bleeding, prior history, medications, menstrual history, and family history	Bed side clinic	OSCE history station	
IM9.4	Perform a general physical and relevant systemic examination in a case of anemia	1. examination for pallor, icterus, lymphadenopathy, sternal tenderness, evidence of CTD 2. check for hyper dynamic circulation, spleen, liver	Bedside clinic	OSCE – physical examination station – general physical examination/abdomen	
IM9.5,9.11	Generate a differential diagnosis in a case of anemia in order of likelihood and prioritize based on clinical features that suggest a specific aetiology	1. given clinical features and hemogram in a case of anemia , to generate a differential diagnosis in order of likelihood	Small group discussion Case based learning	Modified essay question Data interpretation question	Pathology
IM9.9,9.13	Macrocytic anemia	1. list causes of macrocytic anemia 2. describe pathogenesis of various types of macrocytic anemia 3. Order and interpret for diagnosis of macrocytic anemia 4. Describe treatment of different causes of macrocytic anemia	Lecture class	SEQ	Pathology
IM9.10	Perform bedside investigations in a case of anemia	1. Perform and interpret peripheral blood smear 2. Check stool for occult blood	Clerkship(learner doctor)	Log book	Pathology

Number	COMPETENCY The student should be able to	SLOs	Suggested TL methods	Suggested Assessment methods	Vertical Integration
IM9.11	Bone marrow biopsy	1. Student should be able to enumerate the indications for bone marrow biopsy and describe the procedure of bone marrow biopsy	Small group discussion	Written/ Viva voce/ Skill assessment	Pathology
IM9.14	Describe the national programs for anemia prevention		Lecture	Written/ Viva voce	Pharmacology, Community Medicine
IM9.15,9.16 9.20	Patient counselling in anemia	1. Communicate the diagnosis and the treatment appropriately to patients 2. Incorporate patient preferences in treatment of anemia Communicate and counsel patients with methods to prevent nutritional anemia	DOAP session	Skill assessment	
IM9.17,9.18	Blood transfusion	Describe the indications for blood transfusion and the appropriate use of blood components Describe the precautions required necessary when performing a blood transfusion	Lecture, Small group discussion	Viva voce	Pathology
IM9.19	Assist in a blood transfusion		Clerkship (learner doctor)	document in log book	
	Polycythemia	1.define and classify polycythemia 2. discuss clinical features and differentiation of primary and secondary polycythemia 3.describe investigations and management of polycythemia rubra vera	Lecture		
	Leukemia	1. Enumerate leukemias common in adults 2. Describe clinical features of leukemia in adults 3. Discuss diagnosis and management of leukemia	Lecture		
	Multiple myeloma	Describe the clinical features, diagnosis and management of multiple myeloma	Lecture		

		SLOs	Suggested TL method	Suggested assessment	Vertical integration	
IM10.1 IM10.2 IM10.3 IM10.4 IM10.25	AKI	1. Define renal insufficiency. Distinguish between acute & chronic renal insufficiency 2. Describe the pathophysiology & causes of pre renal, renal and post renal AKI 3. Describe the evolution, natural history and treatment of AKI 4. Identify and describe the priorities in the management of ARF including diet, volume management, alteration in doses of drugs, monitoring and indications for dialysis	Lecture	Essay question	Pathology	

Number	COMPETENCY The student should be able to	SLOs	Suggested Learning methods	Suggested Assessment methods	Vertical Integration
IM10.5 IM10.6 IM10.7 IM10.8 IM 10.27 IM 10.28	CKD	1. Discuss the aetiology of CKD 2. Stage Chronic Kidney Disease 3. discuss the pathophysiology & clinical features of uremia 4. discuss the significance of proteinuria in CKD 5. discuss the indications for hemodialysis 6. discuss renal replacement therapy	Lecture	Short essay	Pathology
IM10.9 IM10.10 IM10.11 IM10.26	Complications of CKD	1.discuss pathophysiology of anemia & hyperparathyroidism in CKD 2. discuss association between CKD glycemia and hypertension 3. discuss relationship between CAD risk factors and CKD 4. discuss supportive therapy in CKD	Lecture	Short answer	Pathology
IM10.12 IM10.13 IM10.14	Examination of patient with renal disease	1.Elicit history to differentiate between AKI & CKD and to suggest aetiology of renal disease 2.Perform systematic examination to establish diagnosis and stage of CKD, and features of uremia 3.Generate differential diagnosis to suggest specific etiology	Small group discussion Bedside clinic	Short case	

Number	COMPETENCY The student should be able to	SLOs	Suggested Learning methods	Suggested Assessment methods	Number required to certify	Vertical Integration
IM10.15 IM10.16 IM10.17 IM10.18 IM10.19 IM10.20	Investigations in renal disease	1.Describe the appropriate diagnostic work up based on presumed aetiology 2. Enumerate indications for and interpret the results of : renal function tests, calcium, phosphorus, PTH, urine electrolytes, osmolality, Anion gap 3.Describe and calculate indices of renal function 4. Identify ECG findings in hyperkalemia 5. Enumerate indications and describe findings in renal ultrasound 6. discuss indications to perform arterial blood gas analysis: interpret the data	Lecture	Skill assessment / Written/ Viva voce		
IM10.21 IM10.22	Femoral/jugular catheterization	1. discuss indications for and insert a peripheral intravenous catheter 2. discuss the indications, demonstrate in a model and assist in the insertion of a central venous or a dialysis catheter	DOAP session, skill lab	document ation in logbook		

Number	COMPETENCY The student should be able to	SLOs	Suggested Learning methods	Suggested Assessment methods	Vertical Integration
IM10.24 IM10.29 IM10.30 IM10.31 IM10.23	Patient counselling & ethical issues	1.Counsel patients on a renal diet 2.discuss and communicate the ethical and legal issues involved in renal replacement therapy	Small group discussion Clerkship	Documentation in logbook	

		3. Recognize the impact of CKD on patient's quality of life well-being work and family 4.Incorporate patient preferences in to the care of CKD 5. Communicate diagnosis treatment plan and subsequent follow up			

Number	**COMPETENCY** **The student should be able to**	**SLOs**	**Suggested TL methods**	**Suggested Assessment methods**	**Vertical Integration**
IM11.1 IM11.2 IM11.3 IM11.4	Diabetes	1.Define and classify diabetes 2.Discuss the epidemiology and pathogenesis and risk factors and clinical evolution of type 1 diabetes 3.Discuss the epidemiology , pathogenesis and risk factors economic impact and clinical evolution of type 2 diabetes 4.Describe and discuss the genetic background and the influence of the environment on diabetes	Lecture		
IM11.5 IM11.6	Complications of diabetes	1.Describe and discuss the pathogenesis and temporal evolution of microvascular and macrovascular complications of diabetes 2.Describe and discuss the pathogenesis and precipitating factors, recognition and management of diabetic emergencies	Lecture		
IM11.7,11.8	History and examination of a patient with diabetes	1. Elicit document and present a medical history that will differentiate the aetiologies of diabetes including risk factors, precipitating factors, lifestyle,	Bedside clinic	History station in OSCE Examination station in OSCE (	

		nutritional history, family history, medication history, co-morbidities and target organ disease 2. Perform a systematic examination that establishes the diagnosis and severity that includes skin, peripheral pulses, blood pressure measurement, fundus examination, detailed examination of the foot (pulses, nervous and deformities and injuries)		GPE, foot examination, checking for DPN)	
IM 11.12,11.13	Bedside investigations in a patient with diabetes	1.Perform and interpret a capillary blood glucose test 2. Perform and interpret a urinary ketone estimation with dipstick	Small group discussion Clerkship – learner doctor	Skill assessment	Pathology, Biochemistry
IM11.11,11.16,11.17 11.18, 11.22	Management of diabetes	1. Order and interpret laboratory tests to diagnose diabetes and its complications 2.Discuss and describe the pharmacologic therapies for diabetes their indications, contraindications, adverse reactions and interactions	Lecture followed by small group discussion	Short essay	Pharmacology
		3.Outline a therapeutic approach to therapy of T2Diabetes based on presentation, severity and complications in a cost-effective manner 4. Describe and discuss the pharmacology, indications, adverse reactions and interactions of drugs used in the prevention and treatment of target organ damage and complications of Type II Diabetes including neuropathy, nephropathy, retinopathy, hypertension, dyslipidemia and cardiovascular disease 4.Enumerate the causes of hypoglycemia and describe the		MEQ	

		counter hormone response and the initial approach and treatment			

Number	COMPETENCY The student should be able to		Suggested Learning methods	Suggested Assessment methods	Vertical Integration
IM11.19,11.20, 11.21	Education and counselling of patient with diabetes	1.Demonstrate and counsel patients on the correct technique to administer insulin 2.Demonstrate to and counsel patients on the correct technique of self-monitoring of blood glucoses 3.Recognise the importance of patient preference while selecting therapy for diabetes	Small group discussion Clerkship – learner doctor	OSCE – communication station	Pharmacology
IM12.1,12.2,12.3 12.4,12.12 12.13, 12.14, 12.15	Etiopathogenesis, diagnosis and management of thyroid disorders	1. Discuss the etiopathogenesis if hypothyroidism and hyperthyroidism 2. Describe and discuss the physiology of the hypothalamopituitary - thyroid axis, principles of thyroid function testing 3. Describe and discuss the principles of radio iodine uptake in the diagnosis of thyroid disorders 4. Describe the pharmacology, indications, adverse reaction, interactions of thyroxine and antithyroid drugs 5. Discuss iodization programs of GOI 6. Write and communicate to the patient appropriately a prescription for thyroxine based on age, sex, and clinical and biochemical status	Lecture	Essay question, short essay	Pathology, Physiology

Number	COMPETENCY The student should be able to	SLOs	Suggested Learning methods	Suggested Assessment methods	Vertical Integration
IM,12.6 12.7,12.8,	History, examination and bedside diagnosis of thyroid disorders	1.Elicit document and present an appropriate history that will establish the diagnosis cause of thyroid dysfunction and its severity 2. Perform and demonstrate examination of thyroid, including signs of thyrotoxicosis and hypothyroidism, palpation of the pulse for rate and rhythm abnormalities, neck palpation of the thyroid and lymph nodes and cardiovascular findings	Bedside clinic	OSCE Short case	
		3.Generate a differential diagnosis based on the clinical presentation and prioritize it based on the most likely diagnosis			
IM12.9,12.10, 12.11,		1.Order and interpret diagnostic testing for thyroid disease 2. Identify atrial fibrillation, pericardial effusion and bradycardia 3.Interpret TFT	Small group discussion	Short essay question Modified essay question	
	Etiopathogenesis, diagnosis and management of Cushing's syndrome	1. Discuss the etiopathogenesis of Cushing's syndrome 2. Describe the clinical features of Cushing's syndrome 3. Describe the diagnosis and management of Cushing's syndrome	Lecture		

	Etiopathogenesis, diagnosis and management of Addison's disease	1. Discuss the etiopathogenesis of Addison's disease 2. Describe the clinical features of Addison's disease 3. Describe the diagnosis and management of Addison's disease	Lecture		

	Competency	SLOs	TL method	Assessment	Integration
IM13.1 IM13.2 IM13.3 IM13.4	Introduction to cancer	1. Describe clinical epidemiology , inherited & modifiable risk factors for common malignancies in India 2.Describe the genetic basis of selected cancers 3.Describe the relationship between infection and cancers 4.Describe the natural history, presentation, course, complications and cause of death for common cancers	Lecture	Short note	Pathology, Biochemistry
IM13.5 IM13.6 IM13.16 IM13.17 IM13.18 IM13.19	Palliative care & pain relief	1.Describe common issues encountered in patients at the end of life and principles of management 2. distinguish between curative and palliative care in patients with cancer 3.Demonstrate an understanding of needs and preferences of patients when choosing curative and palliative therapy 4. Discuss indications, use, side effects of narcotics in pain alleviation in patients with cancer 5. Discuss ethical & medico legal issues involved in end-of-life care 6. Describe therapies used in alleviating suffering in patients at the end of life	Lecture	Short note/ Viva voce	
IM13.7 IM13.8 IM13.10	History & examination in a case of cancer	1.Elicit history that will help establish aetiology of cancer 2. Perform physical examination	Small group discussion Bedside clinic	Skill assessment/ Short case	

		including general and local examination to identify diagnosis, extent of spread and complications of cancer 3.Generate a differential diagnosis based on the presenting symptoms and clinical features			
IM13.9		Demonstrate in a mannequin the correct technique for performing breast exam, rectal examination and cervical examination and pap smear	Skill lab	Skill assessment/ Short case	Human Anatomy

Number	COMPETENCY The student should be able to	SLOs	Suggested Learning methods	Suggested Assessment methods	Vertical Integration
IM13.11 IM13.12 IM13.13 IM13.14 IM13.15	Investigation & management in cancer	1. Order and interpret diagnostic testing based on clinical diagnosis including CBC and stool occult blood and prostate specific antigen 2.Describe indications and interpret results of Chest X Ray, mammogram, skin and tissue biopsies and tumor markers used in common cancers 3.Describe and assess pain and suffering objectively in a patient with cancer 4.Describe the indications for surgery, radiation and chemotherapy for common malignancies 5.Describe the need, tests involved, their utility in the prevention of common malignancies	Small group discussion	Short note/ Viva voce	Radiodiagnosis

	Competency	SLOs	TL methods	Assessment	Integration
IM14.1 IM14.2 IM14.3 IM14.5	Overview	Define and measure obesity as it relates to the Indian population Describe and discuss the aetiology of obesity including modifiable and non-modifiable risk factors and secondary causes Describe and discuss the monogenic forms of obesity Describe and discuss the natural history of obesity and its complications	Lecture	Written/viva voce	
IM14.6 IM14.7 IM14.8	Examination	Elicit and document and present an appropriate history that includes the natural history, dietary history, modifiable risk factors, family history, clues for secondary causes and motivation to lose weight Perform, document and demonstrate a physical examination based on the history that includes general examination, measurement of abdominal obesity, signs of secondary causes and comorbidities Perform, document and demonstrate a physical examination based on the history that includes general examination, measurement of abdominal obesity, signs of secondary causes and comorbidities	Small group discussion Bedside clinic	Short case	
IM14.9 IM14.10	Investigation of obesity	Order and interpret diagnostic tests based on the clinical diagnosis including blood glucose, lipids, thyroid function tests etc. Perform, document and demonstrate a physical examination based on the history that includes general examination, measurement of abdominal obesity, signs of secondary causes and comorbidities	Lecture	Written/viva voce	

IM14.11 IM14.12	Counselling & education	Communicate and counsel patient on behavioural, dietary and lifestyle modifications Demonstrate an understanding of patient's inability to adhere to lifestyle instructions and counsel them in a non - judgmental way	Clerkship Case based discussion	Documentation in logbook	
IM14.13 IM14.14 IM14.15	Management of obesity	Describe and enumerate the indications, pharmacology and side effects of pharmacotherapy for obesity Describe and enumerate the indications and side effects of bariatric surgery Describe and enumerate and educate patients, health care workers and the public on measures to prevent obesity and promote a healthy lifestyle	Lecture	Written/viva voce	

	Competency	SLOs	TL methods	Assessment	Integration
IM15.1 IM15.2	GI bleed	1. Discuss the aetiology of upper and lower GI bleeding 2. Discuss the evaluation & stabilization of patient who presents with GI bleed	Lecture	Short essay	Pathology
IM15.3		Discuss the physiologic effects of acute blood and volume loss	SDL – pre reading	Viva voce	Pathology, Physiology
IM15.4 IM15.5 IM15.6 IM15.8	Examination of patient with GI bleed	1. Elicit history to identify source of GI bleed, amount of bleed & hemodynamic compromise 2.Perform physical examination including general examination, volume assessment and abdominal examination 3. Distinguish between upper & lower GI bleed 4.Generate a differential diagnosis based on the presenting symptoms and clinical features and prioritize based on the most likely diagnosis	Small group discussion Bedside clinic	Long case	
IM15.7		Demonstrate the correct technique to perform an anal and rectal examination in a mannequin or equivalent	DOAP session	Skill assessment	

Number	COMPETENCY The student should be able to	SLOs	Suggested Learning methods	Suggested Assessment methods	Vertical Integration
IM15.9 IM15.10 IM15.11 IM15.12 IM15.14 IM15.16 IM15.17 IM15.15	Investigation & management of GI bleed	Choose and interpret diagnostic tests : CBC, PT and PTT, stool occult blood, LFT H.pylori test. Enumerate the indications for endoscopy, colonoscopy Develop treatment plan including fluid resuscitation, blood and blood component transfusion and arresting bleed Enumerate indications for whole blood, component and platelet transfusion and describe the clinical features and management of a mismatched transfusion Discuss pharmacotherapy of acute GI bleed Enumerate the indications for endoscopic interventions and Surgery Determine appropriate level of specialist consultation Describe pharmacotherapy of acid peptic disease including Helicobacter pylori	Case based discussion	Modified essay Question	

IM15.13	Observe cross matching and blood / blood component transfusion		Small group discussion Clerkship	Documentation in logbook	Pathology
IM15.18	Counsel the family and patient in an empathetic non-judgmental manner on the diagnosis and therapeutic options		Small group discussion Clerkship	Documentation in logbook	

Number	COMPETENCY The student should be able to	SLOs	Suggested Learning methods	Suggested Assessment methods	Vertical Integration
IM16.3 16.6 16.12 16.13 16.14	Diarrhoea	1. Describe and discuss the chronic effects of diarrhoea including malabsorption 2. Distinguish between diarrhoea and dysentery based on clinical features 3. Enumerate and discuss the indications for further investigations including antibodies, colonoscopy, diagnostic imaging and biopsy in the diagnosis of chronic diarrhoea 4. Describe and enumerate the indications, pharmacology and side effects of pharmacotherapy for parasitic causes of diarrhoea 5. Describe and enumerate the indications, pharmacology and side effects of pharmacotherapy for bacterial and viral diarrhoea	Lecture	Short note	
IM16.4 16.5 16.7 16.8	History, examination and diagnosis in a case of diarrhoea	1.Elicit and document and present an appropriate history that includes the natural history, dietary history, travel , sexual history and other concomitant illnesses 2.Perform, document and demonstrate a physical examination based on the history that includes GPE & abdomen exam 3. Generate a differential diagnosis based on the presenting symptoms and clinical features 4.Choose and interpret diagnostic tests based on the clinical diagnosis including complete blood count, and stool examination	Bedside clinic	Short case OSCE history station	Microbiology, Pathology

IM16.9 16.10 16.11	Investigations in diarrhoea	Identify common parasitic causes of diarrhoea under the microscope in a stool specimen Identify vibrio cholera in a hanging drop specimen Enumerate the indications for stool cultures and blood cultures in patients with acute diarrhoea	DOAP session (1 hour)	Skill assessment	Microbiology

Number	**COMPETENCY** **The student should be able to**		**Suggested Learning methods**	**Suggested Assessment methods**	**Vertical Integration**
IM16.15 16.16 16.17	IBD	Choose and interpret diagnostic tests based on the clinical diagnosis including complete blood count, and stool examination Describe and enumerate the indications, pharmacology and side effects of pharmacotherapy including immunotherapy Describe and enumerate the indications for surgery in inflammatory bowel disease	Lecture followed by case-based discussion	Short note	Pathology

	Competency	SLOs	TL methods	Assessment	
IM17.1 IM17.3 IM17.10	Headache - introduction	1. Define & classify headache & describe clinical features of various types of headache 2.Classify migraine and describe the distinguishing features between classical and non-classical forms of migraine 3.Enumerate indications for emergency care, admission and	Lecture	Short essay Viva voce	

		immediate supportive care in patients with headache			
IM17.11 IM17.12	Vascular headache	1.Describe indications, pharmacology, dose, side effects of abortive therapy in migraine 2.Describe the indications, pharmacology, dose, side effects of prophylactic therapy in migraine	Lecture	Short essay	
IM17.2 IM17.4 IM17.5 IM17.6	History & examination in headache case	1.Elicit history including aura, precipitating aggravating and relieving factors, associated symptoms to identify the cause 2.Perform neurologic examination & look for signs of raised ICT 3. Generate differential diagnosis based on clinical features, & prioritize the diagnosis based on the presentation 4.Choose & interpret diagnostic testing based on clinical diagnosis including imaging	Small group discussion Bedside clinic	History station in OSCE	
17.9 IM17.7 IM17.13	Meningitis	1.Etiopathogenesis & clinical features of meningitis 2. describe the findings in the CSF in patients with meningitis 3.Describe the pharmacology, dose, adverse reactions and regimens of drugs used in the treatment of bacterial, tubercular and viral meningitis	Lecture	Short essay Viva voce	

Number	COMPETENCY The student should be able to		Suggested Learning methods	Suggested Assessment methods	Vertical Integration
IM17.8	Lumbar puncture	Demonstrate in a mannequin or equivalent the correct technique for performing a lumbar puncture	Skill lab	Skill assessment	Microbiology, Pathology
IM17.9	CSF analysis	Interpret the CSF findings when presented with various parameters of CSF fluid analysis	Case based discussion	Problem based short essay question	Microbiology, Pathology
IM17.14	Counselling	Counsel patients with migraine and tension headache on lifestyle changes and need for prophylactic therapy	Small group discussion Clerkship	Documentation in logbook	Pharmacology
	Competency	SLOs			
IM18.1	Neuroanatomy	Describe the functional and the vascular anatomy of the brain	Lecture	Short answer Diagram	Human Anatomy
IM18.2	Cerebrovascular accident	Classify cerebrovascular accidents & describe aetiology, predisposing risk factors & pathogenesis of hemorrhagic and non-hemorrhagic stroke	Lecture	SEQ	Pathology

Number	COMPETENCY The student should be able to	SLOs	Suggested Learning methods	Suggested Assessment methods	Vertical Integration
IM18.3 IM18.4 IM18.5 IM18.6 IM18.7 IM18.8	History & examination of a case of stroke	1.Elicit history including onset, progression, precipitating and aggravating relieving factors, associated symptoms that help identify the cause of stroke 2.Identify the nature of stroke based on the temporal evolution and resolution of the illness 3. Perform physical examination including general and a detailed neurologic examination as appropriate, based on the history 4.Distinguish lesion based on upper vs lower motor neuron, side, site and most probable nature of the lesion 5.Describe clinical features and distinguish, based on clinical examination, the various disorders of speech 6.Describe and distinguish, based on the clinical presentation, the types of bladder dysfunction seen in CNS disease	Small group discussion Bedside clinic	1. Long case 2.Physical examination station in OSCE	
IM18.9 IM18.10 IM18.11 IM18.12 IM18.13 IM18.14 IM18.15	Investigations & treatment of stroke	1.Choose and interpret appropriate diagnostic & imaging tests to delineate site & underlying cause of lesion 2. Choose and interpret appropriate diagnostic testing in young patients with a cerebrovascular accident (CVA) 3. Describe the initial supportive management of a patient presenting with a cerebrovascular accident (CVA) 4. Enumerate the indications for and describe acute therapy of non-hemorrhagic stroke including the use of	Lecture	1. data interpretation station in osce 2. Short answer	Radiodiagnosis

		thrombolytic agents 5.Enumerate the indications for and describe the role of anti-platelet agents in non-hemorrhagic stroke 6.Describe the initial management of a hemorrhagic stroke 7. Enumerate the indications for surgery in a hemorrhagic stroke			
IM18.16	Rehabilitation of stroke	observe the multidisciplinary rehabilitation of patients with a CVA	DOAP session		
IM18.17	Counselling	Counsel patient and family about the diagnosis and therapy in an empathetic manner	Small group discussion Clerkship	Documentation in logbook	

	Competency	SLOs			
IM19.1	Neuroanatomy basal ganglia	Describe the functional anatomy of the locomotor system of the brain	Lecture	Written/ Viva voce	Human Anatomy, Physiology
IM19.2	Movement disorders and Parkinson's disease	3. Classify movement disorders based on distribution, rhythm, repetition, exacerbating and relieving factors 4. Describe the clinical features of Parkinson's disease	Lecture	Written/ Viva voce	
IM19.3 IM19.4 IM19.5 IM19.6	History & examination of movement	1.Elicit history including onset, progression precipitating and aggravating relieving factors, associated symptoms to identify cause of	Small group discussion Bedside clinic	Short case Examination station in OSCE	

		movement disorders disorder 3.Perform physical examination that includes a general and detailed neurologic examination 4.Generate differential diagnosis & prioritize based on history & physical examination 5.Reach clinical diagnosis of location, nature and cause of lesion based on clinical presentation			
IM19.7 IM19.8 IM19.9	Investigation & management of movement disorders	Choose and interpret diagnostic and imaging tests in the diagnosis of movement disorders Discuss pharmacology, dose, side effects and interactions used in the drug therapy of Parkinson's syndrome Enumerate the indications for use of surgery and botulinum toxin in the treatment of movement disorders	Lecture	Skill assessment/ Written/ Viva voce	Radiodiagnosis

Number	COMPETENCY The student should be able to	**SLOs**	Suggested Learning methods	Suggested Assessment methods	Vertical Integration
IM20.1 IM20.3 IM20.6 IM20.7	Snake bite	1.Enumerate local poisonous snakes & describe the distinguishing marks of each 2. Choose & interpret appropriate diagnostic testing in patients with snake bite 3.Describe initial approach to stabilization of patient with snake bite 4. Describe pharmacology, dose, adverse reactions, hypersensitivity	Lecture	Essay question Viva voce	Forensic Medicine, Pharmacology

		reactions of anti-snake venom			
IM20.2	Patient Education	Demonstrate and educate (to other health care workers / patients) the correct initial management of patient with a snake bite in the field	DOAP session Role play for patient education	Viva voce	Forensic Medicine
IM20.4 IM20.5	Examination of snake bite case	1. Elicit history including circumstance, time, kind of snake, evolution of symptoms in a patient with snake bite 2.Perform general, local, appropriate cardiac and neurologic examination in case of snake bite	Small group discussion Bedside clinic	OSCE examination station on simulated patient	Forensic Medicine
IM20.8		Describe the diagnosis, initial approach, stabilization and therapy of scorpion envenomation	Lecture	Written/ Viva voce	Pharmacology
IM20.9		Describe the diagnosis initial approach stabilization and therapy of bee sting allergy	SDL	Written/ Viva voce	Pharmacology
		Clinical features, stabilization , management of attempted hanging	Lecture		
		Clinical features, stabilization , management of attempted drowning	Lecture		
		Heat stroke	SDL		

Number	COMPETENCY The student should be able to		Suggested Learning methods	Suggested Assessment methods	Vertical Integration
IM21.1 IM21.2	Poisoning	1.Describe the initial approach to the stabilization of the patient who presents with poisoning 2.describe toxicology, clinical features and management of common plant poisons	Lecture	Viva voce Structured essay	
IM21.3 IM21.4		1.describe toxicology, clinical features and management of common corrosive poisons 2.describe toxicology, clinical features and management of patients admitted with common drug overdose	Lecture	Short answer	
	Hepatotoxic poisons	1.Describe toxicology, clinical features, management in a patient admitted with paracetamol/rodenticide poisoning 2.Discuss the role of liver transplant in. these cases	Lecture	Short essay	
IM21.8		1.describe the precautions to be taken in a patient with suspected suicidal ideation / gesture	Small group discussion	viva	
IM21.5		Observe and describe the functions and role of a poison center in suspected poisoning	DOAP session	document in log book	Forensic Medicine, Pharmacology

IM21.6		Describe the medico legal aspects of suspected suicidal or homicidal poisoning and demonstrate the correct procedure to write a medico legal report on a suspected poisoning	SDL – revision & pre reading	Viva voce	Forensic Medicine, Pharmacology
IM21.7	Counselling	Counsel family members of a patient with suspected poisoning about the clinical and medico legal aspects with empathy	Small group discussion Clerkship	Communication station in osce	Forensic Medicine, Pharmacology
	Competenc y	SLOs	TL method	Assessment method	Integration
IM22.1 IM22.2 IM22.3	Hypercalce mia	Enumerate causes of hypercalcemia ; distinguish features of PTH vs non PTH mediated hypercalcemia Describe etiology, clinical features, diagnosis and approach to primary hyperparathyroidism Describe the approach to the management of hypercalcemia	Lecture	Short essay	Pathology, Physiology
	Hypocalcem ia	Clinical features, diagnosis and treatment of hypocalcemia	Lecture	Short essay	
IM22.4		Enumerate the components and describe the genetic basis of the multiple endocrine neoplasia syndrome	SDL	Viva voce	Pathology

Number	COMPETENCY The student should be able to	SLOs	Suggested Learning methods	Suggested Assessment methods	Vertical Integration
IM22.5 IM22.6	Abnormalities of sodium metabolism	Enumerate the causes , describe clinical features & lab and approach to diagnosis and management of hyponatremia Enumerate the causes , describe clinical features & lab and approach to diagnosis and management of hypernatremia	Lecture	Short answer Viva voce	
IM22.7 IM22.8	Abnormalities of potassium metabolism	Enumerate the causes , describe clinical features & lab and approach to diagnosis and management of hypokalemia Enumerate the causes , describe clinical features & lab and approach to diagnosis and management of hyperkalemia	Lecture		
IM22.9 IM22.10 IM22.11 IM22.12	Acidosis & alkalosis	1. Discuss the clinical and laboratory features of metabolic acidosis and alkalosis 2. Discuss the clinical and laboratory features of respiratory acidosis and alkalosis	Lecture	Short essay MCQs	Physiology
IM22.13		Identify the underlying acid base disorder based on ABG report and clinical situation	Assignments Problem solving	Problem based short essay question	Physiology

Number	COMPETENCY The student should be able to	**SLOs**	Suggested Learning methods	Suggested Assessment methods	Vertical Integration
IM23.1 IM23.2	Nutrition in illness	Discuss and describe the methods of nutritional assessment in an adult and calculation of caloric requirements during illnesses Discuss and describe the causes and consequences of protein caloric malnutrition in the hospital	Lecture	Short answer	
IM23.3	Vitamins	Discuss and describe the aetiology, causes, clinical manifestations, complications, diagnosis and management of common vitamin deficiencies	Lecture	Short answer	Physiology, Biochemistry
IM23.4	Nutrition in the critically ill	Enumerate the indications for enteral and parenteral nutrition in critically ill patients	Lecture	Short answer	Physiology, Biochemistry
IM23.5		Counsel and communicate to patients in a simulated environment with illness on an appropriate balanced diet	DOAP session Clerkship	Documentation in logbook	
	Competency	SLOs	TL methods	Assessment	Integration
IM24.17 IM24.1 IM24.4 IM24.8 IM24.9 IM24.10	Common illnesses in the elderly	1.Describe the impact of demographic changes in ageing on the population 2.Describe the epidemiology, pathogenesis, clinical evolution, presentation and course of common diseases in the elderly: vascular events, osteoporosis, CVA, COPD	Lecture	Long essay	
IM24.2	Examination of the elderly	Perform multidimensional geriatric assessment that includes medical, psycho-social and functional	Small group discussion	Short case	Psychiatry

		components	Bedside clinic		
IM24.3 IM24.6 IM24.22 IM24.5 IM24.7	Delirium , dementia and depression	Discuss etiopathogenesis, clinical presentation, identification, functional changes, acute care, stabilization, management and rehabilitation of acute confusional states, nutritional disorders dementia in the elderly depression in the elderly personality changes in the elderly	Lecture	Long essay	

Number	COMPETENCY The student should be able to	SLOs	Suggested Learning methods	Suggested Assessment methods	Vertical Integration
IM24.11 IM24.12 IM24.13 IM24.14 IM24.15	Multidisciplinary care of the elderly	Describe etiopathogenesis, clinical presentation, identification, functional changes, acute care, stabilization, management and rehabilitation of elderly with : degenerative joint disease, falls, fractures,, visual & hearing loss Describe and discuss the etiopathogenesis , clinical presentation, identification, functional changes, acute care, stabilization, management and rehabilitation of the elderly undergoing surgery	Multidisciplinary panel discussion Team teaching	Short answer	

Number	COMPETENCY The student should be able to	SLOs	Suggested Learning methods	Suggested Assessment methods	Vertical Integration
IM24.16 IM24.19 IM24.20 IM24.21	Physical & mental rehabilitation of elderly	1. discuss principles of physical & social rehabilitation, functional assessment, role of physiotherapy and occupational therapy in the management of disability in the elderly 2. Enumerate & describe social problems in the elderly including isolation, abuse, change in family structure and their impact on health. 3.Enumerate and describe social interventions in the care of elderly including domiciliary services, rehabilitation facilities, old age homes and state interventions 4.Enumerate and describe ethical issues in the care of the elderly	Case based discussion	Written/ Viva voce	

Number	COMPETENCY The student should be able to	SLOs	Suggested Learning methods	Suggested Assessment methods	Vertical Integration
IM25.4	Leptospirosis	1. Epidemiology & Etiopathogenesis of leptospirosis 2. Clinical features of leptospirosis 3. Diagnosis and management of leptospirosis	lecture	SEQ	
IM25.5	Enteric fever	1. Epidemiology & Etiopathogenesis of enteric fever 2. Clinical features of enteric fever 3. Diagnosis and management of enteric fever	lecture	Short answer	
	Tuberculosis	1. Epidemiology & Etiopathogenesis of Tuberculosis 2. Clinical features of Tuberculosis 3. Diagnosis and management of Tuberculosis	lecture		

Pandemic Module

	Competency	Hours	TL method
4.1	Care of patients	6	Small group discussion
4.2	Emergency procedures	8	Small group discussion
4.3	Death related management	2	Small group discussion
4.4	Communications & media management	4	Small group discussion
4.5	Intensive care	4	Small group discussion
4.6	Palliative care	4	

Competencies to be covered in AETCOM sessions

	Competency
IM26.1	Enumerate and describe professional qualities and roles of a physician
IM27.1	Describe and discuss the commitment to lifelong learning as an important part of physician growth
IM26.3	Describe and discuss the role of non-maleficence as a guiding principle in patient care
IM26.4	Describe and discuss the role of autonomy and shared responsibility as a guiding principle in patient care
IM26.5	Describe and discuss the role of beneficence of a guiding principle in patient care
IM26.6	Describe and discuss the role of a physician in health care system
IM26.7	Describe and discuss the role of justice as a guiding principle in patient care
IM26.8	Identify discuss medicolegal, socioeconomic and ethical issues as it pertains to organ donation
IM26.9	Identify, discuss and defend medicolegal, sociocultural, economic and ethical issues as it pertains to rights, equity and justice in access to health care
IM26.10	Identify, discuss and defend medicolegal, socio-cultural and ethical issues as it pertains to confidentiality in patient care

Number	COMPETENCY The student should be able to
IM26.11	Identify, discuss and defend medicolegal, socio-cultural and ethical issues as it pertains to patient autonomy, patient rights and shared responsibility in health care
IM26.12	Identify, discuss and defend medicolegal, socio-cultural and ethical issues as it pertains to decision making in health care including advanced directives and surrogate decision making
IM26.13	Identify, discuss and defend medicolegal, socio-cultural and ethical issues as it pertains to decision making in emergency care including situations where patients do not have the capability or capacity to give consent
IM26.14	Identify, discuss and defend medicolegal, socio-cultural and ethical issues as it pertains to research in human subjects
IM26.15	Identify, discuss and defend, medicolegal, socio-cultural and ethical issues as they pertain to consent for surgical procedures
IM26.16	Identify, discuss and defend medicolegal, socio-cultural, professional and ethical issues as it pertains to the physician patient relationship (including fiduciary duty)
IM26.17	Identify, discuss physician's role and responsibility to society and the community that she/ he serves
IM26.18	Identify, discuss and defend medicolegal, socio-cultural, professional and ethical issues in physician-industry relationships
IM26.19	Demonstrate ability to work in a team of peers and superiors
IM26.20	Demonstrate ability to communicate to patients in a patient, respectful, non-threatening, non-judgmental and empathetic manner
IM26.21	Demonstrate respect to patient privacy

Number	COMPETENCY The student should be able to
IM26.22	Demonstrate ability to maintain confidentiality in patient care
IM26.23	Demonstrate a commitment to continued learning
IM26.24	Demonstrate respect in relationship with patients, fellow team members, superiors and other health care workers
IM26.25	Demonstrate responsibility and work ethics while working in the health care team
IM26.26	Demonstrate ability to maintain required documentation in health care (including correct use of medical records)
IM26.27	Demonstrate personal grooming that is adequate and appropriate for health care responsibilities
IM26.28	Demonstrate adequate knowledge and use of information technology that permits appropriate patient care and continued learning
IM26.29	Communicate diagnostic and therapeutic options to patient and family in a simulated environment
IM26.30	Communicate care options to patient and family with a terminal illness in a simulated environment
IM26.31	Demonstrate awareness of limitations and seeks help and consultations appropriately
IM26.32	Demonstrate appropriate respect to colleagues in the profession
IM26.33	Demonstrate an understanding of the implications and the appropriate procedures and response to be followed in the event of medical errors
IM26.34	Identify conflicts of interest in patient care and professional relationships and describe the correct response to these conflicts

Number	COMPETENCY The student should be able to
IM26.35	Demonstrate empathy in patient encounters
IM26.36	Demonstrate ability to balance personal and professional priorities
IM26.37	Demonstrate ability to manage time appropriately
IM26.38	Demonstrate ability to form and function in appropriate professional networks
IM26.39	Demonstrate ability to pursue and seek career advancement
IM26.40	Demonstrate ability to follow risk management and medical error reduction practices where appropriate
IM26.41	Demonstrate ability to work in a mentoring relationship with junior colleagues

IM26.42	Demonstrate commitment to learning and scholarship
IM26.43	Identify, discuss and defend medicolegal, sociocultural, economic and ethical issues as they pertain to in vitro fertilization donor insemination and surrogate motherhood
IM26.44	Identify, discuss and defend medicolegal, socio-cultural professional and ethical issues pertaining to medical negligence
IM26.46	Identify, discuss and defend medicolegal, socio-cultural professional and ethical issues in dealing with impaired physicians
IM26.47	Identify, discuss and defend medicolegal, socio-cultural and ethical issues as they pertain to refusal of care including do not resuscitate and withdrawal of life support
IM26.48	Demonstrate altruism
IM26.49	Administer informed consent and appropriately address patient queries to a patient being enrolled in a research protocol in a simulated environment

Respiratory Medicine – Knowledge Competencies

Topic - Tuberculosis					
	Competency	**Teaching-learning method**	**Formative assessment**	**Summative assessment**	**Integration**
CT1.1	Describe and discuss the epidemiology of tuberculosis and itsimpact on the work, life and economy of India	Lecture, Small group discussion	MCQs/Drills	Essay/SAQ/ MCQs	Community Medicine
CT1.2	Describe and discuss the microbiology of tubercle bacillus, mode of transmission, pathogenesis, clinical evolution and natural history of pulmonary and extra pulmonary forms (including lymph node, boneand CNS)	Lecture, Small group discussion	MCQs/Drills	Essay/SAQ/ MCQs	Microbiology
CT1.3	Discuss and describe the impact of co-infection with HIV and otherco-morbid conditions. Like diabetes on the natural history of tuberculosis	Lecture, Small group discussion	MCQs/Drills	Essay/SAQ/ MCQs	Microbiology
CT1.4	Describe the epidemiology, the predisposing factors and microbialand therapeutic factors that determine resistance to drugs	Lecture, Small group discussion	MCQs/Drills	Essay/SAQ/ MCQs	Community Medicine, Microbiology, Pharmacology
CT1.12	Enumerate the indications for tests including: serology, specialcultures and polymerase chain reaction and sensitivity testing	Small group discussion, Lecture	MCQs/Drills	Essay/SAQ/ MCQs	Microbiology
CT1.13	Describe and discuss the origin, indications, technique of administration, efficacy and complications of the BCG vaccine	Lecture, Small group discussion	MCQs/Drills	Essay/SAQ/ MCQs	Microbiology
CT1.14	Describe and discuss the pharmacology of various anti-tuberculousagents, their indications, contraindications, interactions	Lecture, Small group discussion	MCQs/Drills	Essay/SAQ/ MCQs	Pharmacology, Microbiology

	and adversereactions				
CT1.16	Describe the appropriate precautions, screening, testing and indications for chemoprophylaxis for contacts and exposed healthcare workers	Bedside clinic, Smallgroup discussion	MCQs/Drills	Essay/SAQ/ MCQs	Community Medicine
Topic – Obstructive airway disease					
CT2.1	Define and classify obstructive airway disease	Lecture, Small group discussion	MCQs/Drills	Essay/SAQ/ MCQs	Physiology
CT2.2	Describe and discuss the epidemiology, risk factors and evolution ofobstructive airway disease	Lecture, Small group discussion	MCQs/Drills	Essay/SAQ/ MCQs	Physiology
CT2.3	Enumerate and describe the causes of acute episodes in patientswith obstructive airway disease	Lecture, Small group discussion	MCQs/Drills	Essay/SAQ/ MCQs	Physiology
CT2.4	Describe and discuss the physiology and pathophysiology ofhypoxia and hypercapneia	Lecture, Small group discussion	MCQs/Drills	Essay/SAQ/ MCQs	Physiology
CT2.5	Describe and discuss the genetics of alpha 1 antitrypsin deficiencyin emphysema	Lecture, Small group discussion	MCQs/Drills	Essay/SAQ/ MCQs	
CT2.6	Describe the role of the environment in the cause and exacerbationof obstructive airway disease	Lecture, Small group	MCQs/Drills	Essay/SAQ/ MCQs	

		discussion			
CT2.7	Describe and discuss allergic and non-allergic precipitants ofobstructive airway disease	Lecture, Small group discussion	MCQs/Drills	Essay/SAQ/ MCQs	
CT2.16	Discuss and describe therapies for OAD including bronchodilators, leukotriene inhibitors, mast cell stabilisers, theophylline, inhaled andsystemic steroids, oxygen and immunotherapy	Lecture, Small group discussion	MCQs/Drills	Essay/SAQ/ MCQs	
CT2.17	Describe and discuss the indications for vaccinations in OAD	Lecture, Small group discussion	MCQs/Drills	Essay/SAQ/ MCQs	
CT2.20	Describe and discuss the principles and use of oxygen therapy inthe hospital and at home	Lecture, Small group discussion	MCQs/Drills	Essay/SAQ/ MCQs	
CT2.25	Discuss and describe the impact of OAD on the society andworkplace	Lecture, Small group discussion	MCQs/Drills	Essay/SAQ/ MCQs	
CT2.26	Discuss and describe preventive measures to reduce OAD inworkplaces	Lecture, Small group discussion	MCQs/Drills	Essay/SAQ/ MCQs	
	Integration Topics				
PH1.32	Describe the mechanism/s of action, types, doses, side effects, indications and contraindications of drugs used in bronchial asthmaand COPD	Lecture, Small group	MCQs/Drills	Essay/SAQ/ MCQs	Physiology

		discussion			
PH1.33	Describe the mechanism of action, types, doses, side effects,indications and contraindications of the drugs used in cough (antitussives, expectorants/ mucolytics)	Lecture, Small group discussion	MCQs/Drills	Essay/SAQ/ MCQs	Pharmacology
PH1.44	Describe the first line antitubercular dugs, their mechanisms ofaction, side effects and doses.	Lecture	MCQs/Drills	Essay/SAQ/ MCQs	Pharmacology
PH1.45	Describe the dugs used in MDR and XDR Tuberculosis	Lecture	MCQs/Drills	Essay/SAQ/ MCQs	Pharmacology
IM24.10	Describe and discuss the aetiopathogenesis,clinical presentation, identification, functional changes, acute care, stabilization, management and rehabilitation of COPD in the elderly	Lecture, Small group discussion	MCQs/Drills	Essay/SAQ/ MCQs	Internal medicine
PE28.19	Describe the etio-pathogenesis, clinical features, diagnosis,management and prevention of asthma in children	Bedside clinics, Small group discussion , Lecture	Skill Assessment /Written/ Viva voce		Paediatrics
PE34.1	Discuss the epidemiology, clinical features, clinical types, complications of Tuberculosis in Children and Adolescents	Lecture, Small group discussion	MCQs/Drills	Essay/SAQ/ MCQs	Paediatrics
PE34.2	Discuss the various diagnostic tools for childhood tuberculosis	Lecture, Small group discussion	MCQs/Drills	Essay/SAQ/ MCQs	Paediatrics

PE34.3	Discuss the various regimens for management of Tuberculosis asper National Guidelines	Lecture, Small group discussion	MCQs/Drills	Essay/SAQ/ MCQs	Paediatrics
PE34.4	Discuss the preventive strategies adopted and the objectives andoutcome of the National Tuberculosis Control Program	Lecture, Small group discussion	MCQs/Drills	Essay/SAQ/ MCQs	Paediatrics
PE34.10	Discuss the various samples for demonstraing the organism egGastric Aspirate, Sputum , CSF, FNAC	Bed side clinics, Small group discussion	MCQs/Drills	Essay/SAQ/ MCQs	Paediatrics
PE34.12	Enumerate the indications and discuss the limitations of methods ofculturing M.Tuberculii	Small group discussion	MCQs/Drills	Essay/SAQ/ MCQs	Paediatrics

Respiratory medicine – Psychomotor competencies

Topic – Tuberculosis					
CT1.5	Elicit, document and present an appropriate medical history that includes risk factor, contacts, symptoms including cough and fever CNS and other manifestations	Bed side clinic, DOAPsession		Skill assessment	
CT1.6	Demonstrate and perform a systematic examination that establishesthe diagnosis based on the clinical presentation that includes a a) general examination, b) examination of the chest and lung includingloss of volume, mediastinal shift, percussion and auscultation (including DOAP session of lung sounds and added sounds) c) examination of the lymphatic system and d) relevant CNS examination	Bed side clinic, DOAPsession		Skill assessment	
CT1.7	Perform and interpret a PPD (mantoux) and describe and discussthe indications and pitfalls of the test	DOAP session		Maintenance of logbook	

CT1.10	Perform and interpret an AFB stain	DOAP session			
CT1.11	Assist in the performance, outline the correct tests that require to beperformed and interpret the results of a pleural fluid aspiration	DOAP session			
CT1.15	Prescribe an appropriate antituberculosis regimen based on the location of disease, smear positivity and negativity and co- morbidities based on current national guidelines including directlyobserved tuberculosis therapy (DOTS)	Bedside clinic, Smallgroup discussion, Lecture			
CT1.17	Define criteria for the cure of Tuberculosis; describe and recognisethe features of drug resistant tuberculosis, prevention and therapeutic regimens	S	P	Y	
CT1.8	Generate a differential diagnosis based on the clinical history andevolution of the disease that prioritises the most likely diagnosis	Bedside clinic, Small group discussion	Bedside clinic/ Vivavoce		
CT1.9	Order and interpret diagnostic tests based on the clinical presentation including: CBC, Chest X ray PA view, Mantoux, sputumculture and sensitivity, pleural fluid examination and culture, HIV testing	Bedside clinic, DOAPsession	OSCE	Long case/short case	
CT2.8	Elicit document and present a medical history that will differentiatethe aetiologies of obstructive airway disease, severity and precipitants	Bedside clinic, DOAPsession	OSCE	Long case/short case	
CT2.9	Perform a systematic examination that establishes the diagnosis and severity that includes measurement of respiratory rate, level ofrespiratory distress, effort tolerance, breath sounds, added sounds,identification of signs of consolidation pleural effusion and pneumothorax	Bedside clinic, DOAPsession	OSCE	Long case/short case	

CT2.10	Generate a differential diagnosis and prioritise based on clinicalfeatures that suggest a specific aetiology	Bedside clinic, DOAPsession	OSCE	Long case/short case	
CT2.11	Describe, discuss and interpret pulmonary function tests	Bedside clinic, DOAPsession	OSCE	Long case/short case	
CT2.12	Perform and interpret peak expiratory flow rate	Bedside clinic, DOAPsession	OSCE	Long case/short case	
CT2.13	Describe the appropriate diagnostic work up based on thepresumed aetiology	Bedside clinic, DOAPsession	OSCE	Long case/short case	
CT2.14	Enumerate the indications for and interpret the results of : pulseoximetry, ABG, Chest Radiograph	Bedside clinic, DOAPsession	OSCE	Long case/short case	
CT2.15	Generate a differential diagnosis and prioritise based on clinicalfeatures that suggest a specific aetiology	Bedside clinic, DOAPsession	OSCE	Long case/short case	
CT2.18	Develop a therapeutic plan including use of bronchodilators andinhaled corticosteroids	Bedside clinic, DOAPsession	OSCE	Long case/short case	
CT2.19	Develop a management plan for acute exacerbations includingbronchodilators, systemic steroids, antimicrobial therapy	Bedside clinic, DOAPsession	OSCE	Long case/short case	
Integration topics					
PY6.8	Demonstrate the correct techinque to perform & interpret Spirometry	Bedside clinic, DOAPsession	OSCE	Long case/short case	
PE34.5	Able to elicit, document and present history of contact withtuberculosis in every patient encounter	Bedside clinic, DOAPsession	OSCE	Long case/short case	
PE34.6	Identify a BCG scar	Bedside clinic, DOAPsession	OSCE	Long case/short case	
PE34.7	Interpret a Mantoux test	Bedside clinic, DOAPsession	OSCE	Long case/short case	
PE34.8	Interpret a Chest Radiograph	Bedside clinic, DOAPsession	OSCE	Long case/short case	

PE34.9	Interpret blood tests in the context of laboratory evidence fortuberculosis	Bedside clinic, DOAPsession	OSCE	Long case/short case	
PE34.11	Perform AFB staining	DOAP	Logbook		

Respiratory medicine – Communication competencies

CT1.18	Educate health care workers on National Program of Tuberculosisand administering and monitoring the DOTS program	Bedside clinic, DOAPsession	OSCE	Long case/short case	
CT1.19	Communicate with patients and family in an empathetic mannerabout the diagnosis, therapy	Bedside clinic, DOAPsession	OSCE	Long case/short case	
CT2.21	Describe discuss and counsel patients appropriately on smokingcessation	Bedside clinic, DOAPsession	OSCE	Long case/short case	
CT2.22	Demonstrate and counsel patient on the correct use of inhalers	Bedside clinic, DOAPsession	OSCE /logbook	Long case/short case	
CT2.23	Communicate diagnosis treatment plan and subsequent follow upplan to patients	Bedside clinic, DOAPsession	OSCE	Long case/short case	
CT2.24	Recognise the impact of OAD on patient's quality of life, well being,work and family	Bedside clinic, DOAPsession	OSCE	Long case/short case	
CT2.27	Demonstrate an understanding of patient's inability to change working, living and environmental factors that influence progressionof airway disease	Bedside clinic, DOAPsession	OSCE	Long case/short case	
CT2.28	Demonstrate an understanding for the difficulties faced by patientsduring smoking cessation	Bedside clinic, DOAPsession	OSCE	Long case/short case	
PE28.20	Counsel the child with asthma on the correct use of inhalers in asimulated environment	Bedside clinic, DOAPsession	OSCE/ logbook	Long case/short case	

List of certifiable competencies

CT2.12	Perform and interpret peak expiratory flow rate	Bedside clinic, DOAPsession	Logbook	
PE34.11	Perform AFB staining	DOAP	Logbook	

Acknowledgements

This curriculum and logbook was developed by Dr Smitha Bhat, Professor of Internal Medicine, Fr Muller's Medical College with Inputs from faculty from St John's Medical College, including Dr Soumya Umesh, Associate Professor, Dr Savitha Sebastian, Assistant Professor, Dr Mary George, Assistant Professor, Dr Thenmozhi Nagarajan, Assistant Professor and Dr John Paul, Senior Resident.

The respiratory medicine components of curriculum and logbook has been developed with Inputs from Dr Uma Devaraj

Sri Siddhartha Academy of Higher Education, Tumkur

General Medicine Allied Subjects Curriculum

Including Psychiatry and Dermatology

as per

Competency-Based Medical Education Curriculum

Sri Siddhartha Academy of Higher Education, Tumkur

Psychiatry Curriculum

as per

Competency-Based Medical Education Curriculum

SSAHE Psychiatry Curriculum as per the new Competency Based Medical Education

Preamble

The NMC envisages that the Indian Medical Graduate, should function as the Physician of first contact in the community, to provide holistic health care to the evolving needs of the nation and the world. To fulfil this the IMG should be able to perform the following roles: a clinician, a communicator, a lifelong learner, a professional and a team leader.

Competency-based medical education (CBME) is an outcomes-based training model that has become the new standard of medical education internationally. This new curriculum is being implemented across the country and the first batch has been enrolled since the academic year 2019. The regulatory and accrediting body NMC had started the process by training faculty across the country in the key principles of CBME and developing key competencies for each speciality with the input from expert groups under each speciality.

Mental health is essential to overall health and the well-being of individuals and societies. Mental health affects the individual's ability to function, to be productive, to establish and maintain positive relationships, and to experience a state of well-being. This is the reason we say, “There is no health without mental health.” Mental disorders, a highly prevalent group of non-communicable diseases, affect the lives of 1 out of 5 persons. Factors related to mental illness can interfere with the treatment of other illnesses and frequently co-occur with CVS, diabetes, cancer, and other non-communicable diseases, and communicable diseases like HIV and TB. Therefore, training undergraduate medical students in mental health is vital. Knowledge of Psychiatry, Mental health, and Behavioral Sciences equips the students to deal with various difficult and complex situations during medical practice. Additionally, it will help them to develop proper communication skills and to empathize with their patients and their suffering. Moreover, since psychiatric problems are common among patients seen in general practice (about 25%) and specialty clinics (about 15%), adequate training in Psychiatry during UG course makes the student a better doctor.

The Psychiatry undergraduate curriculum provides the IMG the requisite knowledge, essential skills and appropriate attitudes to be able to diagnose and treat common psychiatric disorders and also to be able to recognize serious conditions and refer appropriately.

The NMC, in the Graduate medical regulations 2019, has provided the list of competencies in Psychiatry, required for an IMG and these have been included in this Psychiatry curriculum document. The Specific learning objectives (SLO’s) to achieve each competency has been listed along with the suggested Teaching-Learning methods and preferred assessment methods. The topics have been segregated under three heads: Lecture topic, integrated topics and clinical posting topics. A suggested scheme for teaching Clinical skills topics as posting one and posting two has been made.

Competency Based Medical Education

Suggested Lecture schedule plan (IIIrd MBBS, Part 1)

No	Topic	Competencies	Time	T/L method	Assessment
1	Doctor patient relationship	• Components of communication • breaking bad news • importance of confidentiality PS1.2	1 hour	Lecture/ Small Group	Viva/written/MCQs
2	Mental health	• Stress, components and cause • time-management, study skills, balanced diet, sleep wake cycle PS2.1, PS2.2	1 hour	Lecture/ Small Group	Viva/written/MCQs

3	Mental health	• Components of memory, learning and emotions • Principles of personality development and motivation • Define and distinguish between normality and abnormality PS2.3, PS2.4, PS2.5	1 hour	Lecture/small groups	Written/Viva/MCQs
4	Introduction to psychiatry	• Growth, history, development of psychiatry as specialty • Brain and behaviour PS3.1	1 hour	Lecture/ Small Group	Viva/written/MCQs

5	Introduction to psychiatry	• Signs and symptoms of common mental disorders • Biological, psychological and social factors and their interactions in causation of mental disorders • Distinguish psychotic and non-psychotic disorders PS3.2, PS3.6, PS3.12	1 hour	Lecture/ Small Group	Viva/written/MCQs
6	Introduction to psychiatry	• Pharmacological basis and side-effects of drugs used in psychiatric disorders PS3.10	1 hour	Lecture/ Small Group	Viva/written/MCQs
7	Substance Use disorders	• Magnitude & aetiology • Treatment • Pharmacological basis and side-effects of drugs • Conditions for specialist referral PS4.1, PS4.4, PS4.6, PS4.7	1 hour	Lecture/ Small Group	Viva/written/MCQs
8	Psychotic disorders	• Magnitude & aetiology • Treatment • Pharmacological basis and side-effects of drugs • Conditions for specialist referral PS5.1, PS5.3, PS5.5, PS5.6	1 hour	Lecture/ Small Group	Viva/written/MCQs
9	Depression	• Magnitude & aetiology • Treatment • Pharmacological basis and side-effects of drugs	1 hour	Lecture/ Small Group	Viva/written/MCQs

		• Conditions for specialist referral PS6.1, PS6.4, PS6.6, PS6.7			
10	Bipolar disorders	• Magnitude & aetiology • Treatment • Pharmacological basis and side-effects of drugs • Conditions for specialist referral PS7.1, PS7.4, PS7.6, PS7.7	1 hour	Lecture/ Small Group	Viva/written/MCQs
11	Assessment		1 hour		
12	Anxiety disorders	• Magnitude & aetiology • Treatment • Pharmacological basis and side-effects of drugs • Conditions for specialist referral PS8.1, PS8.4, PS8.6, PS8.7	1 hour	Lecture/ Small Group	Viva/written/MCQs
13	OCD	• Magnitude & aetiology • Treatment • Pharmacological basis and side-1-hour effects of drugs • Conditions for specialist referral PS8.1, PS8.4, PS8.6, PS8.7	1 hour	Lecture/ Small Group	Viva/written/MCQs

14	Stress related disorders	• Magnitude & aetiology • Treatment • Pharmacological basis and side-effects of drugs • Conditions for specialist referral PS9.1, PS9.4, PS9.6, PS9.7	1 hour	Lecture/ Small Group	Viva/written/MCQs
15	Personality disorders	• Magnitude & aetiology • Treatment • Pharmacological basis and side-effects of drugs • Conditions for specialist referral PS11.1, PS11.4, PS11.6, PS11.7	1 hour	Lecture/ Small Group	Viva/written/MCQs
16	Psychosexual and Gender Identity disorders (Psychosexual disorders)	• Magnitude & aetiology • Treatment • Pharmacological basis and side-effects of drugs • Conditions for specialist referral PS13.1, PS13.4, PS13.6, PS13.7	1 hour	Lecture/ Small Group	Viva/written/MCQs
17	Psychosexual and Gender Identity disorders (Gender Identity disorders)	• Magnitude & aetiology • Treatment • Pharmacological basis and side-effects of drugs • Conditions for specialist referral PS13.1, PS13.4, PS13.6, PS13.7	1 hour	Lecture/ Small Group	Viva/written/MCQs

18	Emotional & Behavioral problems in Child and Adolescence (ADHD, ODD, CD)	• Magnitude & aetiology • Treatment • Pharmacological basis and side-effects of drugs • Conditions for specialist referral PS14.1, PS14.3, PS14.5, PS14.6	1 hour	Lecture/ Small Group	Viva/written/MCQs
19	Other specific childhood psychiatric disorders (enuresis)	• Magnitude & aetiology • Treatment • Pharmacological basis and side-effects of drugs • Conditions for specialist referral PS14.1, PS14.3, PS14.5, PS14.6	1 hour	Lecture/ Small Group	Viva/written/MCQs
20	Psychiatric disorders in elderly	• Common psychiatric disorders including dementia, depression & psychosis • Magnitude & aetiology • Therapy in elderly • Conditions for specialist referral PS16.1, PS16.2, PS16.3, PS16.5	1 hour	Lecture/ Small Group	Viva/written/MCQs
21	Psychiatric emergencies	• Describe recognition of psychiatric emergencies like suicide, deliberate self-harm and aggressive PS17.1, PS17.2, PS17.3	1 hour	Lecture/ Small Group	Viva/written/MCQs

22	Therapeutics	• Describe principles of psychosocial interventions in psychiatric illness including psychotherapy, rehabilitation and behavioural therapy PS18.3	1 hour	Lecture/ Small Group	Viva/written/MCQs
23	Assessment	• Second assessment	1 hour	Lecture/ Small Group	Viva/written/MCQs
24	Review and Feedback				

Competency Based Medical Education Suggested

Integrated Lecture/Tutorials schedule plan

No	Topic	Competencies	Posting & Integration	Time	T/L method	Assessment
1	Introduction to psychiatry	• Enumerate, describe common psychiatric disorders, magnitude, aetiology and clinical features in patients with organic psychiatric disorders • Essential investigations in patients with organic psychiatric disorders PS3.7, PS3.8	3rd year General Medicine	1 hour	Lecture/ Small Group	Viva/written/MCQs
2	Alcohol and substance use disorders	• Magnitude and aetiology of alcohol use disorders • Treatment of alcohol use disorders including pharmacotherapy and psychotherapy • Pharmacological basis and side-effects of drugs in alcohol use disorders • Appropriate conditions for specialist referrals in alcohol use disorders PS4.1, PS4.4, PS4.6, PS4.7	3rd year General Medicine	1 hour	Lecture/ Small Group	Viva/written/MCQs

3	Psychosomatic disorders	• Magnitude and aetiology of psychosomatic disorders • Treatment of psychosomatic disorders • Pharmacological basis of treatment and side-effects of psychosomatic disorders • Appropriate conditions for specialist referral PS12.1, PS12.4, PS12.6, PS12.7	3rd year General Medicine	1 hour	Lecture/ Small Group	Viva/written/MCQs
4	Psychosomatic disorders	• Magnitude and aetiology of psychosomatic disorders • Treatment of psychosomatic disorders • Pharmacological basis of treatment and side-effects of psychosomatic disorders • Appropriate conditions for specialist referral PS12.1, PS12.4, PS12.6, PS12.7	3rd year Dermatology	1 hour	Lecture/ Small Group	Viva/written/MCQs
5	Mental retardation, scholastic backwardness, neurodevelopmental disorders, autism	• Magnitude & aetiology • Intelligence quotient and assessment	3rd year Pediatrics	1 hour	Lecture/ Small Group	Viva/written/MCQs

		• Psychosocial treatments and interventions PS15.1, PS15.3, PS15.4				
6	Miscellaneous	• Relevance and role of community psychiatry • Objectives, strategies and contentsof National Mental Health Program • Enumerate and describe salient features of MHCA 2017 • Describe the concept principles of preventive mental health promotion (positive mental health); and community education • Enumerate and describe the identifying features and the principles of participatory management of mental illness occurring during and after disasters PS19.1, PS19.2, PS19.4, PS19.5, PS19.6	3rd year Community psychiatry	1 hour	Lecture/ Small Group	Viva/written/MCQs
7	Miscellaneous	• Describe and discuss basic legal and ethical issues in psychiatry PS19.3, PS19.4	3rd year Forensic	1 hour	Lecture/ Small Group	Viva/written/MCQs

8	Risk assessment for suicide	• Enumerate and describe recognition of suicide risk in individuals PS17.1	3rd year	1 hour	Lecture/ Small Group	Viva/written/MCQs
9	ECT and other modalities like RTMS	• Indications of modified ECT • Indications of other modalities PS 18.2	3rd year	1 hour	Lecture/ Small Group	Viva/written/MCQs
10	Psychological assessments		3rd year	1 hour	Lecture/ Small Group	Viva/written/MCQs

PSYCHIATRY CLINICAL POSTINGS

POSTING 1- II MBBS

No	Topic	Competencies	SLOs	Domain /Level	T/L method	Assessment
1	Doctor patient relationship	Developing rapport & empathy (PS1.1, PS3.4) Importance of confidentiality (PS1.4)	Define and describe the meaning of terms rapport and empathy. Demonstrate comfort with communicating with patient, use modes of communication enabling patient to feel safe and comfortable to participate in a dialogue. Enumerate the ethical principles of confidentiality including safeguarding of information, and consent to disclose information. Enumerate conditions under which confidentiality can be breached.	K/K H S/S H K/K H K/K H	Small group discussion Small group discussion, guided observation of consultants, role-plays, demonstrations Small group discussion Small group discussion	MCQ MCQ, OSCE MCQ MCQ MCQ

2	Breaking bad news	Breaking bad news (PS1.3)	Demonstrate breaking bad news to a patient or their family.	S/SH	Small group discussion, guided observation of consultants, role-plays, demonstrations	MCQ/ OSCE
3	Introduction to psychiatry	Eliciting, presenting & documenting psychiatric history (PS3.3)	Interview a patient to elicit onset, course, duration and progress of illness with respect to present illness, past history, medical history, family history, personal history and premorbid history relevant to present illness.	S/SH	Small group discussion, guided observation of consultants, role-plays, demonstrations	MCQ, OSCE
4	Introduction to psychiatry	Performing mini mental state examination (PS3.5)	Examine a patient to elicit consciousness, orientation, attention and registration, recent and remote memory, affect and mood, speech, form and content of thought, perception, insight into mental illness.	S/SH	Small group discussion, guided observation of consultants, role-plays, demonstrations	MCQ, OSCE
5	Alcohol use disorders	Describe, elicit & document clinical features of alcohol use disorders (PS4.2)	Interview a patient to elicit history of present illness with regards to presenting complaints, onset of harmful use, onset of dependence, history of withdrawal symptoms, history of seizures, history of delirium tremens and history of other medical complications; past history, family history, medical history, personal history and premorbid history in individuals with alcohol use disorders.	S/SH	Small group discussion, guided observation of consultants, role-plays, demonstrations, portfolio	MCQ, OSCE, Portfolio assessment
6	Substance use disorders-tobacco	Describe, elicit & document clinical features of substance use disorders-tobacco (PS4.2)	Interview a patient to elicit history of present illness with regards to onset of harmful use, onset of dependence, history of any withdrawal symptoms; past history, family history, medical history, personal history and premorbid history in individuals with tobacco use disorders.	S/SH	Small group discussion, guided observation of consultants, role-plays, demonstration, portfolio	MCQ, OSCE, Portfolio assessment
7	Depression	Describe, elicit & document clinical features in patients with depression (PS6.2)	Interview a patient to elicit history of present illness with regards to onset, duration, progress and course of illness and clinical features; past history, medical history, family history, personal history and premorbid history in a patient with depression. Perform a mental status examination to assess thought, perception and affect in a patient with depression.	S/SH S/SH	Small group discussion, guided observation of consultants, role-plays, demonstrations, portfolio Small group discussion, guided observation of consultants, role-plays, demonstrations, portfolio	MCQ, OSCE, Portfolio assessment MCQ, OSCE, Portfolio assessment
8	Anxiety disorders (excluding OCD)	Describe, elicit & document clinical features in patients with anxiety (PS8.2)	Interview a patient to elicit history of present illness with regards to onset, duration, progress and course of illness and clinical features; past history, medical history, family history, personal history and premorbid history in a patient with anxiety disorders.	S/SH S/SH	Small group discussion, guided observation of consultants, role-plays, demonstrations, portfolio Small group discussion, guided	MCQ, OSCE, Portfolio assessment

			Perform a mental status examination to assess thought, perception and affect in a patient with anxiety disorders.		observation of consultants, role-plays, demonstrations, portfolio	MCQ, OSCE, Portfolio assessment
9	Bipolar and Psychotic disorders	Describe, elicit & document clinical features in patients with bipolar disorders (PS7.2) Describe, elicit & document clinical features in patients with psychotic disorders (PS5.2)	Interview a patient to elicit history of present illness with regards to onset, duration, progress and course of illness and clinical features; past history, medical history, family history, personal history and premorbid history in a patient with bipolar disorder/ schizophrenia. Perform a mental status examination to assess thought, perception and affect in a patient with bipolar disorder/ schizophrenia.	S/S H S/S H	Small group discussion, guided observation of consultants, role-plays, demonstrations, portfolio Small group discussion, guided observation of consultants, role-plays, demonstrations, portfolio	MCQ, OSCE, Portfolio assessment MCQ, OSCE, Portfolio assessment
10		**End-of-postings assessment with feedback**				**MCQ, OSCE**

DAILY WORKFLOW:

- 9.45am-10.30am: Classroom teaching- suggested TL methods are small group discussion, role-plays guided by scripts and observer checklists,clinical demonstrations and use of AV teaching aides.
- 10.30am-12.30pm: Students will tag with their clinical guides- suggested TL methods are guided observation of consultants and clinicaldemonstrations with patients in the OPD or on ward rounds, and formative assessment based on the student's portfolio.

END-OF-POSTING ASSESSMENT:

- 10 MCQs (10 marks)
- 1 OSCE skills station (20 marks)

CRITERIA FOR POSTING COMPLETION:

- Each student will be required to complete two case records in their logbook.
- 50% marks in the end-of posting assessment.

	TOPIC	COMPETENCIES	**SPECIFIC LEARNING OBJECTIVE**	**T/L METHODS**	**ASSESSMENT**
1	Recap of psychiatric history and examination	Eliciting, presenting & documenting psychiatric history and examination (PS3.3, PS6.2, PS7.2, PS5.2, PS8.2)	Document and present a history in patients with mental disorder including current illness, past history, medical history, family history, personal history and premorbid history. Perform a mental status examination to assess general appearance, psychomotor activity, speech, affect, thought and perception	S/SH Small group discussion, guided observation of consultants, role-plays, demonstrations	CBD, Portfolio assessment
2	Organic Psychiatry	Eliciting delirium using the criteria and describe the higher mental functions. PS3.5	Interview a patient to elicit history of present illness with regards to onset, duration, progress and course of illness and clinical features; past history, medical history, family history, personal history in a patient with delirium. Perform a mental status examination to assess higher mental functions in a patient with delirium	K/KH Role play, guided observation, demonstration	MCQ, OSCE
3	Family education Part 1 Family education part 2	Describe the steps of family education in a simulated environment in a patient with substance use disorder, Depression, Anxiety disorders (PS4.5, PS6.5, PS8.5) Describe steps of family education in a simulated environment in a patient with severe mental illness and elderly with psychiatric illnesses (PS5.4, PS7.5, PS16.5)	Interview patients' family and enumerate and demonstrate the steps of communicating the diagnosis and need for treatment for a specific diagnosis and referral to specialists Interview patients' family and enumerate and demonstrate the steps of communicating the diagnosis and need for treatment for a specific diagnosis and referral to specialists	S/SH Guided observation of consultants, role-plays, demonstrations, simulations, Audio-visual aid S/SH Guided observation of consultants, role-plays, demonstrations, simulations, Audio-visual aid	OSCE, DOPS OSCE, DOPS
4	Stress related/ Dissociative disorders	Describe, elicit & document clinical features of stress related/dissociative disorders. Enumerate, describe and interpret their laboratory investigations PS9.2, PS9.3	Interview a patient to elicit history of present illness with regards to onset, duration, progress and course of illness and clinical features; past history, medical history, family history, personal history and premorbid history in a patient with stress	K/KH Guided observation of consultants, role-plays, demonstrations, simulations	MCQ, OSCE, DOPS

			related disorders. Perform a mental status examination to assess thought, perception and affect in a patient with stress related/dissociative disorder		
5	Somatoform disorder	Describe, elicit & document clinical features of somatoform disorders. Enumeration, describe and interpret laboratory investigations PS10.2, PS10.3	Interview a patient to elicit history of present illness with regards to onset, duration, progress and course of illness and clinical features; past history, medical history, family history, personal history and premorbid history in a patient with somatoform disorders. Perform a mental status examination to assess thought, perception and affect in a patient with somatoform disorder	K/KH Guided observation of consultants, role-plays, demonstrations, simulations	MCQ, OSCE, DOPS
6	Personality disorder and gender related issues	Describe, elicit & document clinical features of personality disorders and gender related issues. Enumeration, describe and interpret laboratory investigations in such patients PS11.2, PS11.3, P13.2, P13.3	Interview a patient to elicit history of present illness with regards to onset, duration, progress and course of illness and clinical features; past history, medical history, family history, personal history and premorbid history in a patient with personality disorders and gender related issues. Perform a mental status examination to assess general appearance, speech, thought, perception and affect in a patient with personality disorder and gender identity issues.	K/KH Guided observation of consultants, role-plays, demonstrations, simulations	MCQ
7	Psychosomatic disorder	Describe, elicit & document clinical features in patients with psychosomatic disorders. Discuss the psychological factors associated with worsening of underlying medical conditions. Enumeration, describe and interpret laboratory	Interview a patient to elicit history of present illness with regards to onset, duration, progress and course of illness and clinical features; past history, medical history, family history, personal history and premorbid history in a patient with psychosomatic disorder. Perform a mental status examination to assess thought,	K/KH Guided observation of consultants, role-plays, demonstrations, simulations	MCQ, OSCE,DOPS, CBD

		investigations in such patients PS12.2, PS12.3	perception and affect in a patient with Psychosomatic disorder		
8	Child and adolescent Psychiatric disorders	Describe, elicit & document clinical features in patients with child and adolescent psychiatric disorders. Enumeration, describe and interpret laboratory investigations in such patients PS14.2	Interview a child/adolescent patient to elicit history of present illness with regards to onset, duration, progress and course of illness, family history, family structure, birth and developmental history, school history, temperament. Perform a head-to-toe physical examination including systemic examination. Perform interview with the child to assess general appearance, psychomotor activity, affect and thought.	K/KH Guided observation of consultants, role-plays, demonstrations, simulations	MCQ, OSCE, CBD
9	Mental retardation	Describe, elicit & document clinical history in child with mental retardation. Perform adequate physical examination in such children. Choose appropriate investigations in child with mental retardation PS15.4	Interview a child/adolescent patient to elicit history of present illness with regards to onset, duration, progress and course of illness, family history, family structure, birth and developmental history, school history, temperament. Perform a head-to-toe physical examination including systemic examination. Perform interview with the child to assess general appearance, psychomotor activity, thought and intelligence including adaptive functioning.	K/KH Guided observation of consultants, role-plays, demonstrations, simulations	MCQ, CBD, OSCE
10	Lab investigation in alcohol use disorders, other substance use disorders, depressi	Enumeration, describe and interpret laboratory investigations in such patients (PS4. 3, PS6.3, PS7.3,PS8.2, PS8.3)	Enumerate and describe at least two indications of laboratory tests used in alcohol use disorders and other substance use disorders, depression and bipolar disorder, anxiety disorder	K/KH Small group discussion	MCQ

	on, bipolar disorder, anxiety disorder				
11	Depression and bipolar disorder	Suicide risk assessment PS6.3, PS7.3	Interview a patient and enumerate risk factors for suicide in the patient. Elicit components of intentionality and lethality	S/SH Demonstration, small group discussion	MCQ, Portfolio assessment, OSCE,DOPS
		Assessment and feedback			

DAILY WORKFLOW:

- 9.45am-10.30am: Classroom teaching- suggested TL methods are small group discussion, role-plays guided by scripts and observer checklists,clinical demonstrations and use of AV teaching aides.
- 10.30am-12.30pm: Students will tag with their clinical guides- suggested TL methods are guided observation of consultants and clinicaldemonstrations with patients in the OPD or on ward rounds, and formative assessment based on the student's portfolio.

END-OF-POSTING ASSESSMENT:

- 10 MCQs (10 marks)
- 1 OSCE skills station (20 marks)

CRITERIA FOR POSTING COMPLETION:

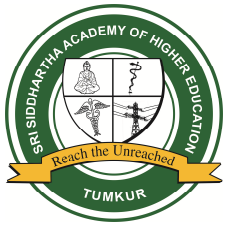
- Each student will be required to complete two cases in their logbook.
- 50% marks in the end-of posting assessment.

Acknowledgements

1) This curriculum was adapted from the draft document prepared by the Indian Psychiatry Society UG education subcommittee 2021-2022: Chairperson: Dr Ravi Gupta,
Co-chairperson: Dr Vinay H R, Convenor: Dr Priya Sreedaran, Advisor: Dr Anil Nischal and EC Co-ordinator: Dr Adarsh Tripathi

2) Dr Luke Salazar and Dr Bhuvaneshwari Sethuraman, from Department of Psychiatry, St John's Medical College, Bangalore

Sri Siddhartha Academy of Higher Education, Tumkur



Psychiatry Log book

For Undergraduates

As Per

Competency-Based Medical Education Curriculum

BASIC PROFORMA OF THE STUDENT

Photo

PARTICULARS OF THE STUDENT:

Name of the student :

MBBS Batch :

Father's name :

Mother's name :

Roll No :

SSAHE Reg No :

Address :

Contact number :

Email-ID :

Signature of the student:.....

PREFACE

This booklet has been adopted from the guidelines of the Indian Psychiatry Society UG education subcommittee 2021-2022 and complies with the "**Guidelines for preparing Logbook for Undergraduate Medical Education Program- 2019"** as per **CBME (Competency Based Medical Education) Guidelines- 2019**. It is for use by faculty members, institutions, and Universities to track and record the progress of an undergraduate student through the specified 18 competencies in Dermatology. The model logbook can be used as a guideline by Medical Colleges and Universities, and can be adapted / modified as per requirement.

This model logbook is with an aim to create a standard protocol for documenting the achievement of competencies allotted to Psychiatry as per the **Competency Based UG Curriculum (2018)** and the **Regulations on Graduate Medical Education, 2019**, **Part II**.

The Competency based curriculum places emphasis on acquisition of defined knowledge, skills, attitudes and values by the learner so as to be a capable physician of first contact in community. This logbook aims to document the acquisition of these milestones during the learner's stay in the Department of Psychiatry. This logbook would be a verifiable record of the learner's progression step-by-step. It has to be maintained as an essential document and filled in a timely manner, to enable progression to the next stage of learning.

Completion of specified activities, and submission of certified logbook is necessary for clearing Formative Assessment in Psychiatry. **Successful documentation and submission of the logbook should be a prerequisite for being allowed to take the final summative examination.**

INDEX

Contents	Page Number
1. BONAFIDE CERTIFICATE	
2. GENERAL INFORMATION	
3. PHASE II • **Competencies that are Required to be achieved during clinical posting** • **Clinical Case Presentation Record during 1st posting** • **Case records with reflections during 1st posting**	
4. PHASE III PART 1 • **Clinical Case Presentation Record during 2nd posting** • **Case records with reflections during 2nd posting**	
5. SCIENTIFIC PROJECT LIKE ICMR/PRESENTATIONS/ OUTREACH ACTIVITIES	
6. ACHIVEMENETS	
7. EXTRACURRICULAR ACTIVITIES	
8. ASSESSMENT RECORD	
9. ATTENDANCE EXTRACT	
10. FINAL SUMMARY	

(Name of College)

Department of Psychiatry

BONAFIDE CERTIFICATE

This is to certify that the candidate …… Reg No…….. has satisfactorily completed all requirements mentioned in this Logbook for undergradutes in Psychiatry including related AETCOM modules as per the Competency-Based Undergraduate Medical Education Curriculum, Graduate Medical Regulation 2019.

He/ She is eligible to appear for the University assessment.

Faculty Incharge:

Name:

Signature:

Place:

Date:

Head of Department:

Name:

Signature:

Place:

Date:

2. GENERAL INSTRUCTIONS

1. This logbook is a record of academic and other activities of the student during his/ her designated clinical posting in the Department of DVL.

2. Entries in the logbook reflect the activities undertaken by the student during the posting and are certified by the faculty.

3. The student is responsible for maintaining his/her logbook regularly.

4. The student is responsible for getting the logbook entries verified by concerned faculty regularly. They will not be signed/ verified/ certified after 15 days have elapsed after the end of posting.

5. The logbook should be verified by the Head of Department before forwarding the application of the student for the University Examination. This is mandatory requirement for appearing for University Examinations

6. The reflections should demonstrate the learning of the student that has taken place during the period of clinical posting. Please do not simply repeat the activities performed. A note on the learning experience, what was learnt and how it is going to be useful in the future, is expected. Reflections will be a useful document and assess learning for many competencies where formal assessment is not being done. Student needs to write academically useful reflections as per the prescribed format and within the time frame of the posting. These will be assessed by the teachers.

A. COMPETENCIES to be acquired during clinical postings 1, Phase 2

No	Topic	Competencies	SLOs
1	Doctor patient relationship	Developing rapport & empathy (PS1.1, PS3.4) Importance of confidentiality (PS1.4)	Define and describe the meaning of terms rapport and empathy. Demonstrate comfort with communicating with patient, use modes of communication enabling patient to feel safe and comfortable to participate in a dialogue. Enumerate the ethical principles of confidentiality including safeguarding of information, and consent to disclose information. Enumerate conditions under which confidentiality can be breached.
2	Breaking bad news	Breaking bad news (PS1.3)	Demonstrate breaking bad news to a patient or their family.
3	Introduction to psychiatry	Eliciting, presenting & documenting psychiatric history (PS3.3)	Interview a patient to elicit onset, course, duration and progress of illness with respect to present illness, past history, medical history, family history, personal history and premorbid history relevant to present illness.
4	Introduction to psychiatry	Performing mini mental state examination (PS3.5)	Examine a patient to elicit consciousness, orientation, attention and registration, recent and remote memory, affect and mood, speech, form and content of thought, perception, insight into mental illness.
5	Alcohol use disorders	Describe, elicit & document clinical features of alcohol use disorders (PS4.2)	Interview a patient to elicit history of present illness with regards to presenting complaints, onset of harmful use, onset of dependence, history of withdrawal symptoms, history of seizures, history of delirium tremens and history of other medical complications; past history, family history, medical history, personal history and premorbid history in individuals with alcohol use disorders.
6	Substance use disorders-tobacco	Describe, elicit & document clinical features of substance use disorders-tobacco (PS4.2)	Interview a patient to elicit history of present illness with regards to onset of harmful use, onset of dependence, history of any withdrawal symptoms; past history, family history, medical history, personal history and premorbid history in individuals with tobacco use disorders.
7	Depression	Describe, elicit & document clinical features in patients with depression (PS6.2)	Interview a patient to elicit history of present illness with regards to onset, duration, progress and course of illness and clinical features; past history, medical history, family history, personal history and premorbid history in a patient with depression. Perform a mental status examination to assess thought, perception and affect in a patient with depression.
8	Anxiety disorders (excluding OCD)	Describe, elicit & document clinical features in patients with anxiety (PS8.2)	Interview a patient to elicit history of present illness with regards to onset, duration, progress and course of illness and clinical features; past history, medical history, family history, personal history and

			premorbid history in a patient with anxiety disorders. Perform a mental status examination to assess thought, perception and affect in a patient with anxiety disorders.
9	Bipolar and Psychotic disorders	Describe, elicit & document clinical features in patients with bipolar disorders (PS7.2) Describe, elicit & document clinical features in patients with psychotic disorders (PS5.2)	Interview a patient to elicit history of present illness with regards to onset, duration, progress and course of illness and clinical features; past history, medical history, family history, personal history and premorbid history in a patient with bipolar disorder/ schizophrenia. Perform a mental status examination to assess thought, perception and affect in a patient with bipolar disorder/ schizophrenia.
10		**End-of-postings assessment with feedback**	

DAILY WORKFLOW (Suggested):

- 9.45am-10.30am: Classroom teaching- suggested TL methods are small group discussion, role-plays guided by scripts and observer checklists, clinical demonstrations and use of AV teaching aides.
- 10.30am-12.30pm: Students will tag with their clinical guides- suggested TL methods are guided observation of consultants and clinical demonstrations with patients in the OPD or on ward rounds, and formative assessment based on the student's portfolio.

END-OF-POSTING ASSESSMENT:

- 10 MCQs (10 marks)
- 1 OSCE skills station (20 marks)

CRITERIA FOR POSTING COMPLETION:

- Each student will be required to complete two case records in their logbook.
- 50% marks in the end-of posting assessment.

1st Posting

CLINICAL CASE PRESENTATION RECORD

Summary of Clinical Case Presentations/Spotters*

(*Departments may create/continue with a case record book for documentation of cases)

At least 3 cases per clinical posting

Serial No.	Date	Patient Name & ID	Diagnosis	Case Presented/ Attended Write P/A	Facilitator's Signature

1st Posting Phase II

REFLECTIONS: CLINICAL CASE PRESENTATION

U.G. PSYCHIATRY PORTFOLIO- SESSION NOTES PROFORMA (Alcohol/Tobacco)

Student name: Roll no.: Session date:

Session objectives: (SLOs) Interview a patient to elicit history of present illness with regards to presenting complaints, onset of harmful use, onset of dependence, history of withdrawal symptoms, history of seizures, history of delirium tremens and history of other medical complications; past history, family history, medical history, personal history and premorbid history in individuals with alcohol use disorders.

OR Interview a patient to elicit history of present illness with regards to onset of harmful use, onset of dependence, history of any withdrawal symptoms; past history, family history, medical history, personal history and premorbid history in individuals with tobacco use disorders.

Patient initials: Age: Sex:

History:

Mental status examination:

Reflections: (What were the strategies used to achieve the objectives? What went well? What did not go well? How did you feel?)

Supervisor feedback: (Identify better strategies to achieve the objectives)

Supervisor signature: Date:

U.G. PSYCHIATRY PORTFOLIO- SESSION NOTES PROFORMA
(Depression/Anxiety)

Student name: Roll no.: Session date:

Session objectives: (SLOs) 1. Interview a patient to elicit history of present illness with regards to onset, duration, progress and course of illness and clinical features; past history, medical history, family history, personal history and premorbid history in a patient with depression/ anxiety.
2. Perform a mental status examination to assess thought, perception and affect in a patient with depression/ anxiety.

P Patient initials :

Age: Sex:

Hist

ory**:**

Mental status examination:

Reflections: (What were the strategies used to achieve the objectives? What went well? What did not go well? How did you feel?)

Supervisor feedback: (Identify better strategies to achieve the objectives)

Supervisor signature:
Date:

Phase II

<u>End of posting Assessment</u>

Suggested Methods

1. **Viva Voce**
2. **CA-OSCE/ Short case**
3. **Bedside assessment**
4. **MCQs**

Date	Marks obtained	Total Marks	Feedback Student	Feedback Faculty

Phase III Part 1
CLINICAL CASE PRESENTATION RECORD

Summary of Clinical Case Presentations/Spotters*
(*Departments may create/continue with a case record book for documentation of cases)
At least 3 cases per clinical posting. Competencies to be addressed is given next)

Serial No.	Date	Patient Name & ID	Diagnosis	Case Presented/ Attended Write P/A	Facilitator's Signature

	TOPIC	COMPETENCIES	SPECIFIC LEARNING OBJECTIVE
1	Recap of psychiatric history and examination	Eliciting, presenting & documenting psychiatric history and examination (PS3.3, PS6.2, PS7.2, PS5.2, PS8.2)	Document and present a history in patients with mental disorder including current illness, past history, medical history, family history, personal history and premorbid history. Perform a mental status examination to assess general appearance, psychomotor activity, speech, affect, thought and perception
2	Organic Psychiatry	Eliciting delirium using the criteria and describe the higher mental functions. PS3.5	Interview a patient to elicit history of present illness with regards to onset, duration, progress and course of illness and clinical features; past history, medical history, family history, personal history in a patient with delirium. Perform a mental status examination to assess higher mental functions in a patient with delirium
3	Family education Part 1 Family education part 2	Describe the steps of family education in a simulated environment in a patient with substance use disorder, Depression, Anxiety disorders (PS4.5, PS6.5, PS8.5) Describe steps of family education in a simulated environment in a patient with severe mental illness and elderly with psychiatric illnesses (PS5.4, PS7.5, PS16.5)	Interview patients' family and enumerate and demonstrate the steps of communicating the diagnosis and need for treatment for a specific diagnosis and referral to specialists Interview patients' family and enumerate and demonstrate the steps of communicating the diagnosis and need for treatment for a specific diagnosis and referral to specialists
4	Stress related/Dissociative disorders	Describe, elicit & document clinical features of stress related/dissociative disorders. Enumerate, describe and interpret their laboratory investigations PS9.2, PS9.3	Interview a patient to elicit history of present illness with regards to onset, duration, progress and course of illness and clinical features; past history, medical history, family history, personal history and premorbid history in a patient with stress related disorders. Perform a mental status examination to assess thought, perception and affect in a patient

			with stress related/dissociative disorder
5	Somatoform disorder	Describe, elicit & document clinical features of somatoform disorders. Enumeration, describe and interpret laboratory investigations PS10.2, PS10.3	Interview a patient to elicit history of present illness with regards to onset, duration, progress and course of illness and clinical features; past history, medical history, family history, personal history and premorbid history in a patient with somatoform disorders. Perform a mental status examination to assess thought, perception and affect in a patient with somatoform disorder
6	Personality disorder and gender related issues	Describe, elicit & document clinical features of personality disorders and gender related issues. Enumeration, describe and interpret laboratory investigations in such patients PS11.2, PS11.3, P13.2, P13.3	Interview a patient to elicit history of present illness with regards to onset, duration, progress and course of illness and clinical features; past history, medical history, family history, personal history and premorbid history in a patient with personality disorders and gender related issues. Perform a mental status examination to assess general appearance, speech, thought, perception and affect in a patient with personality disorder and gender identity issues.
7	Psychosomatic disorder	Describe, elicit & document clinical features in patients with psychosomatic disorders. Discuss the psychological factors associated with worsening of underlying medical conditions. Enumeration, describe and interpret laboratory investigations in such patients PS12.2, PS12.3	Interview a patient to elicit history of present illness with regards to onset, duration, progress and course of illness and clinical features; past history, medical history, family history, personal history and premorbid history in a patient with psychosomatic disorder. Perform a mental status examination to assess thought, perception and affect in a patient with Psychosomatic disorder
8	Child and adolescent Psychiatric disorders	Describe, elicit & document clinical features in patients with child and adolescent psychiatric disorders. Enumeration, describe and interpret laboratory investigations in such patients PS14.2	Interview a child/adolescent patient to elicit history of present illness with regards to onset, duration, progress and course of illness, family history, family structure, birth and developmental history, school history, temperament. Perform a head-to-toe physical examination including

			systemic examination. Perform interview with the child to assess general appearance, psychomotor activity, affect and thought.
9	Mental retardation	Describe, elicit & document clinical history in child with mental retardation. Perform adequate physical examination in such children. Choose appropriate investigations in child with mental retardation PS15.4	Interview a child/adolescent patient to elicit history of present illness with regards to onset, duration, progress and course of illness, family history, family structure, birth and developmental history, school history, temperament. Perform a head-to-toe physical examination including systemic examination. Perform interview with the child to assess general appearance, psychomotor activity, thought and intelligence including adaptive functioning.
10	Lab investigation in alcohol use disorders, other substance use disorders, depression, bipolar disorder, anxiety disorder	Enumeration, describe and interpret laboratory investigations in such patients (PS4. 3, PS6.3, PS7.3,PS8.2, PS8.3)	Enumerate and describe at least two indications of laboratory tests used in alcohol use disorders and other substance use disorders, depression and bipolar disorder, anxiety disorder
11	Depression and bipolar disorder	Suicide risk assessment PS6.3, PS7.3	Interview a patient and enumerate risk factors for suicide in the patient. Elicit components of intentionality and lethality
		Assessment and feedback	

DAILY WORKFLOW:

- 9.45am-10.30am: Classroom teaching- suggested TL methods are small group discussion, role-plays guided by scripts and observer checklists,clinical demonstrations and use of AV teaching aides.
- 10.30am-12.30pm: Students will tag with their clinical guides- suggested TL methods are guided observation of consultants and clinicaldemonstrations with patients in the OPD or on ward rounds, and formative assessment based on the student's portfolio.

END-OF-POSTING ASSESSMENT:

- 10 MCQs (10 marks)
- 1 OSCE skills station (20 marks)

CRITERIA FOR POSTING COMPLETION:

- Each student will be required to complete two cases in their logbook.
- 50% marks in the end-of posting assessment.

U.G. PSYCHIATRY PORTFOLIO- SESSION NOTES PROFORMA
(Family education in a patient with substance use /anxiety/depression/severe mental illness/elderly with psychiatric illness)

Student name: Roll no.: Session date:

Session objectives: (SLOs) 1. Interview patients' family and enumerate and demonstrate the steps of communicating the diagnosis, need for treatment for a specific diagnosis and referral to specialists

Patient initials: Age: Sex:

History:

Mental status examination:

Reflections: (What were the strategies used to achieve the objectives? What went well? What did not go well? How did you feel?)

Supervisor feedback: (Identify better strategies to achieve the objectives)

Supervisor signature and Date:

U.G. PSYCHIATRY PORTFOLIO- SESSION NOTES PROFORMA
(Suicidal risk assessment)

Student name: Roll no.: Session date:

Session objectives: (SLOs) 1. Interview a patient and enumerate risk factors for suicide in the patient

2. Elicit components of intentionality and lethality

Patient initials: Age: Sex:

History:

Mental status examination:

Reflections: (What were the strategies used to achieve the objectives? What went well? What did not go well? How did you feel?)

Supervisor feedback: (Identify better strategies to achieve the objectives)

Supervisor signature and Date:

Phase III Part 1
End of posting Assessment

Suggested Methods

1. **Viva Voce**
2. **CA-OSCE / Short case**
3. **Bedside assessment**
4. **MCQs**

Date	Marks obtained	Total Marks	Feedback Student	Feedback Faculty

6. SCIENTIFIC PROJECT PRESENTATIONS/REPORTS/OUTREACH ACTIVITIES/UG QUIZ

SL NO	**DATE**	**PARTICULARS**	**SIGNATURE OFSTAFF**

9. ASSESSMENT RECORD

Phase	Duration (From-To)	Assessment score (marks obtained)	Total marks	Assessment (%)	Remarks	Faculty Signature
Phase II						
Phase III Part I						
Total						

10. SUMMARY OF ATTENDANCE

Rotation	**Phase**	**Duration (Weeks)**	**From**	**To**	**Total classes held**	**Number of classes attended**	**Faculty Signature**
1st	Phase II	2 weeks					
2nd	Phase III Part I	2 weeks					
Total						Cumulative attendance n/%	

Sri Siddhartha Academy of Higher Education, Tumkur

Dermatology, Venereology & Leprosy Curriculum

as per

Competency-Based Medical Education Curriculum

SSAHE Dermatology, Venereology & Leprosy Curriculum as per the new Competency Based Medical Education

Preamble

The NMC envisages that the Indian Medical Graduate (IMG), should function as the Physician of first contact in the community, to provide holistic health care to the evolving needs of the nation and the world. To fulfil this the IMG should be able to perform the following roles: a clinician, a communicator, a lifelong learner, a professional and a team leader.

Competency-based medical education (CBME) is an outcomes-based training model that has become the new standard of medical education internationally. This new curriculum is being implemented across the country and the first batch has been enrolled since the academic year 2019. The regulatory and accrediting body NMC had started the process by training faculty across the country in the key principles of CBME and developing key competencies for each speciality with the input from expert groups under each speciality.

Dermatology is the branch of medicine dealing with the skin and its appendages. It is a speciality which deals with diseases of skin including leprosy and sexually transmitted diseases, hair, nails, and cosmetic problems and encompasses both medical and surgical modalities. The dermatology undergraduate curriculum provides the IMG the requisite knowledge, essential skills, and appropriate attitudes to be able to diagnose and treat common skin disorders and to be able to recognise and refer other cutaneous conditions.

The NMC, in the Graduate medical regulations 2019, has provided the list of dermatology competencies required for an IMG and these have been included in this dermatology curriculum document. The Specific learning objectives (SLO's) to achieve each competency has been listed along with the suggested Teaching-Learning methods and preferred assessment methods both formative and summative.

Since dermatology doesn't have a separate dermatology exam paper for undergraduate, model division of marks for dermatology under medicine papers has been highlighted. Also, model questions for the same has been attached.

Goals and Objectives of the SSAHE Dermatology, Venereology & Leprosy Curriculum

Goals

Specific goal for IMG in dermatology is to identify and treat common dermatology disease and to refer as appropriate.

Objectives

A) Knowledge

At the end of the course student should be able to:

c. Describe the applied anatomy, physiology and biochemical attributes of the normal skin and its appendages.
d. Understanding of the principles of diagnosis of diseases of the skin and its appendages.
e. Demonstrate the ability to apply the knowledge in a clinical setting.

(B) Skills

At the end of the course the student should be able to:

a. Ability to recognize, diagnose, order appropriate investigations and treat common diseases of the skin including leprosy in the primary care setting and refer as appropriate
b. A syndromic approach to the recognition, diagnosis, prevention, counselling, testing and management of common sexually transmitted diseases including HIV based on national health priorities.
c. Ability to recognize and treat emergencies including drug reactions and refer as appropriate.

C) Attitude and communication skills

At the end of the course the student should be able to:

e. Communicate effectively with patients, their families and the public at large.
f. Communicate effectively with peers and teachers demonstrate the ability to work effectively with peers in a team.
g. Demonstrate professional attributes of punctuality, accountability and respect for teachers and peers.
h. Appreciate the issues of equity and social accountability while undergoing all clinical encounters.

Teaching hours (Third professional, Part-I)				
Subject	**Teaching hours**	**Tutorials/Seminars/Integrated teaching (Hours)**	**Self directed learning (Hours)**	**Total (Hours)**
Dermatology	**20**	**5**	**5**	**30**

Clinical postings (Total : 6 weeks)
2 weeks: II MBBS 2 weeks: III MBBS Part I 2 weeks: III MBBS Part II

Theory teaching hours (Third professional, Part-I)

THEORY				
Sl. No.	**Topic**	**Competencies**	**Time**	**T/L method**
1	Structure & function of skin with its appendages	AN 4.2	1 hour	Lecture
2	Acne	DR 1.1, DR 1.3	1 hour	Lecture
3	Vitiligo	DR 2.2	1 hour	Lecture
4	Papulosquamous disorders: Psoriasis	DR 3.3	1 hour	Lecture

5	Lichen Planus	DR 4.2	1 hour	Lecture
6	Scabies	DR.5.1, DR5.3	1 hour	Lecture
7	Pediculosis	DR 6.1	1 hour	Lecture
8	Fungal infections	DR 7.1, DR 7.3	1 hour	Lecture
9	Viral Infections	DR 8.1, DR 8.7	1 hour	Lecture
10	Leprosy Part I	DR 9.1, DR 9.4, DR 9.5	1 hour	Lecture
11	Leprosy Part II	DR 9.6, DR 9.7	1 hour	Lecture
12	STD's Part I	DR 10.3, DR 10.4	1 hour	Lecture
13	STD's Part I	DR 10.6, 10.8, DR 10.9, DR 10.10 ,DR 10.11	1 hour	Lecture
14	HIV	DR 11.1, DR 11.3	1 hour	Lecture
15	Dermatitis & Eczema	DR 12.1, DR 12.3, DR 12.4	1 hour	Lecture
16	Urticaria & angioedemo	DR 14.1, 14.5	1 hour	Lecture
17	Bacterial Infections/ Pyoderma	DR 15.3	1 hour	Lecture
18	Nutritional Disorders & Skin	DR 17.1, 17.2, 17.3, 17.4	1 hour	Lecture
19	Systemic Diseases & Skin	DR 18.1, DR 18.2	1 hour	Lecture
20	Drugs in skin diseases	PH 1.57	1 hour	Lecture
	Total		**20 hours**	

List of all Dermatology Competencies with their specific learning objectives, with suggested teaching-learning and assessment methods

	Competencies	**Specific learning objectives**	**Teaching learning methods**	**Assessment**
Topic: Structure & function of skin with its appendages				
AN 4.2	Structure & function of skin with its appendages	Structure & function of Skin Structure & function of Hair Structure & function of Nail	Lecture	MCQs at the end of lecture
Topic: Acne				
DR1.1	Enumerate the causative and risk factors of acne	Composition of sebum Functions of sebaceous glands Etiopathogenesis of acne Risk factors for development acne	Lecture	MCQs at the end of lecture

DR1.3	Describe the treatment and preventive measures for various kinds of acne	Preventive measures to control Topical therapeutics in acne Systemic therapeutics in acne Lasers in management of acne	Lecture	MCQs at the end of lecture
Topic: Vitiligo				
DR2.2	Describe the treatment of vitiligo	Etiopathogenesis of vitiligo Clinical types of vitiligo Topical modalities in treatment of vitiligo Systemic modalities in treatment of vitiligo Phototherapy in management of vitiligo	Lecture	MCQs at the end of lecture
Topic: Papulosquamous disorders				
DR 3.3	Enumerate the indications for and describe the various modalities of treatment of psoriasis including topical, systemic and phototherapy	Etiopathogenesis of psoriasis Clinical features and types of psoriasis Diagnosis of psoriasis Topical therapy and its indications Phototherapy and its indications Systemic therapy and its indications Biologicals in psoriasis	Lecture	MCQs at the end of lecture
Topic: Lichen planus				
DR 4.2	Enumerate and describe the treatment modalities for lichen planus	Etiopathogenesis of lichen planus Clinical features and types of lichen planus Diagnosis of lichen planus Topical and systemic modalities of lichen planus	Lecture	MCQs at the end of lecture
Topic: Scabies				
DR 5.1	Describe the etiology, microbiology, pathogenesis, natural history, clinical features, presentations and complications of scabies in adults and children	Structure and life cycle of scabies mite Clinical types and presentations of scabies Complications of scabies	Lecture	MCQs at the end of lecture
DR 5.3	Enumerate and describe the pharmacology, administration and adverse reaction of pharmacotherapies for scabies	Diagnosis of scabies General measures of treatment Topical scabicidal agents and method of administration Systemic drugs for treatment	Lecture	MCQs at the end of lecture

		Adverse effects of scabicidal agents Preventive measures to reduce transmission		
Topic: Pediculosis				
DR 6.1	Describe the etiology pathogenesis and diagnostic features of pediculosis in adults and children	Etiopathogenesis of pediculosis Clinical features of pediculosis Complications of pediculosis Diagnosis of pediculosis Treatment modalities and method of administration	Lecture	MCQs at the end of lecture
Topic: Fungal Infections				
DR 7.1	Describe the etiology, microbiology, pathogenesis and clinical presentations and diagnostic features of dermatophytes in adult and children	Etiopathogenesis of Dermatophytosis Clinical manifestations and types of dermatophytosis Laboratory diagnosis of dermatophytosis	Lecture	MCQs at the end of lecture
DR 7.3	Describe the pharmacology and action of antifungal (systemic and topical) agents. Enumerate side effects of antifungal therapy	Mechanism of action, indications and side effect profile of systemic antifungals Mechanism of action, indications and side effect profile of topical antifungals	Lecture	MCQs at the end of lecture
Topic: **Viral infections**				
DR 8.1	Describe the etiology, microbiology, pathogenesis and clinical presentations and diagnostic features of common viral infections of the skin in adults and children	Etio pathogenesis and clinical features of herpes virus infections Etio pathogenesis and clinical features of human papilloma virus infections Etiopathogenesis and clinical features of molluscum contagiosum	Lecture	MCQs at the end of lecture
DR 8.7	Enumerate the indications and describe the pharmacology, administration and adverse reaction of pharmacotherapies for common viral illnesses of the skin	Mechanism of action, indications and side effect profile of antiviral therapy	Lecture	MCQs at the end of lecture
Topic: Leprosy				

DR 9.1	Classify describe the epidemiology etiology, microbiology,pathogenesis, clinical presentations and diagnostic features of Leprosy	History and epidemiology of Hansen's disease Microbiology and ultrastructure of M. Leprae Etiopathogenesis and clinical presentations of leprosy Laboratory diagnosis of leprosy	Lecture	MCQs at the end of lecture
DR 9.4	Enumerate, describe and identify lepra reactions and supportive measures and therapy of lepra reactions	Etiopathogenesis,types and clinical features of lepra reactions Management of lepra reactions	Lecture	MCQs at the end of lecture
DR 9.5	Enumerate the indications and describe the pharmacology, administration and adverse reaction of pharmacotherapies for various classes of leprosy based on national guidelines	Mechanism of action, administration, indications and side effect profile of anti leprosy medication.	Lecture	MCQs at the end of lecture
DR 9.6	Describe the treatment of Leprosy based on the WHO guidelines	Multi drug therapy	Lecture	MCQs at the end of lecture
DR 9.7	Enumerate and describe the complications of leprosy and its management, including understanding disability and stigma.	Complications of Hansen's disease Management of deformities in Hansen's disease	Lecture	MCQs at the end of lecture
Topic: Sexually Transmitted Diseases				
DR 10.3	Enumerate the indications and describe the pharmacology, administration and adverse reaction of pharmacotherapies for syphilis	Etiology, pathogenesis and microbiology of syphilis Clinical features, types of syphilis Laboratory diagnosis of syphilis Treatment of syphilis	Lecture	MCQs at the end of lecture
DR 10.4	Describe the prevention of congenital syphilis	Laws and clinical manifestations of congenital syphilis Preventive aspects of congenital syphilis	Lecture	MCQs at the end of lecture
DR 10.6	Describe the etiology, diagnostic and clinical features of non-syphilitic sexually transmitted diseases (chancroid, donovanosis and LGV)	Etiopathogenesis,types and clinical features of chancroid Etiopathogenesis, types and clinical features of Donovanosis Etiopathogenesis, types and clinical features of LGV	Lecture	MCQs at the end of lecture

DR 10.8	Enumerate the indications and describe the pharmacology, indications and adverse reactions of drugs used in the non-syphilitic sexually transmitted diseases (chancroid, donovanosis and LGV)	Management of chancroid Management of donovanosis Management of LGV	Lecture	MCQs at the end of lecture
DR 10.9	Describe the syndromic approach to ulcerative sexually transmitted disease	Syndromic management of genital ulcer disease	Lecture	MCQs at the end of lecture
DR 10.10	Describe the etiology, diagnostic and clinical features and management of gonococcal and non-gonococcal urethritis	Etio-pathogenesis of gonococcal urethritis and non-gonococcal urethritis Laboratory diagnosis of gonococcal urethritis and non-gonococcal urethritis Treatment of gonococcal and non gonococcal uretritis	Lecture	MCQs at the end of lecture
DR 10.11	Describe the etiology, diagnostic and clinical features and management of vaginal discharge	Differential diagnosis of vaginal discharge Clinical features, risk factors and diagnosis of trichomoniasis Predisposing factors, clinical features and diagnosis of candidiasis Clinical features and diagnosis of bacterial vaginosis	Lecture	MCQs at the end of lecture
Topic: HIV				
DR 11.1	Describe the etiology, pathogenesis and clinical features of the dermatologic manifestations of HIV and its complications including opportunistic infections	Structure of HIV Etiopathogenesis and stages of HIV Cutaneous manifestations of AIDS Complications of AIDS	Lecture	MCQs at the end of lecture
DR 11.3	Enumerate the indications and describe the pharmacology, administration and adverse reaction of pharmacotherapies for dermatologic lesions in HIV	Antiretroviral therapy:- Pharmacology, route of administration, indications and adverse reactions of ART.	Lecture	MCQs at the end of lecture
Topic: Dermatitis and Eczema				
DR 12.1	Describe the aetiopathogenesis of eczema	Definition of eczema Etiology and predisposing factors of eczema.	Lecture	MCQs at the end of lecture

DR 12.3	Classify and grade eczema	Various classification and grading eczema	Lecture	MCQs at the end of lecture
DR 12.4	Enumerate the indications and describe the pharmacology, indications and adverse reactions of drugs used in the treatment of eczema	General measures in management of eczema Indications for topical therapy Indications for systemic therapy	Lecture	MCQs at the end of lecture
Topic: Urticaria Angioedema				
DR 14.1	Describe the etiology, pathogenesis and clinical precipitating features and classification of Urticaria and angioedema	Classification of urticaria and angioedema Etio-pathogenesis and precipitating factors of urticarial Clinical features of urticaria and angioedema	Lecture	MCQs at the end of lecture
DR 14.5	Enumerate the indications and describe the pharmacology indications and adverse reactions of drugs used in the urticaria and angioedema	Diagnostic tests for urticaria and angioedema Treatment of urticaria and angioedema	Lecture	MCQs at the end of lecture
Topic: Pyoderma				
DR 15.3	Enumerate the indications and describe the pharmacology, indications and adverse reactions of topical and systemic drugs used in treatment of pyoderma	Classify pyoderma Etio-pathogenesis of pyodermas Clinical features of staphylococcal pyoderma Clinical features of streptococcal pyodermas Clinical features of other bacterial infections Management of pyoderma	Lecture	MCQs at the end of lecture
Topic: Nutritional Deficiencies and Skin				
DR 17.1	Enumerate and identify the cutaneous findings in vitamin A deficiency	Cutaneous manifestations of Vitamin A deficiency Treatment of Vitamin A deficiency	Lecture	MCQs at the end of lecture
DR 17.2	Enumerate and describe the various skin changes in Vitamin B complex deficiency	Cutaneous manifestations of Vitamin B complex deficiency Treatment of Vitamin B complex deficiency	Lecture	MCQs at the end of lecture
DR 17.3	Enumerate and describe the various changes in Vitamin C deficiency	Cutaneous manifestations of Vitamin C deficiency Treatment of Vitamin C deficiency	Lecture	MCQs at the end of lecture
DR 17.4	Enumerate and describe the various changes in Zinc deficiency	Cutaneous manifestations of Zinc deficiency Treatment of Zinc deficiency	Lecture	MCQs at the end of lecture

Topic: Systemic diseases and the skin				
DR 18.1	Enumerate the cutaneous features of Type 2 diabetes	Cutaneous manifestations of Type 2 diabetes	Lecture	MCQs at the end of lecture
DR 18.2	Enumerate the cutaneous features of hypo/hyper-thyroidism	Cutaneous manifestations of Hypothyroidism Cutaneous manifestations of Hyperthyroidism	Lecture	MCQs at the end of lecture
Topic: Drugs in skin diseases				
PH 1.57	Drugs in skin disease	Topical agents in dermatology Systemic agents in dermatology	Lecture	MCQs at the end of lecture

Self- Directed learning:

Duration: 5 hours

Students will be given clinical case scenarios. Reference books and E material will be suggested to them beforehand. Discussion regarding the case scenarios including approach to diagnosis and management will be done.

Self- Directed learning		
Sl. No.	**Topics**	**Competencies**
1	Vesiculobullous disorders	DR 13.1-13.3
2	Cutaneous adverse reaction	DR 12.7
3	Leprosy	DR 9.1-9.7
4	Collagen vascular disorders	DR 16.1
5	STDs – Genital ulcer diseases	DR 10.9
Duration	**5 hours**	

SGD (Small Group Discussion):

A small group of 25 students will be done. A topic is given to each group and same will be discussed among the group.

Sl No.	Topic	Competencies	Duration (Hours)
1	Cutaneous manifestations in Diabetes Mellitus	DR18.1	1
2	Cutaneous manifestations in Thyroid disorders	DR18.2	1
3	Cutaneous manifestations in HIV	DR11.1,11.3	1
4	Psychocutaneous disorders	DR 9.7	1
5	Collagen vascular disorders	DR16.1,16.2	1
Total: 5 hours			

Integration: The teaching should be aligned and integrated horizontally and vertically in order to emphasize the biologic basis of diseases of the skin, sexually transmitted diseases and leprosy and to provide an understanding that skin diseases may be a manifestation of systemic disease.

Topics for vertical integration

SI No	Integrated teaching	Integrated with (Department)
1	AN4.2 Describe structure & function of skin with its appendages	Anatomy
2	AN4.4 Describe modifications of deep fascia with its function	Anatomy
3	AN4.5 Explain principles of skin incisions	Anatomy
4	DR5.3 Enumerate and describe the pharmacology, administration and adverse reaction of pharmacotherapies for scabies	Pharmacology
5	DR6.1 Describe the etiology pathogenesis and diagnostic features of pediculosis in adults and children	Microbiology
6	DR7.1Describe the etiology, microbiology, pathogenesis and clinical presentations and diagnostic features of dermatophytes in adults and children	Microbiology
7	DR7.2Identify Candida species in fungal scrapings and KOH mount	Microbiology
8	DR7.3Describe the pharmacology and action of antifungal (systemic and topical) agents. Enumerate side effects of antifungal therapy	Microbiology, Pharmacology
9	DR8.1 Describe the etiology, microbiology, pathogenesis and clinical presentations and diagnostic features of common viral infections of the skin in adults and children	Microbiology
10	DR8.7 Enumerate the indications and describe the pharmacology, administration and adverse reaction of pharmacotherapies for common viral illnesses of the skin	Pharmacology
11	DR9.1 Classify describe the epidemiology etiology microbiology pathogenesis, clinical presentations and diagnostic features of Leprosy	Microbiology, Community medicine
12	DR9.4 Enumerate, describe and identify lepra reactions and supportive measures and therapy of lepra reactions	Pharmacology
13	DR9.5 Enumerate the indications and describe the pharmacology, administration and adverse reaction of pharmacotherapies for various classes of leprosy based on national guidelines	Pharmacology, Community medicine
14	DR9.6 Describe the treatment of Leprosy based on the WHO guidelines	Pharmacology,

		Community medicine
15	DR9.7 Enumerate and describe the complications of leprosy and its management, including understanding disability and stigma.	Pharmacology, Psychiatry
16	DR10.1Identify and classify syphilis based on the presentation and clinical manifestations	Microbiology
17	DR10.2 Identify spirochete in a dark ground microscopy	Microbiology
18	DR10.3 Enumerate the indications and describe the pharmacology, administration and adverse reaction of pharmacotherapies for syphilis	Microbiology, Pharmacology
19	DR10.6 Describe the etiology, diagnostic and clinical features of non-syphilitic sexually transmitted diseases (chancroid, donovanosis and LGV)	Microbiology
20	DR10.7 Identify and differentiate based on the clinical features non-syphilitic sexually transmitted diseases (chancroid, donovanosis and LGV)	Microbiology
21	DR10.8 Enumerate the indications and describe the pharmacology, indications and adverse reactions of drugs used in the non- syphilitic sexually transmitted diseases (chancroid, donovanosis and LGV)	Microbiology, Pharmacology
22	DR11.1 Describe the etiology, pathogenesis and clinical features of the dermatologic manifestations of HIV and its complications including opportunistic infections	Microbiology
23	DR11.2 Identify and distinguish the dermatologic manifestations of HIV, its complications, opportunistic infections and adverse reactions	Microbiology
24	DR11.3 Enumerate the indications and describe the pharmacology, administration and adverse reaction of pharmacotherapies for dermatologic lesions in HIV	Microbiology, Pharmacology
25	DR12.7 Identify and distinguish fixed drug eruptions and Steven Johnson syndrome from other skin lesions	Microbiology, Pathology
26	DR14.1 Describe the etiology, pathogenesis and clinical precipitating features and classification of Urticaria and angioedema	Microbiology, Pathology
27	DR15.2 Identify staphylococcus on a gram stain	Microbiology
28	DR15.3 Enumerate the indications and describe the pharmacology, indications and adverse reactions of topical and systemic drugs used in treatment of pyoderma	Microbiology, Pharmacology
29	PH1.46Describe the mechanisms of action, types, doses, side effects, indications and contraindications of antileprotic drugs	Pharmacology
30	DR16.2 Identify and distinguish Raynaud's phenomenon	Pathology

31	DR17.1 Enumerate and identify the cutaneous findings in vitamin A deficiency	Biochemistry
32	DR17.2 Enumerate and describe the various skin changes in Vitamin B complex deficiency	Biochemistry
33	DR 17.3 Enumerate and describe the various changes in Vitamin C deficiency	Biochemistry
34	DR17.4 Enumerate and describe the various changes in Zinc deficiency	Biochemistry
35	PA34.1 Describe the risk factors, pathogenesis, pathology and natural history of squamous cell carcinoma of the skin	Pathology
36	PA34.2 Describe the risk factors, pathogenesis, pathology and natural history of basal cell carcinoma of the skin	Pathology
37	PA34.3 Describe the distinguishing features between a nevus and melanoma. Describe the etiology, pathogenesis, risk factors, morphology clinical features and metastases of melanoma	Pathology
38	MI4.3 Describe the etio-pathogenesis of Skin and soft tissue infections and discuss the clinical course, and the laboratory diagnosis.	Microbiology
39	MI7.2 Describe the etio-pathogenesis and discuss the laboratory diagnosis of sexually transmitted infections. Recommend preventive measures, wherever relevant.	Microbiology
40	PH1.57 Describe drugs used in skin disorders	Pharmacology
41	DR14.5 Enumerate the indications and describe the pharmacology indicationsandadversereactions ofdrugsusedintheurticariaand indications and adverse reactions of drugs used in the urticaria and angioedema	Pharmacology

Topics for horizontal integration

SI No	Integrated teaching	Integrated with (Department)
1	DR5.1Describe the etiology, microbiology, pathogenesis, natural history, clinical features, presentations and complications of scabies in adults and children	Pediatrics
2	DR5.2 Identify and differentiate scabies from other lesions in adults and children	Pediatrics
3	DR5.3 Enumerate and describe the pharmacology, administration and adverse reaction of pharmacotherapies for scabies	Pediatrics

4	DR6.1 Describe the etiology pathogenesis and diagnostic features of pediculosis in adults and children	Pediatrics
5	DR6.2 Identify and differentiate pediculosis from other skin lesions in adults and children	Pediatrics
6	DR7.1 Describe the etiology, microbiology, pathogenesis and clinical presentations and diagnostic features of dermatophytes in adults and children	Pediatrics
7	DR8.1 Describe the etiology, microbiology, pathogenesis and clinical presentations and diagnostic features of common viral infections of the skin in adults and children	Pediatrics
8	PE31.4 Identify Atopic dermatitis and manage	Pediatrics
9	DR9.1 Classify describe the epidemiology etiology microbiology pathogenesis, clinical presentations and diagnostic features of Leprosy	General Medicine
10	DR9.2 Demonstrate (and classify based on) the clinical features of leprosy including an appropriate neurologic examination	General Medicine
11	DR9.4 Enumerate, describe and identify lepra reactions and supportive measures and therapy of lepra reactions	General Medicine
12	DR9.5 Enumerate the indications and describe the pharmacology, administration and adverse reaction of pharmacotherapies for various classes of leprosy based on national guidelines	General Medicine
13	DR9.6 Describe the treatment of Leprosy based on the WHO guidelines	General Medicine
14	DR9.7 Enumerate and describe the complications of leprosy and its management, including understanding disability and stigma.	General Medicine
15	DR10.1 Identify and classify syphilis based on the presentation and clinical manifestations	General Medicine
16	DR10.2 Identify spirochete in a dark ground microscopy	General Medicine
17	DR10.3 Enumerate the indications and describe the pharmacology, administration and adverse reaction of pharmacotherapies for syphilis	General Medicine
18	DR10.4 Describe the prevention of congenital syphilis	General Medicine
19	DR10.5 Counsel in a non-judgemental and empathetic manner patients on prevention of sexually transmitted disease	General Medicine
20	DR10.6 Describe the etiology, diagnostic and clinical features of non-syphilitic sexually transmitted diseases (chancroid, donovanosis and LGV)	General Medicine

21	DR10.7 Identify and differentiate based on the clinical features non-syphilitic sexually transmitted diseases (chancroid, donovanosis and LGV)	General Medicine
22	DR10.8 Enumerate the indications and describe the pharmacology, indications and adverse reactions of drugs used in the non- syphilitic sexually transmitted diseases (chancroid, donovanosis and LGV)	General Medicine
23	DR10.9 Describe the syndromic approach to ulcerative sexually transmitted disease	General Medicine
24	DR10.10 Describe the etiology, diagnostic and clinical features and management of gonococcal and non-gonococcal urethritis	General Medicine
25	DR11.1 Describe the etiology, pathogenesis and clinical features of the dermatologic manifestations of HIV and its complications including opportunistic infections	General Medicine
26	DR11.2 Identify and distinguish the dermatologic manifestations of HIV, its complications, opportunistic infections and adverse reactions	General Medicine
27	DR11.3 Enumerate the indications and describe the pharmacology, administration and adverse reaction of pharmacotherapies for dermatologic lesions in HIV	General Medicine
28	DR12.7 Identify and distinguish fixed drug eruptions and Steven Johnson syndrome from other skin lesions	General Medicine
29	DR16.1 Identify and distinguish skin lesions of SLE	General Medicine
30	DR16.2 Identify and distinguish Raynaud's phenomenon	General Medicine
31	DR17.1 Enumerate and identify the cutaneous findings in vitamin A deficiency	General Medicine/Pediatrics
32	DR17.2 Enumerate and describe the various skin changes in Vitamin B complex deficiency	General Medicine/Pediatrics
33	DR 17.3 Enumerate and describe the various changes in Vitamin C deficiency	General Medicine/Pediatrics
34	DR17.4 Enumerate and describe the various changes in Zinc deficiency	General Medicine/Pediatrics
35	DR18.1 Enumerate the cutaneous features of Type 2 diabetes	General Medicine
36	DR18.2 Enumerate the cutaneous features of hypo/hyper-thyroidism	General Medicine
37	DR15.3 Enumerate the indications and describe the pharmacology, indications and adverse reactions of topical and systemic drugs used in treatment of pyoderma	General Surgery
38	DR15.4 Enumerate the indications for surgical referral	General Surgery

39	DR10.11 Describe the etiology, diagnostic and clinical features and management of vaginal discharge	Obstetrics & Gynaecology

Assessment

Eligibility to appear for university examinations is dependent on fulfilling criteria in two main areas – attendance and internal assessment marks

Attendance

Attendance requirements are 75% in theory and 80% in clinical postings which will be added to General Medicine for eligibility to appear for the examinations.

Internal Assessment

There won't be separate internal assessment but 10% of total internal exams marks in general medicine should include questions from dermatology in consultation with department of Dermatology.

University examinations

Dermatology doesn't have a separate paper for third Professional Part II. But discipline of Dermatology, venereology and Leprosy (DVL) in combination with Psychiatry and Respiratory medicine including Tuberculosis should constitute 25% of theory marks in Paper II of General Medicine as separate section. So, 10% of questions must be incorporated from Dermatology in Paper II of General Medicine.

Marks allotted

Dermatology	Theory
Total marks	8-10 marks
	Short answer question 2x3 = 6 marks
	MCQs 4x1=4 marks

Clinical examination/ Practical's:

It is desirable to include one short cases in practical examination in General Medicine examination.

Acknowledgement of contributors

Dr Shashi Kumar BM, Associate Professor, Department of Dermatology, Mandya Institute of Medical Sciences.

Dr Deepadarshan K, Assistant professor in Department of Dermatology, Mandya Institute of Medical Sciences, Mandya for his contribution in preparation of this curriculum.

Sri Siddhartha Academy of Higher Education, Tumkur

Dermatology, Venereology & Leprosy

LOG BOOK

For Undergraduates

As Per

Competency-Based Medical Education Curriculum

NAME OF THE CANDIDATE :

NAMEOFTHECOLLEGE :

UNIVERSITY REGISTER NUMBER :

ACADEMIC YEAR :

BASIC PROFORMA OF THE STUDENT

Photo

PARTICULARS OF THE STUDENT:

Name of the student :

MBBS Batch :

Father's name :

Mother's name :

Roll No :

SSAHE Reg No :

Address :

Contact number :

Email-ID :

Signature of the student:.....

PREFACE

This booklet has been adopted from the book prepared by an Expert Group of IADVL Academy and complies with the "**Guidelines for preparing Logbook for Undergraduate Medical Education Program- 2019"** as per **CBME (Competency Based Medical Education) Guidelines- 2019**. It is for use by faculty members, institutions, and Universities to track and record the progress of an undergraduate student through the specified 18 competencies in Dermatology. The model logbook can be used as a guideline by Medical Colleges and Universities, and can be adapted / modified as per requirement.

These guidelines for recording logbook entries are recommended for the MBBS students from the academic year 2019-20 onwards. This model logbook is with an aim to create a standard protocol for documenting the achievement of competencies allotted to DVL as per the **Competency Based UG Curriculum (2018)** and the **Regulations on Graduate Medical Education, 2019**, **Part II**.

The Competency based curriculum places emphasis on acquisition of defined knowledge, skills, attitudes and values by the learner so as to be a capable physician of first contact in community. This logbook aims to document the acquisition of these milestones during the learner's stay in the Department of Dermatology and STD. This logbook would be a verifiable record of the learner's progression step-by-step. It has to be maintained as an essential document and filled in a timely manner, to enable progression to the next stage of learning.

Completion of specified activities, and submission of certified logbook is necessary for clearing Formative Assessment in Dermatology and STD. **Successful documentation and submission of the logbook should be a prerequisite for being allowed to take the final summative examination.**

Glossary of terms

1. **Number** of Competency- addressed as per Volume of the UG Curriculum e.g. DR2.1
2. **Name of the activity-** To specify seminar/ Live or Group discussion/ Session/ Clinical Interaction/ Demonstration etc.
3. **Date the activity gets completed**
4. **Attempt at each activity by the learner**
    a. First attempt (or) only attempt
    b. Repeat (R) of a previously done activity
    c. Remedial activity (Re) based on the determination by the faculty
5. **Rating upon completion of activity**
    a. Below expectations (B);
    b. Meets expectations (M)
    c. Exceeds expectations (E)
6. **Decision of faculty**
    a. **C (closed):** activity is completed, therefore closed. It can be certified, if needed.
    b. **R (repeat)**: activity needs to be repeated without any further intervention.
    c. **Re (remedial)**: activity needs remedial action (usually done after repetition did not lead to satisfactory completion)
7. Initials (Signature) of faculty indicating the completion or other determination
8. Initial (Signature) of the learner, if feedback has been received.

A numerical score may also be used if deemed necessary by the Department

Three posting of 2 weeks each as per GMER document. Competencies have been divided accordingly.

Method of teaching-learning advised.

Method of assessment advised.

INDEX

Contents	Page Number
11. BONAFIDE CERTIFICATE	
12. GENERAL INFORMATION	
13. PHASE II • **Competencies Requiring Certification** • **Clinical Case Presentation Record** • **Reflections**	
14. PHASE III PART 1 • **Competencies Requiring Certification** • **Clinical Case Presentation Record** • **Reflections**	
15. PHASE III PART 2 • **Competencies Requiring Certification** • **Clinical Case Presentation Record** • **Reflections**	
16. SCIENTIFIC PROJECT LIKE ICMR/PRESENTATIONS/ OUTREACH ACTIVITIES	
17. ACHIVEMENETS	
18. EXTRACURRICULAR ACTIVITIES	
19. ASSESSMENT RECORD	
20. ATTENDANCE EXTRACT	
21. FINAL SUMMARY	

(Name of Institution)

DEPARTMENTOF Dermatology, Venereology & Leprosy (DVL)

BONAFIDE CERTIFICATE

This is to certify that the candidate …… Reg No……..

has satisfactorily completed all requirements mentioned in this Logbook for undergradutes in DVL including related AETCOM modules as per the Competency-Based Undergraduate Medical Education Curriculum, Graduate Medical Regulation 2019.

He/ She is eligible to appear for the University assessment.

Faculty Incharge:

Name:

Signature:

Place:

Date:

Head of Department:

Name:

Signature:

Place:

Date:

2. GENERAL INSTRUCTIONS

1. This logbook is a record of academic and other activities of the student during his/ her designated clinical posting in the Department of DVL.

2. Entries in the logbook reflect the activities undertaken by the student during the posting and are certified by the faculty.

3. The student is responsible for maintaining his/her logbook regularly.

4. The student is responsible for getting the logbook entries verified by concerned faculty regularly. They will not be signed/ verified/ certified after 15 days have elapsed after the end of posting.

5. The logbook should be verified by the Head of Department before forwarding the application of the student for the University Examination. This is mandatory requirement for appearing for University Examinations

6. The reflections should demonstrate the learning of the student that has taken place during the period of clinical posting. Please do not simply repeat the activities performed. A note on the learning experience, what was learnt and how it is going to be useful in the future, is expected. Reflections will be a useful document and assess learning for many competencies where formal assessment is not being done. Student needs to write academically useful reflections as per the prescribed format and within the time frame of the posting. These will be assessed by the teachers.

3. COMPETENCIES: PHASE II

B. Psychomotor Competencies that are required to be complete during the Clinical postings

Competency Addressed	Date of completion	Suggested Activity
DR-A1: Identify and differentiate the primary, secondary and special skin lesions		CASE PRESENTATION *Any of the following cases: Pediculosis, scabies, herpes labialis, herpes zoster and varicella, viral warts, molluscum contagiosum, folliculitis impetigo and carbuncle, Leprosy, Psoriasis, Tinea.*
DR-A3: Elicit and present medical history of a common dermatology case		
DR-A2: Present and describe basics of dermatological examination of a common dermatology case.		
DR5.2: Identify and differentiate scabies from other lesions in adults and children		
DR6.2: Identify and differentiate pediculosis from other skin lesions in adults and children		
DR8.2: Identify and distinguish herpes simplex and herpes labialis from other skin lesions		
DR8.3: Identify and distinguish herpes zoster and varicella from other skin lesions		
DR8.4: Identify and distinguish viral warts from other skin lesions		
DR8.5: Identify and distinguish molluscum contagiosum from other skin lesions		
DR8.6: Enumerate the indications, describe the procedure and perform a Tzanck smear		
DR15.1: Identify and distinguish folliculitis impetigo and carbuncle from other skin lesions		
DR 7.2 Identify candida species in fungal scrapings and KOH mount		In the side laboratory observe each at least once
DR 10.2 Identify spirochete in a dark ground microscopy		
DR 15.2 Identify staphylococcus on a gram stain		

Phase II

CLINICAL CASE PRESENTATION RECORD

Summary of Clinical Case Presentations/Spotters*

(*Departments may create/continue with a case record book for documentation of cases)

At least 3 cases per clinical posting

Serial No.	Date	Patient Name & ID	Diagnosis	Case Presented/ Attended Write P/A	Facilitator's Signature

Phase II
REFLECTIONS: CLINICAL CASE PRESENTATION

(Students should preferably reflect on cases which they themselves have presented):
At least one Reflection per Clinical Posting

Phase II

Serial Number	Patient Name	Age/Sex	Diagnosis	Date
Student Presenter				
What Happened?				
So What?				
What Next?				
Signature of Faculty			Date	

Phase II

End of posting Assessment

Suggested Methods

5. **Viva Voce**
6. **CA-OSCE / OSCE / OSPE**
7. **Bedside assessment**
8. **Communication skill (Counselling)**
9. **Psychomotor skill- Smear preparation, slide preparation, speculum examination**

Date	Marks obtained	Total Marks	Feedback Student	Feedback Faculty

Phase III Part 1
CLINICAL CASE PRESENTATION RECORD

Summary of Clinical Case Presentations/Spotters*
(*Departments may create/continue with a case record book for documentation of cases)
At least 3 cases per clinical posting

Serial No.	Date	Patient Name & ID	Diagnosis	Case Presented/ Attended Write P/A	Facilitator's Signature

Phase III Part 1
REFLECTIONS: CLINICAL CASE PRESENTATION

(Students should preferably reflect on cases which they themselves have presented):
At least one Reflection per Clinical Posting
Phase II

Serial Number	Patient Name	Age/Sex	Diagnosis	Date
Student Presenter				
What Happened?				
So What?				
What Next?				
Signature of Faculty			Date	

Phase III Part 1

End of posting Assessment

Suggested Methods

10. **Viva Voce**
11. **CA-OSCE / OSCE / OSPE**
12. **Bedside assessment**
13. **Communication skill (Counselling)**
14. **Psychomotor skill- Smear preparation, slide preparation, speculum examination**

Date	Marks obtained	Total Marks	Feedback Student	Feedback Faculty

Phase III Part II
CLINICAL CASE PRESENTATION RECORD

Summary of Clinical Case Presentations/Spotters*
(*Departments may create/continue with a case record book for documentation of cases)
At least 3 cases per clinical posting

Serial No.	Date	Patient Name & ID	Diagnosis	Case Presented/ Attended Write P/A	Facilitator's Signature

REFLECTIONS: CLINICAL CASE PRESENTATION

(Students should preferably reflect on cases which they themselves have presented):
At least one Reflection per Clinical Posting

Phase III Part 2

Serial Number	Patient Name	Age/Sex	Diagnosis	Date
Student Presenter				
What Happened?				
So What?				
What Next?				
Signature of Faculty			Date	

End of posting Assessment

Suggested Methods

1. **Viva Voce**
2. **CA-OSCE / OSCE / OSPE**
3. **Bedside assessment**
4. **Communication skill (Counselling)**
5. **Psychomotor skill- Smear preparation, slide preparation, speculum examination**

Date	Marks obtained	Total Marks	Feedback Student	Feedback Faculty

6. SCIENTIFIC PROJECT PRESENTATIONS/REPORTS/OUTREACH ACTIVITIES/UG QUIZ

SL NO	**DATE**	**PARTICULARS**	**SIGNATURE OFSTAFF**

7. EXTRACURRICULAR ACTIVITIES

Sl no	**Date**	**Particulars**	**Signature of the faculty**

8. ACHIEVEMENTS/AWARDS

Sl no	**Date**	**Particulars**	**Signature of the faculty**

9. ASSESSMENT RECORD

Phase	Duration (From-To)	Assessment score (marks obtained)	Total marks	Assessment (%)	Remarks	Faculty Signature
Phase II						
Phase III Part I						

Phase III Part 2						
Total						

10. SUMMARY OF ATTENDANCE

Rotation	**Phase**	**Duration (Weeks)**	**From**	**To**	**Total classes held**	**Number of classes attended**	**Faculty Signature**
1st	Phase II	2 weeks					
2nd	Phase III Part I	2 weeks					
3rd	Phase III Part II	2 weeks					
Total						Cumulative attendance n/%	

Sri Siddhartha Academy of Higher Education, Tumkur

General Surgery Curriculum

For

Competency Based Curriculum

SSAHE General Surgery Curriculum as per the new Competency Based Curriculum

Preamble

The NMC envisages that the Indian Medical Graduate should function as the Physician of first contact in the community, to provide holistic health care to the evolving needs of the nation and the world. To fulfil this, the IMG should be able to perform the following roles: a clinician, a communicator, a lifelong learner, a professional and a team leader.

Competency-based medical education (CBME) is an outcomes-based training model that has become the new standard of medical education internationally. This new curriculum is being implemented across the country and the first batch has been enrolled since the academic year 2019. The regulatory and accrediting body NMC had started the process by training faculty across the country in the key principles of CBME and developing key competencies for each specialty with the input from expert groups under each specialty.

The NMC, in the Graduate medical regulations 2019, has provided the list of General Surgery medicine competencies required for an IMG and these have been included in this document.
The document begins with the goals and objectives of the Surgery curriculum, then a summary of phase wise hours allotted to general surgery and their distribution across didactic lecture, small group discussion and self-directed learning. Subsequently, this document suggests phase wise topics in the 4 clinical postings, directory of minimum cases to be seen, and suggested clinical assessment methods for the postings.

This is followed by the competencies to be delivered, along with the SLOs, suggested TL methods, and suggested assessment methods. The competencies have been divided according the three main domains which is Knowledge, Psychomotor skills and Communication skills. The competency tables also indicate the phase they should be taught in. This will be helpful for the faculty and students.

Goals and Objectives of the medicine curriculum

Goals

The broad goal of the General Surgery curriculum is to equip the IMG with sufficient knowledge, skills and attitude to diagnose and appropriately treat common surgical disorders affecting the adult population.

Objectives

A) Knowledge

At the end of the course student should be able to:

f. Describe the pathophysiology of common diseases of adults
g. Describe the clinical features, diagnosis and management of the above
c. Be well versed with the preventive aspects of the surgery curriculum, specifically patient education and lifestyle modification.

(B) Skills

At the end of the course the student should be able to:

d. Demonstrate the ability to elicit a detailed clinical history and perform a general physical and systemic examination, in outpatient and inpatient settings.
e. Demonstrate the ability to apply the elicited history and examination to arrive at correct diagnosis and plan treatment.
f. Demonstrate the ability to deliver immediate care to commonly seen emergencies prior to referral to higher centre.

C) Attitude and communication skills

At the end of the course the student should be able to:

i. Communicate effectively with patients, their families and the public at large
j. Communicate effectively with peers and teachers demonstrate the ability to work effectively with peers in a team.
k. Demonstrate professional attributes of punctuality, accountability and respect for teachers and peers.
l. Appreciate the issues of equity and social accountability

Summary of course content, teaching and learning methods and student assessment for the undergraduate (MBBS) Curriculum in General Surgery

Distribution of Teaching hours :

Phase	Lecture	Small group discussion	Self-directed learning	Total
Phase 2	25			25
Phase 3, part 1	25	35	5	65
Phase 3, part 2	70	125	15	210

Time allotted excludes time reserved for internal / University examinations, and vacation.
Teaching-learning methods shall be learner centric and shall predominantly include small group learning, interactive teaching methods and case-based learning. Didactic lectures not to exceed one-third of the total teaching time. In the third Professional year both Part1& Part2, 25% of allotted time (non-clinical time) shall be utilized for integrated learning with pre- and para- clinical subjects. This will be included in the assessment of clinical subjects. Horizontal integration between the Final MBBS Part 2 subjects is necessary wherever feasible
The teaching learning activity focus should be on application of knowledge rather than acquisition of knowledge.
The curricular contents shall be vertically and horizontally aligned and integrated to the maximum extent possible to enhance learner's interest and eliminate redundancy and overlap.

Small group discussion (SGD) may include the following
1.Tutorials
2.Case based discussion
3. Skill lab sessions
Unless otherwise mentioned, in the TL methods suggested in the competency table, SGD sessions are for 2 hours, and lectures for 1 hour and skill lab sessions are for 4 hours

Suggested Topics for Theory classes for each MBBS Phase

2nd MBBS	
Competency number	**Topic**
SU1	Metabolic response to injury
SU2	Shock
SU3	Blood and blood components
SU4	Burns

SU8	Ethics
SU10	Pre-op, intra-op and post-op care
SU12	Nutrition and fluid therapy
SU18	Skin and subcutaneous tissue
SU27	Vascular disorders
3rd MBBS Part 1	
Competency number	**Topic**
SU5	Wound healing and wound care
SU6	Surgical infections
SU7	Surgical audit and research
SU11	Anaesthesia and pain management
SU14	Basic surgical skills
SU17	Trauma
SU19	Congenital facial anomalies
SU20	Oropharyngeal carcinoma
SU21	Salivary Gland
SU22	Thyroid gland and Adrenal gland
SU 23	Adrenal glands and other endocrine glands
SU25	Breast
3rd MBBS Part 2	
Competency number	**Topic**
SU13	Transplantation
SU15	Biohazard disposal
SU16	Minimally invasive surgery
SU24	Pancreas
SU26	Cardio thoracic surgery
SU28	Abdomen
SU29	Urinary system
SU30	Male reproductive system
	Neurosurgery

Clinical posting, certifiable skills, case matrix, clinical skills assessment , clerkship , skill lab topics

Acquisition and certification of skills shall be through experiences in patient care, diagnostic and skill laboratories. Use of skill lab to train undergraduates in listed skills should be done mandatorily.

The clinical postings in the second professional shall be 15 hours per week (3 hrs per day from Monday to Friday)

The clinical postings in the third professional part II shall be 18 hours per week (3 hrs per day from Monday to Saturday)

Acquisition and certification of skills shall be through bedside clinics, clerkship (student doctor), diagnostic and skill laboratories.

Clinical postings – phase wise objectives

Posting 1: The student , at the end of the posting, would have practiced the following

A. Building a rapport with the patient

B. Eliciting history in native language of patient
C. Examining vital signs – pulse, blood pressure, temperature, jugular venous pressure
D. General physical examination – pallor, icterus, cyanosis, lymphadenopathy, edema
E. Observation of systemic examination

Posting 2

A. Practice of skills attained in posting 1
B. Systemic examination (inspection, palpation, percussion, auscultation) of cardiovascular system, respiratory system, abdomen, and central nervous system

Posting 3

A. Practice of skills attained in posting 1 and 2
B. Fluent, confident systemic examination
C. Ability to distinguish between normal and abnormal physical findings
D. Collating history and examination findings to arrive at differential diagnoses

Posting 4

Practice and refinement of skills attained in postings 1, 2 and 3

Suggested topics for Clinical postings for each MBBS Phase

1st posting - 2nd MBBS, (4 weeks)		
1	History taking in a surgical patient	
2	Examination of ulcer	
3	Clinical examination of a swelling	

4	Examination of abdomen	
5	Examination of the vascular system	
6	Examination of the lymphatic system	
7	Hand wash and draping patients in OT	
8	Basic instruments in surgical operation theatre	
2nd Posting 3rd MBBS Part 1 (4weeks)		
1	Wound care	
2	BLS	
3	Airway maintenance	
4	Thyroid examination	
5	Breast examination	
6	Examination of Abdomen	
7	Hernia	
8	Disorders of Stomach	
9	Submandibular region and salivary glands	
9	Revise and review all topics in 1st posting	
3rd and 4th Posting 3rd MBBS Part 2 (8+4weeks)		
1	Investigations in a surgical patient	
2	Pre-op and post-op care	
3	Anaesthesia and pain management	
4	Transplant	
5	Revisit, review and revise all topics in 1st and 2nd postings	

Suggested topics for Skills lab in Surgery

	To perform breast examination
	To perform per rectal examination to palpate the prostrate

	To administer an appropriate dose of local anaesthetic and incise and drain abscess
	To appropriately apply dressing for injuries and burns
	To clean and suture superficial skin wounds
	To insert an intercostal needle/drainage

Learner-doctor method (Clerkship): should be mandatorily implemented, from 1st clinical postings in Surgery.
The goal of this type of T-L activity is to provide learners with experience in longitudinal patient care, being part of the health care team, and participate in hands-on care of patients in outpatient and inpatient setting. During the 1st clinical postings, the students are oriented to the working of the department. During the subsequent clinical posting the students are allotted patients, whom they follow-up through their stay in the hospital, participating in that patient's care including case work-up, following-up on investigations, presenting patient findings on rounds, observing surgeries if any till patient is discharged.

Goal: To provide learners with experience in:

(a) Longitudinal patient care,

(b) Being part of the health care team,

(c) Hands-on care of patients in outpatient and inpatient setting.

(d) No learner will be given independent charge of the patient

(e) The supervising physician will be responsible for all patient care decisions

The learner will function as a part of the health care team with the following responsibilities:

Be part of the unit's outpatient services on admission days, Remain with the admission unit until 6 PM except during designated class hours,

Be assigned patients admitted during each admission day for whom he/she will undertake responsibility, under the supervision of a senior resident or faculty member,

Participate in the unit rounds on its admission day and will present the assigned patients to the supervising physician,

Perform simple tasks, including nebulisation, patient education

Follow the patient's progress throughout the hospital stay until discharge,

Participate, under supervision, in procedures, surgeries, deliveries etc. of assigned patients

Participate in unit rounds on at least one other day of the week excluding the admission day, Discuss ethical and other humanitarian issues during unit rounds, Attend all scheduled classes and educational activities, Document his/her observations in a prescribed log book / case record.

Learner-doctor method phase wise

Year of Curriculum	Focus of Learner - Doctor programme
Year 1	Introduction to hospital environment, early clinical exposure, understanding perspectives of illness
Year 2	History taking, physical examination, assessment of change in clinical status, communication and patient education
Year 3	All of the above and choice of investigations, basic procedures and continuity of care
Year 4	All of the above and decision making, management and outcomes

Eligibility to appear for Professional examinations

(b) Attendance

1. Attendance requirements are 75% in theory and 80% in practical /clinical for eligibility to appear for the examinations in that subject. In subjects that are taught in more than one phase – the learner must have 75% attendance in theory and 80% in practical in each phase of instruction in that subject.
2. If an examination comprises more than one subject (for e.g., General Surgery and allied branches), the candidate must have 75% attendance in each subject and 80% attendance in each clinical posting.
3. Learners who do not have at least 75% attendance in the electives will not be eligible for the Third Professional - Part II examination.

Internal Assessment
Progress of the medical learner shall be documented through structured periodic assessment that includes formative and summative assessments. Logs of skill-based training shall be also maintained.

Log book

4. A designated faculty member in each unit will coordinate and facilitate the activities of the learner, monitor progress, provide feedback and review the log book/ case record.
5. The log book/ case record must include the written case record prepared by the learner including relevant investigations, treatment and its rationale, hospital course, family and patient discussions, discharge summary etc.
6. The log book should also include records of patients assigned. Submission of the log book/ case record to the department is required for eligibility to appear for the final examination of the subject.

Theory assessment
There shall be no less than four theory internal assessment (One each in 2nd MBBS and 3rd MBBS Part1 and Two in 3rd MBBS Part2) excluding the prelims in Surgery. An end of posting clinical assessment shall be conducted for each of the clinical postings in Surgery.
A 100-mark question paper covering the relevant topics of the MBBS Phase may be conducted. Mark division will be as follows:

100 marks
Long essay 2X10= 20
Short essay 6x5=30 marks
Short answer question 10x3=30marks
MCQs 20x1=20marks

A minimum of 80% of the marks should be from the must know component of the curriculum. A maximum of 20% can be from the desirable to know component. All main essay questions to be from the must know component of the curriculum.
One main essay question to be of the modified variety containing a clinical case scenario. At least 30% of questions should be clinical case scenario based. Questions to be constructed to test higher cognitive levels.

Internal assessment at the end of clinical postings
Internal assessment marks at the end of each posting will be a sum of log book (documentation of skills practiced, clerkship, assessment of behaviour in posting) and clinical internal assessment marks. Internal assessment may be conducted as follows in postings
Posting 1 – long case focusing on history, vital signs and general physical examination
Posting 2 – OSCE with the following stations – history, vital signs, general physical examination, examination of specific system/structure, diagnostic skills, communication
Posting 3 – Long case/short case

Posting 4 – short case and/or long case

AETCOM assessment will include: (a) Written tests comprising of short notes and creative writing experiences, (b) OSCE based clinical scenarios / viva voce

The competencies to be delivered in AETCOM have been summarized at the end of the competency table. The question paper must include a least one question based on AETCOM competencie covered in that phase. AETCOM competencies must also be tested in the viva voce.

There will be one Theory and Clinical preliminary exam before the student is eligible for university exams.
Day to day records and logbook (including required skill certifications) should be given importance in internal assessment. Internal assessment should be based on competencies and skills.
Learners must secure at least 50% marks of the total marks (combined in theory and clinical; not less than 40 % marks in theory and practical separately) assigned for internal assessment in Surgery to be eligible for appearing at the final University examination.
Internal assessment marks will reflect as separate head of passing at the summative examination.
The results of internal assessment should be displayed on the notice board within 1-2 weeks of the test.
Remedial measures should be offered to students who are either not able to score qualifying marks or have missed on some assessments due to any reason.
Learners must have completed the required certifiable competencies for that phase of training and Medicine logbook entry completed to be eligible for appearing at the final university examination.
.

University examinations

University examinations Third Professional Part II - (Final Professional) examination shall be at the end of training (14 months including 2 months of electives) in the subjects of General Medicine, General Surgery, Obstetrics & Gynaecology and Paediatrics.
The discipline of Orthopaedics, Anaesthesiology, Dentistry and Radiodiagnosis will constitute 25% of the total theory marks incorporated as a separate section in paper II of General Surgery.
The discipline of Psychiatry and Dermatology, Venereology and Leprosy (DVL), Respiratory Medicine including Tuberculosis will constitute 25% of the total theory marks in General Medicine incorporated as a separate section in paper II of General Medicine.
University examinations are to be designed with a view to ascertain whether the candidate has acquired the necessary knowledge, minimal level of skills, ethical and professional values with clear concepts of the fundamentals which are necessary for him/her to function effectively and appropriately as a physician of first contact. Assessment shall be carried out on an objective basis to the extent possible.

Marks allotted

Medicine	Theory	Clinical examination
Total marks	2 papers of 100 marks each for General surgery (including orthopaedics and other surgery allied subjects). The pattern of each question paper is given below. As indicated above adequate	200 marks

	weightage to be given to surgery allied subjects	
	Long essay 2X10= 20	One long case for 80 marks
	Short essay 6x5=30 marks	Two short cases for 40 marks each
	Short answer question 10x3=30marks	Viva-voce for 40 marks. Station-1: Xray & ECG Station-2: Instruments Station-3: Specimens Station-4: Drugs & case scenarios
	MCQs 20x1=20marks	

The theory paper should include different types such as structured essays, short essays, Short Answers Questions (SAQ) and MCQs (Multiple Choice Questions). Marks for each part should be indicated separately.

A minimum of **80%** of the marks should be from the **must know** component of the curriculum. A maximum of **20%** can be from the **desirable to know** component. All **main essay questions** to be from the **must know component** of the curriculum.

One main essay question to be of the **modified variety** containing a clinical case scenario. At least 30% of questions should be clinical case scenario based. Questions to be constructed to test higher cognitive levels.

Clinical examinations will be conducted in the hospital wards. Clinical cases kept in the examination must be of common conditions that the learner may encounter as a physician of first contact in the community. Selection of rare syndromes and disorders as examination cases is to be discouraged. Emphasis should be on candidate's capability to elicit history, demonstrate physical signs, write a case record, analyse the case and develop a management plan.

Viva/oral examination should assess approach to patient management, emergencies, attitudinal, ethical, and professional values. Candidate's skill in interpretation of common investigative data, X-rays, identification of specimens, ECG, etc. is to be also assessed.

At least one question in each paper of the clinical specialties in the University examination should test knowledge competencies acquired during the professional development programme. Skill competencies acquired during the Professional Development Programme must be tested during the clinical, practical and viva voce.

There shall be one main examination in an academic year and a supplementary to be held not later than 90 days after the declaration of the results of the main examination.

Pass criteria

Internal Assessment: 50% combined in theory and practical (not less than 40% in each) for eligibility for appearing for University Examinations

University Examination: Mandatory 50% marks separately in theory and clinicals (clinicals = clinical + viva)

The grace marks up to a maximum of five marks may be awarded at the discretion of the University to a learner for clearing the examination as a whole but not for clearing a subject resulting in exemption.

Appointment of Examiners

Person appointed as an examiner in the subject must have at least four years of total teaching experience as assistant professor after obtaining postgraduate degree in the subject in a college affiliated to a recognized/approved/permitted medical college.

For the Practical/ Clinical examinations, there shall be at least four examiners for 100 learners, out of whom not less than 50% must be external examiners. Of the four examiners, the senior-most internal examiner will act as the Chairman and coordinator of the whole examination programme so that uniformity in the matter of assessment of candidates is maintained.
Where candidates appearing are more than 100, two additional examiners (one external & one internal) for every additional 50 or part there of candidates appearing, be appointed.
All eligible examiners with requisite qualifications and experience can be appointed as internal examiners by rotation
External examiners may not be from the same University.
There shall be a Chairman of the Board of paper-setters who shall be an internal examiner and shall moderate the questions.
All theory paper assessment should be done as central assessment program (CAP) of concerned university.

BLUEPRINT FOR ASSESSMENT

RATIONALE BEHIND THE BLUEPRINTING WITH EXCERPTS FROM NMC DOCUMENT ON ASSESSMENT

As per NMC guidelines, a balance should be drawn between the action verbs which are specified in the Bloom's taxonomy along with a balance of the topics of the curriculum

Levels of Bloom's Taxonomy with Suggested Verbs in the questions are specified below.

Knowledge	Define, Describe, Draw, Find, Enumerate, Cite, Name, Identify, List, label, Match, Sequence, Write, State
Comprehension	Discuss, Conclude, Articulate, Associate, Estimate, Rearrange, Demonstrate understanding, Explain, Generalise, Identify, Illustrate, Interpret, Review, Summarise
Application	Apply, Choose, Compute, Modify, Solve, Prepare, Produce, Select, Show, Transfer, Use
Analysis	Analyse, Characterise, Classify, Compare, Contrast, Debate, Diagram, Differentiate, Distinguish, Relate, Categorise
Synthesis	Compose, Construct, Create, Verify, Determine, Design, Develop, Integrate, Organise, Plan, Produce, Propose, rewrite

Evaluation	Appraise, Assess, Conclude, Critic, Decide, Evaluate, judge, Justify, Predict, Prioritise, Prove, Rank

The blueprint for General surgery theory paper indicating the topics and marks allotted for each are given below. The blueprinting provided is an estimate only, the spirit of the blueprint must be honoured while setting the paper. This document will guide teachers/ students and evaluators on what to focus on. The focus should be on providing clinical oriented questions rather than purely theoretical questions

The distribution of topics in paper 1 and paper 2 in General surgery is also given below. The given division of topics is only a guideline, as the topics are often a continuum, making clear demarcation difficult.

Blue print for General surgery

Competency number	Topic	Marks
	Applied basic sciences	6
SU1	Metabolic response to injury	2
SU2	Shock + its management	5
SU3	Blood and blood components	4
SU4	Burns	4
SU5	Wound healing and wound care	5
SU6	Surgical infections	5
SU7 +SU8	Surgical audit and research+ Ethics	2
SU19	Congenital facial anomalies	2
SU20	Oropharyngeal carcinoma	3
SU21	Salivary Gland+ neck cysts+ cervical lyphadenitis	4
	Skin lesions including ulcers, sinuses, fistulas and malignancies	5
SU9	Investigations in a surgical patient	5
SU10	Pre-op, intra-op and post-op care	6
SU12	Nutrition and fluid therapy	5
SU13	Transplantation	4
SU14	Basic surgical skills	3

SU15	Biohazard disposal	2
SU16	Minimally invasive surgery	5
SU17	Trauma	5
SU22	Thyroid gland	6
SU 23	Adrenal glands and other endocrine glands	4
SU24	Pancreas	5
SU25	Breast	8
SU26	Cardio thoracic surgery and Neurosurgery	7
SU27	Vascular system	10
SU28	Abdomen including hernias	12
SU29	Urinary system	10
SU30	Male reproductive system	6
Total		**150**

Distribution of topics In General surgery Paper 1 and Paper 2 for University Examination

Paper 1 – Section A and B 100marks		
1	Applied basic sciences	
2	Metabolic response to injury	
3	Shock + its management	
4	Blood and blood components	
5	Burns	
6	Wound healing and wound care	
7	Surgical infections	
8	Surgical audit and research+ Ethics	
9	Congenital facial anomalies	
10	Oropharyngeal carcinoma	
11	Salivary Gland+ neck cysts+ cervical lyphadenitis	
12	Skin lesions including ulcers, sinus, fistulas and malignancies	
13	Investigations in a surgical patient	
14	Pre-op, intra-op and post-op care	

15	Nutrition and fluid therapy	
17	Transplantation	
18	Basic surgical skills	
19	Biohazard disposal	
20	Minimally invasive surgery	
21	Trauma	
22	Thyroid gland	
23	Adrenal glands and other endocrine glands	
24	Breast	
Paper 2 – Section A 50marks		
1	Pancreas	
2	Cardio thoracic surgery and neurosurgery	
3	Vascular system	
4	Abdomen including hernias	
5	Urinary system	
6	Male reproductive system	
Paper 2 – Section B 50marks, Orthopedics and surgery allied subjects Anaesthesia, Radiology and dentistry		

Surgery competencies – Knowledge

Metabolic response to injury					
SU1.1	Describe Basic concepts of homeostasis, enumerate the metabolic changes in injury and their mediators.	Lecture	3, 4 term	MCQs, Quiz, Drills	Theory

SU1.2	Describe the factors that affect the metabolic response to injury.	Lecture	3, 4 term	Quiz	Theory
SU1.3	Describe basic concepts of perioperative care.	Lecture	3, 4 term	Quiz	Theory
Shock					
SU2.1	Describe Pathophysiology of shock, types of shock & principles of resuscitation including fluid replacement and monitoring.	Lecture	3, 4 term	Quiz	Theory
SU2.2	Describe the clinical features of shock and its appropriate treatment.	Lecture	3, 4 term	Quiz	Theory
Blood and blood components					
SU3.1	Describe the Indications and appropriate use of blood and blood products and complications of blood transfusion.	Lecture	3, 4 term	Quiz	Theory
Burns					
SU4.1	Elicit document and present history in a case of Burns and perform physical examination. Describe Pathophysiology of Burns.	Lecture	3, 4 term	Quiz	Theory
SU4.2	Describe Clinical features, Diagnose type and extent of burns and plan appropriate treatment.	Lecture	3, 4 term	Quiz	Theory
SU4.3	Discuss the Medicolegal aspects in burn injuries.	Lecture	3, 4 term	Quiz	Theory
Wound healing and wound care					
SU5.1	Describe normal wound healing and factors affecting healing.	Lecture	5 term	Quiz	Theory
SU5.3	Differentiate the various types of wounds, plan and observe management of wounds.	Lecture	5 term	Quiz	Theory
SU5.4	Discuss medico legal aspects of wounds	Lecture	5 term	Quiz	Theory
Surgical infections					
SU6.1	Define and describe the aetiology and pathogenesis of surgical Infections	Lecture	5 term	Quiz	Theory
SU6.2	Enumerate Prophylactic and therapeutic antibiotics	Lecture	5 term	Quiz	Theory
Surgical Audit and Research					

SU7.1	Describe the Planning and conduct of Surgical audit	Lecture	8,9 ter,	Theory	Theory
SU7.2	Describe the principles and steps of clinical research in General Surgery	Lecture	8,9 term	Theory	Theory
Ethics					
SU8.1	Describe the principles of Ethics as it pertains to General Surgery	Lecture	3, 4 term	Quiz	Theory
Pre, intra and post- operative management.					
SU10.1	Describe the principles of perioperative management of common surgical procedures	Lecture	3,4 term	Quiz	Theory
Anaesthesia and pain management					
SU11.1	Describe principles of Preoperative assessment.	Lecture	6 term	Theory	Theory
SU11.2	Enumerate the principles of general, regional, and local Anaesthesia.	Lecture	6 term	Theory	Theory
SU11.4	Enumerate the indications and principles of day care General Surgery	Lecture	6 term	Theory	Theory
SU11.5	Describe principles of providing post-operative pain relief and management of chronic pain.	Lecture	6 term	Theory	Theory
SU11.6	Describe Principles of safe General Surgery	Lecture	6 term	Theory	Theory
Nutrition and fluid therapy					
SU12.1	Enumerate the causes and consequences of malnutrition in the surgical patient	Lecture	3, 4 term	Quiz	Theory
SU12.2	Describe and discuss the methods of estimation and replacement of the fluid and electrolyte requirements in the surgical patient	Lecture	3, 4 term	Quiz	Theory
SU12.3	Discuss the nutritional requirements of surgical patients, the methods of providing nutritional support and their complications	Lecture	3, 4 term	Quiz	Theory
Transplantation					
SU13.1	Describe the immunological basis of organ transplantation	Lecture	8, 9 term	Theory	Theory

SU13.2	Discuss the Principles of immunosuppressive therapy. Enumerate Indications, describe surgical principles, management of organ transplantation	Lecture	8, 9 term	Theory	Theory
SU13.3	Discuss the legal and ethical issues concerning organ donation	Lecture	8, 9 term	Theory	Theory
Basic Surgical Skills					
SU14.1	Describe Aseptic techniques, sterilization and disinfection.	Lecture	5 term	Quiz	Theory
SU14.2	Describe Surgical approaches, incisions and the use of appropriate instruments in Surgery in general.	Lecture	5 term	Quiz	Theory
SU14.3	Describe the materials and methods used for surgical wound closure and anastomosis (sutures, knots and needles)	Lecture	5 term	Quiz	Theory
Biohazard disposal					
SU15.1	Describe classification of hospital waste and appropriate methods of disposal.	Lecture	9 term	Quiz	Theory
Minimally invasive General Surgery					
SU16.1	Minimally invasive General Surgery: Describe indications advantages and disadvantages of Minimally invasive General Surgery	Lecture	8, 9 term	Theory	Theory
Trauma					
SU17.3	Describe the Principles in management of mass casualties	Lecture	5 term	Quiz	Theory
SU17.4	Describe Pathophysiology, mechanism of head injuries	Lecture	5 term	Quiz	Theory
SU17.5	Describe clinical features for neurological assessment and GCS in head injuries	Lecture	5 term	Quiz	Theory
SU17.6	Chose appropriate investigations and discuss the principles of management of head injuries	Lecture	5 term	Quiz	Theory
SU17.7	Describe the clinical features of soft tissue injuries. Chose	Lecture	5 term	Quiz	Theory

	appropriate investigations and discuss the principles of management.				
SU17.8	Describe the pathophysiology of chest injuries.	Lecture	5 term	Quiz	Theory
SU17.9	Describe the clinical features and principles of management of chest injuries.	Lecture	5 term	Quiz	Theory
Skin and subcutaneous tissue					
SU18.1	Describe the pathogenesis, clinical features and management of various cutaneous and subcutaneous infections.	Lecture	4 term	Quiz	Theory
SU18.2	Classify skin tumors Differentiate different skin tumors and discuss their management.	Lecture	4 term	Quiz	Theory
Developmental anomalies of face, mouth and jaws					
SU19.1	Describe the etiology and classification of cleft lip and palate	Lecture	6 term	Theory	Theory
SU19.2	Describe the Principles of reconstruction of cleft lip and palate	Lecture	6 term	Theory	Theory
Oropharyngeal cancer					
SU20.1	Describe etiopathogenesis of oral cancer symptoms and signs of oropharyngeal cancer.		6 term	Theory	
SU20.2	Enumerate the appropriate investigations and discuss the Principles of treatment.	Lecture	6 term	Theory	Theory
Disorders of salivary glands					
SU21.1	Describe surgical anatomy of the salivary glands, pathology, and clinical presentation of disorders of salivary glands	Lecture	6 term	Theory	Theory
SU21.2	Enumerate the appropriate investigations and describe the Principles of treatment of disorders of salivary glands	Lecture	6 term	Theory	Theory
Endocrine General Surgery: Thyroid and parathyroid					
SU22.1	Describe the applied anatomy and physiology of thyroid	Lecture	7 term	Theory	Theory
SU22.2	Describe the etiopathogenesis of thyroidal swellings	Lecture	7 term	Theory	Theory

SU22.4	Describe the clinical features, classification and principles of management of thyroid cancer	Lecture	7 term	Theory	Theory
SU22.5	Describe the applied anatomy of parathyroid	Lecture	7 term	Theory	Theory
SU22.6	Describe and discuss the clinical features of hypo - and hyperparathyroidism and the principles of their management	Lecture	7 term	Theory	Theory
Adrenal glands					
SU23.1	Describe the applied anatomy of adrenal glands	Lecture	7 term	Theory	Theory
SU23.2	Describe the etiology, clinical features and principles of management of disorders of adrenal gland	Lecture	7 term	Theory	Theory
	Describe the clinical features, classification and principles of management of thyroid cancer	Lecture	7 term	Theory	Theory
SU23.3	Describe the clinical features, principles of investigation and management of Adrenal tumors	Lecture	7 term	Theory	Theory
Pancreas			7 term		
SU24.1	Describe the clinical features, principles of investigation, prognosis and management of pancreatitis.	Lecture	7 term	Theory	Theory
SU24.2	Describe the clinical features, principles of investigation, prognosis and management of pancreatic endocrine tumours	Lecture	9 term	Quiz	Theory
SU24.3	Describe the principles of investigation and management of Pancreatic disorders including pancreatitis and endocrine tumors.	Lecture	9 term	Quiz	Theory
Breast					
SU25.1	Describe applied anatomy and appropriate investigations for breast disease	Lecture	7 term	Theory	Theory
SU25.2	Describe the etiopathogenesis, clinical features and principles of management of benign breast disease including infections of the breast	Lecture	7 term	Theory	Theory

SU25.3	Describe the etiopathogenesis, clinical features, Investigations and principles of treatment of benign and malignant tumours of breast.	Lecture	7 term	Theory	Theory
Cardio-thoracic General Surgery- Chest - Heart and Lungs					
SU26.1	Outline the role of surgery in the management of coronary heart disease, valvular heart diseases and congenital heart diseases	Lecture	9 term	Quiz	Theory
SU26.3	Describe the clinical features of mediastinal diseases and the principles of management	Lecture	9 term	Quiz	Theory
SU26.4	Describe the etiology, pathogenesis, clinical features of tumors of lung and the principles of management	Lecture	9 term	Quiz	Theory
Vascular diseases					
SU27.1	Describe the etiopathogenesis, clinical features, investigations and principles of treatment of occlusive arterial disease.	Lecture	4 term	Quiz	Theory
SU27.3	Describe clinical features, investigations and principles of management of vasospastic disorders	Lecture	4 term	Quiz	Theory
SU27.4	Describe the types of gangrene and principles of amputation	Lecture	4 term	Quiz	Theory
SU27.5	Describe the applied anatomy of venous system of lower limb	Lecture	4 term	Quiz	Theory
SU27.6	Describe pathophysiology, clinical features, Investigations and principles of management of DVT and Varicose veins	Lecture	4 term	Quiz	Theory
SU27.7	Describe pathophysiology, clinical features, investigations and principles of management of Lymph edema, lymphangitis and Lymphomas	Lecture	4 term	Quiz	Theory
Abdomen					
SU28.1	Describe pathophysiology, clinical features, Investigations and principles of management of Hernias	Lecture	5 term	Quiz	Theory

SU28.3	Describe causes, clinical features, complications and principles of mangament of peritonitis	Lecture	9 term	Quiz	Theory
SU28.4	Describe pathophysiology, clinical features, investigations and principles of management of Intra-abdominal abscess, mesenteric cyst, and retroperitoneal tumors	Lecture	9 term	Quiz	Theory
SU28.5	Describe the applied Anatomy and physiology of esophagus	Lecture	9 term	Quiz	Theory
SU28.6	Describe the clinical features, investigations and principles of management of benign and malignant disorders of esophagus	Lecture	9 term	Quiz	Theory
SU28.7	Describe the applied anatomy and physiology of stomach	Lecture	9 term	Quiz	Theory
SU28.8	Describe and discuss the aetiology, the clinical features, investigations and principles of management of congenital hypertrophic pyloric stenosis, Peptic ulcer disease, Carcinoma stomach	Lecture	9 term	Quiz	Theory
SU28.10	Describe the applied anatomy of liver. Describe the clinical features, Investigations and principles of management of liver abscess, hydatid disease, injuries and tumors of the liver	Lecture	9 term	Quiz	Theory
SU28.11	Describe the applied anatomy of spleen. Describe the clinical features, investigations and principles of management of splenic injuries. Describe the post-splenectomy sepsis - prophylaxis	Lecture	9 term	Quiz	Theory
SU28.12	Describe the applied anatomy of biliary system. Describe the clinical features, investigations and principles of management of diseases of biliary system	Lecture	9 term	Quiz	Theory
SU28.13	Describe the applied anatomy of small and large intestine	Lecture	9 term	Quiz	Theory

SU28.14	Describe the clinical features, investigations and principles of management of disorders of small and large intestine including neonatal obstruction and Short gut syndrome	Lecture	9 term	Quiz	Theory
SU28.15	Describe the clinical features, investigations and principles of management of diseases of Appendix including appendicitis and its complications.	Lecture	9 term	Quiz	Theory
SU28.16	Describe applied anatomy including congenital anomalies of the rectum and anal canal	Lecture	9 term	Quiz	Theory
SU28.17	Describe the clinical features, investigations and principles of management of common anorectal diseases	Lecture	9 term	Quiz	Theory
Urinary System					
SU29.1	Describe the causes, investigations and principles of management of Hematuria	Lecture	8 term	Theory	Theory
SU29.2	Describe the clinical features, investigations and principles of management of congenital anomalies of genitourinary system	Lecture	8 term	Theory	Theory
SU29.3	Describe the Clinical features, Investigations and principles of management of urinary tract infections	Lecture	8 term	Theory	Theory
SU29.4	Describe the clinical features, investigations and principles of management of hydronephrosis	Lecture	8 term	Theory	Theory
SU29.5	Describe the clinical features,investigations and principles of management of renal calculi	Lecture	8 term	Theory	Theory
SU29.6	Describe the clinical features, investigations and principles of management of renal tumours	Lecture	8 term	Theory	Theory
SU29.7	Describe the principles of management of acute and chronic retention of urine	Lecture	8 term	Theory	Theory
SU29.8	Describe the clinical features, investigations and principles of management of bladder cancer	Lecture	8 term	Theory	Theory
SU29.9	Describe the clinical features, investigations and principles of management of disorders of prostate	Lecture	8 term	Theory	Theory

SU29.11	Describe clinical features, investigations and management of urethral strictures	Lecture	8 term	Theory	Theory
Penis, Testis, Scrotum					
SU30.1	Describe the clinical features, investigations and principles of management of phimosis, paraphimosis and carcinoma penis.	Lecture	8 term	Theory	Theory
SU 30.2	Describe the applied anatomy clinical features, investigations and principles of management of undescended testis.	Lecture	8 term	Theory	Theory
SU30.3	Describe the applied anatomy clinical features, investigations and principles of management of epidydimo-orchitis	Lecture	8 term	Theory	Theory
SU30.4	Describe the applied anatomy clinical features, investigations and principles of management of varicocele	Lecture	8 term	Theory	Theory
SU30.5	Describe the applied anatomy, clinical features, investigations and principles of management of Hydrocele	Lecture	8 term	Theory	Theory
SU30.6	Describe classification, clinical features, investigations and principles of management of tumours of testis	Lecture	8 term	Theory	Theory

Surgery competencies – Psychomotor skills

Wound healing and Wound care					
SU5.2	Elicit, document and present a history in a patient presenting with wounds.	Clinics	5 term	OSCE/Short case	Long case/short case
Ethics					
SU8.2	Demonstrate Professionalism and empathy to the patient undergoing General Surgery	DOAP	3,4 term	OSCE/Short case	Long case/short case
SU8.3	Discuss Medico-legal issues in surgical practice	Lecture	3, 4 term	OSCE/Short case	Long case/short case
Investigation of surgical patient					

Su9.1	Choose appropriate biochemical, microbiological, pathological, imaging investigations and interpret the investigative data in a surgical patient	Clinics	8, 9 term	OSCE/Short case	Long case/short case
SU9.2	Biological basis for early detection of cancer and multidisciplinary approach in management of cancer	Lecture	8, 9 term	OSCE/Short case	Long case/short case
SU9.3	Communicate the results of surgical investigations and counsel the patient appropriately	DOAP	8, 9 term	OSCE/Short case	Long case/short case
Pre, intra and post- operative management.					
SU10.2	Describe the steps and obtain informed consent in a simulated environment	Clinics	8, 9 term	OSCE/Short case	Long case/short case
SU10.3	Observe common surgical procedures and assist in minor surgical procedures; Observe emergency lifesaving surgical procedures.	DOAP	8, 9 term	OSCE/Short case	Long case/short case
SU10.4	Perform basic surgical Skills such as First aid including suturing and minor surgical procedures in simulated environment	DOAP	8, 9 term	OSCE/Short case	Long case/short case
Anesthesia and Pain management					
SU11.3	Demonstrate maintenance of an airway in a mannequin or equivalent	DOAP	8, 9 term	OSCE/Short case	Long case/short case
Transplantation					
SU13.4	Counsel patients and relatives on organ donation in a simulated environment	Clinics	8, 9 term	OSCE/Short case	Long case/short case
Basic Surgical skills					
SU14.4	Demonstrate the techniques of asepsis and suturing in a simulated environment	Clinics	8, 9 term	OSCE/Short case	Long case/short case
Trauma					

SU17.1	Describe the Principles of FIRST AID	Clinics	5 term	OSCE/Short case	Long case/short case
SU17.2	Demonstrate the steps in Basic Life Support. Transport of injured patient in a simulated environment	DOAP	5 term	OSCE/Short case	Long case/short case
SU17.10	Demonstrate Airway maintenance. Recognize and manage tension pneumothorax, hemothorax and flail chest in simulated environment.	DOAP	5 term	OSCE/Short case	Long case/short case
Skin and subcutaneous tissue					
SU18.3	Describe and demonstrate the clinical examination of surgical patient including swelling and order relevant investigation for diagnosis. Describe and discuss appropriate treatment plan.	Clinics	3, 4 term	OSCE/Short case	Long case/short case
Endocrine General Surgery: Thyroid and parathyroid					
SU22.3	Demonstrate and document the correct clinical examination of thyroid swellings and discus the differential diagnosis and their management	Clinics	7 term	OSCE/Short case	Long case/short case
IM12.6	Perform and demonstrate a systematic examination based on thehistory that will help establish the diagnosis and severity includingsystemic signs of thyrotoxicosis and hypothyroidism, palpation of the pulse for rate and rhythm abnormalities, neck palpation of thethyroid and lymph nodes and cardiovascular findings	Clinics	7the term	OSCE/Short case	Long case/short case
IM12.7	Demonstrate the correct technique to palpate the thyroid	Clinics	term	OSCE/Short case	Long case/short case
Breast					

SU24.5	Demonstrate the correct technique to palpate the breast for breast swelling in a mannequin or equivalent	Clinics	7 term	OSCE/Short case	Long case/short case
Vascular Diseases					
SU27.2	Demonstrate the correct examination of the vascular system and enumerate and describe the investigation of vascular disease	Clinics	4 term	OSCE/Short case	Long case/short case
SU27.8	Demonstrate the correct examination of the lymphatic system	Clinics	4 term	OSCE/Short case	Long case/short case
Abdomen					
SU28.2	Demonstrate the correct technique to examine the patient with hernia and identify different types of hernias.	Clinics	5 term	OSCE/Short case	Long case/short case
SU28.9	Demonstrate the correct technique of examination of a patient with disorders of the stomach	Clinics	8, 9 term	OSCE/Short case	Long case/short case
SU28.18	Describe and demonstrate clinical examination of abdomen. Order relevant investigations. Describe and discuss appropriate treatment plan	Clinics	8, 9 term	OSCE/Short case	Long case/short case
Urinary System					
SU29.10	Demonstrate a digital rectal examination of the prostate in a mannequin or equivalent	Clinics	8, 9 term	OSCE/Short case	Long case/short case
Blood and blood components					
SU3.2	Observe blood transfusion	Bedside	3,4th term	OSCE/Short case	Long case/short case
Integration – Paediatric surgery					

PE21.8	Elicit, document and present a history pertaining to diseases of theGenitourinary tract00	Bedside	6,7 term	OSCE/Short case	Bedside clinics, Skills lab
PE21.14	Recognize common surgical conditions of the abdomen and genitourinary system and enumerate the indications for referral including acute and subacute intestinal obstruction, appendicitis pancreatitis perforation intussusception, Phimosis, undescendedtestis, Chordee, hypospadiasis, Torsion testis, hernia Hydrocele,Vulval Synechiae	Clinics	6,7 term	OSCE/Short case	Bed side clinics,Skills lab
IM13.9	Demonstrate in a mannequin the correct technique for performing breast exam, rectal examination and cervical examination and papsmear	Skills lab	6,7 term	OSCE	Long case/short case
IM15.7	Demonstrate the correct technique to perform an anal and rectalexamination in a mannequin or equivalent				DOAP session

Surgery competencies – Communication skills

Shock					
SU2.3	Communicate and counsel patients and families about the treatment and prognosis of shock demonstrating empathy and care	Clinics	3, 4 term	OSCE/Short case	Long case/short case
Blood and Blood components					
SU3.3	Counsel patients and family/ friends for blood transfusion and blood donation.	Clinics	3, 4 term	OSCE/Short case	Long case/short case
Burns					

SU4.4	Communicate and counsel patients and families on the outcome and rehabilitation demonstrating empathy and care.	Clinics	3, 4 term	OSCE/Short case	Long case/short case
Breast					
SU24.4	Counsel the patient and obtain informed consent for treatment of malignant conditions of the breast	Clinics	8, 9 term	OSCE/Short case	Long case/short case

Horizontal Integration Topics – Internal medicine, Orthopedics, Obstetrics and Gynecology and Anaesthesiology

Internal Medicine					
IM5.8	Describe and discuss the pathophysiology, clinical evolution andcomplications of cholelithiasis and cholecystitis	Lecture, Small group discussion	6th and 7th term	MCQs/Quiz/ Drill	Essay/sort essay/SAQ/ MCQ
IM5.13	Enumerate the indications for ultrasound and other imaging studiesincluding MRCP and ERCP and describe the findings in liver disease	Bed side clinic, Small group discussion	6th and 7th term	MCQs/Quiz/Drill	Essay/sort essay/SAQ/ MCQ
IM5.16	Describe and discuss the management of hepatitis, cirrhosis, portalhypertension, ascites, spontaneous, bacterial peritonitis and hepatic encephalopathy	Lecture, Small group discussion	6th and 7th term	MCQs/Quiz/Drill	Essay/sort essay/SAQ / MCQ
IM5.18	Enumerate the indications for hepatic transplantation	Lecture, Small group discussion	6th and 7th term	MCQs/Quiz/Drill	Essay/sort essay/SAQ / MCQ
IM12.8	Generate a differential diagnosis based on the clinical presentationand prioritise it based on	Bed side clinic, Small	6th and 7th term	OSCE/short case	Essay/sort essay/SAQ

	the most likely diagnosis	group discussion			/ MCQ
IM12.9	Order and interpret diagnostic testing based on the clinical diagnosis including CBC, thyroid function tests and ECG and radio iodine uptake and scan	Bed side clinic, Small group discussion	6th and 7th term	OSCE/short case	Longcase/short case/
IM12.10	Identify atrial fibrillation, pericardial effusion and bradycardia onECG	Bed side clinic, Small group discussion	6th and 7th term	OSCE/short case	Longcase/short case/
IM12.11	Interpret thyroid function tests in hypo-and hyperthyroidism	Bed side clinic, Small group discussion	6th and 7th term	OSCE/short case	Longcase/short case/
IM12.13	Describe the pharmacology, indications, adverse reaction, interactions of thyroxine and antithyroid drugs	Lecture, Small group discussion	6th and 7th term	MCQs/Quiz/Drill	Essay/sort essay/SAQ/ MCQ
IM12.15	Describe and discuss the indications of thionamide therapy, radioiodine therapy and Surgeryin the management of thyrotoxicosis	Bed side clinic, Small group discussion	6th and 7th term	OSCE/short case	Longcase/short case/

IM13.7	Elicit document and present a history that will help establish theaetiology of cancer and includes the appropriate risk factors, duration and evolution	Bedside clinic	8th and 9th term	OSCE/short case	Longcase/short case/
IM13.8	Perform and demonstrate a physical examination that includes anappropriate general and local examination that excludes the diagnosis, extent spread and complications of cancer	Bedside clinic	8th and 9th term	OSCE/short case	Longcase/short case/
IM13.9	Demonstrate in a mannequin the correct technique for performing breast exam, rectal examination and cervical examination and papsmear	Bedside clinic	8th and 9th term	OSCE/short case	Longcase/short case/
IM13.10	Generate a differential diagnosis based on the presenting symptomsand clinical features and prioritise based on the most likely diagnosis	Bedside clinic	8th and 9th term	OSCE/short case	Longcase/short case/
IM13.13	Describe and assess pain and suffering objectively in a patient withcancer	Bedside clinic	8th and 9th term	OSCE/short case	Longcase/short case/
IM13.14	Describe the indications for General Surgery, radiation andchemotherapy for common malignancies	Bedside clinic	8th and 9th term	OSCE/short case	Longcase/short case/
IM14.14	Describe and enumerate the indications and side effects of bariatricsurgery	Lecture, Small group discussion	8th and 9th term	MCQs/Quiz/Drill	Essay/sort essay/SAQ/ MCQ
IM15.1	Enumerate,describe and discuss the aetiology of upper and lowerGI bleeding	Lecture, Small group discussion	8th and 9th term	MCQs/Quiz/Drill	Essay/sort essay/SAQ/ MCQ
IM15.2	Enumerate describe and discuss the evaluation and steps involvedin stabilizing a patient who presents with acute volume loss and GIbleed	DOAP session, Smallgroup discussion, Lecture	8th and 9th term	OSCE/short case	Longcase/short case/

IM15.3	Describe and discuss the physiologic effects of acute blood andvolume loss	Lecture, Small group discussion	8th and 9th term	MCQs/Quiz/Drill	Essay/sort essay/SAQ/ MCQ
IM15.4	Elicit document and present an appropriate history that identifies theroute of bleeding, quantity, grade, volume loss, duration, etiology, comorbid illnesses and risk factors	DOAP session, Smallgroup discussion, Lecture	8th and 9th term	MCQs/Quiz/Drill	Longcase/short case/

IM15.5	Perform, demonstrate and document a physical examination basedon the history that includes general examination, volume assessment and appropriate abdominal examination	Bedside clinics	8th and 9th term	OSCE/short case	Longcase/short case/
IM15.6	Distinguish between upper and lower gastrointestinal bleedingbased on the clinical features	Lecture, Small group discussion	8th and 9th term	MCQs/Quiz/Drill	Essay/sort essay/SAQ/ MCQ
IM15.8	Generate a differential diagnosis based on the presenting symptomsand clinical features and prioritise based on the most likely diagnosis	Bedside clinic	8th and 9th term	OSCE/short case	Longcase/short case/
IM15.9	Choose and interpret diagnostic tests based on the clinical diagnosis including complete blood count, PT and PTT, stool examination, occult blood, liver function tests, H.pylori test.	Bedside clinic, DOAP	8th and 9th term	OSCE/short case	Longcase/short case/
IM15.10	Enumerate the indications for endoscopy, colonoscopy and otherimaging procedures in the investigation of Upper GI bleeding	Lecture, Small group discussion	8th and 9th term	MCQs/Quiz/Drill	Essay/sort essay/SAQ/ MCQ
IM15.11	Develop, document and present a treatment plan that includes fluidresuscitation, blood and blood component transfusion, and specific therapy for arresting blood loss	Lecture, Small group discussion	8th and 9th term	MCQs/Quiz/Drill	Essay/sort essay/SAQ/ MCQ
IM15.12	Enumerate the indications for whole blood, component and platelet transfusion and describe the clinical features and management of amismatched transfusion	Lecture, Small group discussion	8th and 9th term	OSCE/short case	Essay/sort essay/SAQ/ MCQ
IM15.13	Observe cross matching and blood / blood component transfusion	Bedside clinic	8th and 9th term		Longcase/short case/

IM15.14	Describe and enumerate the indications, pharmacology and sideeffects of pharmacotherapy of pressors used in the treatment of Upper GI bleed	Lecture, Small group discussion	8th and 9th term	MCQs/Quiz/Drill	Essay/sort essay/SAQ/ MCQ

IM15.15	Describe and enumerate the indications, pharmacology and sideeffects of pharmacotherapy of acid peptic disease including Helicobacter pylori	Lecture, Small group discussion	8th and 9th term	MCQs/Quiz/Drill
IM15.16	Enumerate the indications for endoscopic interventions and Surgery	Lecture, Small group discussion	8th and 9th term	MCQs/Quiz/Drill
IM15.17	Determine appropriate level of specialist consultation	Lecture, Small group discussion	8th and 9th term	MCQs/Quiz/Drill
IM15.18	Counsel the family and patient in an empathetic non-judgmentalmanner on the diagnosis and therapeutic options	DOAP session	8th and 9th term	OSCE/short case
IM16.12	Enumerate and discuss the indications for further investigations including antibodies, colonoscopy, diagnostic imaging and biopsy in the diagnosis of chronic diarrhea	Lecture, Small group discussion	8th and 9th term	MCQs/Quiz/Drill
IM16.15	Distinguish, based on the clinical presentation, Crohn's diseasefrom ulcerative colitis	Lecture, Small group discussion	8th and 9th term	MCQs/Quiz/Drill
IM16.17	Describe and enumerate the indications for Surgeryin inflammatorybowel disease	Lecture, Small group discussion	8th and 9th term	MCQs/Quiz/Drill
IM18.15	Enumerate the indications for Surgery in a hemorrhagic stroke	Lecture, Small group discussion	8th and 9th term	MCQs/Quiz/Drill
IM19.9	Enumerate the indications for use of Surgery and botulinum toxin inthe treatment of movement disorders	Lecture, Small group discussion	8th and 9th term	MCQs/Quiz/Drill
IM22.2	Describe the aetiology, clinical manifestations, diagnosis and clinicalapproach to primary hyperparathyroidism	Lecture, Small group discussion	8th and 9th term	MCQs/Quiz/Drill
IM24.11	Describe and discuss the aetiopathogenesis,clinical presentation, identification, functional changes, acute care, stabilization, management and rehabilitation of the elderly undergoing surgery	Lecture, Small group discussion	8th and 9th term	MCQs/Quiz/Drill

Obstetrics & Gynecology				
OG26.2	Describe the causes, prevention, clinical features, principles ofmanagement of genital injuries and fistulae	Lecture, Small group discussion	8th and 9th term	MCQs/Quiz/Drill

OG33.2	Describe the principles of management including Surgery and radiotherapy of benign, pre-malignant (CIN) and malignant Lesionsof the Cervix	Lecture, Small group discussion	8th and 9th term	MCQs/Quiz/Drill	

Orthopaedics					
OR1.1	Describe and discuss the principles of pre-hospital care and casuality management of a trauma victim including principles oftriage	Lecture, Small groupdiscussion	8th and 9th term	MCQs/Quiz/Drill	Essay/sort essay/SAQ/ MCQ
OR1.2	Describe and discuss the aetiopathogenesis, clinical features,investigations, and principles of management of shock	Lecture, Small groupdiscussion	8th and 9th term	MCQs/Quiz/Drill	Essay/sort essay/SAQ/ MCQ
OR1.3	Describe and discuss the aetiopathogenesis, clinical features, investigations, and principles of management of soft tissue injuries	Lecture, Small groupdiscussion	8th and 9th term	MCQs/Quiz/Drill	Essay/sort essay/SAQ/ MCQ
OR1.4	Describe and discuss the principles of management of soft tissueinjuries	Lecture, Small groupdiscussion	8th and 9th term	MCQs/Quiz/Drill	Essay/sort essay/SAQ/ MCQ
OR3.1	Describe and discuss the aetiopathogenesis, clinical features, Investigations and principles of management of Bone and Jointinfections a) Acute Osteomyelitis b) Subacute osteomyelitis c) Acute Suppurative arthritis d) Septic arthritis & HIV infection e) Spirochaetal infection f) Skeletal Tuberculosis	Lecture, Small groupdiscussion	8th and 9th term	MCQs/Quiz/Drill	Essay/sort essay/SAQ/ MCQ
OR3.3	Participate as a member in team for procedures like drainage ofabscess, sequestrectomy/ saucerisation and arthrotomy	DOAP	8th and 9th term	OSCE/short case	Longcase/short case/
OR4.1	Describe and discuss the clinical features, Investigation and principles of management of Tuberculosis affecting major joints(Hip, Knee) including cold abcess and caries spine	Lecture, Small groupdiscussion	8th and 9th term	MCQs/Quiz/Drill	Essay/sort essay/SAQ/ MCQ

OR10.1	Describe and discuss the aetiopathogenesis, clinical features,Investigations and principles of management of benign and malignant bone tumours and pathological fractures	Lecture, Small groupdiscussion	8th and 9th term	MCQs/Quiz /Drill	Essay/sort essay/SAQ/ MCQ
OR11.1	Describe and discuss the aetiopathogenesis, clinical features, investigations and principles of management of peripheral nerveinjuries in diseases like foot drop, wrist drop, claw hand, palsies ofRadial, Ulnar, Median, Lateral Popliteal and Sciatic Nerves	Lecture, Small groupdiscussion	8th and 9th term	MCQs/Quiz /Drill	Essay/sort essay/SAQ/ MCQ
Anaesthesiology					
AS3.1	Describe the principles of preoperative evaluation	Lecture, Small groupdiscussion	8th and 9th term	MCQs/Quiz /Drill	Essay/sort essay/SAQ/ MCQ
AS3.2	Elicit, present and document an appropriate history including medication history in a patient undergoing Surgery as it pertains to apreoperative anaesthetic evaluation	DOAP	8th and 9th term	OSCE/short case	Longcase/short case/
AS3.3	Demonstrate and document an appropriate clinical examination in apatient undergoing General Surgery	DOAP	8th and 9th term	OSCE/short case	Longcase/short case/
AS3.4	Choose and interpret appropriate testing for patients undergoing Surgery	Lecture, Small groupdiscussion	8th and 9th term	MCQs/Quiz /Drill	Essay/sort essay/SAQ/ MCQ
AS3.5	Determine the readiness for General Surgery in a patient based onthe preoperative evaluation	Lecture, Small groupdiscussion	8th and 9th term	MCQs/Quiz /Drill	Essay/sort essay/SAQ/ MCQ
AS5.6	Observe and describe the principles and steps/ techniques involved in common blocks used in Surgery(including brachial plexus blocks)	DOAP	8th and 9th term	OSCE/short case	Longcase/short case/

AS6.3	Describe the common complications encountered by patients in therecovery room, their recognition and principles of management	Lecture, Small groupdiscussion	8th and 9th term	MCQs/Quiz /Drill	Essay/sort essay/SAQ/ MCQ
AS9.3	Describe the principles of fluid therapy in the preoperative period	Lecture, Small groupdiscussion	8th and 9th term	MCQs/Quiz /Drill	Essay/sort essay/SAQ/ MCQ
AS9.4	Enumerate blood products and describe the use of blood productsin the preoperative period	Lecture, Small groupdiscussion	8th and 9th term	MCQs/Quiz /Drill	Essay/sort essay/SAQ/ MCQ
AS10.3	Describe the role of communication in patient safety	Lecture, Small groupdiscussion	8th and 9th term	MCQs/Quiz /Drill	Essay/sort essay/SAQ/ MCQ

Sri Siddhartha Academy of Higher Education, Tumkur

UNDERGRADUATE LOG BOOK (CBME)

DEPARTMENT OF GENERAL SURGERY

Purpose of this logbook

The logbook is a verified record of the progression of the learner documenting the acquisition of the requisite knowledge, skills, attitude, and/or competencies in order to function as an Indian Medical Graduate. It is a record of the academic/cocurricular activities of the designated student, who would be responsible for maintaining his/her logbook.

Entries in the logbook will reflect the activities undertaken in the department and has to be scrutinized by the head of the concerned department.

The logbook is a record of various activities by the student like:

- ✓ Overall participation & performance
- ✓ Attendance
- ✓ Participation in sessions
- ✓ Record of completion of pre-determined activities
- ✓ Acquisition of selected competencies

The logbook is the record of work done by the candidate in the department and shall be verified by the college before submitting the application of the students for the university examination.

The purposes of this logbook are:

a. To orient the students to holistic patient management by completing the case record, observing and recording procedures and discussing patient treatment in the therapeutics section.
b. To facilitate the student's learning process, document the learning process and assist instudent assessment
c. To keep a record of the student's progress in development of the desired skills and attitudes
d. To ensure that the time spent in the department is well utilized
e. To form a basis for continual assessment of the student

This log book is a documentation of cases seen, clerked and witnessed by you during your posting in General Surgery. It is also a record of various seminars, case-based learning, simulation exercises and other academic activities that the learner has been a part of during course. Though efforts are made to cover as much as possible, in no way should this be considered the syllabus.

Please carry this book whenever you attend the non-lecture academic activities of the department and get it duly signed by the concerned staff at the end of the academic activity. We expect discipline, honesty, sincerity and punctuality.

The responsibility of completing the logbook and getting it verified/assessed by the faculty lies with the student. The logbook must be carried by the student as per the given instructions.

General Instructions

1. It is expected that the students will adhere to the highest ethical standards and professionalism.

2. Shall maintain punctuality in respect to arrival and completion of the assigned work

3. Maintain a cordial relationship with peers, unit staff and hospital staff

4. Not indulge in any act which would bring disrepute to the institution.

5. You should wear a clean apron and follow the dress regulations as laid down by the college and maintain proper hygiene with wearing respective identification badge while in college and hospital.

6. You should carry the following with you for the clinics
    a. Clinical text book
    b. Stethoscope
    c. Clinical kit for examination as prescribed by the department of surgery.

7. Respect the patient as an individual and recognize that he/she also has rights.

8. Cases that are discussed only have to be documented and not the dummy cases.

9. **Loss of this logbook at any time may affect the formative assessment results and impair the student appearing in the summative assessment.**

10. **The student is solely responsible for maintaining the log book record. If the student loses the logbook, he/she would be withheld from appearing for the University examination unless suitable backup proof is provided.**

Student details

Name of the student	
Roll No (College ID)	
University Registration Number	
Batch	
Contact No	
E mail Id	
Guardian/Parent Name Contact Number	
Faculty Mentor	
Name Department	

BONAFIDE CERTIFICATE

This is to certify that the candidate Mr/Ms……, Reg No. ……., admitted in the year…… in …… College Hospital, has satisfactorily completed / has not completed all requirements mentioned in this logbook for MBBS course in the subject of GENERAL SURGERY including related AETCOM modules as per the Competency-Based Undergraduate Medical Education Curriculum, Graduate Medical Regulation during the period from …… to……

He/She is / is not eligible to appear for the University examination as on the date given below.

Signature of Faculty Mentor

Name and Designation

Countersigned by Head of the Department

Date

INDEX

S. No.	Content	Page No.
1.	Bonafide certificate	
2.	Preface	
3.	General Instructions	
4.	Attendance extract	
5.	Overall Assessment	
6.	Clinical posting 1	
7.	Clinical posting 2	
8.	Clinical posting 3	
9.	Clinical posting 4	
10.	Check lists for skills assessments	
11.	AETCOM modules	
12.	Integrated sessions	
13.	Small group learning sessions	
14.	Self- Directed Learning sessions	
15.	Seminars presented	
16.	Research projects/publications	
17.	Co - Curricular Activities (Quiz, Poster, Debate, Essay, Skits)	
18.	CME/ Conference / Workshop	
19.	Awards / recognition	

ATTENDANCE EXTRACT

Theory classes

Professional Year	Number attended	Number conducted	Percentage of Attendance	Signature of HOD

Second Professional				
Third professional-part I				
Third ProfessionalPart II				

Small Group sessions

Professional Year	Number attended	Number conducted	Percentage of Attendance	Signature of HOD
Third professional-part I				
Third ProfessionalPart II				

Bedside clinics:

Professional Year	Unit From (date) To (date)	Number attended	Number conducted	Percentage of Attendance	Signature of Unit Head	Signature of HOD
Second Professional Posting 1						
Third Professional Part I Posting 2						
Third Professional Part II Posting 3						
Posting 4						

Note:

Every candidate should have **attendance not less than 75% of the total classes conducted in theory which includes didactic lectures and self-directed learning and not less than 80% of the total classes conducted in practical which includes small group teaching, tutorials, integrated learning and practical sessions** in each calendar year calculated from the date of commencement of the term to the last working day in each of the subjects prescribed to be eligible to appear for the university examination.

Overall assessment of the student

	Posting 1	Posting 2	Posting 3	Posting 4
Attendance	/5	/5	/5	/5
Discipline	/5	/5	/5	/5
Middle of posting assessment	/5	/10	/20	/30
End of posting assessment	/5	/15	/20	/30
Student doctor method of learning	/5	/10	/10	------
Total (/200)	/ 25	/45	/60	/70
Remarks if any				

Total marks obtained on a total of 200 is -----

A student will be permitted to appear for final university exams only if he/she obtains more than 100 marks in the assessments.

Final remarks if any -

Posting 1
Duration: 4 weeks
Date of Posting: From: **To:**
Unit:

Bedside Clinics in Surgery II MBBS

1	History taking surgery in surgery

2	General Physical examination
3	Eliciting vital signs
4	Examination of an ulcer
5	Examination of a swelling
6	Examination of abdomen
7	Hand wash and draping patients in OT
8	Basic instruments in surgical operation theatre

Learner doctor method

Posting 1

One patient will be allotted to the student at the beginning of the posting. The patient is assessed at admission and followed up. The student will interact with the patient and the treating team to make daily notes of the following aspects of patient's progress in hospital.

History taking, physical examination, assessment of change in clinical status, communication and patient education. A brief summary is to be written at the end of the patient's stay in hospital.

Learner doctor method

Reflection on the learner doctor method of learning;

What happened?

So what ?

What next?

Signature of faculty: Date :

List of Clinical Cases Presented/Attended in Posting 1:

	Diagnosis	Presented/Attended	Signature
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

List of Cases observed/assisted in OT/Minor OT:

	Date	Diagnosis	Operative procedure	Assisted/ Observed	Faculty signature
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

Posting 2
Duration: 4 weeks
Date of Posting: **From:** **To:**
Unit:

Learner doctor method

Posting 2

One patient will be allotted to the student at the beginning of the posting. The patient is assessed at admission and followed up. The student will interact with the patient and the treating team to make daily notes of the following aspects of patient's progress in hospital.

History taking, physical examination, assessment of change in clinical status, communication and patient education. A brief summary is to be written at the end of the patient's stay in hospital.

Learner doctor method

Reflection on the learner doctor method of learning;

What happened?

So what ?

What next?

Signature of faculty: Date :

List of Clinical Cases Presented/Attended in Posting 2:

	Diagnosis	Presented/Attended	Signature
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

List of Cases observed/assisted in OT/Minor OT:

	Date	Diagnosis	Operative procedure	Assisted/ Observed	Faculty signature
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

Bedside Clinics in Surgery III MBBS Part I

S no.	Competency No.	Competency addressed	Date completed Dd/mm/yyyy	Attempt at activity*	Rating**	Decision of faculty***	Initial of faculty and date	Feedback Received Initial of learner
1	SU22.2	Demonstrate and document the correct clinical examination of thyroid swellings and discuss the differential diagnosis and their management						
2	SU25.5	Demonstrate the correct technique to palpate the breast for breast lump on a patient						
3	SU27.8	Demonstrate the correct examination of the lymphatic system						
4	SU21.2	Demonstrate and document the correct clinical examination of swelling in the submandibular region and discuss the differential diagnosis and management						

*First or Only (F) Repeat (R) Remedial (Re)
**Below(B) expectations Meets(M) expectations Exceeds (E)expectations
*** Completed (C) Repeat (R) Remedial (Re)

TUTORIALS in Surgery for MBBS Professional –III PART 1

SL No.	Competency No.	Competency addressed	Date completed Dd/mm/yyyy	Attempt at activity*	Rating**	Decision of faculty ***	Initial of faculty and date	Feedback Received Initial of learner
1	SU2.3	Communicate and counsel patients and families about the treatment and prognosis of shock demonstrating empathy and care						
2	SU4.4	Burns: Communicate and counsel patients and families on the outcome and rehabilitation demonstrating empathy and care.						
3	SU5.2	Elicit, document and present a history in a patient presenting with wounds.						
4	SU6.2	Enumerate Prophylactic and therapeutic antibiotics Plan appropriate management						
5	SU11.5	Describe the steps and obtain informed consent in a simulated environment						
6	SU12.2	Describe and discuss the methods of estimation and replacement of the fluid and electrolyte requirements in the surgical patient						

7	SU8.2	Demonstrate Professionalism and empathy to the patient undergoing General Surgery						
8	SU3.2	Observe blood transfusions.						
9	SU3.3	Counsel patients and family/ friends for blood transfusion and blood donation.						
1	SU17.2	Demonstrate the steps in Basic Life Support. Transport of injured patient in a simulated environment						
1	SU17.10	Demonstrate Airway maintenance. Recognize and manage tension pneumothorax, hemothorax and flail chest in simulated environment.						

SEMINARS								
1	SU4.2	Burns assessment						
1	SU8.3	Discuss Medico-legal issues in surgical practice						
1	SU17.1	Principles of FIRST AID						
1	SU14.3	Surgical Wound Closure and Anastomosis(Sutures , Knots And Needles)						
1	17.3	Mass causalities						
1	17.9	Chest Injuries						
1	SU19.2	Cleft Lip and Palate						

1	SU22.4	Thyroid Cancer						
2	SU22.6	Hyperparathyroidism						
2	SU26.1	Congenital Heart Diseases						
2	SU17.1	Basic life support						
2	SU27.3	Principles of Amputation						

Posting 3
Duration: 8 weeks
Date of Posting: From: **To:**
Unit:

Clinical postings (8+4*WEEKS)

OPD	Observe and record new and follow up cases in OPD(3hrs)
Post Admission day ward rounds	Follow up of assigned cases(1hr), Bedside clinics SGD,DOAP(1hr), SDL, Discussion and closure (1hr)
OT	Observe OT procedures and document in the logbook with Discussion(3hrs)
Ward	Follow up of assigned cases(1hr), Bedside clinics (SGD, DOAP(1hr), SDL, Discussion and closure (1hr)

Learner doctor method

Posting 3

One patient will be allotted to the student at the beginning of the posting. The patient is assessed at admission and followed up. The student will interact with the patient and the treating team to make daily notes of the following aspects of patient's progress in hospital.

History taking, physical examination, assessment of change in clinical status, communication and patient education. A brief summary is to be written at the end of the patient's stay in hospital.

Learner doctor method

Reflection on the learner doctor method of learning;

What happened?

So what ?

What next?

Signature of faculty: Date :

List of Clinical Cases Presented/Attended in Posting 3:

	Diagnosis	Presented/Attended	Signature
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

List of Cases observed/assisted in OT/Minor OT:

	Date	Diagnosis	Operative procedure	Assisted/Observed	Faculty signature
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

Bedside Clinics in General Surgery for MBBS Third Professional year - Part 2

Bedside Clinics in Surgery For MBBS-PHASE 3

S no.	Competency No.	Competency addressed	Date completed Dd/mm/yyyy	Attempt at activity *	Rating **	Decision of faculty***	Initial of faculty and date	Feedback Received Initial of learner
	SU21.1	Salivary gland examination						
Abdomen	SU28.9	Demonstrate the correct technique to examine the patient with disorders of stomach						
Abdomen	SU28.18	Describe and demonstrate clinical examination of abdomen. Order relevant investigations. Describe and discuss approproiate treatment plan						
Thyroid	SU22.3	Demonstrate and document the correct clinical examination of thyroid swellings anddiscus the differential diagnosis and their management						
Vascular diseases	SU27.2	Demonstrate the correct examination of the vascular system and enumerate and describethe						

		investigation of vascular disease						
Penis, Testisand scrotum	SU30.5	Describe the applied anatomy, clinical features, investigation s and principles of management of Hydrocele						
Breast	SU25.5 SU25.4	Demonstrat e the correct technique to palpate the breast for breast swelling in a mannequin or equivalent Counsel the patient and obtain informed consent for treatment of malignant conditions of the breast						
Abdomen	SU28.2	Demonstrate the correct technique to examine the patient with hernia and identifydifferent types of hernias						

*First or Only (F) Repeat (R) Remedial (Re)
**Below(B) expectations Meets(M) expectations Exceeds (E)expectations
*** Completed (C) Repeat (R) Remedial (Re)

List of Tutorials and seminars MBBS Part 3

SL No.	**Competency No.**	**Competency addressed**	**Date completed Dd/mm/yyyy**	**Attempt at activity***	**Rating****	**Decision of faculty *****	**Initial of faculty and date**	**Feedback Received** **Initial of learner**

1	SU19.2	Principles of reconstruction of cleft lip and palate						
2	SU20.2	Principles of treatment – Oropharnygeal cancer						
3	SU25.4	Counsel the patient and obtain informed consent for treatment of malignant conditions of the breast						
4	SU29.10	Digital rectal examination of the prostate in a mannequin or equivalent						
5	SU9.3	Communicate the results of surgical investigations and counsel the patient appropriately						
6	SU9.1	Choose appropriate biochemical, microbiological, pathological, imaging investigations and interpret the investigative data in a surgical patient						
7	SU10.2	Describe the steps and obtain informed consent in a simulated environment						
8	SU10.4	Perform basic surgical Skills such as First aid including suturing and minor surgical procedures in simulated environment						

9	SU11.3	Demonstrate maintenance of an airway in a mannequin or equivalent						
1	SU13.4	Counsel patients and relatives on organ donation in a simulated environment						
1	SU14.4	Demonstrate the techniques of asepsis and suturing in a simulated environment						
1	SU25.4	Counsel the patient and obtain informed consent for treatment of malignant conditions of the breast						
SEMINARS								
1	SU28.11	post-splenectomy sepsis - prophylaxis						
1	SU28.4	Short gut syndrome						

Posting 4
Duration: 4 weeks
Date of Posting: From: **To:**
Unit:

Learner doctor method

Posting 4

One patient will be allotted to the student at the beginning of the posting. The patient is assessed at admission and followed up. The student will interact with the patient and the treating team to make daily notes of the following aspects of patient's progress in hospital.

History taking, physical examination, assessment of change in clinical status, communication and patient education. A brief summary is to be written at the end of the patient's stay in hospital.

Learner doctor method

Reflection on the learner doctor method of learning;

What happened?

So what ?

What next?

Signature of faculty: Date :

List of Clinical Cases Presented/Attended in Posting 4:

	Diagnosis	Presented/Attended	Signature
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

List of Cases observed/assisted in OT/Minor OT:

	Date	Diagnosis	Operative procedure	Assisted/Observed	Faculty signature
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

Observe common surgical procedures and assist in minor surgical procedures; Observe emergency lifesaving surgical procedures.

List of Minor Procedures

S.No.	Procedure (Minimum number – 2)	Number observed	Date	Faculty signature
1	**ICD insertion**			
2	**Ryles tube insertion**			
3	**Foleys catheter insertion**			
4	**Central line insertion**			
5	**Swelling excision**			
6	**Lymph node biopsy**			
7	**Toe nail excision**			
8	**Paronychia drainage**			
9	**Toe disarticulation**			
10	**Bedside debridement**			

List of common surgical procedures

S.No.	Procedure (Minimum number 2)	Number observed	Date	Faculty signature
1	**Inguinal Hernia repair**			
2	**Appendectomy**			
3	**Fibroadenoma excision**			
4	**Circumcision**			
5	**Thyroidectomy**			
6	**Modified Radical Mastectomy**			
7	**Varicose vein surgery**			

8	**Laparotomy**			
9	**Laparoscopic cholecystectomy**			
10	**Ventral hernia repair**			

TUTORIALS (60 HRS)

SL NO.	COMPETENCY NO.	TOPIC	Date of activity	Faculty feedback	Signature of Faculty
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					
32					
33					
34					
35					
36					
37					
38					
39					
40					
41					
42					

43					
44					
45					
46					
47					
48					
49					
50					
51					
52					
53					
54					
55					
56					
57					
58					
59					
60					

SEMINAR (40 Hours)

SL NO.	COMPETENCY NO.	TOPIC	Date of activity	Faculty feedback	Signature of Faculty
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					
32					
33					
34					
35					
36					
37					
38					
39					
40					

Competency Acquisition: Suggested Log Book pattern

Name of student	Roll number	Year of joining
Specific competency no.		
Competency required to graduate	Universal competency no.	
Administer informed consent to a patient undergoing surgery in a simulated environment (Dreyfus level advanced beginner)		
Competency must be acquired at the end of professional year	IV	
Is the acquisition of this competency a prerequisite to advancement to the next phase	Yes/ No	
Does this competency require performance in a patient	Yes/ No	
Number of times the student must have performed the skill		
	Date Completed	**Supervisor**
Certified by Faculty: Name, Date and UID		
Student's descriptive narrative of skill acquired		
Faculty only: If the student has not completed the competency, write down the reasons and remedial measures suggested		

Communication skills rating scale adapted from Kalamazoo consensus statement

Rating 1-3 - Poor, 4 -6 Satisfactory, 6 -10 Superior

Criteria	Score
Builds relationship	
Opens the discussion	
Gathers information	
Understands the patient's perspective	
Shares information	
Manages flow	
Overall rating	

AETCOM MODULES

Module number: Date:

Name of the activity:

Department of General surgery

Competencies
The student should be able to :

Reflection

Feedback

Signature of the student:

Assessment:

Signature of the faculty

AETCOM MODULES

Module number: Date:

Name of the activity:

Department of General surgery

Competencies
The student should be able to :

Reflection

Feedback

Signature of the student:

Assessment: Signature of the faculty

AETCOM MODULES
Module number: Date:
Name of the activity:
Department of General Surgery

Competencies
The student should be able to :

Reflection

Feedback

Signature of the student:

Assessment:

Signature of the faculty

	List of AETCOM competency			
Competency No.	Competency	Domain	Date	Signature
8	Identify and discuss medico-legal, socioeconomic and ethical issues as it pertains to organ donation	K/KH		
14	Identify, discuss and defend medico-legal, socio-cultural and ethical issues as it pertains to decision making in emergency care including situations where patients do not have the	K/KH		

	capability or capacity to give consent			
18	Identify, discuss and defend, medico-legal, socio-cultural and ethical issues as they pertain to consent for surgical procedures	K/KH		
23	Demonstrate ability to communicate to patients in a patient, respectful, non-threatening, non-judgemental and empathetic manner	S/SH		

32	Demonstrate respect and follows the correct procedure when handling cadavers and other biologic tissues	S/SH		
33	Administer informed consent and appropriately address patient queries to a patient undergoing a surgical procedure in a simulated environment	S/SH		
34	Communicate diagnostic and therapeutic options to patient and	S/SH		

	family in a simulated environment			

Integrated sessions

	Date of session	Topics covered	Competency numbers addressed	Departments involved in the conduct of the session	Signature of the student	Signature of the faculty
1						
2						
3						
4						

5						
6						

Small group discussions Phase 3, part 1

	Topic	Type of SGD	Date	Observed/Presented	Faculty Sign

Small group discussions Phase 3, part 2

	Topic	Type of SGD	Date	Observed/Presented	Faculty Sign

Self-directed learning sessions:

Sl. No.	Date	Topic	Competency number	Signature of the Faculty
11				
12				
13				
14				
15				
16				

17				
18				
19				
20				

Seminars presented – phase 3 part 1

	Name of the topic	Date	Signature of the faculty
1			

2			
3			
4			
5			

Seminars presented Phase 3 part 2

	Name of the topic	Date	Signature of the faculty
1			
2			
3			
4			

5			

Research projects and publications

	Name of the topic	Date	Signature of the faculty
1			

2			
3			
4			
5			

Co curricular activities –(quiz, poster, debates, essays, skit)

	Name of the topic	Date	Signature of the faculty
1			
2			
3			
4			
5			
6			
7			

8			
9			
10			

Participation in CME, conference, and workshops.

	Name of the topic	Date	Signature of the faculty
1			
2			
3			
4			
5			

6			
7			
8			
9			
10			

Awards and recognition

	Name of the Award	Date	Signature of the faculty

1			
2			
3			
4			
5			

Sri Siddhartha Academy of Higher Education, Tumkur

Surgery Allied Subjects including Anaesthesiology

Radiodiagnosis and Radiotherapy Curriculum

as per

Competency-Based Medical Education Curriculum

Anesthesiology CBME Curriculum of Phase-III Part I MBBS

Theory teaching hours				
Subject	**Small group discussions**	**Interactive Lectures**	**Self directed learning (Hours)**	**Total (Hours)**
Anaesthesiology	**10**	**8**	**2**	**20**
Clinical posting				
Anaesthesiology	**One week**			

THEORY (20 hours) and CLINICS (1 week)					
Sl number	Topic	Competency number	T-L method	Time	Integration
1	**Anaesthesiology as a specialty**	AS 1.1, 1.2, 1.3, 1.4	Lecture	1 hour	

2	**Cardiopulmonary resuscitation**	AS 2.1, 2,2	Small group discussion, simulation	2 hours	
3	**Preoperative evaluation and medication**	AS 3.1,3.2,3.3,3.4,3.5,3.6	Lecture Clinics	1 hour	Surgery
4	**General Anaesthesia**	AS 4.1, 4.2	Lecture	1 hour	
		AS 4.3,4.4,4.5,4.6,4.7	Small group discussion Clinics	2 hours	
5	**Regional anaesthesia**	AS 5.1, 5.2	Lecture	1 hour	
		AS 5.3,5.4,5.5,5.6	Small group discussion Clinics	2 hours	
6	**Intensive Care Management**	AS 7.1,7.2	Lecture	1 hour	
		AS 7.3,7.4,7.5	Small group discussion Clinics	2 hours	Medicine
7	**Pain and its management**	AS 8.1,8.2,.3,8.4,8.5	Lecture	1 hour	
8	**Fluids**	AS 9.1,9.2	Small group discussion, skills lab	2 hours	
		AS 9.3,9.4	Lecture	1 hour	
9	**Patient safety**	AS 10.1,10.2,10.3,10.4	Lecture	1 hour	

Self- Directed learning:

Duration: 2 hours

Students will be given clinical case scenarios and will be told to work in groups. Reference books and E material will be suggested to them beforehand. Discussion regarding monitoring, identification of high-risk patients, resuscitation and discharge criteria will be done.

Self-Directed Learning – 2 hours				
Sl no	Topic	Competencies	T-L method	Assessment
1	**Post-anaesthesia recovery**	AS 6.1,6.2,6.3	Self-Directed Learning	Formative assessment Recording of team work contribution in Log Book

Assessment and Feedback of Anaesthesia: Theory paper – 50 marks, Short essay, MCQs – 1 hour
Monitoring Log Book and Feedback

Theory teaching hours				
Subject	*Teaching hours*	*Tutorials/Seminars/Integrated teaching (Hours)*	*Self directed learning (Hours)*	*Total (Hours)*
Radiodiagnosis	*10*	*8*	*2*	*20*
Clinical posting				
Radiodiagnosis	*2 weeks in 2nd MBBS*			

THEORY					
Blocks	*Sl. No.*	*Topic*	*Competencies*	*Time*	*T/L method*
I	*1*	*Definition of radiation; Interaction of radiation with matter;*	*RD 1.1*	*1 hour*	*Lecture*
	2	*Radiation protection*	*RD 1.1*	*1 hour*	*Lecture*
	3	*Introduction to imaging modalities*	*RD 1.2*	1 hour	Lecture
	4	*X ray and related investigations like fluoroscopy & Mammography*	*RD 1.2*	1 hour	Lecture
	5	*Ultrasonography and color doppler*	*RD 1.2*	1 hour	Lecture

	6	*Computed Tomography*	*RD 1.2*	1 hour	Lecture
	7	*Magnetic Resonance Imaging*	*RD 1.2*	1 hour	Lecture
	8	*Contrast Media and contrast reactions.* Management of contrast reactions.	*RD 1.2*	1 hour	Lecture
	3	*Imaging modalities in common malignancies*	*RD 1.8*	1 hour	Lecture
	4	*Interventional Radiology in common clinical conditions*	*RD 1.9*	1 hour	Lecture
	5	*Pre-procedural Patient preparation for imaging.*	*RD 1.11*	1 hour	Lecture
II	*6*	*Effects of radiation on pregnancy and the methods of prevention/minimization of radiation exposure.*	*RD 1.12*	1 hour	Lecture
	7	*Components of PC & PNDT act and its medico-legal implications*	*RD 1.13*	1 hour	Lecture

	8	*Assessment and feedback* *(50 marks)*		*1 hour*	*Short essay, short answers, MCQs*

Self- Directed learning: Duration: 2 hours

Students will be given clinical case scenarios and asked to suggest the imaging modality of choice. Reference books and E material will be suggested to them beforehand. Discussion regarding the imaging modalities including patient preparation will be done.

Self- Directed learning		
Sl. No.	**Topics**	**Competencies**
1	Emergency Radiology	RD 1.10
2	Selection of imaging modalities in various common clinical conditions with advantages and disadvantages	RD1.2, RD1.3, RD1.4,RD1.5, RD1.6, RD1.7, RD1.8.

Clinical posting – 2 weeks in 2nd MBBS

Most of the Show/Shows how competencies are integrated with other clinical subjects

Compet Number	**Competency**	**T-L method**	**Assessment**	**Integration**
PE21.12	Interpret report of Plain radiograph of KUB	DOAP	OSCE	Pediatrics
PE21.13	Enumerate the indications for and Interpret the written report of Ultrasonogram of KUB	DOAP	OSCE	Pediatrics
PE23.13	Interpret a chest radiograph and recognize Cardiomegaly	DOAP	OSCE	Pediatrics
PE23.16	Use the ECHO reports in management of cases	DOAP	OSCE	Pediatrics
PE28.17	Interpret X-ray of the paranasal sinuses	DOAP	OSCE	Pediatrics

	and mastoid; and /or usewritten report in case of management Interpret CXR in foreign body aspiration and lower respiratory tractinfection, understand the significance of thymic shadow in Pediatric chest X-rays			
PE30.23	Interpret the reports of EEG, CT, MRI	DOAP	OSCE	Pediatrics
PE34.8	Interpret a Chest radiograph	DOAP	OSCE	Pediatrics
IM3.7	Order and interpret diagnostic tests based on the clinical presentation including: CBC, Chest X ray PA view, Mantoux, sputumgram stain, sputum culture and sensitivity, pleural fluid examination and culture, HIV testing and ABG	DOAP	OSCE	Internal medicine

Tutorials/Seminars/Integrated teaching:

Sl No.	Topic	Competencies	Integration with	Duration (Hours)
1	Imaging and Radiological investigations in common ENT disorders	RD 1.3	ENT	1 hour
2	Imaging and Radiological investigations in common disorders of Obstetrics and Gynecology	RD 1.4	Ob & Gy	1 hour
3	Imaging and Radiological investigations in common disorders related to internal medicine	RD 1.5	Medicine	1 hour
4	Imaging and Radiological investigations in common disorders related to surgery	RD1.6	Surgery	1 hour
5	Imaging and Radiological investigations in common disorder related to Pediatrics	RD1.7	Paediatrics	1 hour
6	Imaging and Radiological investigations in common conditions pertaining to common malignancies	RD1.8, RD 1.3, RD1.4,RD1.5, RD1.6, RD1.7	Oncology	1 hour
7	Effects of Radiation on pregnancy and methods of prevention / minimization of radiation exposure	RD1.12, RD1.4	Ob & Gy	1 hour
8	Components of PC & PNDT act and its medicolegal implications	RD1.13, RD1.4	Forensic PSM	1 hour
		Total		**8**

Radiotherapy – Competencies

Compet Number	Competency	T-L method	Assessment

RT1.1	Describe and discuss definition of radiation, mechanism of action ofradiation, types of radiation	Lecture/SDL	MCQs/SAQ
RT1.2	Describe and discuss interaction of radiation with matter &measurement of radiation	Lecture/SDL	MCQs/SAQ
RT1.3	Enumerate, describe and discuss classification and staging ofcancer (AJCC, FIGO etc.)	Lecture/SDL	MCQs/SAQ
RT2.1	Describe and discuss radiation protection and personnel monitoringduring radiation treatment	Lecture/SDL	MCQs/SAQ
RT3.1	Describe and discuss cell cycle and cell survival curve, principles ofradiobiology	Lecture/SDL	MCQs/SAQ
RT3.2	Describe and discuss synergism of radiation and chemotherapy	Lecture/SDL	MCQs/SAQ
RT4.1	Describe and discuss teletherapy machine (Co60/LINAC)	Lecture/SDL	MCQs/SAQ
RT4.2	Enumerate, describe and discuss types of treatment plan, basicworkflow of 2D/3DCRT/IMRT/IGRT	Lecture/SDL	MCQs/SAQ
RT4.3	Describe and discuss Brachytherapy machine (remote after loading)	Lecture /SDL	MCQs/SAQ
RT4.4	Describe and discuss different radioactive isotopes and their use incancer patients	Lecture/SDL	MCQs/SAQ
RT4.5	Describe and discuss role of radiation in management of commonmalignancies in India (region specific)	Lecture/SDL	MCQs/SAQ
RT4.6	Describe and discuss radiotherapy for benign disease	Lecture/SDL	MCQs/SAQ
RT4.7	Counsel patients regarding acute and late effects of radiation andsupportive care	DOAP	OSCE
RT4.8	Describe oncological emergencies and palliative care	Lecture/SDL	MCQs/SAQ
RT4.9	Display empathy in the care of patients with cancer	DOAP	OSCE

Sri Siddhartha Academy of Higher Education, Tumkur

Anesthesia and Radiodiagnosis

(General Surgery Allied Subjects)

LOG BOOK

For Undergraduates

As Per

Competency-Based Medical Education Curriculum

As Per
Competency-Based Medical Education Curriculum

BASIC PROFORMA OF THE STUDENT

Phot
o

PARTICULARS OF THE STUDENT:

Name of the student :

MBBS Batch :

Father's name :

Mother's name :

Roll No :

SSAHE Reg No :

Address :

Contact number :

Email-ID :

Signature of the student:.....

PREFACE

This booklet has been adopted from the book prepared by an Expert Group constituted by the university and complies with the "**Guidelines for preparing Logbook for Undergraduate Medical Education Program- 2019"** as per **CBME (Competency Based Medical Education) Guidelines- 2019**. It is for use by faculty members, institutions, and Universities to track and record the progress of an undergraduate student through the specified competencies in Anaesthesia and Radiodiagnosis including Radiotherapy. The model logbook can be used as a guideline by Medical Colleges and Universities, and can be adapted / modified as per requirement.

The Competency based curriculum places emphasis on acquisition of defined knowledge, skills, attitudes and values by the learner so as to be a capable physician of first contact in community. This logbook aims to document the acquisition of these milestones during the learner's stay in the Departments of Anaesthesia and Radiodiagnosis.

This logbook would be a verifiable record of the learner's progression step-by-step. It has to be maintained as an essential document and filled in a timely manner, to enable progression to the next stage of learning.

Successful documentation and submission of the logbook is a prerequisite for being allowed to take the final summative examination.

Summary of Clinical Case Presentations/Spotters in Anaesthesia
(*Departments may create/continue with a case record book for documentation of cases)
At least 3 cases in a clinical posting

Serial No.	Date	Patient Name & ID	Diagnosis	Case Presented/ Attended Write P/A	Facilitator's Signature

End of posting Assessment

Suggested Methods

15. **Viva Voce**
16. **CA-OSCE / OSCE / OSPE**
17. **Bedside assessment**
18. **Communication skill (Counselling)**
19. **Psychomotor skill- Smear preparation, slide preparation, speculum examination**

Date	Marks obtained	Total Marks	Feedback Student	Feedback Faculty

SUMMARY OF ATTENDANCE

Rotation	**Phase**	**Duration (Weeks)**	**From**	**To**	**Total classes held**	**Number of classes attended**	**Faculty Signature**
1st	Phase II	2 weeks					

Anaesthesia

REFLECTIONS: CLINICAL CASE PRESENTATION

(Students should preferably reflect on cases which they themselves have presented):

At least one Reflection per Clinical Posting

Phase II

Serial Number	Patient Name	Age/Sex	Diagnosis	Date
Student Presenter				
What Happened?				
So What?				
What Next?				
Signature of Faculty			Date	

Summary of Clinical Case Presentations/Spotters in Radiodiagnosis
(*Departments may create/continue with a case record book for documentation of cases)
At least 3 cases per clinical posting

Serial No.	Date	Patient Name & ID	Diagnosis	Case Presented/ Attended Write P/A	Facilitator's Signature

End of posting Assessment

Suggested Methods

1. **Viva Voce**
2. **CA-OSCE / OSCE / OSPE**
3. **Bedside assessment**
4. **Communication skill (Counselling)**

5. **Psychomotor skill- Smear preparation, slide preparation, speculum examination**

Date	Marks obtained	Total Marks	Feedback Student	Feedback Faculty

SUMMARY OF ATTENDANCE

Rotation	**Phase**	**Duration (Weeks)**	**From**	**To**	**Total classes held**	**Number of classes attended**	**Faculty Signature**
1st	Phase II	2 weeks					

Radiodiagnosis

REFLECTIONS: CLINICAL CASE PRESENTATION

(Students should preferably reflect on cases which they themselves have presented):

At least one Reflection per Clinical Posting

Phase II

Serial Number	Patient Name	Age/Sex	Diagnosis	Date
Student Presenter				

What Happened?	
So What?	
What Next?	
Signature of Faculty	Date

Sri Siddhartha Academy of Higher Education, Tumkur

Orthopedics Curriculum

as per

Competency Based Medical Education

INDEX

Serial Number		Content	Page Number
1		**Goal & Competencies of Undergraduate**	4
2		**Period of training during MBBS**	6
3		**Minimum teaching hours**	7
4		**Competencies & Specific learning Objectives aligned with Teaching learning methods & Assessment methods**	8
5		**Time table & list of Competencies to cover in each phase of MBBS**	52
6		**Goals & Competencies to cover in Internship**	64
7		**Period of training in Internship**	67
8		**Certifiable skills in Internship**	68
9		**Assessment in Orthopaedics**	69
10. **Annexures**	A	**Teaching learning methods**	72
	B	**Blue Print & Assessment methods – Theory**	73
	C	**Blue Print & Assessment methods – Practical**	75
	D	**Integration topics**	76
	E	**Self Directed Learning- Examples**	110
	F	**Topics for Electives**	114
	G	**Clinical Postings**	115
	H	**Log Book Format**	120
	I	**Model Question Papers**	121
	J	**Recommended Text Books**	123

Goals and Objectives for the undergraduate MBBS curriculum in Orthopaedics(As per Graduate Medical Education Regulations (GMR), 1997 Part II)

GOAL

The aim of teaching the undergraduate student in Orthopaedics (including Trauma) and Physical Medicine and Rehabilitation is to impart such knowledge and skills that may enable him to diagnose and treat common ailments. He/she shall have ability to diagnose and suspect presence of fracture, dislocation, acute osteomyelitis, acute poliomyelitis and common congenital deformities such as Congenital Talipes Equino Varus (CTEV) and Developmental Dysplasia of Hip (DDH).

(a) **COMPETENCIES**: The student must demonstrate:

1. Ability to recognize and assess bone injuries, dislocation and poly-trauma and provide first contact care prior to appropriatereferral,
2. Knowledge of the medico-legal aspects of trauma,
3. Ability to recognize and manage common infections of bone and joints in the primary care setting,
4. Recognize common congenital, metabolic, neoplastic, degenerative and inflammatory bone diseases and refer appropriately,
5. Ability to perform simple orthopaedic techniques as applicable to a primary care setting,
6. Ability to recommend rehabilitative services for common orthopaedic problems across all ages.

(b) **INTEGRATON**: The teaching should be aligned and integrated horizontally and vertically in order to allow the student to understand

the structural basis of orthopaedic problems, their management and correlation with function, rehabilitation and quality of life.

List of Topics and Competencies in Phase II MBBS, Phase III Part 1 and Part 2 MBBS

Sl.No	Topics	Competencies	Procedures requiring certification
1	Skeletal trauma, poly trauma	06	Nil
2	Fractures	16	Nil
3	Musculoskeletal Infection	03	Nil
4	Skeletal Tuberculosis	01	Nil
5	Rheumatoid Arthritis and associated inflammatory disorders	01	Nil
6	Degenerative disorders	01	Nil
7	Metabolic bone disorders	01	Nil
8	Poliomyelitis	01	Nil
9	Cerebral Palsy	01	Nil
10	Bone Tumors	01	Nil
11	Peripheral nerve injuries	01	Nil
12	Congenital lesions	01	Nil
13	Procedural Skills	02	Nil
14	Counselling Skills	03	Nil

	Total	**39**	**Nil**

Period of Training in Phase II and Phase III				
	Phase II	Phase III Part 1	Phase III Part 2	Total
Theory	NONE	40 hours	50 hours	90 hours
Clinicals	2 weeks	4 weeks	2 weeks	8 weeks

Minimum Teaching Hours in MBBS Phase II, Phase III Part 1 and Part 2

Term	Lectures (hours)	Small group discussions(SGD) (Tutorials / Seminars) /Integrated learning (hours)	Self - Directed Learning (SDL) (hours)	Total (hours)
Phase II	NONE	NONE	NONE	
Phase III Part 1	15	20	05	**40**
Phase III Part 2	20	25	05	**50***
Total				**90**
** 25% of allotted time shall be utilized for integrated learning*				
AETCOM (OR14.1, 14.2, 14.3)				
Phase II				
Phase III Part 1				
Phase III Part 2		2 hours (OR 14.1, 14.2, 14.3)		
Total				

Specific Learning Objectives

Number	COMPETENCY The student should be able to:	Domain K/S/A/C	Level K/KH/SH/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal integration
TOPIC : SKELETAL TRAUMA, Poly trauma								
OR1.1	**Describe and discuss the Principles of pre-hospital care and Causality management of a trauma victimincluding principles of triage.**	**K**	**K/KH**	**Y**	**Lecture with video, Small group discussion**	**Written/ Viva voce/OSCE/ Simulation**		**GENERAL SURGERY ANESTHESIOLOGY**
Specific learning objectives:								
1.1.1	**Discuss prehospital trauma care in a polytraumapatient.**							
1.1.2	**Enumerate interventions that may be performed by emergency personnel prior to transport to hospital ina polytrauma patient.**							
1.1.3	**Differentiate polytrauma and multiple fracturepatients.**							
1.1.4	**Enumerate the steps in primary survey of a polytrauma patient in Emergency Department (ED).**							
1.1.5	**Discuss BLS and ATLS.**							
1.1.6	**Discuss secondary and tertiary survey.**							
1.1.7	**Discuss the concept of "GOLDEN HOUR"**							
1.1.8	**Discuss the principles of "TRIAGE"**							

1.1.9	**List the diagnostic tests done in poly trauma patient in ED.**							
1.1.10	**Discuss the management of polytrauma patient inED.**							9

OR1.2	**Describe and discuss the aetiopathogenesis, clinicalfeatures, investigations, and principles of management of shock**	**K**	**K/KH**	**Y**	**Lecture**	**Written/ Viva voce/OSCE/ Simulation**		**GERERAL SURGERY**
Specific learning objectives:								
1.2.1	**Define shock.**							
1.2.2	**Enumerate the various causes of shock.**							
1.2.3	**Describe the pathophysiology as a basis for signs andsymptoms associated with progression through various stages of shock.**							
1.2.4	**Classify hemorrhagic shock.**							
1.2.5	**Discuss the investigative work up in patients withvarious causes of shock.**							
1.2.6	**Describe the principles of management of hemorrhagic shock in a poly trauma patient inemergency department.**							
1.2.7	**Discuss the role of pharmacotherapy in variousshock states.**							
1.2.8	**Discuss massive blood transfusion protocol inhemorrhagic shock.**							
1.2.9	**Discuss the ideal fluid resuscitation in shock.**							

OR1.3	**Describe and discuss the aetiopathogenesis, clinicalfeatures, investigations, and principles of management of soft tissue injuries**	**K**	**K/KH**	**Y**	**Lecture, Small group discussion**	**Written/OSCE**		**GENERAL SURGERY**
Specific learning objectives:								
1.3.1	**Enumerate the tissues involved in soft tissue injuries(STI)**							
1.3.2	**Classify soft tissue injuries**							
1.3.3	**Discuss the common causes of soft tissue injuries**							
1.3.4	**Discuss the clinical features of soft tissue injuries**							
1.3.5	**Discuss the treatment of sprains depending ongrading**							
1.3.6	**Discuss the common investigations to diagnose softtissue injuries**							
1.3.7	**List common ligaments which are injured.Knee Joint/ Ankle**							
1.3.8	**Enumerate the sports which puts athletes in risk forsoft tissue injuries with examples.**							
1.3.9	**List common causes for overuse soft tissue injuries**							
1.3.10	**Discuss the principles of management of soft tissueinjuries.**							

OR1.4	**Describe and discuss the Principles of managementof soft tissue injuries.**	**K**	**K/KH**	**Y**	**Lecture, small group discussion**	**Written/ Assessment/ Vivavoice**		**GENERAL SURGERY**
Specific learning objectives:								
1.4.1	**Discuss the principles of management of soft tissueinjuries**							
1.4.2	**Describe "RICE" protocol in soft tissue injuries.**							
1.4.3	**Discuss "NO HARM" protocol in soft tissue injuries.**							
1.4.4	**Discuss the management of chronic overuse softtissue injuries (tendinitis and bursitis)**							
1.4.5	**Discuss how will you give prevention tips on avoiding soft tissue injuries for your non-medicalfriends.**							

OR1.5	**Describe and discuss the aetiopathogenesis , clinicalfeatures, investigations, and principles of management of dislocation of major joints, shoulder, knee ,hip.**	**K**	**K/KH**	**Y**	**Lecture, Small group discussion,Bed side clinic**	**Written/ Viva voce/OSCE/ Simulation**		
Specific learning objectives:								
1.5.1	**Define dislocation and subluxation.**							
1.5.2	**Discuss etiology and pathoanatomy of shoulderdislocation.**							
1.5.3	**Classify shoulder dislocations.**							
1.5.4	**Discuss clinical features of anterior and posteriorshoulder dislocation.**							
1.5.5	**Discuss relevant investigations in shoulderdislocations.**							
1.5.6	**Define recurrent shoulder dislocations.**							
1.5.7	**Enumerate the essential lesions of recurrentanterior dislocation.**							
1.5.8	**Discuss the methods of closed reduction of shoulderdislocations.**							
1.5.9	**Discuss the post reduction protocol following closedreduction of anterior dislocation of shoulder.**							
1.5.10	**Enumerate the complications of shoulderdislocations.**							

1.5.11	Describe the mechanism of knee dislocations.							
1.5.12	Classify knee dislocations.							
1.5.13	Discuss associated injuries with knee dislocation.							
1.5.14	Discuss relevant investigation in knee dislocation.							
1.5.15	Discuss the management of knee dislocation.							
1.5.16	Enumerate the complications associated with kneedislocations.							
1.5.17	Classify hip dislocations.							
1.5.18	Explain the mechanism and clinical features ofanterior dislocation of hip.							
1.5.19	Describe the mechanism and clinical features ofposterior dislocation of hip.							
1.5.20	List the investigation in hip dislocation.							
1.5.21	Discuss the management of anterior and posterior dislocation.							
1.5.22	Describe the post reduction protocol of hipdislocation.							
1.5.23	Enumerate the complication of hip dislocation.							

OR1.6	Participate as a member in the team for closed reduction of shoulder dislocation /hip dislocation /knee dislocation	K	K/KH / SH	Y	Simulation, DOAPsession	OSCE/ Simulation		
Specific learning objectives:								
1.6.1	Discuss the principles of closed reduction of a dislocated joint.							
1.6.2	Describe the common closed reduction techniquesof shoulder dislocation.							
1.6.3	Describe the common closed reduction techniquesof hip dislocation.							
1.6.4	Observe, assist in closed reduction of shoulder dislocation in skill lab as an assistant using variousmethods.							
1.6.5	Observe , assist in closed reduction of hip dislocation in skill lab as an assistant using variousmethods.							

TOPIC : FRACTURES								
OR2.1	Describe and discuss the mechanism of Injury,clinical features, investigations and plan management of fracture of clavicle.	K	K/KH	Y	Lecture, Small group discussion,Bed side clinic	Written/ Viva voce/OSCE		
Specific learning objectives:								
2.1.1	Describe the anatomy of clavicle and acromio-clavicular joint.							
2.1.2	Discuss the mechanism of injury of claviclefracture.							
2.1.3	Discuss the clinical features of clavicle fracture.							
2.1.4	Classify clavicle fractures.							
2.1.5	Enumerate associated injuries in fracture claviclepatient.							
2.1.6	Discuss the principles of management of claviclefractures.							
2.1.7	List the surgical indications for clavicle fractures.							
2.1.8	Enumerate complications in clavicle fractures.							

OR2.2	**Describe and discuss the mechanism of Injury,clinical features, investigations and plan management of fractures of proximal humerus**	**K**	**K/KH**	**Y**	**Lecture, Small group discussion,Bed side clinic**	**Written/ Vivavoce/ OSCE**		
Specific learning objectives:								
2.2.1	**Describe the anatomy of proximal humerus.**							
2.2.2	**Discuss the blood supply and its importance.**							
2.2.3	**Explain the mechanism of injury.**							
2.2.4	**Discuss the clinical features and relevantinvestigations.**							
2.2.5	**Classify proximal humerus fractures.**							
2.2.6	**Discuss the principles of management ofproximal humeral fractures.**							
2.2.7	**List the surgical indications of proximal humerus fractures.**							
2.2.8	**Enumerate the complications of proximalhumerus fractures.**							

OR2.3	**Select, prescribe and communicate appropriate medications for relief of joint pain**	**K**	**K/KH/SH**	**Y**	**Lecture, Small group discussion,Bed side clinic**	**Written/ Viva voce/OSCE**		
Specific learning objectives:								
2.3.1	**Discuss the pathophysiology of joint pain.**							
2.3.2	**Enumerate the causes of joint pain .**							
2.3.3	**How do you evaluate join pain.**							
2.3.4	**Discuss WHO analgesics ladder**							
2.3.5	**Describe the role of opioid analgesics used in jointpains.**							
2.3.6	**Enumerate NSAIDS group of analgesics used in relief of joint pain.**							
2.3.7	**Mention parental analgesics used in relief of joinpain.**							
2.3.8	**Discuss the side effects of chronic use of NASIDS in aosteoarthritic joint pain.**							
2.3.9	**Name some topical analgesics.**							
2.3.10	**Discuss the role of intra-articular steroid injections inosteoarthritis.**							
2.3.11	**Discuss the role of viscosupplementation.inosteoarthritis.**							

OR2.4	**Describe and discuss the mechanism of injury, clinical features,investigations and principles of management of fracture of shaft of humerus and supracondylar fracture humerus with emphasis on neurovascular deficit**	**K**	**K/KH**	**Y**	**Lecture, Small group discussion,Bed side clinic**	**Written/ Viva voce/OSCE**		
Specific learning objectives:								
2.4.1	**Discuss the mechanism of injury and pathoanatomy of fractureshaft of humerus.**							
2.4.2	**Describe the classification and various patterns of fracture shaftof humerus.**							
2.4.3	**Define Holstein-Lewis fracture.**							
2.4.4	**Discuss the principles of management of fracture shaft of humerus.**							
2.4.5	**Enumerate various methods of conservative management offracture shaft of humerus.**							
2.4.6	**Discuss various surgical methods of fixation of fracture shaft ofhumerus**							
2.4.7	**Discuss the management of humerus fracture with radial nerveInjury.**							
2.4.8	**Define supracondylar fracture of humerus.**							
2.4.9	**Differentiate supracondylar and intercondylar humerus fractures.**							
2.4.10	**Classify supracondylar fracture in children.**							
2.4.11	**Discuss the radiological findings in paediatric supracondylarfracture humerus.**							
2.4.12	**Discuss the management of paediatric supracondylar fracturehumerus.**							

2.4.13	**Discuss the management of paediatric supracondylar fracture with absent radial pulse.**							
2.4.14	**Define compartment syndrome.**							
2.4.15	**Discuss the investigations and management ofcompartment syndrome of forearm.**							
2.4.16	**Enumerate the various complications of paediatricsupracondylar fracture humerus**							

OR2.5	**Describe and discuss the aetiopathogenesis, clinical features, mechanism of injury, investigation & principles of management of fractures of both bonesforearm and Galeazzi and Monteggia injury**	**K**	**K/KH**	**Y**	**Lecture, Small group discussion, Bedside clinic**	**Written/ Viva voce/OSCE**		
Specific learning objectives:								
2.5.1	**Describe the anatomy of radius and ulna.**							
2.5.2	**Discuss the mechanism of injury of fracture bothbones of forearm.**							
2.5.3	**Discuss clinical features and investigations in fractureboth bones of forearm.**							
2.5.4	**Define greenstick fracture.**							
2.5.5	**Discuss the principles of management of forearm fracture in children**							
2.5.6	**Discuss the principles of management of forearmfracture in adults**							
2.5.7	**Define Galeazzi fracture.**							
2.5.8	**Describe the mechanism of injury, pathoanatomyand clinical features in Galeazzi fracture.**							
2.5.9	**Classify Galeazzi fracture.**							
2.5.10	**Discuss the management of Galeazzi fracture**							

2.5.11	**Define Monteggia fracture.**							
2.5.12	**Describe the mechanism of injury, pathoanatomyand clinical features of Monteggia fracture.**							
2.5.13	**Classify Monteggia fracture.**							
2.5.14	**Discuss the management of Monteggia fracture.**							
2.5.15	**Enumerate various complications of forearmfractures.**							

OR2.6	**Describe and discuss the aetiopathogenesis, mechanism of injury, clinical features, investigations and principles of management offractures of distal radius**	**K**	**K/KH**	**Y**	**Lecture, Small group discussion, Bedside clinic**	**Written/ Viva voce/OSCE**		
Specific learning objectives:								
2.6.1	**Define Colle's fracture.**							
2.6.2	**Discuss the mechanism of injury, pathoanatomyand radiological findings in Colle's fracture.**							
2.6.3	**Define Smith's fracture.**							
2.6.4	**Define Barton's fracture.**							
2.6.5	**Describe the criteria for conservative managementof fractures of distal radius.**							
2.6.6	**Discuss the closed reduction technique of Colle'sfracture.**							
2.6.7	**Discuss the surgical management of fractures ofdistal radius.**							
2.6.8	**Describe the complications and its management offractures of distal radius.**							

OR2.7	**Describe and discuss the aetiopathogenesis, mechanism of injury, clinical features, investigations and principles of management ofpelvic injuries with emphasis on hemodynamic instability**	**K**	**K/KH**	**Y**	**Lecture, Small group discussion, Bedside clinic**	**Written/ Viva voce/OSCE**		
Specific learning objectives:								
2.7.1	**Discuss the anatomy of pelvis.**							
2.7.2	**Describe the mechanism of injury, pathoanatomyand clinical features of pelvic fractures.**							
2.7.3	**Classify pelvic fractures.**							
2.7.4	**Discuss the investigations in pelvic fractures.**							
2.7.5	**Describe the principles of management of pelvic fractures.**							
2.7.6	**How will you assess and manage a patient with pelvic fracture with haemodynamic instability.**							

OR2.8	**Describe and discuss the aetiopathogenesis, mechanism of injury, clinical features, investigationsand principles of management of spine injuries withemphasis on mobilization of the patient**	**K**	**K/KH**	**Y**	**Lecture, Small group discussion, Bedside clinic**	**Written/ Viva voce/OSCE**		
Specific learning objectives								
2.8.1	**Describe the anatomy of spine.**							
2.8.2	**Discuss the mechanism of injury, clinical featuresand investigations of a patient with spine injury.**							
2.8.3	**Differentiate stable and unstable spine fractures.**							
2.8.4	**Classify spine fractures.**							
2.8.5	**Define Hangman's fracture.**							
2.8.6	**Define whiplash injury.**							
2.8.7	**Discuss the principles of management of spinefractures.**							
2.8.8	**Discuss the surgical management of spine fracturewith spinal cord injury.**							
2.8.9	**Discuss how will you rehabilitate quadriplegic andparaplegic patients following spine fractures.**							

OR2.10	**Describe and discuss the aetiopathogenesis, mechanism of injury, clinical features, investigations and principles of management offractures of proximal femur.**	**K**	**K/KH**	**Y**	**Lecture, Small group discussion, Bedside clinic**	**Written/ Viva voce/OSCE**		
Specific learning objectives:								
2.10.1	**Discuss the blood supply of femoral head.**							
2.10.2	**Define and classify Intracapsular fractures of neckof femur.**							
2.10.3	**Discuss the clinical features and investigations ofintracapsular fracture neck of femur**							
2.10.4	**Discuss the management of intracapsular fractureneck of femur in all age groups.**							
2.10.5	**Enumerate complications of fracture neck offemur and discuss its management.**							
2.10.6	**Define extracapsular fracture neck of femur**							
2.10.7	**Classify extracapsular fracture neck of femur.**							
2.10.8	**Describe the clinical features, investigations andmanagement of extracapsular fracture neck of femur.**							
2.10.9	**Discuss the management of intertrochantericfracture.**							

OR2.11	**Describe and discuss the aetiopathogenesis, mechanism of injury, clinical features, investigationsand principles of management of (a)Fracture patella (b) Fracture distal femur (c) Fracture proximal tibia with special focus on neurovascular injury and compartment syndrome**	**K**	**K/KH/ SH**	**Y**	**Lecture, Small group discussion, Bedside clinic**	**Written/ Viva voce/OSCE**		
Specific learning objectives:								
2.11.1	**Discuss the anatomy of extensor mechanism of knee.**							
2.11.2	**Discuss mechanism of injury and clinical features ofpatella fracture.**							
2.11.3	**Interpret radiograph of knee with patella fracturepatterns.**							
2.11.4	**Discuss the general principles of management offracture patella.**							
2.11.5	**Discuss the mechanism of injury in supracondylarand intercondylar fracture femur.**							
2.11.6	**Discuss general principles of management of distal femur fractures.**							
2.11.7	**Classify proximal tibia fractures**							
2.11.8	**Discuss the general principles of management ofproximal tibia fractures.**							
2.11.9	**Enumerate the common complications of proximaltibia fracture.**							

2.11.10	**Discuss the etiopathogenesis, clinical features, investigation and management of compartmentsyndrome with proximal tibia fracture**.							

OR2.12	**Describe and discuss the aetiopathogenesis, clinicalfeatures, investigations and principles of management of Fracture shaft of femur in all age groups and the recognition and management of fatembolism as a complication**	**K**	**K/KH**	**Y**	**Lecture, Small group discussion, Bedside clinic**	**Written/ Viva voce/OSCE**		
Specific learning objectives:								
2.12.1	**Discuss the etiology of fracture shaft of femur**							
2.12.2	**Discuss the clinical features and investigations infracture shaft of femur**							
2.12.3	**Discuss the management of fracture shaft of femurin children.**							
2.12.4	**Discuss the management of fracture shaft of femurin adults**							
2.12.5	**Enumerate the complications of fracture shaft of femur**							
2.12.6	**Define fat embolism.**							
2.12.7	**Discuss the clinical features and management offat embolism.**							
2.12.8	**Explain the preventive steps to avoid fat embolismin long bone fractures.**							

OR2.13	**Describe and discuss the aetiopathogenesis, clinicalfeatures, Investigation and principles of management of:** **a) Fracture both bones leg** **b) Calcaneus** **c) Small bones of foot**	**K**	**K/KH**	**Y**	**Lecture, Small group discussion, Bedside clinic**	**Written/ Viva voce/OSCE**		
Specific learning objectives:								
2.13.1	**Discuss the mechanism and clinical features offracture both bones of leg**							
2.13.2	**Discuss the conservative and surgical managementof fracture both bones of leg**							
2.13.3	**Discuss the management of isolated fibula fracture**							
2.13.4	**Discuss the fractures caused due to fall from height**							
2.13.5	**Classify calcaneal fractures.**							
2.13.6	**Discuss the radiological findings and managementof calcaneal fractures.**							
2.13.7	**What is Aviator's fracture.**							
2.13.8	**Define Jones fracture**							

OR2.14	**Describe and discuss the aetiopathogenesis, clinicalfeatures, Investigation and principles of management of ankle fractures**	**K**	**K/KH**	**Y**	**Lecture, Small group discussion, Bedside clinic**	**Written/ Viva voce/OSCE**		
Specific learning objectives:								
2.14.1	**Discuss the mechanism of injury of ankle fractures.**							
2.14.2	**Classify ankle fractures**							
2.14.3	**Discuss the principles of management of anklefractures**							
2.14.4	**Define Cotton's fracture.**							
2.14.5	**Mention the complications of ankle fractures.**							

OR2.15	Plan and interpret the investigations to diagnose complications of fractures like malunion, non-union, infection, compartment syndrome	K	K/KH	Y	Lecture, Small groupdiscussion, Bedside clinic	Written/ Vivavoce/ OSCE		
Specific learning objectives:								
2.15.1	Enumerate immediate, early and late complications of fractures.							
2.15.2	Define malunion							
2.15.3	Define nonunion.							
2.15.4	Define delayed union.							
2.15.5	Discuss the factors affecting fracture healing							
2.15.6	Classify nonunion of long bones.							
2.15.7	List the radiological investigations in nonunion.							
2.15.8	Discuss the investigation to rule out infections followingfractures.							
2.15.9	Discuss the management of nonunion.							
2.15.10	Discuss the management of malunion.							
2.15.11	Define compartment syndrome.							
2.15.12	Discuss the clinical features of compartment syndrome.							
2.15.13	Discuss the investigations to rule out compartment syndrome.							
2.15.14	Discuss the indications for fasciotomy.							
2.15.15	Discuss the sequelae of compartment syndrome.							

OR2.16	**Describe and discuss the mechanism of injury, clinical features, investigations and principles of management of open fractures with focus on secondary infection prevention and management**	**K**	**K/KH**	**Y**	**Lecture, Small group discussion, Bedside clinic**	**Written/ Viva voce/OSCE**		
Specific learning objectives:								
2.16.1	**Define open fractures.**							
2.16.2	**Classify open fractures.**							
2.16.3	**Discuss the etiology in open fractures.**							
2.16.4	**Discuss the management of open fractures.**							
2.16.5	**Describe antibiotic prophylaxis in open fractures.**							
2.16.6	**Discuss wound debridement and role of irrigationin open fractures.**							
2.16.7	**Enumerate the complications of open fractures.**							
2.16.8	**Discuss the prophylaxis against tetanus and gasgangrene.**							

TOPIC: Musculoskeletal Infection								
OR3.1	Describe and discuss the aetiopathogenesis, clinicalfeatures, investigations and principles of management of bone and joint infections. a) Acute Osteomyelitis. b) Subacute osteomyelitis. c) Acute Suppurative arthritis. d) Septic arthritis & HIV infection e) Spirochetal infection	K	K/KH	Y	Lecture, small group discussion, video assisted lecture	Written/ Viva voice/OSCE	Pathology, Microbiology	General Surgery
Specific learning objectives:								
3.1.1	Define osteomyelitis.							
3.1.2	Classify osteomyelitis.							
3.1.3	Discuss the epidemiological aspects of osteomyelitis.							
3.1.4	Define septic arthritis.							
3.1.5	List the common organisms causing acuteosteomyelitis.							
3.1.6	Discuss the routes of infection in osteomyelitis.							
3.1.7	Discuss the risk factors associated with osteomyelitis.							
3.1.8	Describe the clinical features and investigations inacute, subacute and chronic osteomyelitis.							
3.1.9	Enumerate types of sequestrum.							
3.1.10	Describe the principles of management of acute,subacute and chronic osteomyelitis.							

3.1.11	**Define saucerization.**							33

3.1.12	Enumerate the complications of chronicosteomyelitis.							
3.1.13	Describe the clinical features, investigations andmanagement of septic arthritis.							
3.1.14	Discuss the characteristics and management of septicarthritis in HIV patients.							

OR3.2	Participate as a member in team for aspiration ofjoints under supervision.	K	K/KH/SH	Y	Small group, Discussion. DOAPsession	Viva voice/ OSCE/Skill assessment.		
Specific learning objectives:								
3.2.1	Define arthrocentesis.							
3.2.2	Discuss indications for arthrocentesis.							
3.2.3	Describe the informed consent procedure before aspirations.							
3.2.4	Perform the procedure of arthrocentesis of knee ona mannequin under supervision.							
3.2.5	Enumerate the complications of arthrocentesis.							

OR3.3	Participate as a member in team for procedure like drainage of abscess , sequestrectomy/ saucerizationand arthrotomy.	K	K/KH/SH	Y	DOAP session, Video demonstration	Viva voice/OSCE/Skillsassessment.		General Surgery
Specific learning objectives:								
3.3.1	Define abscess.							
3.3.2	Discuss the indications and contra indications ofincision and drainage (I&D).							
3.3.3	Describe the procedure of I&D including appropriateanesthesia.							
3.3.4	Discuss the importance of aftercare and patient education about abscess and I&D.							
3.3.5	Define arthrotomy.							
3.3.6	Discuss the indications of arthrotomy.							
3.3.7	Discuss the procedure of arthrotomy of knee joint.							
3.3.8	Define sequestrum.							
3.3.9	Discuss the types of sequestrum.							
3.3.10	Enumerate the operative methods in chronicosteomyelitis							
3.3.11	Differentiate involucrum from sequestrum.							
3.3.12	Discuss the procedure of saucerization.							
3.3.13	Mention the prerequisites before doingsequestrectomy.							

Topic : Skeletal Tuberculosis								
OR4.1	Describe and discuss the clinical features , investigation and principles of management oftuberculosis affecting major joints (hip, knee) including cold abscess and caries spine.	K	K/KH	Y	Lecture, Small group discussion,Case discussion.	Written /Viva voice/OSCE	Pathology	General surgery
Specific learning objectives:								
4.1.1	Discuss the epidemiology of skeletal tuberculosis.							
4.1.2	Describe the pathogenesis, clinical features andradiological findings in tuberculosis of hip.							
4.1.3	Enumerate the stages of TB hip.							
4.1.4	Discuss the medical and surgical management of TBhip.							
4.1.5	Discuss triple deformity of knee.							
4.1.6	Discuss the management of TB knee.							
4.1.7	Describe the pathogenesis, clinical features andinvestigations of TB spine.							
4.1.8	Discuss the general principles of management of TBspine.							
4.1.9	Define Pott's paraplegia.							
4.1.10	Enumerate the causes of Pott's paraplegia.							
4.1.11	Define cold abscess. List the locations where cold abscess are seen.							
4.1.12	Discuss the mechanism of action, dose ,regimen andside effects of anti-tubercular drugs.							

4.1.13	**Discuss psoas abscess and its management.**							

Topic: Rheumatoid Arthritis and associated inflammatory disorders.								
OR5.1	Describe and discuss the aetiopathogenesis , clinical features, investigations and principles of managementof various inflammatory disorders of joints.	K	K/KH	Y	Lecture , Small group discussion, Bedside clinic	Written/Viva voice/OSCE		General medicine.
Specific learning objectives:								
5.1.1	Define poly arthritis.							
5.1.2	Enumerate the causes of poly arthritic joint pain							
5.1.3	Enumerate various causes of inflammatory jointdiseases.							
5.1.4	Describe the etiopathogenesis, clinical features andinvestigations of rheumatoid arthritis.							
5.1.5	Discuss the articular deformities in rheumatoidarthritis							
5.1.6	Discuss the extra articular manifestations inrheumatoid arthritis							
5.1.7	Describe the medical management of rheumatoidarthritis.							
5.1.8	Describe the mechanism of action, dosage and sideeffects of DMARDS.							
5.1.9	Enumerate various causes of seronegative arthritis.							
5.1.10	Discuss ankylosing spondylitis							
5.1.11	Describe clinical features, investigations and management of crystalline arthropathies							

Topic: Degenerative disorders								
OR6.1	Describe and discuss the clinical features, investigations and principles of management ofdegenerative condition of spine (cervical Spondylosis, Lumbar Spondylosis, IVDP)	K	K/KH	Y	Lecture , Small group discussion,Case discussion	Written/Viva voice/OSCE		
Specific learning objectives:								
6.1.1	Define degenerative disc disease.							
6.1.2	Discuss the etiopathogenesis and clinical features ofintervertebral disc prolapse (IVDP).							
6.1.3	Discuss the general principles of management ofIVDP.							
6.1.4	Discuss the differential diagnosis of radicular pain oflower limbs.							
6.1.5	Discuss the differential diagnosis of Low back pain.							
6.1.6	Define cervical spondylosis.							
6.1.7	Discuss the clinical features, radiological findingsand management of cervical spondylosis.							
6.1.8	Define lumbar spondylosis.							
6.1.9	Discuss the clinical features, radiological findingsand management of lumbar spondylosis							
6.1.10	Define spondylolisthesis.							

Topic : Metabolic bone disorders								
OR7.1	Describe and discuss the aetiopathogenesis, clinicalfeatures , investigations and principles of management of metabolic bone disorders in particular osteoporosis , osteomalacia, rickets , Paget's disease.	K	K/KH	Y	Lecture , Small group discussion, Case discussion	Written /Viva voice/OSCE		
Specific learning objectives:								
7.1.1	Define rickets and osteomalacia.							
7.1.2	Discuss the etiopathogenesis, clinical features andinvestigations of rickets.							
7.1.3	Discuss the pathophysiology, clinical features andinvestigations of osteomalacia.							
7.1.4	Discuss the medical management of rickets and osteomalacia.							
7.1.5	Discuss the deformities in rickets and its surgicalmanagement.							
7.1.6	Define osteoporosis.							
7.1.7	Discuss the etiology and risk factors for osteoporosis.							
7.1.8	Classify osteoporosis.							
7.1.9	Describe the clinical features andinvestigations inosteoporosis.							
7.1.10	Discuss the general principles of management ofosteoporosis.							
7.1.11	Discuss DEXA scan.							

7.1.12	Enumerate the common osteoporotic fractures.							
7.1.13	Discuss the lifestyle measures to prevent osteoporosis and its complications.							
7.1.14	Define Paget's disease.							
7.1.15	Discuss the clinical features, investigations andmanagement of Paget's disease							

OR7.2	Perform a systematic examination of a patient with deformity of Knee.	K	K/KH/SH	Y	DOAP session, Video demonstration	Viva voice/OSCE/Skillsassessment.		General Surgery
Specific learning objectives:								
7.2.1	Take an elaborate history in chorological order							
7.2.2	Perform generalized examination of patient							
7.2.3	Perform localized examination of the affected limb anddiscuss in terms of inspection, palpation, movements and measurements							
7.2.4	Define Genu Varum and Valgum and discuss etiologiesand pathogenesis							
7.2.5	Discuss investigations required to diagnose and planmanagement of a patient with knee deformity							
7.2.6	Discuss management.							

Topic : Poliomyelitis								
OR8.1	Describe and discuss the aetipathogenesis, clinicalfeatures, assessment and principles of managing apatient with Post Polio Residual Paralysis.	K	K/KH	Y	Lecture , Small group discussion,Case discussion	Written /Viva voice/OSCE		
Specific learning objectives:								
8.1.1	Define poliomyelitis.							
8.1.2	Discuss the etiology, pathogenesis and clinicalfeatures of poliomyelitis.							
8.1.3	Discuss the types of poliomyelitis and itscomplications.							
8.1.4	What is PPRP(Post Polio Residual Paralysis).							
8.1.5	Discuss the signs and symptoms in post polio syndrome.							
8.1.6	How do you recognize the paralysis caused bypoliomyelitis.							
8.1.7	Enumerate the common secondary problemsfollowing poliomyelitis.							
8.1.8	Mention the common contractures and deformities in PPRP.							
8.1.9	Discuss how do you evaluate a case of PPRP.							
8.1.10	Discuss the general principles of management ofPPRP.							

Topic : Cerebral Palsy								
OR9.1	Describe and discuss the aetiopathogenesis , clinical features, assessment and principles of managementof cerebral palsy patient.	K	K/KH	Y	Lecture , Small group discussion	Written/ Viva voice/OSCE		
Specific learning objectives:								
9.1.1	Define cerebral palsy.							
9.1.2	Discuss the etiopathogenesis of cerebral palsy.							
9.1.3	Classify cerebral palsy.							
9.1.4	Discuss the clinical features and investigations ofcerebral palsy.							
9.1.5	Discuss the general principles of management ofcerebral palsy.							
9.1.6	Discuss the common deformities of cerebral palsy.							
9.1.7	Mention common surgical procedures done incerebral palsy.							

Topic : Bone tumors								
OR10.1	Describe and discuss the aetiopathogenesis, clinical features, investigations and principles of management ofbenign and malignant bone tumors and pathological fractures.	K	K/KH	Y	Lecture , Small group discussion , Video assisted interactive lecture	Written/Viva voice/OSCE	Pathology	General surgery. Radiotherapy
Specific learning objectives:								
10.1.1	Classify bone tumors.							
10.1.2	Enumerate common benign tumors.							
10.1.3	Discuss aetiopathogenisis, clinical features , investigationsand management of Osteochondroma.							
10.1.4	List the complications of Osteochondroma.							
10.1.5	Discuss the etiopathogenesis, clinical features, radiologicalfindings and management of Osteoclastoma.							
10.1.6	Discuss Enneking staging of malignant bone tumors.							
10.1.7	Discuss the technique of open bone biopsy in malignantbone tumors.							
10.1.8	Describe the etiopathogenesis, clinical features, investigations and management of osteosarcoma.							
10.1.9	Discuss the etiopathogenesis, clinical features, investigations and management of Ewing's sarcoma.							
10.1.10	Define pathological fracture.							
10.1.11	Enumerate the causes of pathological fracture.							
10.1.12	Discuss the criteria for impending pathological fracture.							

10.1.13	**Discuss the general principles of management ofpathological fractures.**							

OR 10.2	Perform a systematic examination of a patient withbony swelling	K	K/KH/SH	Y	DOAP session, Video demonstration	Viva voice/OSCE/Skillsassessment.		General Surgery
Specific learning objectives:								
10.2.1	**Take an elaborate history in chorological order**							
10.2.2	**Perform generalized examination of patient**							
10.2.3	**Perform localized examination of the affected limb anddiscuss in terms of inspection, palpation, movements and measurements**							
10.2.4	**Discuss differential diagnosis of bony swellings/tumors.**							
10.2.5	**Discuss investigations required to establish diagnosis and plan management of benign and malignant tumors**							
10.2.6	**Discuss medical and surgical management of bonyswelling.**							

Topic: Peripheral nerve injuries.								
OR11.1	Describe and discuss the aetiopathogenesis, clinical features, investigations and principles of management of peripheral nerve injuries in diseaseslike foot drop, wrist drop, claw hand, palsies of Radial , Ulnar, Median. Lateral Popliteal and Sciatic Nerves.	K	K/KH	Y	Lecture, Small group discussion,case presentation	Written/ Viva voice/OSCE	Human anatomy	General medicine. General surgery.
Specific learning objectives:								
11.1.1	Classify peripheral nerve injuries.							
11.1.2	Enumerate the causes of peripheral nerve injuries.							
11.1.3	Discuss the investigations to diagnose peripheralnerve injuries.							
11.1.4	Describe the etiology, clinical features, clinical testsand management of radial nerve injury.							
11.1.5	Describe the etiology, clinical features, clinical testsand management of median nerve injury.							
11.1.6	Describe the etiology, clinical features, clinical testsand management of ulnar nerve injury.							
11.1.7	Enumerate the causes of foot drop.							
11.1.8	Discuss the clinical features, clinical tests andmanagement of foot drop.							
11.1.9	Discuss the etiology, clinical tests and managementof sciatic nerve injury.							
11.1.10	Discuss various splints used in peripheral nerve injuries							

Topic: Congenital lesions								
OR12.1	Describe and discuss the clinical features , investigations andprinciples of management of Congenital and acquired malformations of deformities of a. limbs and spine – Scoliosis and spinal bifida. b. Developmental Dysplasia of Hip (DDH), Torticollis. c. Congenital Talipes Equino Varus (CTEV).	K	K/K H	Y	Lecture, Small group discussion.	Written / Viva voice/OSCE	Human anatomy	
Specific learning objectives:								
12.1.1	Define scoliosis and kyphosis.							
12.1.2	Discuss the causes, clinical features, investigations and management of scoliosis.							
12.1.3	Define spina bifida.							
12.1.4	Discuss the etiology, clinical features, investigations andmanagement of spina bifida.							
12.1.5	Describe the etiology, pathoanatomy, clinical features andinvestigations of DDH.							
12.1.6	Discuss the general principles of management of DDH.							
12.1.7	Enumerate the causes of Torticollis.							
12.1.8	Discuss the clinical features, investigations and management of Torticollis.							
12.1.9	Describe the etiology, pathoanatomy , clinical features andinvestigations of CTEV.							
12.1.10	Discuss the general principles of management of CTEV.							
12.1.11	Discuss the correction techniques of CTEV.							
12.1.12	Enumerate the common surgical procedures performed for							

	CTEV.							

Topic: Procedural Skills								
OR13.1	Participate in a team for procedures in patients and demonstrating the ability to perform on mannequins/ simulatedpatients in the following: i. Above elbow plaster. ii. Below knee plaster. iii. Above knee plaster. iv. Thomas splint. v. Splinting for long bone fractures. vi. Strapping for shoulder and clavicle trauma.	K	K/KH/SH	Y	Case discussion, Video assisted Lecture, Small group discussion, Teaching ,Skill lab sessions	OSCE with Simulation based assessment.		
Specific learning objectives:								
13.1.1	Differentiate cast and slab.							
13.1.2	Discuss the precautions to be followed during and after plasterapplication.							
13.1.3	Perform under supervision application of above elbow slab for anundisplaced supracondylar fracture.							
13.1.4	Perform under supervision the application of Colle's cast .							
13.1.5	Perform under supervision the application of above knee plasterslab to immobile proximal tibia fracture.							
13.1.6	Identify Thomas splint and enumerate its uses.							
13.1.7	Perform under supervision the application of strapping for clavicle Fractures.							
13.1.8	Perform under supervision the application of Thomas splint forfracture shaft femur							

OR13.2	**Participate as a member in team for Resuscitation ofPolytrauma victim by doing all of the following:** **(a) I V access central- peripheral** **(b) Bladder catheterization** **(c) Endotracheal intubation.** **(d) Splintage**	**K**	**K/KH/ SH**	**Y**	**Case discussion, Video assisted Lecture, Small group discussion, Teaching , Skill labsessions**	**OSCE with Simulation based assessment**		**Anesthesiology**
Specific learning objectives:								
13.2.1	**Perform under supervision in getting IV access on amannequin in a skill lab.**							
13.2.2	**Perform bladder catheterization under supervision inskill lab.**							
13.2.3	**Perform endotracheal intubation under supervisionon a mannequin in a skill lab.**							
13.2.4	**Perform neck immobilization using cervical collar ina polytrauma patient under supervision.**							
13.2.5	**Perform under supervision the use of Thomas splint to immobilize fracture both bones leg in a polytraumapatient.**							
13.2.6	**Perform under supervision the use of pelvic binder ina case of pelvic fracture with haemodynamic instability**							

Topic : Counselling Skills								
OR14.1	Demonstrate the ability to counsel patients regarding prognosis in patients with various orthopaedic illness like a. fracture with disabilities. b. fracture that requires prolonged bed stay. c. bone tumours d. congenital disabilities.	K/C	K/KH/ SH	Y	Case discussion, Video assisted lecture, Small group discussion, Teaching, Skill labsessions.	OSCE with Simulation based assessment		AETCOM
Specific learning objectives:								
14.1.1	Demonstrate ability to communicate to patients with fractures, that multiple complications can occur leading to loss of skeletal function, restricted range of motion and neurovascular damage that canseverely compromise function and performance.							
14.1.2	Demonstrate ability to communicate to patients with multiple osteoporotic vertebral fractures aboutthe necessity of prolonged bed rest and its complication.							
14.1.3	Demonstrate ability to counsel to patients with bone tumors , the prognosis, or outlook for survival depending on the particular type of bone tumor andextent to which it had spread.							
14.1.4	Demonstrate ability to counsel parents about children with congenital disabilities with respect tofunction, performance and cosmesis.							

OR14.2	**Demonstrate the ability to counsel patients to obtain consent for various orthopaedic procedures like limb amputation, permanent fixations etc.**	**K/C**	**K/KH/ SH**	**Y**	**Case discussion, Video assisted lecture , Small group discussion, Teaching, Skills labsessions**	**OSCE with Simulation based assessment**		**AETCOM**
Specific learning objectives:								
14.2.1	**Demonstrate the ability to counsel a patient with limb amputation for serious trauma (crush or blast),about the advantages, recovery , rehabilitation andfunctional recovery.**							
14.2.2	**Demonstrate the ability to obtain informed consentfrom patient and family in a simulated environment.**							
14.2.3	**Communicate diagnostic and therapeutic options topatient and family for fracture fixation to obtain informed consent**							

OR14.3	**Demonstrate the ability to convince the patient forreferral to a higher center in various orthropaedicillness , based on the detection of warning signals and need for sophisticated management.**	**K/C**	**K/KHSH**	**Y**	**Case discussion, Video assisted lecture , Small group discussion, Teaching, Skills labsessions**	**OSCE with Simulation based assessment**		**AETCOM**
Specific learning objectives:								
14.3.1	**Enumerate common orthopedic emergencies whichneeds timely referral to a higher tertiary center .**							
14.3.2	**Demonstrate the ability to convince about referringpatient with fracture proximal tibia associated withvascular injury to higher center.**							
14.3.3	**Demonstrate the ability to convince about referringpatient with traumatic amputation of leg to higher center for replantation.**							
14.3.4	**Demonstrate the ability to convince about referringa spinal cord injury patient to higher center.**							

Model Time table for Phase II MBBS, Phase III Part 1 and Part 2 MBBS

Phase II (2 weeks Clinical Posting)	
	9.00 AM to 12.00Noon
Monday	Postings
Tuesday	Postings
Wednesday	Postings
Thursday	Postings
Friday	Postings
Saturday	X

Phase III Part 1 (4 weeks Clinical Posting + 5 SDL + 20hrs SGD/IT+ 15hrs Lectures)			
	9.00 AM to 12.00 Noon	12.01 Pm to 1.00 PM ***5 SDL+ 19 SGD/IT***	2.00PM to 3.00 PM
Monday	Postings	SDL/SGD/IT	
Tuesday	Postings	SDL/SGD/IT	
Wednesday	Postings	SDL/SGD/IT	***15 Lectures + 1SGD/IT***
Thursday	Postings	SDL/SGD/IT	
Friday	Postings	SDL/SGD/IT	
Saturday	Postings	SDL/SGD/IT	

Phase III Part 2 (2 weeks Clinical Posting + 5 SDL+ 25 SGL/IT+ 20 Lectures)			
	9.00 AM to 12.00Noon	**12.01 Pm to 1.00 PM** ***(5 SDL+ 7 SGD/IT)***	**2.00PM to 3.00 PM**
Monday	Postings	SDL/SGD/IT	
Tuesday	Postings	SDL/SGD/IT	
Wednesday	Postings	SDL/SGD/IT	***20 Lectures+ 18 SGD/IT***
Thursday	Postings	SDL/SGD/IT	
Friday	Postings	SDL/SGD/IT	
Saturday	Postings	SDL/SGD/IT	

List of Competencies to cover in each phase of MBBS

Lectures in Phase III Part 1 and Part 2 MBBS

Sl.No	Topics	MBBS Phase III, Part 1 Competencies to be covered	MBBS Phase III, Part 2 Competencies to be covered
1	Skeletal trauma, poly trauma	OR1.1, 1.2, 1.3, 1.4, 1.5	
2	Fractures	OR 2.1, 2.2, 2.4, 25, 2.6, 2.10, 2.11, 2.12, 2.13, 2.14, 2.15, 2.16	2.7, 2.8
3	Musculoskeletal Infection		3.1
4	Skeletal Tuberculosis		4.1
5	Rheumatoid Arthritis and associatedinflammatory disorders		5.1
6	Degenerative disorders		6.1
7	Metabolic bone disorders		7.1
8	Poliomyelitis		8.1
9	Cerebral Palsy		9.1
10	Bone Tumors		10.1
11	Peripheral nerve injuries		11.1
12	Congenital lesions		12.1
13	Physical Medicine and Rehabilitation		PM1.2,1.3, 1.4, 5.1, 5.2, 5.3, 5.4, 7.7, 8.1

14	**Total Hours**	**15 hours**	**20 hours**

Small group discussions (Tutorials / Seminars) in Phase III Part 1 and Part 2 MBBS

Sl.No	Topics	MBBS Phase III, Part 1 Competencies to be covered	MBBS Phase III, Part 2 Competencies to be covered
1	Skeletal trauma, poly trauma	OR1.1, 1.2, 1.3, 1.4, 1.5, 1.6	
2	Fractures	OR 2.3, 2.4, 2.5, 2.10, 2.12, 2.14, 2.16	2.7, 2.8
3	Musculoskeletal Infection		3.2, 3.3
4	Skeletal Tuberculosis		4.1
5	Rheumatoid Arthritis and associated inflammatory disorders		5.1
6	Metabolic bone disorders		7.1
7	Bone Tumors		10.1
8	Peripheral nerve injuries		11.1
9	Congenital lesions		12.1
10	Counseling Skills	14.1,14.2,14.3	
	Total Hours	14 Hours	9 Hours

Integrated learning in Phase III Part 1 and Part 2 MBBS			
Sl.No	**Topics**	**MBBS Phase III, Part 1 Competencies to be covered**	**MBBS Phase III, Part 2 Competencies to be covered**
1	Anatomy	AN2.4,2.5,8.4, 8.6, 17.2, 10.12, 17.3, 18.6, 18.7, 11.4, 19.4, 19.6, 19.7	
2	Microbiology		MI 4.2
3	Forensic medicine		FM3.7, 3.8, 3.9, 3.10, 3.11, 3.12
4	Pathology		PA33.1, 33.2, 33.2, 33.4
5	General Medicine		IM7.4, 7.6, 7.7, 7.8, 7.9, 7.10, 24.12, 24.13, 24.14. 24.16
6	Physical Medicine andRehabilitation		PM 5.1, 5.2, 5.3, 5.4 6.3, 6.4, 2.4, 7.4, 7.5
	Total Hours	6 hours	16 hours

Self Directed Learning in Phase III Part 1 and Part 2 MBBS			
Sl. No	Topics	MBBS Phase III, Part 1 Competencies to be covered	MBBS Phase III, Part 2 Competencies to be covered
1	Skeletal trauma, poly trauma	OR 1.5,1.6	
2	Fractures	OR 2.15	OR 2.7, OR 2.8
3	Musculoskeletal Infection		OR 3.1
9	Cerebral Palsy		
10	Bone Tumors		OR 10.1
11	Peripheral nerve injuries		OR 11.1
13	Physical Medicine andRehabilitation	PM5.3, PM5.4, PM7.2,	
14	Total Hours	5 Hours	5 Hours

Time allotment for Competencies in Phase III Part 1 MBBS

Sl.No	Topics	Competency	Type of Learning and Hours		
			Lectures (hours)	Small group discussions (Tutorials / Seminars) /Integrated learning (hours)	Self - Directed Learning (hours)
1	Skeletal trauma, poly trauma	OR1.1	1	1	1
		OR1.2	1	1	
		OR13, OR1.4	1	1	
		OR1.5	1	1	1
		OR 1.6		1	
2	Fractures	OR 2.1, 2.2	1		
		OR 2.3		1	
		OR 2.4	1	1	
		OR 2.5	1	1	
		OR 2.6	1		
		OR 2.10	1	1	
		OR 2.11	1		
		OR2.12	1	1	
		OR 2.13	1		
		OR 2.14	1		
		OR 2.15	1	1	1
		OR 2.16	1	1	

CONTINUED IN NEXT PAGE

Time allotment for Competencies in Phase III Part 1 MBBS

Sl.No	Topics	Competency	Type of Learning and Hours		
			Lectures (hours)	Small group discussions (Tutorials / Seminars) /Integrated learning (hours)	Self - Directed Learning (hours)
3	Counseling Skills	OR 14.1,14.2		1	
		OR 14.3		1	
4	Anatomy (Integrated)	AN 2.4,2.5,8.4		1	
		AN 8.6,17.2		1	
		AN10.12, 17.3		1	
		AN 18.6, 18.7		1	
		AN 11.4, 19.4		1	
		AN 19.6, 19.7		1	
5	Physical medicine and Rehabilitation	PM 5.3,5.4			1
		PM 7.2			1
	Total		15	20	5

Time allotment for Competencies in Phase III Part 2 MBBS

Sl.No	Topics	Competency	Type of Learning and Hours		
			Lectures (hours)	Small group discussions (Tutorials / Seminars) /Integrated learning (hours)	Self - Directed Learning (hours)
1	Fractures	OR 2.7	1	1	1
		OR 2.8	1	1	1
2	Musculoskeletal Infection	OR 3.1	2		1
		OR 3.2,3.3		1	
3	Skeletal Tuberculosis	OR 4.1	2	1	
4	Rheumatoid Arthritis and associated inflammatory disorders	OR 5.1	1	1	
5	Degenerative disorders	OR 6.1	1		
6	Metabolic bone disorders	OR 7.1	1	1	
7	Poliomyelitis	OR 8.1	1		
8	Cerebral Palsy	OR 9.1	1		
9	Bone Tumors	OR 10.1	2	1	1
10	Peripheral nerve injuries	OR 11.1	2	1	1

11	**Congenital lesions**	**OR 12.1**	**2**	**1**	
CONTINUED IN NEXT PAGE					

Time allotment for Competencies in Phase III Part 2 MBBS

Sl.No	Topics	Competency	Type of Learning and Hours		
			Lectures (hours)	Small group discussions (Tutorials / Seminars) /Integrated learning (hours)	Self - Directed Learning (hours)
12	Pathology	PA 33.1		1	
		PA 33.2, 33.4		1	
13	Microbiology	MI 4.2		1	
14	Forensic Medicine and Toxicology	FM3.7. 3.8, 3.9, 3.10		1	
		FM 3.11, 3.12		1	
15	General Medicine	IM 7.5, 7.6, 7.7, 7.8, 7.9, 7.10,		2	
		24.12		1	
		24.13, 24.14, 24.16		2	
16	Physical Medicine and Rehabilitation	PM 1.2, 1.3, 1.4	1		
		PM 5.1, 5.2, 5.3, 5.4	1	1	
		PM 6.3		2	
		PM 6.4		1	
		PM 7.4		1	
		PM 7.5		1	
		PM 7.7, 8.1	1		
	TOTAL HOURS		20	25	5

Orthopaedic Competencies in Internship

GOAL

The goal of the internship programme is to train medical students to fulfill their roles as doctors of first contact in the community.

(A) THERAPEUTIC- An intern must know:

(a) Splinting (plaster slab) for the purpose of emergency splintage, definitive splintage and post operative splintage and application of

Thomas splint;

(b) Manual reduction of common fractures – phalangeal, metacarpal, metatarsal and Colles's fracture;

(c) Manual reduction of common dislocations – interphalangeal, metacarpophalangeal, elbow an shoulder dislocations;

(d) Plaster cast application for undisplaced fractures of arm, fore arm, leg and ankle;

(e) Emergency care of a multiple injury patient;

(f) Precautions about transport and bed care of spinal cord injury patients.

(B) Skill that an intern should be able to perform under supervision:

(1) Advise about prognosis of poliomyelitis, cerebral palsy, CTEV and CDH;

(2) Advise about rehabilitation of amputees and mutilating traumatic and leprosy deformities of hand;

(C) An intern must have observed or preferably assisted at the following operations:

(1) drainage for acute osteomyelitis;

(2) sequestrectomy in chronic osteomyelitis;

(3) application of external fixation;

(4) internal fixation of fractures of long bones.

Physical Medicine and Rehabilitation Competencies in

GOAL

The aim of teaching the undergraduate student in Physical Medicine & Rehabilitation is to impart such knowledge and skills that mayenable him to diagnose and treat common rheumatologic, orthopedic and neurologic illnesses requiring physical treatment. He/she shall acquire competence for clinical diagnosis based on history, physical examination and relevant laboratory investigations and institute appropriate line of management.

(A) THERAPEUTIC- An intern must know:

a) Diagnosing and managing with competence clinical diagnosis and management based on detailed history and assessment ofcommon disabling conditions like poliomyelitis, cerebral palsy, hemiplegia, paraplegia, amputations etc.

b) Participation as a team member in total rehabilitation including appropriate follow up of common disabling conditions,

c) Procedures of fabrication and repair of artificial limbs and appliances.

(B) An intern must have observed or preferably assisted at the following operations/ procedures: :

a) Use of self-help devices and splints and mobility aids

b) Accessibility problems and home making for disabled

c) Simple exercise therapy in common conditions like prevention of deformity in polio, stump exercise in an amputee etc.

d) Therapeutic counseling and follow up

List of Competencies to cover in Internship

SL NO	*Competency*	*Performed*	*Assisted*	*Observed*
1	Splinting	?	?	?
2	Cast Application	?	?	?
3	Manual Reduction of Commondislocations	?	?	?
4	Application of External Fixator		?	?
5	Internal Fixation of Long Bones		?	?
6	Wound repair and dressing	?	?	?
7	Drainage of Acute Osteomyelitis	?	?	?
8	Major Operative Procedures		?	?
9	Minor Operative Procedures		?	?
10	Case Sheet Writing	?		

Period Of Training in Internship	
Subject	**Period of Posting (Weeks)**
Orthopaedics including PMR	**4 weeks**

Certifiable skills in Internship

A Comprehensive list of skills recommended in Orthopedics desirable for Bachelor of Medicine and Bachelor of Surgery (MBBS) – Indian Medical Graduate

1. **Application of basic splints and slings (I)**
2. **Basic fracture and dislocation management (O)**
3. **Compression bandage (I)**

I- Independently performed on patients,
O- Observed in patients or on simulations,
D- Demonstration on patients or simulations and performance under supervision in patients

Assessment in Orthopaedics

Formative Assessment - An assessment conducted during the instruction with primary purpose of providing feedback for improving learning.

Summative Assessment - An assessment conducted at the end of instruction to check how much the student has learnt.

Internal Assessment (IA)- Range of assessments conducted by the teachers teaching a particular subject with the purpose of knowing what is learnt and how it is learnt. Internal assessment can have both formative and summative functions.

Note - Assessment requires specification of measurable and observable entities. This could be in the form of whole tasks that contribute toone or more competencies or assessment of a competency per se. Another approach is to break down the individual competency into learning objectives related to the domains of knowledge, skills, attitudes, communication etc. and then assess them individually

Scheduling of Internal Assessment -

A. In Phase II MBBS there will be one Internal assessments in practicals.
B. In Phase III part 1 MBBS there will be one Internal assessment each in theory and practicals.
C. In Phase III part 2 MBBS the test should be prelim or pre-university examination with theory and practicals

Theory can include:

Theory tests, seminars, quizzes, interest in subject, scientific attitude etc. Written tests should have essay questions, short notes andcreative writing experiences.

Practical can include:

Practical tests, Objective Structured Practical Examination (OSPE), Directly Observed Procedural Skills (DOPS), records maintenance and attitudinal assessment.

Log Book Assessment -

A. Log book should record all activities like seminar, symposia, quizzes and other academic activities.
B. It should be assessed regularly and submitted to the department.
C. Up to twenty per cent internal marks can be considered for Log book assessment.

Feedback in Internal Assessment

Feedback should be provided to students throughout the course so that they are aware of their performance and remedial action can be initiated well in time. The feedbacks need to be structured and the faculty and students must be sensitized to giving and receiving feedback.

The results of IA should be displayed on notice board within two weeks of the test and an opportunity provided to the students to discuss the results and get feedback on making their performance better.

It is also recommended that students should sign with date whenever they are shown IA records in token of having seen and discussed themarks.

Internal assessment marks will not be added to University examination marks and will reflect as a separate head of passing at the summativeexamination. Internal assessment should be based on competencies and skills.

Criteria for appearing in University examination

Students must secure at least 50% marks of the total marks (combined in theory and practical; not less than 40 % marks in theory andpractical separately) assigned for internal assessment in order to be eligible for appearing at the final University examination

Annexures

A. Teaching Learning Methods

- **Didactic lectures** should be made more interactive by encouraging the more involvement of the students. In the present digital era, student's involvement is more with usage of technology. For examples, many polling sessions, quizzes etc., can be done using google slides and other apps or websites.

- **Small group discussion (SGD**) should be planned properly and discussed among the faculty members before taking the class. As for as possible, uniformity should be maintained in the SGD by various facilitators. **Case based learning (CBL) and problem based learning (PBL)** may be used to make the learner understand and learn about the various aspects in order to achieve the particular competency.

- Encourage the students learn themselves through **self-directed learning (SDL).** SDL sessions may be planned with objectives in order to cover the particular competency. These sessions may be conducted by providing learning material (research articles, public news, videos, etc.) by a teacher and ask the students to search on a particular topic. Students should learn themselves by going through available resources and come back to classes allotted for SDL sessions where teacher able to connect the learning of students in order to achieve the competency.

- **Integrated classes** should be planned in order to cover the competency involving the topics from different subjects. These classes can be taken using Nesting, Temporal Coordination or Sharing. Case linkers may be used to link the topic/subject area among different subjects/ departments.

- Skills should be taught using the clinical cases at hospital wards/casualty/EMD, simulation in skills labs and/or departmental demonstration rooms. **Case scenarios** may be developed while teaching at skills lab and/or demonstration rooms.

B. Blue Print & Assessment methods - Theory

Number of QPs for Orthopaedics: One

Theory marks: 50

This shows the weightage given to each chapter in the summative assessment. This improves the content validity by distributing theassessment of learners in the competencies that are represented by learning objectives under each chapter.

Number of QPs for the subject: One.

Only CORE competencies shall be considered for framing questions. QP should contain the following distribution of questions (as shown inbelow table).

Type of Question	Marks Per Question	Number of questions	Total Marks
Long Essay	10	2	20
Short Essays	5	3	15
Short Answers	3	5	15
		Total	**50**

Each paper should contain Long essays (10 marks x 2), Short essay (5 marks x 3), Short answer (3 marks x 5).

Distribution of marks in suggested blue print

SL NO	Topics	Type of Question		
		Long Essay	Short Essay	Short Answers
1	Skeletal trauma, poly trauma		?	?
2	Fractures	?	?	?
3	Musculoskeletal Infection	?	?	?
4	Skeletal Tuberculosis	?	?	?
5	Rheumatoid Arthritis and associated inflammatory disorders		?	?
6	Degenerative disorders		?	?
7	Metabolic bone disorders	?	?	?
8	Poliomyelitis		?	?
9	Cerebral Palsy		?	?
10	Bone Tumors	?	?	?
11	Peripheral nerve injuries		?	?
12	Congenital lesions	?	?	?
13	Physical Medicine and Rehabilitation		?	?

NOTE: The questions should be framed only from Core competencies (as shown in above table).

C. Blue Print & Assessment methods - Practicals

1. Total Marks: 50

I. Clinical Cases: 40 Marks

I. Viva Voce: 10 Marks

Suggested Marks distribution for Each Case		
Sl No	**Assessment parameter**	**Marks**
1	History and case sheet writing	5
2	Clinical examination	5
3	Diagnosis/ analysis of case	5
4	Presentation	5

Clinical Cases:

Two short cases (2 X 20 Marks)

Viva:

Two Radiographs (5 Marks)

Two Instruments/ Implants (5Marks)

D. Integration Topics

Integration: The teaching should be aligned and integrated horizontally and vertically recognizing the importance of orthopaedic conditions as they relate to the practice of medicine as a whole.

HUMAN ANATOMY								
AN2.4	Describe various types of cartilage with its structure& distribution in body	K	KH	Y	Lecture	Written/Vive voice	orthopaedics	
Specific learning objectives:								
2.4.1	Define cartilage.							
2.4.2	Enumerate types of cartilage.							
2.4.3	Discuss the components of cartilage.							
2.4.4	Describe structure of various types of cartilage withexamples							
2.4.5	Discuss what happens to articular cartilage in osteoarthritis							
AN2.5	Describe various joints with subtypes and examples	K	KH	Y	Lecture	Written/Viva Voce	orthopaedics	
	Specific learning objectives:							
2.5.1	Define a joint.							
2.5.2	Classify joints based on mobility between bones.							
2.5.3	Discuss the components of synovial joints.							
2.5.4	Describe the structure of joint capsule.							
2.5.5	Enumerate the types of synovial joints.							
2.5.6	Describe the supporting structures of synovial joints.							

AN8.4	Demonstrate important muscle attachments on thegiven bone	K/S	SH	Y	Practical, DOAPsession, Small group teaching	Viva voice/ Practicals	orthoapedics	
Specific learning objectives:								
8.4.1	Demonstrate the origin and insertion of Deltoidmuscle.							
8.4.2	Demonstrate the origin and insertion of Biceps Brachii.							
8.4.3	Demonstrate the flexor group of muscles offorearm and its attachments.							
8.4.4	Demonstrate the extensor group of muscles offorearm and its attachments.							
8.4.5	Demonstrate the muscle attachment of humerus.							
8.4.6	Demonstrate the muscle attachment of radius andulna.							
8.4.7	Discuss the muscle attachment of femur.							
8.4.8	Discuss the origin and insertion of quadriceps.							
8.4.9	Describe the muscle attachment of tibia and fibula.							

AN8.6	Describe scaphoid fracture and explain theanatomical basis of avascular necrosis	K	KH	N	DOAP session	Viva voice	orthopaedics	
Specific learning objectives:								
8.6.1	**Discuss the anatomy of scaphoid bone.**							
8.6.2	**Describe the blood supply of scaphoid bone.**							
8.6.3	**Discuss the mechanism of injury of scaphoidfracture.**							
8.6.4	**Classify scaphoid fractures.**							
8.6.5	**Discuss the clinical features and investigations inscaphoid fractures.**							
8.6.6	**Discuss the principles of management of scaphoidfracture.**							
8.6.7	**Enumerate complications of scaphoid fracture**							
8.6.8	**Discuss the causes of avascular necrosis of scaphoidfracture and its management.**							

AN10.12	Describe and demonstrate shoulder joint for - type,articular surfaces, capsule , synovial membrane, ligaments, relations, movements, muscle involved,blood supply, nerve supply and applied anatomy.	K/S	SH	Y	Practical, Lecture,Small group discussion, DOAPsession.	Written/Viva voice/Skills assessment	Orthopaedics	
Specific learning objectives:								
10.12.1	Discuss shoulder joint anatomy.							
10.12.2	Describe various supporting structures of shoulder joint.							
10.12.3	Discuss glenoid labrum and its importance.							
10.12.4	Demonstrate the movements of shoulder joint.							
10.12.5	Describe sub acromial bursa and its importance.							
10.12.6	Describe the blood supply of proximal humerus andits applied anatomy.							
10.12.7	Discuss rotator cuff group of muscles							
AN11.4	Describe the anatomical basis of Saturday nightparalysis	K	K/KH	Y	Practical ,Lecture	Written/Viva voice	Orthopaedics	
Specific learning objectives:								
11.4.1	Discuss the formation of radial nerve.							
11.4.2	Discuss the anatomy of radial nerve in the arm.							
11.4.3	Define Saturday night paralysis.							
11.4.4	Discuss the mechanism of injury in Saturday nightparalysis.							
11.4.5	Discuss the clinical features and investigations ofradial nerve injury in the arm.							

11.4.6	**Discuss the general principles of management ofcompression neuropathy.**							

AN17.2	**Describe anatomical basis of complications of fracture neck of femur,**	**K**	**K/KH**	**N**	**Lecture**	**Written/Viva voice**	**orthopaedics**	
Specific learning objectives:								
17.2.1	**Discuss the blood supply of femoral head.**							
17.2.2	**Enumerate the complications of fracture neck of femur.**							
17.2.3	**Discuss the reasons for high incidence of nonunion of fracture neck offemur.**							
17.2.4	**Discuss the reasons for high incidence of avascular necrosis of femoralhead**							
AN17.3	**Describe dislocation of hip joint and surgical hip replacement.**	**K**	**K/KH**	**N**	**Lecture**	**Written/Viva voice**	**Orthopaedics**	
Specific learning objectives:								
17.3.1	**Classify hip dislocations.**							
17.3.2	**Classify posterior hip dislocation.**							
17.3.3	**Discuss the mechanism of injury, clinical features and investigations ofposterior dislocation.**							
17.3.4	**Discuss the closed reduction methods for posterior dislocation.**							
17.3.5	**Enumerate the indications for open reduction of posterior dislocation.**							
17.3.6	**List the complications of dislocation of hip.**							
17.3.7	**Differentiate hemiarthroplasty and total hip arthroplasty.**							
17.3.8	**Differentiate unipolar and Bipolar hemiarthroplasty.**							
17.3.9	**Enumerate the indications of hemiarthroplasty.**							
17.3.10	**Enumerate the common indications for total hip arthroplasty**							

AN18.6	**Describe knee joint injuries with its applied anatomy.**	**K**	**KH**	**N**	**Lecture**	**Written//Viva voice**	**orthopaedics**	
Specific learning objectives:								
18.6.1	**Enumerate the common knee injuries.**							
18.6.2	**Describe the anatomy of ligaments of the knee.**							
18.6.3	**Describe the anatomy of the meniscus.**							
18.6.4	**Descriptive the mechanism of injury, various tests andinvestigations in ACL injury.**							
18.6.5	**Discuss the general principles of management of ACL injury.**							
18.6.6	**Describe the mechanism of injury, various tests and investigations in meniscus injury.**							
18.6.7	**Discuss the general principles of management ofmeniscus injury**							
AN18.7	**Explain anatomical basis of osteoarthritis**	**K**	**KH**	**N**	**Lecture**	**Written/Viva voice**	**Orthopaedics**	
Specific learning objectives:								
18.7.1	**Define osteoarthritis.**							
18.7.2	**Classify osteoarthritis.**							
18.7.3	**Discuss the aetiopathogenisis of primary osteoarthritis.**							
18.7.4	**Discuss the changes in articular cartilage in primary osteoarthritis.**							
18.7.5	**Discuss the secondary causes of osteoarthritis**							

AN19.4	**Explain the anatomical basis of rupture of Achillestendon**	**K**	**KH**	**N**	**Lecture**	**Written/Viva voice**	**orthopaedics**	
Specific learning objectives:								
19.4.1	**Discuss the anatomy of Achilles tendon.**							
19.4.2	**Discuss the pathoanatomy of rupture of Achillestendon.**							
19.4.3	**Discuss the mechanism of injury in tear of Achilles tendon.**							
AN19.6	**Explain the anatomical basis of flat foot & club foot**	**K**	**KH**	**N**	**Lecture**	**Written/Viva voice**	**Orthopaedics**	
Specific learning objectives:								
19.6.1	**Define flatfoot.**							
19.6.2	**Discuss the arches of foot.**							
19.6.3	**Describe the pathoanatomy of flatfoot.**							
19.6.4	**Discuss the etiology of flatfoot.**							
19.6.5	**Define CTEV**							
19.6.6	**Discuss the pathoanatomy of CTEV**							
19.6.7	**Discuss the etiology of CTEV**							

AN19.7	Explain the anatomical basis of Metatarsalgia &plantar fasciitis	K	KH	N	Lecture	Written/Viva voice	Orthopaedics	
Specific learning objectives:								
19.7.1	**Define metatarsalgia.**							
19.7.2	**Classify metatarsalgia.**							
19.7.3	**Enumerate the causes for metatarsalgia.**							
19.7.4	**Discuss the risk factors responsible formetatarsalgia.**							
19.7.5	**Define plantar fasciitis.**							
19.7.6	**Discuss the structure and function of plantar fascia.**							
19.7.7	**Discuss the risk factors responsible for plantarfasciitis**							

PATHOLOGY								
PA33.1	Classify and describe the etiology , pathogenesis , manifestation , radiologic and morphologic features andcomplications of osteomyelitis	K	K H	Y	Lecture, Small group discussion	Written/ Viva voice		Human anatomy Orthopaedics.
Specific learning objectives:								
33.1.1	Classify osteomyelitis.							
33.1.2	Discuss aetiopathogenisis of acute osteomyelitis.							
33.1.3	Discuss the clinical features and investigations in acuteosteomyelitis.							
33.1.4	Discuss the clinical features and radiological findings in chronicosteomyelitis.							
33.1.5	Discuss the pathologic morphology in osteomyelitis.							
33.1.6	Enumerate the complications of osteomyelitis							
PA33.2	Classify and describe the etiology , pathogenesis , manifestations, radiologic and morphologic features andcomplications and metastases of bone tumors.	K	K H	Y	Lecture, Small group discussion	Written/Viva voice		Orthopaedics.
Specific learning objectives:								
33.2.1	Classify skeletal metastasis.							
33.2.2	Describe the mechanism of bone metastasis.							
33.2.3	Describe the clinical features and investigative work up in bonemetastasis.							
33.2.4	Discuss the principles of management of skeletal metastasis.							
33.2.5	Discuss the complication of skeletal metastasis							

PA33.4	**Classify and describe the etiology , pathogenesis , manifestations, radiologic and morphogenic featuresand complications of Paget's disease of the bone.**	**K**	**KH**	**N**	**Lecture, Small group discussion**	**Written/Viva voice**		**Orthopaedics.**
Specific learning objectives:								
33.4.1	**Define Paget's disease.**							
33.4.2	**Discuss the pathophysiology of Paget's disease.**							
33.4.3	**Discuss the clinical features, diagnostics anddifferential diagnosis of Paget's disease.**							
33.4.4	**Discuss principles of management of Paget's disease.**							
33.4.5	**Discuss the complications of Paget's disease**							

Microbiology								
MI4.2	Describe the etiopathogenesis, clinical course and discuss the laboratory diagnosis of bone and jointinfections.	K	KH	Y	Lecture	Written/Viva voice		Orthopaedics.
Specific learning objectives:								
4.2.1	Discuss the aetiopathogenisis of acuteosteomyelitis.							
4.2.2	Discuss the aetiopathogenisis of acute septic arthritis.							
4.2.3	Discuss the clinic features of acute osteomyelitis.							
4.2.4	Discuss the clinical features of acute septic arthritis.							
4.2.5	Discuss the laboratory diagnosis of acute osteomyelitis, chronic osteomyelitis and acuteseptic arthritis.							

Forensic medicine								
FM3.7	Describe factors influencing infliction of injuries andhealing, examination and certification of wounds and wound as a cause of death : primary and secondary.	K	K/KH	Y	Lecture, Small group discussion	Written/ Viva voice		Forensic medicine. Orthopaedics.
Specific learning objectives:								
3.7.1	Describe the factors influencing the causation of aninjury.							
3.7.2	Describe the factors that influence healing of aninjury or fracture.							
3.7.3	Discuss the primary and secondary causes of deathfrom a wound.							
FM3.8	Mechanical injuries and wounds: describe and discuss different types of weapons including dangerous weapons and their examination.	K	K/KH	Y	Lecture, Small group discussion	Written/ Viva voice		General surgery. Orthopaedics.
Specific learning objectives:								
3.8.1	Identify the weapons that cause blunt force andsharp force injuries.							
3.8.2	Define dangerous weapon (S.324 IPC and 326 IPC)							

FM3.9	**Firearm injuries:** **Describe different types of firearms including structure and components, along with description ofammunition propellant charge and mechanism of fire-arms , different types of cartridges and bullets and various terminology in relation of firearm – caliber range , choking.**	**K**	**K/KH**	**Y**	**Lecture, Small group discussion**	**Written /Viva voice**		**General surgery. Orthopaedics.**
Specific learning objectives:								
3.9.1	**Define Forensic ballistics, Proximal ballistics, Intermediate ballistics and Terminal ballistics.**							
3.9.2	**Define firearm**							
3.9.3	**Classify firearms.**							
3.9.4	**Enumerate the parts of the basic firearms.**							
3.9.5	**Explain ' rifling' and 'caliber' of a firearm.**							
3.9.6	**Explain choking in a firearm and is purpose.**							
3.9.7	**Enumerate the components of rifled firearm andshotgun and its function .**							
3.9.8	**Describe the types of gunpowder.**							
3.9.9	**Discuss on types of bullets and pellets.**							

FM3.10	Firearm injuries: Describe and discuss wound ballistics- different types of firearm injuries, blast injuries and their interpretation, preservation and dispatch of trace evidenced in cases of firearm and blast injuries. Various tests related to confirmation of use of firearms.	K	K/ KH	Y	Lecture , Small group discussion. Bed side clinic DOAP session	Written/Viva voice/OSCE	General orthopaedics.	
Specific learning objectives:								
3.10.1	Define wound ballistics.							
3.10.2	Enumerate the factors affecting gunshot wound production.							
3.10.3	Explain the mechanism of firing and various components of discharge of firing.							
3.10.4	Describe the entry and exit wounds from rifled firearm atvarious Ranges.							
3.10.5	Describe the entry and exit wounds from a shotgun at various Ranges.							
3.10.6	Discuss on Ricocheting of a bullet and its effect.							
3.10.7	Discuss on tumbling bullet, Yawning bullet, Dumdum bullet,Tandem bullet, Souvenir bullet.							
3.10.8	List the evidentiary materials to be collected and preservation of evidentiary materials in gunshot wounds.							
3.10.9	Describe the method of collection and preservation of evidentiary Materials in gunshot wounds.							
3.10.10	Describe the significance of bullet markings and use of comparison microscope.							
3.10.11	Enumerate the tests done for detection of gunshot residue.							
3.10.12	Describe the injuries caused by bomb blast/explosion .							
3.10.13	Discuss the diagnostic evaluation in blast injury.							
3.10.14								

FM3.11	**Regional injuries: Describe and discuss regional injuries to head (Scalpwounds, fracture skull, intracranial hemorrhages , coup and countercoup injuries) neck, chest , abdomen, limbs ,genital organs, spinal cord and skeleton.**	**K**	**K/KH**	**Y**	**Lecture, Small group discussion,Bed side clinic or autopsy , DOAP session**	**Written/Viva voice/OSCE/OSPE**		**General surgery. Orthopaedics.**
Specific learning objectives:								
3.11.1	**Define head injury.**							
3.11.2	**Discuss the forensic anatomy of scalp and scalpinjuries.**							
3.11.3	**Enumerate the types of skull fracture.**							
3.11.4	**Describe the intracranial hemorrhages and its medicolegal aspects.**							
3.11.5	**Describe the cerebral injuries and its medicolegal aspects.**							
3.11.6	**Explain 'concussion of brain' and 'diffuse axonalinjury'.**							
3.11.7	**Discuss on punch drunk syndrome.**							
3.11.8	**Describe the mechanism , clinical features andmedicolegal aspects Of whiplash injury.**							
3.11.9	**Discuss on 'railway spine'.**							
3.11.10	**Discuss on injuries to chest , abdomen and genitalorgans.**							

FM3.12	**Reginal injuries:** **Describe and discuss injuries related to fall fromheight and vehicular injuries – Primary and Secondary impact, Secondary injuries , crush syndrome , railway spine.**	**K**	**K/KH**	**Y**	**Lecture, Small group discussion, Bedside clinic or autopsy, DOAP session**	**Written/ Viva voice/OSCE/OPSE**		**General surgery. Orhopaedics.**
Specific learning objectives:								
3.12.1	**Describe the injuries sustained to person in a fallfrom height .**							
3.12.2	**Describe the injuries to a pedestrian in vehicular accident (primary impact , second impact and secondary injuries)**							
3.12.3	**Describe the injuries to driver , front seat passengerand back seat passenger of a motor car.**							
3.12.4	**Discuss on 'Crush syndrome'.**							

General medicine								
IM7.5	Develop a systematic clinical approach to joint pain based on the pathophysiology.	K	K/KH	Y	Lecture, Small group discussion.	Written/Viva voice		Orthopaedics.
Specific learning objectives:								
7.5.1	Enumerate the common causes of joint pain.							
7.5.2	Discuss the pathophysiology of joint pain.							
7.5.3	List the causes of joint pain structurally arisingfrom within the joint.							
7.5.4	Enumerate the causes of joint pain arising from structures around the joint.							
7.5.5	Enumerate various causes of joint pain because ofreferred pain.							
7.5.6	Discuss synovitis as a cause for joint pain.							
7.5.7	Discuss enthesitis as a cause for joint pain.							
7.5.8	Discuss crystal deposition as a cause for joint pain							

IM7.6	Describe and discriminate acute, subacute and chronic causesof joint pain.	K	K/K H	Y	Lecture, Small group discussion.	Written/Viva voice		Orthopaedics.
Specific learning objectives:								
7.6.1	Enumerate the various causes of acute joint pain.							
7.6.2	Enumerate the various causes of chronic joint pain.							
7.6.3	Differentiate acute joint pain from chronic joint pain.							
7.6.4	Discuss the differential diagnosis of acute joint pain.							
7.6.5	Discuss the differential diagnosis of chronic joint pain.							
IM7.7	Discriminate , describe and discuss arthralgia from arthritisand mechanical from inflammatory causes of joint pain	K	K/K H	Y	Lecture, Small group discussion	Written/ Viva voice		Orthopaedics.
Specific learning objectives:								
7.7.1	Define arthritis.							
7.7.2	Define arthralgia.							
7.7.3	Differentiate between arthritis and arthralgia.							
7.7.4	Enumerate the causes of mechanical joint pain with examples.							
7.7.5	Enumerate the causes of inflammatory joint pain withexamples.							
7.7.6	Differentiate mechanical joint pain from inflammatory jointpain							

IM7.8	Discriminate , describe and discuss distinguishingarticular from periarticular complaints.	K	K/KH	Y	Lecture, Small group discussion	Written/ Viva voice		Orthopaedics.
Specific learning objectives:								
7.8.1	Discuss the clinical features of joint pain arising fromintra-articular structures.							
7.8.2	Discuss the clinical features of joint pain arising fromperiarticular structures.							
7.8.3	Differentiate the articular and periarticular jointpain.							
IM7.9	Determine the potential causes of joint pain basedon the presenting features of joint involvement.	K	K/KH	Y	Lecture , Small group discussion	Written/ Viva voice		Orthopaedics.
Specific learning objectives:								
7.9.1	Enumerate various presenting symptoms of jointpain conditions.							
7.9.2	Differentiate various conditions of joint pain by presenting symptoms.							
IM7.10	Describe the common signs and symptoms ofarticular and periarticular diseases.	K	K/KH	Y	Lecture, Small group discussion	Written/Viva voice		Orthopaedics.
Specific learning objectives:								
7.10.1	Discuss the clinical features of various articular conditions.							
7.10.2	Discuss the clinical features of periarticular jointconditions							

IM7.13	**Perform a systematic examination of all joints, muscle and skin that will establish the diagnosisand severity of disease.**	**S**	**SH**	**Y**	**Bedside clinic,DOAP session**	**Skill assessment**		**Orthopaedics.**
Specific learning objectives:								
7.13.1	**Perform the clinical examination of Hip joint.**							
7.13.2	**Perform the clinical examination of Knee joint.**							
7.13.3	**Perform the clinical examination of Shoulder joint.**							
7.13.4	**Perform the clinical examination of Elbow joint.**							
7.13.5	**Perform the clinical examination of Wrist and Hand**							
7.13.6	**Perform the clinical examination of Foot and Ankle.**							
IM7.17	**Enumerate the indications for arthrocentesis.**	**K**	**K**	**Y**	**Lecture , Small group discussion.**	**Written/ Viva voice**		**Orthopaedics.**
Specific learning objectives:								
7.17.1	**Describe arthrocentesis.**							
7.17.2	**Describe various indications for arthrocentesis**							

IM7.18	Enumerate the indications and interpret plain radiographs ofjoints.	K	SH	Y	Bedside clinic,Small group discussion.	Skill assessment/Written	Radiodiagnosis	Orthopaedics.
Specific learning objectives:								
7.18.1	Enumerate the investigations for joint pain.							
7.18.2	Enumerate the indications for radiological examination of jointpain.							
7.18.3	Enumerate various radiological findings in arthritis of a joint.							
7.18.4	Discuss the radiological findings of osteoarthritis knee joint.							
7.18.5	Discuss the radiological findings in tuberculosis knee joint.							
7.18.6	Discuss the radiological findings in tuberculosis of hip joint.							
IM7.21	Select, prescribe and communicate appropriate medications forrelief of joint pain.	K / C	SH	Y	DOAP session	Skill assessment/Written	Pharmacology.	Orthopaedics.
Specific learning objectives:								
7.21.1	Discuss the pathophysiology of joint pain.							
7.21.2	Enumerate the causes of joint pain .							
7.21.3	How do you evaluate join pain.							
7.21.4	Discuss WHO analgesics ladder.							
7.21.5	Describe the role of opioid analgesics used is osteoarthritis							
7.21.6	Enumerate NSAIDS group analgesics used in relief of joint pain.							
7.21.7	Mention parental analgesics used in relief of join pain.							
7.21.8	Discuss the side effects of chronic use of NASIDS n in a osteoarthritic joint pain.							
7.21.9	Name some topical analgesics.							

7.21.10	**Discuss the role of intra-articular steroid injections.**							
7.21.11	**Discuss the role of viscosupplementation in osteoarthritis.**							

IM24.12	**Describe and discuss the aetiopathogensis , clinical presentation,identification, functional changes , acute care, stabilization, management and rehabilitation of degenerative joint disease.**	**K**	**K H**	**Y**	**Lecture , Small group discussion.**	**Written/Viva voice**		**Orthopaedics.**
Specific learning objectives:								
24.12.1	**Define degenerative joint disease.**							
24.12.2	**Discuss the aetiopathogenesis of degenerative joint disease.**							
24.12.3	**Describe the clinical features of degenerative joint disease.**							
24.12.4	**Discuss the loss of functional activity in degenerative joint disease.**							
24.12.5	**Discuss the management of early osteoarthritis.**							
24.12.6	**Discuss the principles of management of degenerative joint disease.**							
24.12.7	**Discuss the physical therapy and rehabilitation of degenerativeJoint pain**							

IM24.13	**Describe and discuss the aetipathogenesis , clinical presentation, identifications, functional changes , acute care,stabilization, management and rehabilitation of falls in the elderly.**	**K**	**K H**	**Y**	**Lecture ,Small group discussion.**	**Written/ Viva voice**		**Orthopaedics. Physical medicine and rehabilitation.**
Specific learning objectives:								
24.13.1	**Discuss the causes of falls in elderly.**							
24.13.2	**Discuss the common factures in elderly because of falls.**							
24.13.3	**List the common presentation features following falls in elderly patients.**							
24.13.4	**Discuss the acute care management of fractures in elderly.**							
24.13.5	**Discuss general principles of management of fractures in elderly.**							
24.13.6	**Discuss the rehabilitation of elderly fractured patient.**							
24.13.7	**Describe the preventive steps to avoid falls in elderly**							

IM24.16	**Describe and discuss the principles of physical and social rehabilitation , functional assessment , role ofphysiotherapy and occupation therapy in the management of disability in the elderly.**	**K**	**KH**	**Y**	**Lecture, Small group discussion.**	**Written/ Viva voice**		**Orthopaedics. Physical medicineand rehabilitation.**
Specific learning objectives:								
24.16.1	**Discuss the common form of disability in elderly.**							
24.16.2	**Discuss ageing and disability.**							
24.16.3	**Discuss disability of elderly population in India.**							
24.16.4	**Discuss the general principles of physical and socialrehabilitation of the disabled elderly.**							
24.16.5	**Discuss the occupational therapy for a disabledelderly**							

Physical Medicine & Rehabilitation								
PM1.2	Define and describe disability, its cause and magnitude, identification and prevention of disability.	K	K/KH	Y	Lecture, Small group discussion	Written/ Viva voice		General medicine . Orthopaedics.
Specific learning objectives:								
1.2.1	Define disability.							
1.2.2	Describe the various causes of disabilities.							
1.2.3	Classify disability.							
1.2.4	Define impairment.							
1.2.5	Differentiate temporary and permanent disability.							
1.2.6	Define handicap.							
1.2.7	List various domains of functioning which can be affected by disability.							
1.2.8	Discuss the prevalence of disability in India and worldwide.							
PM1.3	Define and describe the methods to identify and prevent disability	K	K/KH	Y	Lecture, Small group discussion	Written/Viva voice		General medicine Orthopaedics.
Specific learning objectives:								
1.3.1	Discuss the methods of identification of various disabilities.							
1.3.2	Discuss identification of locomotor disability in achild.							
1.3.3	Discuss the checklist for identification of childrenwith special needs.							
1.3.4	Differentiate primary, secondary and tertiaryprevention of disabilities.							
1.3.5	Discuss disability management							

PM1.4	**Enumerate the rights and entitlements of differently abledpersons**	**K**	**K**	**Y**	**Lecture, Small group discussion**	**Written/ Viva voice**		**General medicine. Orthopaedics.**
Specific learning objectives:								
1.4.1	**Discuss the rights of differently abled persons.**							
1.4.2	**Define " persons with benchmark disabilities".**							
1.4.3	**Discuss the rights and entitlement of differently abledpersons.**							
1.4.4	**Enumerate additional benefits provided for persons withbenchmark disabilities and those with high support needs**							

PM4.3	**Observe in a mannequin or equivalent the administration of an intra-articular injection**	**S**	**KH**	**N**	**DOAP session**	**Skill assessment**		**Orthopaedics**
Specific learning objectives:								
4.3.1	**List out the indications for intra-articular injections.**							
4.3.2	**Demonstrate the sterile precautions to be taken whileadministering intra-articular injection.**							
4.3.3	**Enumerate the drugs used to be injected as intra-articular formulations.**							
4.3.4	**Surface marking of joint line and position of the jointfor intra-articular injection to be elicited.**							
4.3.5	**Depiction of post intra-articular injection care andrehabilitation.**							
4.3.6	**Recent advances in the modality of intra-articularinjection.**							
4.3.7	**Explain the guided intra-articular injections**							
PM4.5	**Demonstrate correct assessment of muscle strengthand range of movements**	**S**	**SH**	**Y**	**DOAP session, Bedside clinic**	**Skill assessment**		**General medicine Orthopaedics.**
Specific learning objectives:								
4.5.1	**List out the MRC grading of muscle power.**							
4.5.2	**Explain the types of joints.**							
4.5.3	**Demonstrate the movements across each major jointof upper limb.**							

4.5.4	**Demonstrate the various movements across eachmajor joint of lower limb.**							

PM5.1	**Enumerate the indications and describe the principlesof amputation.**	**K**	**KH**	**Y**	**Lecture , Small group discussion.**	**Written/ Viva voice**		**Orthopaedics. General Surgery.**
Specific learning objectives:								
5.1.1	**Define amputation.**							
5.1.2	**Define disarticulation.**							
5.1.3	**Enumerate the indications of amputations.**							
5.1.4	**Discuss the general principles in techniques of amputation and disarticulations.**							
5.1.5	**Enumerate the complications of amputation.**							
PM5.2	**Describe the principles of early mobilizations, evaluation of the residual limb, contralateral limb andthe influence of co-morbidities.**	**K**	**KH**	**Y**	**Lecture, Small group discussion.**	**Written/ Viva voice**		**Orthopaedics.**
Specific learning objectives:								
5.2.1	**Discuss the principles of early mobilization of a amputee patient.**							
5.2.2	**Discuss ideal stump in an amputated patient.**							
5.2.3	**Discuss the evaluation of the amputation stump forprosthesis fitting.**							
5.2.4	**Discuss the rehabilitation following amputation.**							
5.2.5	**Discuss the factors affecting the rehabilitation of a amputated patient.**							
5.2.6	**Discuss the influence of co morbidities in anamputated patient.**							

PM5.3	**Demonstrate the correct use of crutches in ambulation and postures to correct contractures anddeformities**	**S**	**SH**	**Y**	**DOAP session, Bedside clinic discussion**	**Skill assessment**		**Orthopaedics.**
Specific learning objectives:								
5.3.1	**List the indications for use of crutches.**							
5.3.2	**Enumerate various types crutches.**							
5.3.3	**Demonstrate the correct use of crutches while standing, walking, sitting and climbing stairs.**							
5.3.4	**Define contracture.**							
5.3.5	**Define deformity.**							
5.3.6	**Discuss the causes for contractures and deformities.**							
5.3.7	**Discuss various preventive measures to avoidcontractures and deformities.**							
5.3.8	**Discuss how do you prevent contractures inbedridden patients**							
PM5.4	**Identify the correct prosthesis for commonamputations.**	**S**	**SH**	**Y**	**DOAP session**	**Skill assessment/Written**		**Orthopaedics.**
Specific learning objectives:								
5.4.1	**Define prosthesis.**							
5.4.2	**Enumerate various lower limb prostheses.**							
5.4.3	**Enumerate various upper limb prostheses.**							
5.4.4	**Identify correct prosthesis for above knee amputation.**							
5.4.5	**Identify correct prosthesis for below kneeamputation.**							

5.4.6	**Identify upper limb prosthesis with respect to level ofamputation.**							105

PM6.3	Describe the principles of skin traction, serial casts and surgicaltreatment including contracture release , tendon transfer , osteotomies and arthrodesis.	K	KH	Y	Lecture, Small group discussion.	Written/ Viva voice		Orthopaedics.
Specific learning objectives:								
6.3.1	Define traction.							
6.3.2	Enumerate types of traction.							
6.3.3	Discuss the conditions in which traction is used.							
6.3.4	List the indications for skin tractions in upper and lower limbs.							
6.3.5	Discuss the technique of skin traction application and its complications.							
6.3.6	Define serial cast technique.							
6.3.7	Enumerate common indications for serial cast technique.							
6.3.8	Discuss the principles of deformity corrections by surgical release.							
6.3.9	List some conditions where surgical release of contracted structures is performed to correct deformity.							
6.3.10	Define tendon transfer							
6.3.11	List the indications for tendon transfers.							
6.3.12	Discuss the principles of tendon transfers.							
6.3.13	Define osteotomy.							
6.3.14	Enumerate common indications for osteotomies.							
6.3.15	Discuss the general principles of osteotomy.							
6.3.16	Define arthrodesis.							
6.3.17	Enumerate the indications of arthrodesis.							
6.3.18	Discuss the general principles of arthrodesis procedure							

PM6.4	Describe the principles of orthosis for ambulation inPPRP	K	KH	Y	Lecture, Small group discussion.	Written/ Viva voice		Orthopaedics.
Specific learning objectives:								
6.4.1	Define PPRP.							
6.4.2	Define orthosis.							
6.4.3	Discuss the general principles of orthoticmanagement of PPRP.							
6.4.4	Enumerate the common orthosis used for lower limb,spine and upper limb in PRPP							
PM7.1	Describe and discuss the clinical features , diagnosticwork up, work up diagnosis and management of spinal cord injury.	K	KH	Y	Lecture, Small group discussion.	Written/ Viva voice		Orthopaedics.
Specific learning objectives:								
7.1.1	Define complete spinal cord injury.							
7.1.2	Differentiate complete and incomplete cord injury.							
7.1.3	Discuss spinal shock.							
7.1.4	Discuss the aetiopathogenesis of spinal cord injury.							
7.1.5	Discuss the clinical features of spinal cord injury.							
7.1.6	Discuss the evaluation and diagnosis of spinal cordinjuries.							
7.1.7	Discuss the management of spinal cord injury.							
7.1.8	Discuss the prognosis of spinal cord injury.							

PM7.2	**Describe and demonstrate process of transfer, applications of collar restraints while maintainingairway and prevention of secondary injury in a mannequin/model.**	**S**	**SH**	**Y**	**DOAP session, Small group discussion.**	**Skill assessment.**		**Orthopaedics.**
Specific learning objectives:								
7.2.1	**Demonstrate the transfer process of polytraumapatient.**							
7.2.2	**Differentiate primary and secondary transport.**							
7.2.3	**Discuss the risks associated during transportation.**							
7.2.4	**Discuss the safety of patient transport.**							
PM7.3	**Perform and demonstrate a correct neurologicalexamination in a patient with spinal injury and determine the neurologic level of injury.**	**S**	**SH**	**Y**	**Bedside clinic.**	**Skill assessment**		**Orthipaedics.**
Specific learning objectives:								
7.3.1	**Perform neurological examination in Quadriplegiapatient.**							
7.3.2	**Perform neurological examination in paraplegiapatient.**							
7.3.3	**Perform neurological examination in paraparesispatient.**							

PM7.4	**Assess bowel and bladder function and identify commonpatterns of bladder dysfunction**	**S**	**KH**	**Y**	**Small group discussion**	**Written/Viva voice**		**General medicine. Orthopaedics.**
Specific learning objectives:								
7.4.1	**Enumerate the causes of bowel and bladder dysfunction.**							
7.4.2	**Describe the nerve supply of bladder**							
7.4.3	**Explain the types of bladder in spinal cord injury (SCI).**							
PM7.5	**Enumerate the indications and identify the commonmobility aids and appliances , wheel chairs.**	**S**	**S**	**Y**	**DOAP session**	**Skill assessment/ Viva voice**		**Orthopaedics.**
Specific learning objectives:								
7.5.1	**Name the common mobility aids.**							
7.5.2	**Explain walking stick and walking frame**							
7.5.3	**Role of wheel chairs in orthopedics and neurology**							
PM7.7	**Enumerate and describe common life threatening complications following SCI like Deep vein thrombosis ,Aspiration Pneumonia , Autonomic dysreflexia.**	**K**	**KH**	**Y**	**Lecture, Small group discussion.**	**Written/ Viva voice**		**General medicine. Orthopaedics.**
Specific learning objectives:								
7.7.1	**Describe the pathophysiology, investigations and management of deep vein thrombosis (DVT) and preventive measures in DVT in follow up case of SCI.**							
7.7.2	**Discuss the pathophysiology, investigations andmanagement of aspiration pneumonia**							

7.7.3	**Enumerate the pathophysiology, investigations, management and preventive measures in autonomicdysreflexia in follow up case of SCI.**							

PM8.1	**Describe the clinical features , evaluation , diagnosis and management of disability followingtraumatic brain injury.**	**K**	**KH**	**Y**	**Lecture , Small group discussion.**	**Written/ Viva voice**		**General medicine. Orthopaedics. General surgery .**
Specific learning objectives:								
7.8.1	**Discuss the clinical features of traumatic braininjury (TBI).**							
7.8.2	**Discuss the neurological status of traumatic braininjury .**							
7.8.3	**Evaluate the diagnostic modality of traumatic braininjury**							
7.8.3	**Discuss t the management of disability of traumaticbrain injury**							

E. SELF DIRECTED LEARNING (10 Hours)

Sl NO	MBBS PHASE III Part 1	MBBS PHASE III Part 2
1	OR1.1- Polytrauma, ATLS	OR 2.7- Pelvic Injury and Shock
2	OR 1.6- Dislocations	OR 2.8- Spinal cord injury
3	OR 2.15- Compartment Syndrome	OR 3.1- Osteomyelitis
4	PM 5.3- Crutches, Mobility Aids	OR 10.1- Malignant Bone Tumor
5	PM 5.4- Amputation , Prosthesis	OR 11.1- Peripheral Nerve injury

SDL EXAMPLE 1: Case Scenario:- Polytrauma

A 35-year-old man is brought to the emergency department following a motorcycle accident. He is breathing spontaneously and has asystolic blood pressure of 80 mm Hg, a pulse rate of 120/min, and a temperature of 98.6° F (37° C). Examination suggests an unstablepelvic fracture. Ultrasound evaluation of the abdomen is negative. Despite administration of 4 L of normal saline solution, he still has asystolic pressure of 90 mm Hg and a pulse rate of 110. Urine output has been about 20 mL since arrival 35 minutes ago. Discuss Management of this patient

Learning objectives

A. Classify a polytrauma patient to one of the four groups (stable, borderline, unstable, extremis) based on the physiology

B. Learn which injury pattern and physiologic parameters can lead to ARDS and MODS in the polytrauma patient

C. Outline the latest advances in resuscitation (ATLS)

D. Define the role of orthopedic surgery in saving life and limb after major trauma

E. Identify patients that can safely have early total care

F. Consider the suitability of damage control surgery

G. Set priorities for management of injuries - Long bone vs Pelvic Ring

SDL EXAMPLE 2: Case Scenario:- Compartment Syndrome

20 year old male patient was treated conservatively with a cast for fracture of right radius and ulna. He comes to ER 24hours later with severe pain ion his forearm.

What is the most likely diagnosis?

Learning objectives

A. What is compartment syndrome?

B. What are clinical signs of compartment syndrome?

C. What is the pathophysiology behind compartment syndrome?

D. How do you measure compartment pressure?

E. What would have prevented this complication?

F. How do you manage this patient?- Investigations, medication, surgery

G. What are the complications of compartment syndrome?

F. Topics for Electives

1. Trauma and fractures
2. Paediatric Orthopaedics
3. Orthopaedic adult reconstruction/ Joint Replacement
4. Orthopaedic spine
5. Orthopaedic sports medicine
6. Geriatric orthopaedics
7. Musculoskeletal Oncology

G. Clinical Postings

Learner - Doctor programme (Clinical) – As per GMER 2019	
Year of Curriculum	**Focus of Learner - Doctor programme**
Phase I	Introduction to hospital environment, early clinical exposure, understanding perspectives of illness
Phase II	History taking, physical examination, assessment of change in clinical status, communication and patient education
Phase III Part 1	All of the above and choice of investigations, basic procedures and continuity of care
Phase III Part 2	All of the above and decision making, management and outcomes

	MBBS Phase II	**MBBS Phase III Part I**	**MBBS Phase III Part 2**	**Total weeks**
Orthopedics - including Traumaand PMR	2 weeks	4 weeks	2 weeks	**8 weeks**

List of Competencies to be considered in clinical Postings

Bed Side Clinics	Case discussion	Demonstrations
OR1.5: Dislocation of joints	OR 3.4: Osteomyelitis/Septic Arthritis	AN8.4: Demonstrate important muscle attachment on the given bone
OR 2.1 to OR 2.16: Fractures	OR4.1: Tuberculosis of joints/spine	AN 10.12: Describe and demonstrate Shoulder joint for– type, articular surfaces, capsule, synovial membrane, ligaments, relations, movements, muscles involved, blood supply, nerve supply and applied anatomy
OR5,1: Inflammatory disorders of joints	OR6.1: Degenerative conditions of spine	OR13.1: Casts and Plasters
IM7.13: Perform a systematic examination of all joints, muscle andskin that will establish the diagnosis and severity of disease	OR7.1,7.2: Metabolic Bone Disorders- osteoporosis, osteomalacia, rickets, Paget's disease	OR13.2: Splints and tractions
IM7.18: Enumerate the indications and interpret plain radiographsof joints	OR8.1: PPRP OR 11.1- Peripheral Nerve injuries	PM5.3: Demonstrate the correct use of crutches in ambulation and postures tocorrect contractures and deformities
PM 4.5: Demonstrate correct assessment of muscle strength and range of movements	OR 12.1: Congenital - CTEV	
PM7.3: Perform and demonstrate a correct neurological examination in a patient with spinal injury and determine theneurologic level of injury	OR 10.1, 10.2: Tumors, swellings	

Model Time table for MBBS Phase II Clinical Postings			
Day		**Week 1**	**Week 2**
Monday	Clinical case Discussion	History Taking and Basic OrthopaedicExamination (IM 7.5)	History and Examination of ShoulderJoint (IM 7.13.3)
Tuesday	Clinical case Discussion	History and Examination of bone and joint infection (PA33.1)	History and Examination of Elbow Joint (IM 7.13.4)
Wednesday	Clinical case Discussion	History and Examination of Knee Joint(IM 7.13.2)	History and Examination of Wrist Jointand Hand (IM 7.13.5)
Thursday	Clinical case Discussion	History and Examination of Ankle andFoot (IM 7.13.6)	History and Examination of Hip Joint (IM7.13.1)
Friday	Clinical case Discussion	History taking and examination of deformed limb (OR 7.2)	History and Examination of Bone swelling/tumor (OR 10.2)
Saturday	X	X	X

Model Time table for MBBS Phase III, Part 1 Clinical Postings					
Day		**Week 1**	**Week 2**	**Week 3**	**Week 4**
Monday	Clinical case Discussion	Infections –1 Osteomyelitis of longbones (PA33.1))	Osteoarthritis KNEE (IM7.13.2, OR 2.3)	Malunion – Upperlimb(OR 2.15)	Examination of BoneTumor (OR 10.2)
Tuesday	Clinical case Discussion	Rickets/deformities (OR7.1,7.2)	Nerve injuries – Footdrop (OR11.1)	Frozen Shoulder/ Shoulder Impingement(IM 7.13.3)	Malunion – lowerlimb(OR 2.15)
Wednesday	Clinical case Discussion	Rheumatoid Arthritis/Ankylosing spondylitis(OR 5.1)	TB Hip/Knee (OR4.1)	Nerve injuries – Wristdrop/Claw Hand (OR11.1)	Septic Arthritis (OR3.4)
Thursday	Clinical case Discussion	Non- union (OR 2.15)	Ligamentous Injuries ofKnee (OR1.3, AN18.6)	Hip Deformity- Abnormal Gait (IM7.13.1)	Examination of Patient with claudication pain (OR 6.1)
Friday	Skill lab	Below and above elbow slab/cast (OR13.1)	Below and above Knee slab/cast(OR 13.1)	Reduction and cast application for Colle'sFracture. (OR 13.1) Strapping of Clavicle Fracture (OR 2.1)	ATLS – Basics (OR 1.1)

Saturday	Operating procedures /Skill Lab	Hand wash, Donning surgical gown and gloves, preparation ofparts	Suturing Methods	Debridement of Osteomyelitis/ Saucerization	Tendon Repair

Model Time table for MBBS Phase III, Part 2 Clinical Postings			
Day		**Week 1**	**Week 2**
Monday	Clinical case Discussion	Infections –2 Infected Non Union/ Ilizarov/external fixator (PA33.1))	CTEV (AN19,6. OR 12.1)
Tuesday	Clinical case Discussion	Quadriplegia/Paraplegia (PM 7.3)	Examination of Bone Tumor (OR 10.2)
Wednesday	Clinical case Discussion	Recurrent Shoulder Dislocation (IM 7.13.3)	Elbow- Deformity (OR7.2)
Thursday	Instruments/Specimens/X-rays	X-rays and Specimens	Instruments, Implants, orthosis and prosthesis,
Friday	Skill lab	Skin traction and Thomas splintapplication (OR13.1)	Shoulder dislocation reduction Techniques(OR1.6)
Saturday	Operating procedures/ VideoAssisted Teaching	Intramedullary nailing	Plate Osteosynthesis

H. Model Question Papers

Example 1

Time: 1 hour 30 minutes **Total Marks: 50**

Long Essays- 10 Marks Each (2X10=20 Marks)

1. A 6 year old kid was brought to emergency department with pain swelling and in left elbow with difficulty on moving the elbow. Parents give a history of fallfrom height directly on elbow while playing.
    1. What is the most common pediatric elbow/distal humerus fracture?
    2. Mechanism of injury and classification
    3. Management
    4. Complications- acute and chronic **(1+3+3+3= 10Marks)**
2. A 65 year old obese individual has come to the hospital with complaints f pain in both knees. Discuss clinical examination Investigations and various treatment modalities of Osteoarthritis of knee (3+3+4=10)

1. Osteoclastoma - definition, Histology, management
2. Colle's fracture- definition, classification, management
3. Tuberculosis of Spine – Pathogenesis, Classification and Management

Short Answers- 3 marks each (5X3=15 Marks)

6. Thomas Splint
7. Saturday Night Palsy
8. Deformities in CTEV
9. Bennett's Fracture
10. Stages of Fracture Healing

Example 2

Total Marks: 50

Time: 1 hour 30 minutes

Long Essay- 10Marks Each (2X10=20Marks)

1. A new born was brought to the hospital with CTEV of both feet. Discuss
    1. Etiology
    2. Deformities
    3. Management
    4. **(3+3+4= 10Marks)**
2. **A** 11 year old boy was referred from a primary care center with osteosarcoma of femur. Discuss
    1. Clinical features
    2. Radiological and histological findings
    3. Management **(3+3+4= 10**

marks)Short Essay- 5 marks each (3X5=15

Marks)

1. Monteggia Fracture Dislocation
2. Claw hand
3. Nutritional Rickets

Short Answers- 3 marks each (5X3=15 Marks)

6. Dennis Brown splint
7. Skeletal Traction
8. List DMARD's
9. Ant eri or Dra

wer's Test

10. Mallet Finger

J. Recommended Text Books

1. Natarajan's Textbook of Orthopaedics and Traumatology. 8th Edition
2. Maheshwari, Essential Orthopaedics. 6th Edition
3. Crawford Adams, Outline of Orthopaedics – Fractures and dislocation. 14th Edition
4. Apley & Solomon's System Of Orthopaedics And Trauma. 10th edition
5. Das S, A Manual On Clinical Surgery. 14th Edition
6. McRae, Clinical Orthopaedic Examination. 6th Edition

Sri Siddhartha Academy of Higher Education, Tumkur

ORTHOPAEDICS

LOG BOOK

FOR

PHASE III MBBS

AS PER

Competency-Based Medical Education Curriculum

Insert institution logo

Student photo

Name and Address of the College

ORTHOPAEDICS
Logbook

Name of the Student:
Contact Number:
Email Id:
Date of Admission to MBBS Course:
Date of Beginning of the Current Phase:
Reg. No. (College ID):
Reg. No. (University ID):

INDEX

Sl NO.	CONTENT	PAGE NUMBER
1	**BONAFIDE CERTIFICATE**	1
2	**PREFACE**	2
3	**GENERAL INSTRUCTIONS**	3
4	**SUMMARY OF ATTENDANCE**	4
5	**SUMMARY OF INTERNAL ASSESSMENT (IA)**	5
6	**SECTION - 1** CBME CURRICULUM IN ORTHOPAEDICS 1A. COMPETENCIES IN KNOWLEDGE DOMAIN 1B. COMPETENCIES IN SKILL DOMAIN	 6 7
7	**SECTION - 2** AETCOM MODULES	8
8	**SECTION - 3** FORMATIVE ASSESSMENTS 3A. SUMMARY OF FORMATIVE ASSESSMENT 3B. Rubric for Assessing Professionalism 3C. Evaluation and feedback on Self-Directed Learning (SDL)	 12 13 14
9	**SECTION – 4** CLINICAL POSTINGS – LEARNER DOCTOR METHOD Clinical Posting 1 Clinical Posting 2 Clinical Posting 3	 15 19 23
10	**SECTION - 5** ADDITIONAL ACTIVITIES 5.1 CO-CURRICULAR ACTIVITIES 5.2 EXTRACURRICULAR ACTIVITIES 5.3 ACHIEVEMENTS AND AWARDS	 27
11	**SUMMARY PAGE**	28

BONAFIDE CERTIFICATE

KEMPEOWDA INSTITUTE OF MEDICAL SCIENCES

This is to certify that the candidate ……

Reg No. ……..... has satisfactorily completed all requirements mentioned in this Logbook for Phase III MBBS in ORTHOPAEDICS including related AETCOM modules as per the Competency-Based Undergraduate Medical Education Curriculum, Graduate Medical Regulation 2019 during the period from ……... …….to ……...

He/ She is eligible to appear for the Summative (University) Assessment.

Faculty Mentor: **Head of Department:**

Name: **Name:**

Signature: **Signature:**

Place:

Date:

PREFACE

This logbook is designed to follow and record your academic journey through the Orthopaedics course. The knowledge, skills and desirable attitudes you acquire in order to function as a primary care physician of first contact will be documented and certified in this logbook.

Section1 contains the **CBME competencies in Orthopaedics**. It includes the competencies that would be covered during the course.

Section 2 records your participation in **Attitude, Ethics and Communication (AETCOM)** modules related to Orthopaedics.

Section 3 consists of the **Scheme and Summary of Formative Assessments** in Orthopaedics, including the Internal Assessments.

Section 4 documents the **Clinical Postings – Learner Doctor Method.**

Section 5 documents **Additional-Curricular Activities** (Seminars, Conference, Workshops Attended, Scientific Project Presentations, Outreach Activities, etc.) and **Extracurricular Activities.**

We hope that this logbook serves as a guide and facilitates your progress through the year.

GENERAL INSTRUCTIONS

1. This logbook is a record of the Academic/Co-curricular activities in Orthopaedics of the designated student.
2. The student is responsible for getting the entries in the Logbook verified by the Faculty in-charge regularly.
3. Entries in the Logbook will reflect the activities performed by you in the Department of Orthopaedics during your course.
4. The student has to get this logbook verified by the Mentor and the Head of the Department before submitting the Application of the University Examination.
5. All signatures must be done with a date stamp.

SUMMARY OF ATTENDANCE

Block/Phase	*Percentage of Classes Attended*		*Eligible for University Examination (Yes / No)*	*Signature of Student with Date*	*Signature of Teacher with Date*
	Theory	*Practical*			
First Block	**NA**				
Second Block					
Third Block					
Attendance at the end of MBBS Phase III					

SUMMARY OF INTERNAL ASSESSMENT (IA)

Sl. No.	*Internal Assessment*	*Date of Assessment*	*Total Marks*		*Marks Scored*		*Signature of Student with Date*	*Signature of Teacher with Date*
			Theory	*Practical*	*Theory*	*Practical*		
1	First Phase II		**NA**		**NA**			
2	Second Phase III Part 1							
3	Third Phase III Part 2							
4	Remedial Phase III Part 2							

Note: A candidate who has not secured requisite aggregate in the Internal Assessment may be subjected to remedial assessment by the institution. If he/she successfully completes the same, he/she is eligible to appear for University Examinations. The Remedial Assessment shall be completed before submitting the Internal Assessment marks online to the University.

SECTION: 1
Competencies in Orthopaedics

Competency-Based Medical Education (CBME) Curriculum in Orthopaedics

Competencies in Orthopaedics:

There are **39** competencies in Orthopaedics that have been listed in the CBME curriculum by the MCI (***Refer Annexure 1***). They can be categorized into knowledge, skills and affect domains as given below.

There are **29** competencies in the **Knowledge Domain**.

1.A Competencies in the Knowledge Domain

Sl. No.	Topic	Competency
1	Skeletal Trauma, Poly Trauma	OR 1.1, 1.2, 1.3,1.4, 1.5
2	Fractures	OR 2.1, 2.2, 2.4 to OR 2.14, 2.16
3	Musculoskeletal Infection	OR 3.1
4	Skeletal Tuberculosis	OR 4.1
5	Rheumatoid Arthritis and Associated Inflammatory Disorders	OR 5.1
6	Degenerative Disorders	OR 6.1
7	Metabolic Bone Disorders	OR 7.1
8	Polio Myelitis	OR 8.1
9	Cerebral Palsy	OR 9.1
10	Bone Tumors	OR 10.1
11	Peripheral Nerve Injuries	OR 11.1
12	Congenital Lesions	OR 12.1

Competencies in Skills: There are **10** competencies in this domain. These are as given below.

1.B Competencies in Skills

Topics	Competency	Description
Skeletal Trauma, Poly Trauma	OR 1.6	Participate as a member in the team for Closed Reduction of Shoulder Dislocation / Hip Dislocation / Knee Dislocation
Fractures	OR 2.3	Select, Prescribe and Communicate appropriate medication for relief of Joint Pain
	OR 2.15	Plan and Interpret the Investigations to Diagnose Complications of Fractures like Malunion, Non-union, Infection, Compartment Syndrome
Musculo Skeletal Infection	OR 3.2	Participate as a member in the team for Aspiration of Joints under supervision
	OR 3.3	Participate as a member in the team for procedures like Drainage of Abscess, Sequestrectomy / Saucerisation and Arthrotomy
Procedural Skills	OR 13.1	Participate in a team for procedures in patients and demonstrating the ability to perform on mannequins / simulated patients in the following – i. Above Elbow Plaster ii. Below Knee Plaster iii. Above Knee Plaster iv. Thomas Splint v. Splinting for Long Bone Fractures vi. Strapping for Shoulder and Clavicle Trauma
	OR 13.2	Participate as a member in a team for Resuscitation of Poly Trauma Victim by doing all of the following – a. I.V. access Central - Peripheral b. Bladder Catheterisation c. Endotracheal Intubation d. Splintage
Counselling Skills	OR 14.1	Demonstrate the ability to Counsel the patient regarding prognosis in patients with various Orthopaedic illnesses like – a. Fracture with Disabilities b. Fracture that requires prolong bed stay c. Bone Tumors d. Congenital Disabilities
	OR 14.2	Demonstrate the ability to counsel patients to obtain consent for various Orthopaedic procedures like Limb Amputation, Permanent Fixations etc.
	OR 14.3	Demonstrate the ability to convince the patient for referral to a higher centre in various Orthopaedic illnesses, based on the detection of warning signals and need for sophisticated management

SECTION 2:
FORMAT OF AETCOM Modules Report

AETCOM Module Number:

Date:

Topic:

Competencies:

1.
2
3.

Reflections (100 words):

1. What did you learn from this AETCOM session based on the objectives?
2. What change did this session make in your learning?
3. How will you apply this knowledge in future?

Remarks by Facilitator:

Signature of Facilitator with Date:

AETCOM Module Number:

Date:

Topic:

Competencies:

1.
2
3.

Reflections (100 words):

1. What did you learn from this AETCOM session based on the objectives?
2. What change did this session make in your learning?
3. How will you apply this knowledge in future?

Remarks by Facilitator:

Signature of Facilitator with Date:

SECTION: 3

Formative Assessment 1

	Maximum Marks	Marks Obtained	Feedback and Signature
Formative Assessment Practical	10		

Formative Assessment 2

	Maximum Marks	Marks Obtained	Feedback and Signature
Formative Assessment Theory	25		
Formative Assessment Practical	20		

Formative Assessment 3

	Maximum Marks	Marks Obtained	Feedback and Signature
Formative Assessment Theory	25		
Formative Assessment Practical	20		

Rubric for Assessing Professionalism

Phase	***Areas assessed***					***Signature of Student***	***Signature of Teacher***
	Regular for Classes (5marks)	*Regular in Completing Assignments (5marks)*	*Behaviour in Class and Discipline (5marks)*	*Dress Code and Presentation (5marks)*	*Total (20 marks)*		
At the end of 1st IA							
At the end of 2nd IA							
At the end of 3rd IA							
Average score at the end of the year							

Note: Parameters will be assessed at the Departmental level to consider eligibility (Minimum of 50% at the end of the year) of the candidate to appear for the university examination. Not considered for internal assessment marks.

Evaluation and Feedback on Self-Directed Learning (SDL)- 10 hours

Sl. No.	**Date**	**Topic of SDL**	**Feedback**	**Signature of Faculty/Mentor**

Posting 1:
Duration 2 weeks
Date of Posting: **From:** **To:**
Unit:

1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

Section 4: Clinical Postings – Learner Doctor Method

List of Clinical Cases Presented/Attended in Posting 1.

	Diagnosis	**Presented/Attended**	**Signature**
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Learner Doctor Method:
Posting 1:

One patient will be allotted to the student at the beginning of the posting. The patient is assessed at admission and followed up. The student will interact with the patient and the treating team to make daily notes of the following aspects of patient's progress in hospital.

History taking, physical examination, assessment of change in clinical status, communication and patient education.

A brief summary is to be written at the end of the patient's stay in hospital.

Learner Doctor Method:

Reflection on the Learner Doctor Method of Learning:

What did you learn from this Learning Method?

What change did this Learning Method make?

How will you apply this knowledge in future?

Signature of the Faculty: **Date:**

Posting 2:
Duration 4 weeks
Date of Posting: **From:** **To:**
Unit:

List of Clinical Cases Presented/Attended in Posting 2:

	Diagnosis	**Presented/Attended**	**Signature**
1			
2			
3			
4			
5			
6			
7			
8			

9			
10			

Learner Doctor Method:

Posting 2:

One patient will be allotted to the student at the beginning of the posting. The patient is assessed at admission and followed up. The student will interact with the patient and the treating team to make daily notes of the following aspects of patient's progress in hospital.

History taking, physical examination, assessment of change in clinical status, communication and patient education.

A brief summary is to be written at the end of the patient's stay in hospital.

Learner Doctor Method:

Reflection on the Learner Doctor Method of Learning:

What did you learn from this Learning Method?

What change did this Learning Method make?

How will you apply this knowledge in future?

Signature of the Faculty: **Date:**

Posting 3:
Duration 2 weeks
Date of Posting: **From:** **To:**
Unit:

List of Clinical Cases Presented/Attended in Posting 3:

	Diagnosis	**Presented/Attended**	**Signature**
1			
2			
3			
4			
5			
6			
7			
8			

9			
10			

Learner Doctor Method:

Posting 3:

One patient will be allotted to the student at the beginning of the posting. The patient is assessed at admission and followed up. The student will interact with the patient and the treating team to make daily notes of the following aspects of patient's progress in hospital.

History taking, physical examination, assessment of change in clinical status, communication and patient education.

A brief summary is to be written at the end of the patient's stay in hospital.

Learner Doctor Method:

Reflection on the Learner Doctor Method of Learning:

What did you learn from this Learning Method?

What change did this Learning Method make?

How will you apply this knowledge in future?

Signature of the Faculty: **Date:**

Section 5: Additional Curricular and Extracurricular Activities

5.1 Additional Curricular Activities
(Seminar, Conferences, Outreach Activities, Workshops etc.)

Sl. No.	Date	Particulars	Signature of the Faculty

5.2 Extracurricular Activities

Sl. No.	Date	Particulars	Signature of the Faculty

5.3 Achievements/Awards

Sl. No.	Date	Particulars	Signature of the Faculty

FINAL SUMMARY

Sl. No.	Description	Dates		Attendance in Percentage	Status*	Signature of the Teacher with Date
		From	To			
1	AETCOM Modules					
2	Internal Assessment Marks					

Signature of Head of Department **Date:**

* Status: Complete/Incomplete: For Skills and AETCOM modules
Eligible/Ineligible: For Internal Marks

Sri Siddhartha Academy of Higher Education, Tumkur

Obstetrics and Gynecology Curriculum

as per

Competency Based Curriculum

SSAHE Obstetrics and Gynaecology Curriculum as per the new Competency Based Medical Education

PREAMBLE

The NMC envisages that the Indian Medical Graduate, should function as the Physician of first contact in the community, to provide holistic health care to the evolving needs of the nation and the world. To fulfil this the IMG should be able to perform the following roles: a clinician, a communicator, a lifelong learner, a professional and a team leader.

Competency-based medical education (CBME), which most of us are now aware about, is an outcomes-based training model that has become the international standard of medical education. This newly implemented curriculum is being rolled out as detailed by incorporating key principles of CBME and developing competencies for each speciality.

One of the key healthcare indicators of a country is maternal health. Reproductive health is also gaining prominence in the modern health context. The advances in obstetrics include a steady governmental push towards institutionalization of maternal care and a growing body of knowledge regarding prediction and prevention of problems, over and above the existing knowledge.

In line with this, the obstetrics and gynaecology undergraduate curriculum provides the IMG the appropriate knowledge, mandatory skills and optimal attitudes to be able to care for pregnant women and for women with reproductive tract issues and be able to identify high risk conditions and refer to specialists as appropriate.

The GMER 2019 states the following to be the competencies to be achieved by the IMG

Obstetrics and Gynaecology

(a) **Competencies in Obstetrics**: The student must demonstrate ability to:

1. Provide peri-conceptional counselling and antenatal care,
2. Identify high-risk pregnancies and refer appropriately,
3. Conduct normal deliveries, using safe delivery practices in the primary and secondary care settings,
4. Prescribe drugs safely and appropriately in pregnancy and lactation,
5. Diagnose complications of labour, institute primary care and refer in a timely manner,
6. Perform early neonatal resuscitation,
7. Provide postnatal care, including education in breast-feeding,
8. Counsel and support couples in the correct choice of contraception
9. Interpret test results of laboratory and radiological investigations as they apply to the care of the obstetric patient,
10. Apply medico-legal principles as they apply to tubectomy, Medical Termination of Pregnancy (MTP), Pre-conception and Prenatal Diagnostic Techniques (PC PNDT Act) and other related

Acts.

Competencies in Gynaecology: The student must demonstrate ability to:
1. Elicit a gynaecologic history, perform appropriate physical and pelvic examinations and PAP smear in the primary care setting,

2. Recognize, diagnose and manage common reproductive tract infections in the primary care
setting,

3. Recognize and diagnose common genital cancers and refer them appropriately.
(b) **Integration**: The teaching should be aligned and integrated horizontally and vertically in order to provide comprehensive care for women in their reproductive years and beyond, based on a sound knowledge of structure, functions and disease and their clinical, social, emotional, psychological correlates in the context of national health priorities.

To achieve these, NMC has given a detailed list of OBGYN competencies in the **3rd Volume (Competency based Undergraduate Curriculum in Surgery and Allied subjects)** with competencies Numbered OG1.1 and so forth) required to be gained by the IMG.

Based on the competencies mentioned in the above said document, following items have been developed and spelt out in a tabular format

- Specific learning objectives (SLO's) to achieve each competency
- Suggested Teaching-Learning methods
- Preferred assessment methods (both formative and summative)

This is only a guideline and teachers are encouraged to improvise and develop more detailed SLOs. The T-L methods can be modified based on local resources.

Also, a detailed **blueprint** showing the weightage and the assessment for particular topics. (Few topics have been grouped together to give the weightage). This blueprint is an attempt at ensuring concordance between the SLOs', TL methods and the assessment.

A **question paper layout (theory)** has also been added to ensure that there is consistency among different paper setters.

Also, a suggested **assessment format (practical)** has also been given.

List of all Obstetrics and Gynaecology Competencies with their specific learning objectives, with suggested teaching-learning and assessment methods

	Competencies	**Specific learning objectives**	**Teaching learning methods with hours**	**When T-L will be done**	**Form assessment**
Topic: Demographic and Vital Statistics Number of competencies: (03) Number of procedures that req					
OG1.1	Define and discuss birth rate, maternal mortality and morbidity	Definition of birth rate Definition of maternal mortality What is maternal mortality ratio and rate, Incidence, Causes of maternal mortality Factors affecting maternal mortality – 3 delays Interventions to prevent maternal death Definition of maternal morbidity Explain - acute, chronic, direct, indirect, non-obstetric maternal morbidity	Lecture 1hr Integration with community health	5th term	MCQ's at end lectu

OG1.2	"Define and discuss perinatal mortality and morbidity including perinatal and neonatal mortality and mortality audit	Definition of perinatal mortality Incidence Factors affecting perinatal mortality Causes of perinatal mortality Strategies to reduce perinatal mortality Definition of perinatal morbidity How to audit neonatal morbidity	Lectures 1hr Integration with community health	5th term	MCQ 's at end lectu
OG1.3	Define and discuss still birth and abortion	Definition of stillborn Incidence, aetiology, pathology, symptoms, signs, investigations- still born infant Examination of stillborn infant Complications of IUD Management Definition of abortion Types of abortion Aetiology, Pathophysiology, clinical features, investigations, management, differential diagnosis	Lectures 2hr Tutorials /SGD	5th Term	MCQ 's at end lectu
Topic: Anatomy of the female reproductive tract (Basic anatomy and embryology) Number of compete Number of procedures that require certification : (NIL) **Y**					
OG2.1	Describe and discuss the development and anatomy of the female reproductive tract, relationship to other pelvic organs, applied anatomy as related to	Development of external genital organs Development of internal genital organs Development of ovary, differentiation, descent Anatomy of external genitalia Anatomy of Internal genital organs- vagina, uterus, cervix, fallopian tubes, ovary Relationship to other pelvic organs Applied anatomy	Lecture 2hr Integration with Anatomy	5th term	MCQ / Viv

	Obstetrics and Gynaecology.				
OG2.2	Define, classify and discuss the investigations and management of mullerian anomaly	classification of Mullerian anomaly, Investigation & management	Lecture 1hr	5th term	MCQ / Viv
Topic: Physiology of conception Number of competencies: (01) Number of procedures that require cer					
OG3.1	Describe the physiology of ovulation, menstruation, fertilization, implantation and gametogenesis.	Gametogenesis – spermatogenesis, oogenesis Formation and maturation of ovarian follicles, structure of ovum Ovulation- mechanism, causes, timing, effects Fertilization- process, post fertilization events, implantation	Lecture 2hrs	5th term	MCQ
Topic: Development of the fetus and the placenta Number of competencies: (01) Number of procedure					
OG4.1	Describe and discuss the basic embryology of fetus, factors influencing fetal growth and development, anatomy and physiology of placenta, and teratogenesis	Embryology – formation of 3 germ layers, amnion and chorion, placenta Phases of conceptus development Timing of appearance of different organ systems Placenta- development, gross anatomy, structure, placental circulation, functions of placenta Teratogenesis, teratogens	Lecture 1hr	6th term	MCQ
Topic: Preconception counselling Number of competencies:(02) Number of procedures that require ce					
OG5.1	Describe, discuss and identify pre-existing medical disorders and discuss their management; discuss evidence-based intrapartum care	Pre-existing medical disorders- anaemia, cardiac disease, DM, chronic hypertension, bronchial asthma, seizure disorders, thyroid disorders, chronic kidney disease, Antenatal care and preconception counselling Objectives, history and examination, assessment of period of gestation, investigations and nutrition.	Lectures 1hr Tutorials 1hr Bedside clinics, Small group discussion	6th term	MCQ
OG5.2	Determine maternal high	screening for high risk factors,	Lectures 1hr	6th term	MCQ

	risk factors and verify immunization status	elderly primigravida: complications during pregnancy and labour, maternal and foetal mortality, management bad obstetric history obesity: physiological changes, management grand multipara: complications, mortality, management maternal immunization status for - Tetanus - hepatitis B - whooping cough - influenza vaccines contraindicated in pregnancy immunization in special circumstances: rabies, yellow fever, hepatitis A,	Bedside clinic, small group discussion		
Topic: Diagnosis of pregnancy Number of competencies:(01) Number of procedures that require certi					
OG6.1	Describe, discuss and demonstrate the clinical features of pregnancy, derive and discuss its differential diagnosis, elaborate the principles underlying and interpret pregnancy tests.	Discuss the clinical features of early pregnancy Tests to confirm pregnancy - immunological test, Urine Pregnancy test. Discuss the role of ultrasound in diagnosing Pregnancy	Lectures 1hr Bedside clinic, small group discussion OPDs	6th term	MCQ s
Topic: Maternal Changes in pregnancy Number of competencies: (01) Number of procedures that requ					
OG7.1	Describe and discuss the changes in the genital tract, cardiovascular system, respiratory, haematology, renal and gastrointestinal system in pregnancy	Haematology-blood volume, plasma volume, RBC & haemoglobin, blood coagulation factors CVS-anatomical changes, cardiac output, BP, venous pressure RS-respiratory rate, tidal volume, total lung capacity Renal changes in kidney, ureter, bladder Gastrointestinal changes Genital tract-changes in body of uterus, isthmus, cervix	Lectures 1hr Bedside clinic, small group discussion	6th term	MCQ s
Topic: Antenatal Care Number of competencies: (08) Number of procedures that require certification					
OG8.1	Enumerate, describe and	Procedure at 1st visit Procedure at subsequent visits	Bedside clinic, small	6th term	MCQ s

	discuss the objectives of antenatal care, assessment of period of gestation; screening for high-risk factors.	Routine Antenatal screening Antenatal hygiene Immunization Pre conceptional counselling & care Period of gestation based on pts statement, previous records, objective signs & investigations	group discussion OPDs		
OG8.2	Elicit document and present an obstetric history including menstrual history, last menstrual period, previous obstetric history, comorbid conditions, past medical history and surgical history	Menstrual history in detail Negele's rule Importance of Past history Importance of Surgical history	Bedside clinic, small group discussion OPDs	6th term	MCQs
OG8.3	Describe, demonstrate, document and perform an obstetrical examination including a general and abdominal examination (and clinical monitoring of maternal and fetal well-being;)	Antepartum fetal surveillance - clinical - biochemical - biophysical Evaluation of foetal wellbeing Maternal weight gain Assessment of height of fundus General physical examination Per abdomen -inspection, palpation, auscultation Symphysio fundal height, abdominal girth	Lectures 1hr Bedside clinic, small group discussion OPDs	3rd 4th & 6th term	MCQs
OG8.4	Describe and demonstrate clinical monitoring of maternal and fetal well-being	Non stress test Biophysical profile DFMC CTG Maternal condition assessment -vital parameters -investigations - Antenatal foetal surveillance	Lectures 1hr Tutorials 1hr Bedside clinic, small group discussion	6th term	MCQs

OG8.5	Describe and demonstrate pelvic assessment in a model	Bones of pelvis, anatomical measurements of diameters assessment at brim At midcavity At outlet Plane of least pelvic diameter	Bedside clinic, small group discussion, DOAP, Labour room posting	3rd 4th 6th 8th & 9th terms	S Asse
OG8.6	Assess and counsel a patient in a simulated environment regarding appropriate nutrition in pregnancy	BMI calorie requirement in pregnancy & lactation Protein requirement Folic acid requirement Vit b12 requirement Iron requirement Supplementary nutritional therapy Develop checklist for role play for nutrition in pregnancy	Lectures 1hr Bedside clinic, small group discussion, Role play OPD	3rd term	MCQ s
OG8.7	Enumerate the indications for and types of vaccination in pregnancy	Contraindicated vaccines in pregnancy Safe vaccines in pregnancy Tetanus toxoid-dose, route Current guideline for antenatal vaccination including T-dap Timing of vaccination	Lectures 1hr Bedside clinic, small group discussion OPD	3rd term	MCQ s
OG8.8	Enumerate the indications and describe the investigations including the use of ultrasound in the initial assessment and monitoring in pregnancy	Indication of 1st trimester USG Indication of 2nd trimester USG Indication of 3rd trimester USG USG markers of fetal anomalies Gestational age assessment on USG Doppler studies Routine antenatal blood and urine investigation Screening test for aneuploidy, preeclampsia and GDM Describe trimester wise blood test and ultrasound assessment	Lectures 1hr Bedside clinic, small group discussion	3rd term	MCQ s
Topic: Complications in early pregnancy Number of competencies: (05) Number of procedures that re					
OG9.1	Classify, define and discuses the aetiology and management of abortions including threatened, incomplete, inevitable, missed and septic	Definition Etiology Classification Definition, clinical features, investigations and management of threatened, inevitable, missed, complete and incomplete abortion Septic abortion definition Clinical Features Management Prevention	Lectures 1hr Tutorials 1hr Bedside clinic, small group discussion OPD	6th & 7th term	MCQ s

OG9.2	Describe the steps and observe/ assist in the performance of an MTP evacuation	Enumerate the steps of suction evacuation Enumerate steps of dilatation and evacuation Enumerate steps of menstrual regulation	Tutorials 1hr Bedside clinic, small group discussion opd / ward/ minor OT	6th & 7th term	MCQs
OG9.3	Discuss the aetiology, clinical features, differential diagnosis of acute abdomen in early pregnancy (with a focus on ectopic pregnancy) and enumerate the principles of medical and surgical management	Differential diagnosis of acute abdomen in early pregnancy- obstetric, gynaecological, medical and surgical causes Etiology of ectopic pregnancy Classification of ectopic pregnancy Clinical features of acute and chronic ectopic Diagnosis Management options Medical management Surgical management	Lectures 1hr Tutorials 1hr Bedside clinic, small group discussion OPD	6th & 7th term	MCQs
OG9.4	Discuss the clinical features, laboratory investigations, ultrasonography, differential diagnosis, principles of management and follow up of gestational trophoblastic neoplasms	Definition of Molar pregnancy Classification Etiopathology Clinical features Investigations- blood and ultrasonography Differential diagnosis Complications- immediate and late Management- medical and surgical Follow up- history, examination, investigations, and contraceptive advice.	Lectures 1hr Tutorials 1hr Bedside clinic, small group discussion OPD	6th & 7th term	MCQs
OG9.5	Describe the etiopathology, impact on maternal and fetal health and principles of management of hyperemesis gravidarum	Definition of hyperemesis gravidarum Etiopathology Clinical features- symptoms and signs Investigations Complications to mother and foetus Management- hospitalization, fluids, drugs, diet, nutritional supplementation	Lectures 1hr Bedside clinic, small group discussion OPD	6th & 7th term	MCQs

Topic: Antepartum haemorrhage Number of competencies: (02) Number of competencies that require					
OG10.1	Define, classify and describe the aetiology, pathogenesis, clinical features, ultrasonography, differential diagnosis and management of antepartum haemorrhage in pregnancy	Classification and differential diagnosis Placenta previa definition Etiology and types Clinical features Complications Management- investigations, expectant vs definitive management Definition of abruption placenta Etiology and types Clinical features and grades Management	Lectures 2hr Tutorials 2hr Bedside clinic, small group discussion OPD	6th & 7th term	MCQs
OG10.2	Enumerate the indications and describe the appropriate use of blood and blood products, their complications and management.	Enumerate different types of blood components Characteristic features and storage Indications for transfusion Massive transfusion protocol Complications and their management Discuss importance of consent form	Lectures 1hr Bedside clinic, small group discussion	8th term	MCQs
Topic: Multiple pregnancies Number of competencies: (01) Number of procedures that require certific					
OG11.1	Describe the etiopathology, clinical features; diagnosis and investigations, complications, principles of management of multiple pregnancies	Etiopathology and types Diagnosis- History, symptoms, general and abdominal examination Investigations Maternal changes Complications to mother and fetus Management- antenatal, 1st and 2nd stage of labour, including delivery of 2nd twin, third stage, puerperium	Lectures 1hr Tutorials 1hr Bedside clinic, small group discussion OPD	6th & 7th term	MCQs
Topic: Medical Disorders in pregnancy Number of competencies: (08) Number of procedures that req					
OG12.1	Define, classify and describe the etiology and pathophysiology, early detection, investigations; principles of management of hypertensive disorders of	Classification of hypertensive disorders, definition of pre-eclampsia and eclampsia Diagnostic criteria Etiopathogenesis Clinical features of pre-eclampsia and eclampsia- symptoms and signs Specific investigations Maternal and foetal complications antenatal management- supportive, fluid management, antibiotics, anti-hypertensives, anti-convulsant	Lectures 3hr Tutorials 2hr Bedside clinic, small group discussion OPD	8th term	MCQs

	pregnancy and eclampsia, complications of eclampsia.	Monitoring and surveillance Management during labour			
OG12.2	Define, classify and describe the etiology, pathophysiology,diagnosis, investigations, adverse effects on the mother and foetus and the management during pregnancy and labor, and complications of anemia in pregnancy	Definition Classification Aetiology of nutritional anaemia Clinical features of nutritional anaemia Physiological changes and effects of anaemia on pregnancy and foetus Investigations of nutritional anaemia Complications during pregnancy, labour and puerperium Prevention of nutritional anaemia Management of nutritional anaemia- diet, oral and parenteral iron, blood transfusion Discuss classification, aetiology, clinical features, investigations, complications and management of non-nutritional anaemia	Lectures 1hr Tutorials 1hr Bedside clinic, small group discussion OPD	6th & 7th term	MCQs
OG12.3	Define, classify and describe the etiology, pathophysiology,diagnosis, investigations, criteria, adverse effects on the mother and foetus and the management during pregnancy and labor, and complications of diabetes in pregnancy	definition of gestational diabetes mellitus classification of diabetes mellitus in pregnancy Enumerate etiological factors Discuss pathophysiology of diabetes mellitus in pregnancy investigations for diabetes mellitus in pregnancy Screening test for gestational diabetes mellitus Describe the effects of diabetes on pregnancy complications of diabetes mellitus in pregnancy Discuss the management of diabetes in antenatal period, in labour, postnatal	Lectures 1hr Tutorials 1hr Bedside clinic, small group discussion	6th & 7th term	MCQs
OG12.4	Define, classify and describe the etiology, pathophysiology,diagnosis, investigations, criteria, adverse effects on the mother and foetus and the management	classification of heart disease in pregnancy Discuss etiology Describe pathophysiology of heart disease in pregnancy Discuss clinical features of heart disease in pregnancy Describe antenatal investigations diagnosis Discuss the effects of heart disease on pregnancy Discuss the effects of pregnancy on heart disease management during pregnancy, during labour, in postnatal	Lectures 1hr Tutorials 1hr Bedside clinic, small group discussion OPD	6th & 7th term	MCQs

	during pregnancy and labor, and complications of heart diseases in pregnancy	Complications, preconceptional counselling			
OG12.5	Describe the clinical features, detection, effect of pregnancy on the disease and impact of the disease on pregnancy complications and management of urinary tract infections in pregnancy	aetiology of UTI in pregnancy pathophysiology in pregnancy symptoms signs investigations complications management Asymptomatic bacteriuria	Lectures 1hr Bedside clinic, small group discussion OPD	7th term	MCQs
OG12.6	Describe the clinical features, detection, effect of pregnancy on the disease and impact of the disease on pregnancy complications and management of liver disease in pregnancy	Discuss classification of liver disease in pregnancy aetiology pathophysiology Describe clinical features of liver disease in pregnancy List the investigations of liver disease in pregnancy Discuss the differential diagnosis of liver disease in pregnancy List the maternal complications management of liver disease in pregnancy	Lectures 1hr Bedside clinic, small group discussion OPD	7th term	MCQs
OG12.7	Describe and discuss screening, risk factors, management of mother and newborn with HIV	introduction of HIV and incidence routes of transmission immunopathogenesis clinical presentation diagnosis management prenatal care, antenatal care, intrapartum care, postnatal care Pre-test and post-test counselling PPTCT program TORCH infection in pregnancy	Lectures 1hr Bedside clinic, small group discussion	7th term	MCQs
OG12.8	Describe the mechanism, prophylaxis,	Definition of Rh- isoimmunisation Mechanism of antibody formation in the mother Prevention of Rh-isoimmunisation	Lectures 1hr	6th & 7th term	MCQs

	fetal complications, diagnosis and management of isoimmunization in pregnancy	Haemolytic disease of the fetus and newborn Antenatal investigations protocol of Rh-negative mother Plan of delivery in unimmunised and immunised mother Prognosis of Rh-isoimmunisation	Bedside clinic, small group discussion OPD		
Topic: Labour- Number of competencies: (05) Number of procedures that require certification : (01)					
OG13.1	Enumerate and discuss the physiology of normal labor, mechanism of labor in occipito-anterior presentation; monitoring of labor including partogram; conduct of labor, pain relief; principles of induction and acceleration of labor; management of third stage of labor.	physiology of normal labour mechanism of normal labour monitoring of labour by partogram steps of delivery labour analgesia induction of labour by natural, medical, surgical, combined acceleration of labour management of 3rd stage of labour	Lectures 3hr Tutorials 1hr Bedside clinic, small group discussion, evening labour room posting	3rd & 4th term	MCQs
OG13.2	Define, describe the causes, pathophysiology, diagnosis, investigations and management of preterm labor, PROM and postdated pregnancy	definition for preterm labour, PROM & post-dated pregnancy etiology pathophysiology symptoms signs investigations diagnosis complications management	Lectures 2hr Tutorials 1hr Bedside clinic, small group discussion	6th & 7th term	MCQs
OG13.3	Observe/ assist in the performance of an artificial rupture of membranes	indications for ARM Enumerate the technique of procedure limitations contraindications complications	Bedside clinic, small group discussion, evening labour room posting	8th & 9th term	

OG13.4	Demonstrate the stages of normal labor in a simulated environment / mannequin (and counsel on methods of safe abortion).	physiology and mechanism and events of stage 1,2 and 3 of normal labour definition of abortion types of abortion indications of induced abortion medical and surgical methods MTP act complications of abortion	Bedside clinic, small group discussion, skill lab DOAP	8th term	
OG13.5	Observe and assist the conduct of a normal vaginal delivery	Monitoring of mother and foetus in second stage of labour General management- sterile precautions Position for delivery procedures Oxytocics and analgesia in labour Management of third stage of labour Examination of placenta Fourth stage of labour	Bedside clinic, Evening labour room posting DOAP	8th & 9th term	
Topic: Abnormal Lie and Presentation; Maternal Pelvis Number of competencies: (04) Number of proc (NIL)					
OG14.1	Enumerate and discuss the diameters of maternal pelvis and types	Bones of female pelvis Diameters and planes of obstetric pelvis Clinical significance of each type of pelvis False and true pelvis Caldwell and Moloy classification of pelvis.	Bedside clinic, DOAP	6th 8th & 9th term	MCQs
OG14.2	Discuss the mechanism of normal labor, Define and describe obstructed labor, its clinical features; prevention; and management	normal labour- definition Describe cardinal movements involved in labour Explain synclitism/asynclitism Definition of obstructed labour causes Clinical features diagnosis Prevention Management Complications of obstructed labour	Lectures 1hr Bedside clinic, small group discussion, Evening labour room posting	8th term	MCQs
OG14.3	Describe and discuss rupture uterus, causes, diagnosis and management.	incidence of Rupture Uterus causes pathology Clinical features diagnosis complications Management- general and definitive	Lectures 1hr Bedside clinic, small group discussion, Evening labour room posting	8th term	MCQs
OG14.4	Describe and discuss the	Definition Classification of abnormal uterine action	Lectures 1hr	8th term	MCQs

	classification; diagnosis; management of abnormal labor	Describe pathological retraction ring and management Management of abnormal labour Dystocia dystrophia syndrome	Bedside clinic, small group discussion		
OG14.5	Describe and discuss causes, dagnosis and management of breech presentation, occipito posterior, transverse lie, face presentation	Breech – Etiological features Clinical Examination Management of Antenatal intrapartum Complications - Maternal Foetal OP- Aetiology Features Clinical Examination Mechanism of labour in OP, Course of labour Definition of deep transverse arrest and its management Define & discuss the management of transverse	Lectures 1hr Tutorials 1hr Bedside clinic, small group discussion , evening labour room posting	8th term	MCQs
Topic: Operative obstetrics Number of competencies: (02) Number of procedures that require certifica					
OG15.1	Enumerate and describe the indications and steps of common obstetric procedures, technique and complications: Episiotomy, vacuum extraction; low forceps; Caesarean section, assisted breech delivery; external cephalic version; cervical cerclage	Episiotomy- definition, types, timing of episiotomy, structures incised, repair, complications vacuum extraction- design, indications, contraindications, procedure, complications low forceps- description of forceps, indications, contraindications, procedure, complications caesarean section- types, indications, procedure, complications. What is caesarean hysterectomy assisted breech delivery- principles, steps, indications, delivery of after coming head, complications external cephalic version- prerequisites, indications, contraindications, procedure, complications cervical cerclage – types, indications, procedure, complications	Tutorials 2hrs Bedside clinic, Small group discussion, observation in OT, evening labour room posting	8th & 9th term	MCQs Skill Asset
OG15.2	Observe and assist in the performance of an episiotomy and demonstrate the correct suturing technique of an episiotomy in a	episiotomy- suturing technique breech delivery	Bedside clinic, Small group discussion , observation in OT, DOAP Skill lab		MCQs

	simulated environment. Observe/Assist in operative obstetrics cases – including - CS, Forceps, vacuum extraction, and breech delivery				
Topic: Complications of the third stage of labor- Number of competencies: (03) Number of procedures					
OG16.1	Enumerate and discuss causes, prevention, diagnosis, management, of blood and blood products in appropriate use postpartum haemorrhage	Definition – primary and secondary PPH Aetiology incidence diagnosis Degree of shock in PPH Prevention Management- medical, appropriate use of blood and blood products Uterine compression sutures Step wise devascularisation	Lectures 1hr Tutorials 1hr Bedside clinic, Small group discussion, evening labour room posting	8th term	MCQs
OG16.2	Describe and discuss uterine inversion – causes, prevention, diagnosis and management.	uterine inversion- INCIDENCE TYPES degree aetiology Clinical features diagnosis Complications D/D ,prevention, prognosis management	Lectures 1hr Tutorials 1hr Bedside clinic, Small group discussion	8th term	MCQs
OG16.3	Describe and discuss causes, clinical features, diagnosis, investigations; monitoring of fetal well-being, including ultrasound and fetal Doppler; principles of management; prevention and counselling in	intrauterine growth restriction – definition Pathophysiology of FGR TYPES OF FGR aetiology diagnosis Management- antepartum, intrapartum and neonatal	Lectures 1hr Tutorials 1hr Bedside clinic	8th term	MCQs

	intrauterine growth retardation				
OG16.4	Describe and discuss macrosomia, causes, diagnosis, intra partum complications, management	Definition of Macrosomia Causes clinical & sonological findings to diagnose & management shoulder dystocia - Causes Intrapartum Management maternal & neonatal complicaitons	Lectures 1hr Bedside clinic,evening labour room posting Skill lab		MCQs
Topic: Lactation Number of competencies: (03) Number of procedures that require certification : (NIL					
OG17.1	Describe and discuss the physiology of lactation	Anatomy of breast Phases of lactation Prolactin reflex Milk let down reflex Lactation inhibition and suppression			MCQs
OG17.2	Counsel in a simulated environment, care of the breast, importance and the technique of breast feeding	Care of breast Initiation of breast feeding Exclusive breast feeding Technique of breastfeeding-different position and attachment Frequency of breastfeeding Adequacy of breastfeeding Expression of breast milk			
OG17.3	Describe and discuss the clinical features, diagnosis and management of mastitis and breast abscess	Clinical presentation in mastitis Diagnosis of mastitis Complication of mastitis Treatment and prevention of mastitis Breast abscess – definition, clinical presentation, diagnosis, investigation, treatment			MCQs
Topic: Care of the new born Number of competencies: (04) Number of procedures that require certific					
OG18.1	Describe and discuss the assessment of maturity of the newborn, diagnosis of birth asphyxia, principles of resuscitation, common problems.	Examination of newborn Assessment of gestation age – by sole creases , breast nodule, scalp hair, ear lobe, testes and scrotum Birth asphyxia – definition, etiology, diagnosis, clinical features, management Equipments for resuscitation principles of resuscitation Common problem in resuscitation	Lectures 1hr Bedside clinic, Small group discussion DOAP, Evening labour room posting Skill Lab	3rd & 4th term	MCQs

OG18.2	Demonstrate the steps of neonatal resuscitation in a simulated environment	New born resuscitation algorithm Initial steps Positive pressure ventilation Endotracheal intubation, chest compression medication	Bedside clinic, DOAP, Evening labour room posting Skill Lab	6th term	
OG18.3	Describe and discuss the diagnosis of birth asphyxia	definition birth asphyxia etiopathogenesis Clinical features and diagnosis management	Lectures 1hr Bedside clinic, small group discussion	8th term	MCQs
OG18.4	Describe the principles of resuscitation of the newborn and enumerate the common problems encountered	Principles of resuscitation Steps of resuscitation Resuscitation principle in baby who is apnoeic despite tactile stimulation Resuscitation when baby is apnoeic and HR less than 100	Bedside clinic, Small group discussion	8th term	MCQs
Topic: Normal and abnormal puerperium. Number of competencies: (04) Number of procedures that r					
OG19.1	Describe and discuss the physiology of puerperium, its complications, diagnosis and management; counselling for contraception, puerperal sterilization	definition of Purperium Physiological changes includes uterine changes Define lochia & types general physiological changes Puerperal sepsis – definition , causes, pathogenesis , clinical features, diagnosis, management Subinvolution , urinary problems Thromboembolic disorders – DVT, thrombophlebitis, pulmonary embolism Obstetric palsies , puerperal psychiatric disorders	Lectures 2hrs Tutorials 1hr Bedside clinic, Small group discussion	6th & 8th term	MCQs
OG19.2	Counsel in a simulated environment, contraception and puerperal sterilisation	Methods of contraception Puerperal sterilization - a. informed consent and pre-requisites b. timing c. methods d. technique e. steps f. complication Develop a checklist for role paly including above mention SLO	Tutorials 1hr Bedside clinic, DOAP, Role play	8th & 9th term	

OG19.3	Observe/ assist in the performance of tubal ligation	Pre –operative preparation Type of anaesthesia Types of incision Procedure Advantages Drawbacks	DOAP & Intra operative, skill lab	8th & 9th term	
OG19.4	Enumerate the indications for, describe the steps in and insert and remove an intrauterine device in a simulated environment	Indications for cu-t insertions –WHO eligibility criteria Timing of insertion Technique of insertion – no touch insertion	Skill lab & OPD	8th & 9th term	MCQs
Topic: Medical termination of pregnancy Number of competencies: (03) Number of procedures that re					
OG20.1	Enumerate the indications and describe and discuss the legal aspects, indications, methods for first and second trimester MTP; complications and management of complications of Medical Termination of Pregnancy	Induction of Abortion- Definition MEDICAL TERMINATION OF PREGNANCY Act Indications for termination Recommendations (new changes) First trimester (Upto 12 weeks) -Medical & Surgical Second Trimester (13-24 weeks) Medical & Surgical Complications of MTP- Immediate & Remote Management of Complications	Lectures 2hr Bedside clinic, Small group discussion	3rd term	MCQs
OG20.2	In a simulated environment administer informed consent to a person wishing to undergo Medical Termination of Pregnancy	Introduces oneself and verifies the patients identity and age. Explains that if minor or lunatic then parents or legal guardian consent is required Calculates the gestational age Provides information regarding the options available or the need for opinion of two medical practitioners Provides information regarding the failure rates, immediate and remote complications of the chosen procedures Explains that only the patients written consent is required and not the husbands Explains that it is a confidential procedure and has to be reported to the DHS in the prescribed form	Tutorials 1hr DOAP, Role play	8th & 9th term	

		Develop a checklist for role play inluding above mentioned SLO			
OG20.3	Discuss Pre-conception and Pre Natal Diagnostic Techniques (PC& PNDT) Act 1994 & its amendments	Definition of the PC & PNDT act Prenatal diagnostic procedures under the act Prenatal diagnostic Tests covered by the act Qualified Personnel and Registration (of The place where USG is performed) Offences and penalties	Lectures 1hr Bedside clinic, Small group discussion	9th term	MCQs
Topic: Contraception Number of competencies: (02) Number of procedures that require certification :					
OG21.1	Describe and discuss the temporary and permanent methods of contraception, indications, technique and complications; selection of patients, side effects and failure rate including Ocs, male contraception, emergency contraception and IUCD	Methods of contraception MEC criteria pearl Index Permanent – Male and Female contraceptive method Temporary Natural- Calendar, temperature, withdrawal, lactational (FAM) Barrier- Physical-male and female condoms, diaphragms ; Chemical - creams jelly and foam IUCD- types, mode of action, contraindications, complications, other uses Steroidal Contraception-oral, parenteral, devices COC- types, Mechanism of action, contraindications and non-contraceptive uses, follow up, Missed pill management Implants injectables and Emergency contraception Male contraception What is PPIUCD	Lectures 5hrs Tutorials 4hrs Bedside clinic, Small group discussion Skill lab 1	8th & 9th term	MCQs
OG21.2	Describe & discuss PPIUCD programme	Mode of insertion of PPIUCD Benefits Drawbacks Government Family Planning programs	Lectures 1hr Bedside clinic, Small group discussion	8th & 9th term	MCQs
Topic: Vaginal discharge Number of competencies: (02) Number of procedures that require certificati					
OG22.1	Describe the clinical characteristics of physiological vaginal discharge	Characteristics of normal vaginal discharge Leucorrhea Physiological excess Cervical causes Vaginal causes Enumerate the causes of physiological vaginal discharge	Lectures 1hr Bedside clinic ,Small group discussion, OPD	6th term	MCQs
OG22.2	Describe and discuss the	Defence of the genital tract	Lectures 1hr	6th term	MCQs

	etiology (with special emphasis on Candida, T. vaginalis, bacterial vaginosis), characteristics, clinical diagnosis, investigations, genital hygiene, management of common causes and the syndromic management	Candida- Clinical features, complications, diagnosis, treatment T. vaginalis- Clinical features, complications, diagnosis, treatment Bacterial Vaginosis- Clinical features, complications, diagnosis, treatment Gonorrhoea - Clinical features, complications, diagnosis, treatment Syphilis- Clinical features, complications, diagnosis, treatment Chlamydial infections- Clinical features, complications, diagnosis, treatment Chancroid, LGV, Granuloma Inguinale- cause, Clinical features, complications, diagnosis, treatment Herpes Genitalis- Clinical features, complications, diagnosis, treatment Syndromic Approach & kits available	Bedside clinic ,Small group discussion, OPD		
Topic: Normal and abnormal puberty Number of competencies: (03) Number of procedures that requi					
OG23.1	Describe and discuss the physiology of puberty, features of abnormal puberty, common problems and their management	Puberty Definition and Morphological Changes Endocrinology of Puberty Precocious Puberty Definition, types, etiopathogenesis, diagnosis, treatment, prognosis, Delayed Puberty- Definition, types, etiopathogenesis, diagnosis, treatment, prognosis Puberty Menorrhagia - etiopathogenesis, diagnosis treatment	Lectures 1hr Bedside clinic ,Small group discussion, OPD	6th & 7th term	MCQs
OG23.2	Enumerate the causes of delayed puberty. Describe the investigation and management of common causes	Hypergonadotrophic Hypogonadism- Ovarian Failure, gonadal dysgenesis Hypogonadotrophic hypogonadism-primary, kallmann syndrome, tumors Eugonadism- Anatomical ; AIS	Lectures 1hr	6th & 7th term	MCQs
OG23.3	Enumerate the causes of precocious puberty	GnRH dependent- constitutional, intracranial lesions, juvenile primary hypothyroidism; incomplete GnRH independent – Ovarian; adrenal; Liver; iatrogenic	Lectures 1hr	6th term	MCQs
Topic: Abnormal uterine bleeding Number of competencies: (01) Number of procedures that require c					
OG24.0	Discuss common disorders associated with menstruation	Definition of dysmenorrhea clinical Features Types of dismenorrhea & management of dismenorrhea Pre menstrual syndrome	Lectures 1hr Bedside clinic ,Small	6th term	

	like irregular cycle, HMB, intermenstrual bleeding, dismenorrhea, PMS, ovulatory pain	Etiology Clinical Features management	group discussion, OPD		
OG24.1	Define, classify and discuss abnormal uterine bleeding, its management	Old terminology- Menorrhagia; Polymenorrhea; Metrorrhagia; Oligomenorrhea; Hypomenorrhea; DUB Oligomenorrhea; Hypomenorrhea; DUB FIGO PALM-COEIN classification Causes and its clinical features Investigations Management	Lectures 1hr Tutorials 1hr Bedside clinic	6th term	MCQs
Topic: Amenorrhea Number of competencies: (01) Number of procedures that require certification : (					
OG25.1	Describe and discuss the causes of primary and secondary amenorrhea, its investigation and the principles of management.	definition of primary and secondary amenorrhea clinical types of amenorrhea physiological amenorrhea pathological amenorrhea causes of primary and secondary amenorrhea history, clinical examination, when to start investigating investigations panel differential diagnosis of primary and secondary amenorrhea	Lectures 1hr Tutorials 1hr Bedside clinic, Small group discussion, OPD	6th term	MCQs
OG25.2	Describe and discuss sexual development and disorders of sexual development	Sexual Development Classification of intersex Disorder Turners Syndrome Klinefelter's syndrome	Lectures 1hr OPD	6th term	MCQs
Topic: Genital injuries and fistulae Number of competencies: (02) Number of procedures that require					
OG26.1	Describe and discuss the etiopathogenesis, clinical features; investigation and implications on health and fertility and management of endometriosis and adenomyosis	ENDOMETRIOSIS - definition - prevalence and sites - pathogenesis (theories) - pathology - naked eye and microscopic appearance - ovarian endometrioma - Symptoms and signs - investigations - differential diagnosis - complications - management - expectant /medical / surgical /combined	Lectures 2hr Tutorials 1hr Bedside clinic, Small group discussion, OPD	8th term	MCQs

		ADENOMYOSIS - definition - causes - pathogenesis - symptoms and signs - investigations - differential diagnosis - management - complications			
Topic: Genital infections Number of competencies: (04) Number of procedures that require certificati					
OG27.1	Describe and discuss the etiology, pathology, clinical features, differential diagnosis, investigations, management and long term implications of sexually transmitted infections	Disscuss etiopathogenesis of each STD Describe the clinical features Discuss differential diagnosis of STD Discuss investigations and management of STD Syndromic Approach Discuss long term implications of STD	Lectures 1hr Bedside clinic, Small group discussion, OPD	6th term	MCQs
OG27.2	Describe and discuss the etiology, pathology, clinical features, differential diagnosis, investigations, management and long term implications of genital tuberculosis	Describe aetiopathogenesis of genital TB Describe the clinical features Discuss differential diagnosis of genital TB Discuss investigations and management of genital TB Discuss long term implications of genital TB	Lectures 1hr Bedside clinic, Small group discussion, OPD	6th term	MCQs
OG27.3	Describe and discuss the etiology, pathology, clinical features, differential diagnosis, investigations,	Describe etiopathogenesis of HIV Describe the clinical features of HIV in Gynaecology Discuss differential diagnosis of HIV Discuss investigations and management of HIV Discuss long term implications of HIV	Lectures 1hr Bedside clinic, Small group discussion, OPD	6th term	MCQs

	management and long term implications of HIV				
OG27.4	Describe and discuss the etiology, pathology, clinical features, differential diagnosis, investigations, management and long term implications of Pelvic Inflammatory Disease	Define PID Describe etiopathogenesis of PID Describe the clinical features of PID Discuss differential diagnosis of acute PID Discuss investigations and management of PID Discuss long term implications of PID	Lectures 1hr Tutorials 1hr Small group discussion, OPD	6th term	MCQs
OG27.5	Describe and discuss the etiology, pathology, clinical features, differential diagnosis, investigations, management of low back ache and chronic pelvic pain	Describe aetiology, clinical features, management of chronic PID Definition of chronic pelvic pain Difference between cyclic and acyclic pelvic pain Non gynaecological causes of pelvic pain Enumerate Different causes of pelvic pain (gynaecological) What is pelvic congestion syndrome and its management What is Cornett sign What is pessary test What is role of laparoscopy in diagnosis of chronic pelvic pain What is LUNA What is residual (trapped) ovarian syndrome	Lectures 1hr Small group discussion, OPD	6th term	MCQs
OG27.6	Discuss clinical features, differential disgnosis, pathogens and management of Bertholin's abscess	Causative organisms Pathology Fate of infection of bartholin gland clinical features local examination findings treatment recurrent bartholinitis	Lectures 1hr Small group discussion, OPD	6th term	MCQs
Topic: Infertility Number of competencies:(04) Number of procedures that require certification : (NIL)					

OG28.1	Describe and discuss the common causes, pathogenesis, clinical features, differential diagnosis; investigations; principles of management of infertility – methods of tubal patency, ovulation induction, assisted reproductive techniques	Definition of infertility Enumerate the causes and pathogenesis Clinical features Evaluation of infertile couple, Discuss the principles of management of infertility	Lectures 1hr Tutorials 1hr Small group discussion, OPD	8th term	MCQs
OG28.2	Enumerate the assessment and restoration of tubal patency	Causes for tubal factor in infertility Discuss the investigations to asses tubal patency Enumerate the methods to restore tubal patency	Lectures 1hr Tutorials 1hr Small group discussion, OPD	8th term	MCQs
OG28.3	Describe the principles of ovulation induction	Discuss ovarian factor leading to infertility Enumerate the investigations for ovarian factor in infertility Discuss the principles and different methods available for ovulation induction	Lectures 1hr Tutorials 1hr Small group discussion, OPD	8th term	MCQs
OG28.4	Enumerate the various Assisted Reproduction Techniques	Define ART Counselling for ART	Lectures 1hr Tutorials 1hr Small group discussion, OPD	8th term	MCQs
OG28.5	Describe and discuss the common causes, pathogenesis,	Male Infertility : Discuss Aetiology - Genetic Disorders of Spermatogenesis			MCQs

	clinical features, differential diagnosis; investigations; principles of management of male infertility	Disorders of Sperm Anatomical defect Sexual dysfunction & explain History to be elicitated - To find the probable causes Investigation - WHO guidelines for semen analysis - Testicular biopsy - Immunological test -Chromosomal assay Enumerate ART methods			
Topic: Uterine fibroids Number of competencies: (01) Number of procedures that require certificatio					
OG29.1	Describe and discuss the etiology; pathology; clinical features; differential diagnosis; investigations; principles of management, complications of fibroid uterus	Incidence and pathogenesis Risk factors Figo classification of types of fibroid Histological features of fibroid Clinical features Examination Investigations Differential diagnosis Management Asymptotic fibroids: Medical management : Indications Side effects Surgical management : Principles of myomectomy prerequisites Indications Contraindications Endoscopic procedures: Hysteroscopy Laproscopy Uterine artery embolization New methods: MRgFUS Abdominal hysterectomy	Lectures 1hr Tutorials 1hr Small group discussion, OPD, Intra operative	8th term	MCQs
Topic: PCOS and hirsutism Number of competencies: (02) Number of procedures that require certifica					
OG30.1	Describe and discuss the etiopathogenesis; clinical features; differential diagnosis; investigations; management,	discuss the etiopathogenesis of PCOS Discuss clinical features of PCOS investigations , Diagnostic criteria , Differential diagnosis Treatment Long term complications	Lectures 1hr Tutorials 1hr Small group discussion	8th term	MCQs

	complications of PCOS				
OG30.2	Enumerate the causes and describe the investigations and management of hyperandrogenism	Definition of hirsutism Ovarian causes: Adrenal causes: Others: Clinical features investigations management	Lectures 1hr Small group discussion, OPD	8th term	MCQs
Topic: Uterine prolapse Number of competencies: (01) Number of procedures that require certificatio					
OG31.1	Describe and discuss the etiology, classification, clinical features, diagnosis, investigations, principles of management and preventive aspects of prolapse of uterus	Definition of pelvic organ prolapse Supports of uterus Pathophysiology and causes of prolapse Classification of pelvic organ prolapse Symptoms of prolapse Clinical evaluation including history and examination Differential diagnosis of mass per vaginum investigations Factors determining the choice of treatment in pelvic organ prolapse Management of prolapse: pessary treatment in pelvic organ prolapse preventive aspects of prolapse of uterus	Lectures 1hr Tutorials 1hr Small group discussion , OPD, OT, Bed side clinics	8th term	MCQs
Topic: Menopause Number of competencies: (02) Number of procedures that require certification : (N					
OG32.1	Describe and discuss the physiology of menopause, symptoms, prevention, management and the role of hormone replacement therapy.	Definition of menopause Physiology of menopause Symptoms and investigations Management and HRT	Lectures 1hr Small group discussion , OPD	6th term	MCQs
OG32.2	Enumerate the causes of postmenopausal bleeding and describe its management	Definition of post-menopausal BLEEDING causes investigations management	Lectures 1hr Tutorials 1hr Small group discussion, OPD, minor OT, Bed side clinics	9th term	MCQs

Topic: Benign, Pre-malignant (CIN) and Malignant Lesions of the Cervix Number of competencies: (04) require certification : (NIL)					
OG33.1	Classify, describe and discuss the etiology, pathology, clinical features, differential diagnosis, investigations and staging of cervical cancer	Risk factors Clinical features Signs and symptoms Modes of spread investigations Histological types of c a Cervix Staging of Ca cervix-FIGO	Lectures 2hr Tutorials 1hr Small group discussion , OPD	9th term	MCQs
OG33.2	Describe the principles of management including surgery and radiotherapy of Benign, Pre-malignant (CIN) and Malignant Lesions of the Cervix	Benign lesions: Etiopathogenesis Clinical features Symptoms and treatment: preventive and definitive Premalignant lesions of cervix (CIN): Pathogenesis Etiology Symptoms Investigations Treatment of CIN: preventive and definitive Ca cervix: Management of Cervical Cancer according to staging Types of hysterectomy Indications for radiotherapy & Chemotharapy	Lectures 1hr Small group discussion , OPD	9th term	MCQs
OG33.3	Describe and demonstrate the screening for cervical cancer in a simulated environment	Complications and followup counsel the patient about need for Pap smear Examination take informed consent about the procedure ensure the adequate privacy at examination area keep ready equipment needed for the procedure Perform examination under aseptic precaution Document the findings Proper disposal of gloves	Small group discussion, OPD, Skill Lab, DOAP	9th term	MCQs
OG33.4	Enumerate the methods to prevent cancer of cervix including visual inspection with acetic acid (VIA), visual inspection of	Need for screening: Methods: VIA VILI PAP Colposcopy Indications Methods inference	Lectures 1hr Small group discussion, OPD	9th term	MCQs

	cervix with Lugol's iodine (VILI), pap smear and colposcopy				
Topic: Benign and malignant diseases of the uterus and the ovaries Number of competencies: (04) Nu certification : (NIL)					
OG34.1	Describe and discuss aetiology, pathology, staging clinical features, differential diagnosis, investigations, staging laparotomy and principles of management of endometrial cancer	Types of endometrial hyperplasia Incidence, aetiology of endometrial cancer Pathology – gross, microscopic features. Types of endometrial cancer Modes of spread Diagnosis Figo staging Differential diagnosis, investigations Steps of staging laparotomy Chemotherapy and radiotherapy Follow-up	Lectures 1hr Small group discussion, OPD, intra operative	9th term	MCQ s
OG34.2	Describe and discuss the etiology, pathology, classification, staging of ovarian cancer, clinical features, differential diagnosis, investigations, principal of management including staging laparotomy	Incidence, aetiology for ovarian cancer Genetics and ovarian malignancy Pathology Classification of ovarian cancer Modes of spread Clinical features Investigations Diagnosis Figo staging Differential diagnosis Screening Surgical management Chemotherapy Follow-up Germ cell tumours of ovary Discuss the role of Tumour markers	Lectures 2hr Tutorials 1hr Small group discussion, OPD, intra operative, Bed side clinics	9th term	MCQ s
OG34.3	Describe and discuss the etiology, pathology, classification, staging, clinical features, differential diagnosis, investigations	Gestational trophoblastic disease- spectrum WHO based prognostic scoring Incidence Aetiology pathology staging Spread, clinical features Investigations, management Surveillance during and after therapy	Lectures 1hr Tutorials 1hr Small group discussion, OPD, Bed side clinics	9th term	MCQ s

	and management of gestational trophoblastic disease				
OG34.4	Operative Gynaecology : Understand and describe the technique and complications: Dilatation & Curettage (D&C); EA-ECC; cervical biopsy; abdominal hysterectomy; myomectomy; surgery for ovarian tumours; staging laparotomy; vaginal hysterectomy including pelvic floor repair; Fothergill's operation, Laparoscopy; hysteroscopy; management of postoperative complications	operative gynaecology: technique and complications Dilatation and curettage: indications, steps, complications Endometrial aspiration – endocervical curettage Cervical biopsy: types, indications, steps, procedures, complications TAH: types, indications, steps, complications Myomectomy: measures to control blood loss during myomectomy, steps, complications Surgery for ovarian tumours Staging laparotomy VH+PFR: steps, complications Fothergill's operation: indications, steps, complications Laparoscopy: advantages, disadvantages, instruments, indications, contraindications, techniques, complications Hysteroscopy: instruments, distending media, anaesthesia, procedures, indications, contraindications, complications	Lectures 2hr Small group discussion, OPD, OT, Minor OT	9th term	MCQs
OG34.5	Benign lesions of cervix, ovary	Benign disorders of cervix - cervical erosion - cervical ectropion - cervical polyp Benign disorders of ovary - -Enumerate the conditions of non-neoplastic ovarian enlargement - classification of Benign ovarian tumors -complications of Benign ovarian tumors	Lectures 2hr Small group discussion, OPD, Bed side clinics	8th term	MCQs
Topic: Obstetrics & Gynecological skills - I Number of competencies: (17) Number of procedures that r					
OG35.1	Obtain a logical sequence of history, and	Obtain a demographic data Chief complaints History of presenting complaints	Small group	3rd 4th 6th &	

	perform a humane and thorough clinical examination, excluding internal examinations (perrectal and per-vaginal)	Obstetric and menstrual history Past and family history Treatment history Personal history General physical examination including breast and thyroid, BMI SYSTEMIC EXAMINATION- RS/CVS/CNS ABDOMEN EXAMINATION	discussion, OPD, DOAP	8th term	
OG35.2	Arrive at a logical provisional diagnosis after examination.	With elicited history and detailed examination arrive at a logical provisional diagnosis	Small group discussion, OPD, DOAP	6th 8th & 9th term	
OG35.3	Recognize situations, which call for urgent or early treatment at secondary and tertiary centres and make a prompt referral of such patients after giving first aid or emergency treatment.	Analysis of clinical situation Identify the risk factors and need for urgent treatment Administer emergency medications Transfer to tertiary care centre	Small group discussion, OPD, DOAP	8th & 9th term	
OG35.4	Demonstrate interpersonal and communication skills befitting a physician in order to discuss illness and its outcome with patient and family	Counsel the patient and family members Arrive at a provisional diagnosis Explain the medical condition to family members in a language understood by them Discuss the medical and surgical management, complications, requirement of blood and blood products if needed Explain the prognosis of medical condition	Small group discussion, OPD, DOAP	8th & 9th term	
OG35.5	Determine gestational age, EDD and obstetric formula	Address their concerns GA; Menstrual History. Clinical methods Ultrasound examination EDD; Menstrual History Negele's Formula Clinical methods Dating scan No dating scan Then interval Scan	Small group discussion, OPD, DOAP	8th & 9th term	

OG35.6	Demonstrate ethical behavior in all aspects of medical practice.	Definition Gravida, Para, Living, Dead and Abortion Autonomy Justice Beneficence	Small group discussion, OPD, DOAP, role play	3rd 4th 6th 8th & 9th term	
OG35.7	Obtain informed consent for any examination / procedure	Non malfeasance For Examination: Informed oral consent For Procedure; informed written consent Signature is must diagnosis of condition name and purpose of procedure benefits, risks, and alternative procedures benefits and risks of each alternative procedures	Small group discussion, OPD, DOAP	3rd 4th 6th 8th & 9th term	
OG35.8	Write a complete case record with all necessary details	Demography Obstetric score with amenorrhea LMP EDD Menstrual history Chief complaint HOPI Present obstetric history, Past obstetric history Past medical and surgical history and personal history General Physical examination with Vitals. Breast and Spine examination Specific Systemic Examination Diagnosis	Small group discussion, DOAP	3rd 4th 6th 8th & 9th term	
OG35.9	Write a proper discharge summary with all relevant information	Contents of discharge summary -name, age, sex, hospital number, address, date of admission &discharge Final diagnosis Name of the operative interventions and intraoperative findings& complications Brief history Relevant investigations and Reports Course in the hospital in brief Advice on discharge Warning signs and symptoms relevant to the case to be mentioned Timing of follow up visits	Small group discussion, DOAP	8th & 9th term	
OG35.10	Write a proper referral note to secondary or tertiary centres or to other physicians with all necessary details.	Definition of referral letter Patient demographics Registered general Practitioner details Referral Details - Institute - Specialty dept Referring Practitioner details Presenting complaints Past /Family History	Small group discussion, OPD, DOAP	8th & 9th term	

		Assessment and examination Legal information Management to date Reason and urgency for referral			
OG35.11	Demonstrate the correct use of appropriate universal precautions for self-protection against HIV and hepatitis and counsel patients	Universal Infection Control Precautions Protective Clothing Isolation Facilities Spillage Of Blood and Body Fluids Sterilization And Disinfection Intravenous Procedures Waste Disposal Staff Protection and Immunization	Small group discussion, OPD, DOAP	3rd 4th 6th 8th & 9th term	
OG35.12	Obtain a PAP smear in a stimulated environment	counsel the patient about need for Pap smear Examination ensure the adequate privacy at examination area keep ready equipment needed for the procedure perform examination under aseptic precaution document the findings Proper disposal of gloves	DOAP Skill lab	8th & 9th term	
OG35.13	Demonstrate the correct technique to perform artificial rupture of membranes in a simulated / supervised environment	Indications Complications Pelvic examination findings Colour of liquor Foetal Heart Assessment Verbal consent	DOAP, Evening labour room posting Skill lab	8th & 9th term	
OG35.14	Demonstrate the correct technique to perform and suture episiotomies in a simulated/ supervised environment	Define Types Advantages Disadvantages Correct technique Complications – immediate & late	DOAP, Evening labour room posting Skill lab	8th & 9th term	
OG35.15	Demonstrate the correct technique to insert and remove an IUD in a simulated/ supervised environment	Define Types Mechanism of action Advantages Disadvantages Indications and contra indications Criteria for selection of a client Techniques Uses	Skill lab	8th & 9th term	

		Complications			
OG35.16	Diagnose and provide emergency management of antepartum and postpartum hemorrhage in a simulated / guided environment	Symptoms and signs Examination Resuscitation - Airway, breathing, circulation Vitals monitoring Conservative management, medical, balloon tamponade, brace suturing, stepwise devascularization, Emergency hysterectomy.	Small group discussion, drills, Skill lab	8th & 9th term	Skill asse t
OG35.17	Demonstrate the correct technique of urinary catheterization in a simulated/ supervised environment	Verbal consent after explaining to the patient Able to recognize and identify external urethral meatus with knowledge of anatomy of urethra Knows importance of aseptic precautions, proper painting and draping of the patient for the procedure Identifies foley's catheter and its parts, urosac Can demonstrate the procedure of catheterization on a mannequin	Skill lab	8th & 9th term	Skill asse t
Topic: Obstetrics & Gynecological skills - II Number of competencies: (03) Number of procedures that					
OG36.1	Plan and institute a line of treatment, which is need based, cost effective and appropriate for common conditions taking into consideration (a) Patient (b) Disease (c) Socio-economic status (d) Institution/ Governmental guidelines.	History taking to help to arrive at the differential diagnosis Appropriate examination of the patient to elicit signs and narrow the list of differential diagnosis Appropriate investigation to arrive at most probable diagnosis Understanding the specificity and sensitivity of an investigation and its value in arriving at a diagnosis Have idea about cost of investigations so that balance decisions can be taken. Have institutional protocols for common diseases on conditions Understand and cost involved in various treatment options and choses the appropriate treatment based on social economic status	Small group discussion, Bed side clinics	8th & 9th term	
OG36.2	Organize antenatal, postnatal, well-baby and family welfare clinics	Understands the role of conservative treatment / medical treatment / surgical treatment for various disease conditions Will understand antenatal care and its importance Know the requirements for providing ANC care Will understand the various warning symptoms during antenatal period Knowledge of puerperium Knowledge of assessing the neonatal wellbeing Importance of breast feeding	Small group discussion, Bed side clinics	8th & 9th term	

		Understand attachment, latching and suckling in breast feeding evaluation Value of organizing postnatal clinics along with paediatrician /neonatologist for comfort and benefit of mother and baby Able to counsel regarding family planning in the postnatal visit			
OG36.3	Demonstrate the correct technique of punch biopsy of Cervix in a simulated/ supervised environment	Consent for the procedure Identify the punch biopsy forceps Aseptic precautions, painting and draping for the procedure Visualize the cervix using appropriate instrument Demonstrate the procedure on a mannequin Collect the specimen for histopathological examination	Small group discussion OPD	8th & 9th term	
Topic: Obstetrics & Gynecological skills - III Number of competencies: (07) Number of procedures that					
OG37.1	Observe and assist in the performance of a Caesarean section	Define caesarean section [CS] Mention the indication for CS Describe preoperative care, investigations, informed consent Appreciate the need to cross match and confirm blood Inform anaesthetist, OT staff and neonatologist Observe hand washing, safety check list, instrument counts, type of anaesthesia given Enumerate the steps of LSCS List the complications of CS and its management Describe the post-operative care	Small group discussion, OT	8th & 9th term	
OG37.2	Observe and assist in the performance of Laparotomy	Appreciate the importance Documentation of all steps, events including new born details Indication for laparotomy Describe the preoperative care and investigations Informed consent, arrange blood and ICU bed Lists the steps of laparotomy, need for frozen section. Patient positioning and anaesthesia Complications of the procedure Post Operative care	Small group discussion, OT	8th & 9th term	
OG37.3	Observe and assist in the performance of Hysterectomy – abdominal/vaginal	Documentation of all events Indications Assessment for route of surgery Preoperative preparation Informed consent Anaesthesia and patient positioning Steps of Hysterectomy- abdominal/vaginal Complications of the procedure Post Operative care	Small group discussion, OT	8th & 9th term	

OG37.4	Observe and assist in the performance of Dilatation & Curettage (D&C)	Documentation of all events Indications and contraindications Patient evaluation and pre op preparation Informed consent and anaesthesia Steps of procedure Post procedure monitoring Complications of the procedure Documentation of all events	Small group discussion, Minor OT OPD	8th & 9th term	
OG37.5	Observe and assist in the performance of Endometrial aspiration - endocervical curettage (EA-ECC)	Discharge advice Know how to take informed consent How to perform per speculum and per vaginal examination Know about instruments used (Pipelle) and aseptic precautions How to take utero cervical length/ cervical length Procedure of EA-ECC Know how to fill the relevant clinical details in HPE /Biopsy form Postop instructions and follow up	Small group discussion, Minor OT OPD	8th & 9th term	
OG37.6	Observe and assist in the performance of outlet forceps application of vacuum and breech delivery	Know how to take informed consent Identify whether there is an appropriate indication for application of outlet forceps/ vacuum/ breech delivery Assess whether all criteria for application of outlet forceps/ vacuum/ breech delivery are met Pre requisites – availability of OT, blood products, Neonatologist, Senior Obstetrician Labour analgesia/ anaesthesia Know how to perform phantom application of outlet forceps/ check equipment of vacuum and choose an appropriate cup/ manoeuvres for delivery of legs, arms, shoulders and head in assisted breech delivery Perform application of outlet forceps/ vacuum/ breech delivery Know how to give and suture episiotomy and aseptic precautions Identify maternal and neonatal complications Documentation of the procedure	Small group discussion, Evening labour room posting	8th & 9th term	
OG37.7	Observe and assist in the performance of MTP in the first trimester and evacuation in incomplete abortion	Counselling the patient regarding the various methods available and complications of each and taking informed consent Look for any contraindications for the method chosen Prescription of first trimester MTP pills Identifying the complications of MTP pills/Incomplete abortion/ Evacuation of retained products Know regarding equipment, instruments and drugs used (Karmans cannula, Suction apparatus)	Small group discussion, Minor OT	8th & 9th term	

		Procedure for Evacuation of retained products in incomplete abortion, under aseptic precautions Check the need for USG and Anti D Know how to fill the relevant clinical details in HPE /Biopsy form Post operative/ post pill instructions and follow up Documentation of the procedure and know which register needs to be filled for intimation to Health Department of Government			
Topic: Should observe Number of competencies: (04) Number of procedures that require certification					
OG38.1	Laparoscopy	Indications for laparoscopy Contraindications for laparoscopy Informed consent Anaesthesia under which it is performed and its complications Complications of laparoscopy Postoperative instructions	Small group discussion, OT	8th & 9th term	
OG38.2	Hysteroscopy	Definition of Hysteroscopy Steps of Hysteroscopy Indications of Hysteroscopy Diagnostic Hysteroscopy Operative Hysteroscopy Fluid distension Media Post Op care and advice Risks and Complications of Hysteroscopy	Small group discussion, OT	8th & 9th term	
OG38.3	Lap sterilization	Sterilization procedure in women Steps of tubal sterilization done laparoscopically Effectiveness of Lap sterilization in prevention of pregnancy Risks associated with Lap tubal sterilization Benefits of Lap tubal sterilization Ideal timing for Lap tubal sterilization Reversal of Lap tubal sterilization procedure	Small group discussion	8th & 9th term	
OG38.4	Assess the need for and issue proper medical certificates to patients for various purposes	Definition of Medical certificate Medical Certificate certifying illness Medical Certificate certifying fitness Assessing the patient illness and nature of work Responsibility of the issuing doctor Responsibility of the patient Responsibility of the the third party Certificate Requirements Date of Certificate	Small group discussion	8th & 9th term	

Summary of course content, teaching and learning methods and student assessment for the undergraduate (MBBS) Curriculum in Obstetrics and gynaecology

Course content

The course content been given in detail in the above Table, which includes competencies, specific learning objectives for each competency and the suggested Teaching-Learning methods and assessment methods both formative and summative. The competencies have been developed by an expert group nominated by NMC, while the SLOs, T-L methods and assessments methods have written by the expert committee constituted by Sri Siddhartha Academy of Higher Education.

Teaching-Learning methods and Time allotted

	Lectures (hours)	Small group discussion (hours)	Self-directed learning (hours)	Total hours	Clinical postings (weeks)
2nd MBBS	25			25	4weeks First posting in 3-4th terms (15hours/week)
3rd MBBS Part 1	25	35	5	65	4weeks Second posting in 6-7th terms (18hours/week)
3rd MBBS Part 2	70	125	15	210	8+4weeks 3rd&4th posting (18hours/week)
Total	120	160	20	300	20weeks (This includes maternity and family welfare and family planning) Two postings of 4 weeks each. and

Time allotted excludes time reserved for internal / University examinations, and vacation.

25% of allotted time (non-clinical time) of third Professional shall be utilized for integrated learning with pre- and para- clinical subjects. This will be included in the assessment of clinical subjects.

Teaching-learning methods shall be learner centric and shall predominantly include small group learning, interactive teaching methods and case-based learning. Didactic lectures not to exceed one-third of the total teaching time. The teaching learning activity focus should be on application of knowledge rather than acquisition of knowledge.

The curricular contents shall be vertically and horizontally aligned and integrated to the maximum extent possible to enhance learner's interest and eliminate redundancy and overlap. The integration allows the student to understand the structural basis of Obstetrics and Gynaecology problems, their management and correlation with function, rehabilitation, and quality of life

Acquisition and certification of skills shall be through experiences in patient care, diagnostic and skill laboratories. Use of skill lab to train undergraduates in listed skills should be done mandatorily.

The clinical postings in the second professional shall be 15 hours per week (3 hrs per day from Monday to Friday)
The clinical postings in the third professional part II shall be 18 hours per week (3 hrs per day from Monday to Saturday)
Newer T-L method like Learner-doctor method (Clinical clerkship) should be mandatorily implemented, from 1st clinical postings in Obstetrics and Gynaecology itself.
The goal of this type of T-L activity is to provide learners with experience in longitudinal patient care, being part of the health care team, and participate in hands-on care of patients in outpatient and inpatient setting. During the 1st clinical postings, the students are oriented to the working of the department. During the subsequent clinical posting the students are allotted patients, whom they follow-up through their stay in the hospital, participating in that patient's care including case work-up, following-up on investigations, presenting patient findings on rounds, observing surgeries if any till patient is discharged.

	Curriculum Focus of Learner - Doctor programme
Posting 1	Introduction to hospital environment, early clinical exposure, understanding perspectives of illness
Posting 2	History taking, physical examination, assessment of change in clinical status, communication and patient education
Posting 3	All of the above and choice of investigations, basic procedures and continuity of care
Posting 4	All of the above and decision making, management and outcome

Attitude, Ethics &Communication Module (AETCOM module)
The development of ethical values and overall professional growth as integral part of curriculum shall be emphasized through a structured longitudinal and dedicated programme on professional development including attitude, ethics, and communication which is called the AETCOM module. The purpose is to help the students apply principles of bioethics, systems-based care, apply empathy and other human values in patient care, communicate effectively with patients and relatives and to become a professional who exhibits all these values. This will be a longitudinal programme spread across the continuum of the MBBS programme including internship. MBBS Phase 3 Part 2, has to complete 8 modules of 5hours each. The OBG faculty will have the responsibility of conducting 2-3 modules as per the decision and logistics of each institution.
Assessment
Eligibility to appear for university examinations is dependent on fulfilling criteria in two main areas – attendance and internal assessment marks
Attendance

Attendance requirements are 75% in theory and 80% in clinical postings for eligibility to appear for the examinations in Obstetrics and Gynaecology.
75% attendance in AETCOM Module is required for eligibility to appear for final examination in 3rd professional year 3 part 2.

Internal Assessment

Progress of the medical learner shall be documented through structured periodic assessment that includes formative and summative assessments. Logs of skill-based training shall be also maintained.
There shall be no less than four theory internal assessment (One each in 2nd MBBS and 3rd MBBS Part1 and Two in 3rd MBBS Part2) excluding the prelims in Obstetrics and Gynaecology. An end of posting clinical assessment shall be conducted for each of the clinical postings in Obstetrics and Gynaecology. There will be one Theory and Clinical preliminary exams before the student is eligible for university exams.
Day to day records and logbook (including required skill certifications) should be given importance in internal assessment. Internal assessment should be based on competencies and skills.
Learners must secure at least 50% marks of the total marks (combined in theory and clinical; not less than 40 % marks in theory and practical separately) assigned for internal assessment in Obstetrics and Gynaecology to be eligible for appearing at the final University examination.
Internal assessment marks will reflect as separate head of passing at the summative examination.
The results of internal assessment should be displayed on the notice board within 1-2 weeks of the test.
Remedial measures should be offered to students who are either not able to score qualifying marks or have missed on some assessments due to any reason.
Learners must have completed the required certifiable competencies for that phase of training and Obstetrics and Gynaecology logbook entry completed to be eligible for appearing at the final university examination.
AETCOM assessment will include: (a) Written tests comprising of short notes and creative writing experiences, (b) OSCE based clinical scenarios / viva voce.

University examinations

University examinations in Third Professional Part II shall be held at end of 12months of training in the subjects of Medicine, Surgery including Orthopedics, Obstetrics and Gynecology and Pediatrics.
University examinations are to be designed with a view to ascertain whether the candidate has acquired the necessary knowledge, minimal level of skills, ethical and professional values with clear concepts of the fundamentals which are necessary for him/her to function effectively and appropriately as a physician of first contact.
Assessment shall be carried out on an objective basis to the extent possible.

Marks allotted

Obstetrics and Gynecology	**Theory**	**Clinical examination**
Total marks	2 papers of 100 marks each for Obstetrics and Gynecology. The pattern of each question paper is given below	200 marks
	Long essay 2X10= 20	One obstetric case for 80 marks

	Short essay 6x5=30 marks	One gynaec case for 80 marks
	Short answer question 10x3=30marks	Viva-voce for 40 marks. Station-1: Dummy, pelvis and fetal skull. Station-2: Instruments Station-3: Specimens Station-4: Drugs and contraception
	MCQs 20x1=20marks	

The theory paper should include different types such as structured essays, short essays, Short Answers Questions (SAQ) and MCQs (Multiple Choice Questions). Marks for each part should be indicated separately.
All the question papers to follow the suggested **blueprint (APPENDIX 1). It is desirable that t**he marks allotted to a particular topic are adhered to.
A minimum of **80%** of the marks should be from the **must know** component of the curriculum. A maximum of **20%** can be from the **desirable to know** component. All **main essay questions** to be from the **must know component** of the curriculum.
One main essay question to be of the **modified variety** containing a clinical case scenario. At least 30% of questions should be clinical case scenario based. Questions to be constructed to test higher cognitive levels.
Clinical examinations will be conducted in the hospital wards. Clinical cases kept in the examination must be of common conditions that the learner may encounter as a physician of first contact in the community. Selection of rare syndromes and disorders as examination cases is to be discouraged. Emphasis should be on candidate's capability to elicit history, demonstrate physical signs, write a case record, analyse the case and develop a management plan.
Viva/oral examination should assess approach to patient management, emergencies, attitudinal, ethical, and professional values. Candidate's skill in interpretation of common investigative data, X-rays, identification of specimens, ECG, etc. is to be also assessed.
At least one question in each paper of the clinical specialties in the University examination should test knowledge competencies acquired during the professional development programme. Skill competencies acquired during the Professional Development Programme must be tested during the clinical, practical and viva voce.
There shall be one main examination in an academic year and a supplementary to be held not later than 90 days after the declaration of the results of the main examination.
Pass criteria
Internal Assessment: 50% combined in theory and practical (not less than 40% in each) for eligibility for appearing for University Examinations
University Examination: Mandatory 50% marks separately in theory and clinicals (clinicals = clinical + viva)
The grace marks up to a maximum of five marks may be awarded at the discretion of the University to a learner for clearing the examination as a whole but not for clearing a subject resulting in exemption.

Appointment of Examiners

Person appointed as an examiner in the subject must have at least four years of total teaching experience as assistant professor after obtaining postgraduate degree in the subject in a college affiliated to a recognized/approved/permitted medical college.

For the Practical/ Clinical examinations, there shall be at least four examiners for 100 learners, out of whom not less than 50% must be external examiners. Of the four examiners, the senior-most internal examiner will act as the Chairman and coordinator of the whole examination programme so that uniformity in the matter of assessment of candidates is maintained.

Where candidates appearing are more than 100, two additional examiners (one external & one internal) for every additional 50 or part there of candidates appearing, be appointed.

All eligible examiners with requisite qualifications and experience can be appointed as internal examiners by rotation

External examiners may not be from the same University.

There shall be a Chairman of the Board of paper-setters who shall be an internal examiner and shall moderate the questions.

All theory paper assessment should be done as central assessment program (CAP) of concerned university.

BLUEPRINT FOR ASSESSMENT

This section contains the following items

a. Rationale behind the blueprinting with excerpts from NMC document on assessment.

b. Suggested Blueprinting for Obstetrics (including contraception
c. Sample for a 100-mark theory question paper in Obstetrics
d. Suggested blueprinting for Gynecology theory 100 marks paper
e. Sample for a 100-mark theory question paper in Obstetrics
f. Comments on the theory blueprint and samples
g. Principles to be followed in practical assessment
h. Schema for practical examination (200 marks)
i. Sample examination format

RATIONALE BEHIND THE BLUEPRINTING WITH EXCERPTS FROM NMC DOCUMENT ON ASSESSMENT

As per NMC guidelines, a balance should be drawn between the action verbs which are specified in the Bloom's taxonomy along with a balance of the topics of the curriculum **Levels of Bloom's Taxonomy with Suggested Verbs in the questions are specified below.**

Knowledge	Define, Describe, Draw, Find, Enumerate, Cite, Name, Identify, List, label, Match, Sequence, Write, State
Comprehension	Discuss, Conclude, Articulate, Associate, Estimate, Rearrange, Demonstrate understanding, Explain, Generalise, Identify, Illustrate, Interpret, Review, Summarise
Application	Apply, Choose, Compute, Modify, Solve, Prepare, Produce, Select, Show, Transfer, Use
Analysis	Analyse, Characterise, Classify, Compare, Contrast, Debate, Diagram, Differentiate, Distinguish, Relate, Categorise
Synthesis	Compose, Construct, Create, Verify, Determine, Design, Develop, Integrate, Organise, Plan, Produce, Propose, rewrite
Evaluation	Appraise, Assess, Conclude, Critic, Decide, Evaluate, judge, Justify, Predict, Prioritise, Prove, Rank

The focus should be on providing clinical oriented questions rather than purely theoretical questions. All faculty and students are directed to the NMC document on Competency Based Assessment for further details.

The blueprinting provided is an estimate only. While exact adherence to the number of questions may not be perfectly possible, the spirit of the blueprint must be honoured while setting the paper. This document will guide teachers/ students and evaluators on what to focus on.

SUGGESTED BLUEPRINTING FOR OBSTETRICS (INCLUDING CONTRACEPTION)

Level of Bloom's taxonomy tested	**Demography / Anatomy/ Physiology/ Fetus/ Placenta/ Diagnosis of pregnancy**	**Antenatal care/ Complications in early pregnancy/ APH/ Multiple pregnancy/ Medical disorders in pregnancy**	**Labour/Abnormal lie/ presentation/ Operative obstetrics / Complications in 3rd stage of labour**	**Lactation/Care of newborn/ Puerperium**	**MTP/ Contraception**	**Number of questions**
Knowledge	1	1	1	1	2	6
Comprehension	1	2	2	1	1	7
Application	0	1	2	0	0	3
Analysis	1	1	1	1	0	4
Synthesis	0	0	0	0	1	1
Evaluation	0	1	0	0	0	1
Questions in each topic	3	6	6	3	4	**Grand total 22**

***Operative procedures may be incorporated into questions in the respective topics.**

A suggested distribution of topics in obstetrics incorporated with the Levels of Bloom's taxonomy is tabulated below.

Level of Bloom's taxonomy tested	Vaginal discharge/Genital infections	AUB/ Fibroid/ Genital Injuries/ Fistula	Puberty/ Amenorrhea/ Menopause/ Prolapse	Infertility/ PCOS/ Hirsuitism	CIN/ Malignancy	Number of questions
Knowledge	1	1	2	2	0	6
Comprehension	1	2	2	0	2	7
Application	0	1	0	1	1	3
Analysis	0	0	0	1	1	2
Synthesis	1	0	0	0	1	2
Evaluation	0	1	0	1	0	2
Questions in each topic	3	4	4	5	5	**Grand total 22**

***Operative procedures may be incorporated into questions in the respective topics.**

SAMPLE FOR A 100-MARK THEORY QUESTION PAPER IN GYNECOLOGY

LONG ESSAY (2 x 10 marks = 20 marks)

1. 34-year-old comes with excessive menstrual bleeding with passage of clots. She is not pregnant.

a. Discuss the PALM COEIN approach to classifying this condition. (3)

b. Describe in detail the conditions – L and M (2+2)

She is investigated and found to have a 8x8 cm leiomyoma.

c. Discuss the principles and steps in the operative management of such a condition. (3)

2. 15-year-old girl is brought by parents with complaints that she has not attained menstruation.

a. What is the condition (1). Define this condition (1).

b. Enumerate the various causes for the condition (3).

c. Describe the clinical (2) and management (3) of imperforate hymen.

SHORT ESSAY (10 x 5 marks = 50 marks)

3. Genital tuberculosis. Discuss the clinical features (2 marks). Enumerate the investigations (1 mark). Discuss the management (2 marks).
4. A 24-year-old P1L1 comes with complaints of curdy white discharge per vaginum. Apply the concept of syndromic management of Sexually Transmitted Disease and prepare a treatment plan for such a patient.
5. Discuss the etiological factors (2 marks), clinical features (1 mark) and classification (2 marks) and of uterovaginal prolapse.
6. Define menopause (1). Discuss the clinical features (2) and management options (2) for menopausal transition.
7. A couple married for 4 years comes with complaints of not being able to bear children. Classify the various causes of this condition.
8. 45-year-old woman has undergone pap smear and the report shows H-SIL. Discuss the options for management (3) and follow up (2) for the condition
9. Classify Ovarian tumours (WHO classification).
10. A 30-year-old came with raised Beta HCG and passage of grape like vesicles per vaginum. Uterus was evacuated.

a. What is the condition likely to be (1 mark).

b. Prepare a management plan(2 marks)

c. Follow-up plan (2 marks) for this patient.

SHORT ANSWER QUESTIONS (10 x 3 marks = 30 marks)

11. Enumerate the criteria for Bacterial vaginosis. (1+1+1)
12. Illustrate any one theory of endometriosis.

13. Enumerate three etiological factors for genital fistula (1+1+1)
14. 38-year-old comes with abnormal uterine bleeding not responding to tranexamic acid. Uterine curettage shows endometrial hyperplasia without atypia. She is willing for regular follow-up and is not willing for major operative procedure. Choose the best treatment modality (1) and describe the modality. (2)
15. List three options for conservative management of prolapse (1 each)
16. An obese hirsute 33-year-old woman presents with irregular menstrual cycles and ultrasonography suggestive of peripherally arranged follicles. Choose three pharmacological management options for her. (1 each)
17. Enumerate the parameters of semen analysis with their normal range (1 each)
18. A 56-year-old woman with endometrial curettage showing Carcinoma Endometrium has an MRI showing spread to serosa of corpus uteri but no invasion of other pelvic organs or vagina. Paraaortic and pelvic lymph nodes appear negative. What is the presumptive stage of this patient (1.5). What is the next step (1.5)?
19. Justify the usage of tranexamic acid as the first line of management of AUB. (3)
20. You are the district officer in-charge for popularizing routine early cancer screening for genital malignancy. Develop 6 points which can be put in a poster for encouraging patients to undergo early cancer screening.

SELECT THE SINGLE BEST RESPONSE TO THE MULTIPLE CHOICE QUESTIONS GIVEN BELOW. 10X1=10 marks

21.(i)Increase in menstrual bleeding in amount of bleeding or duration with regular cycles is called;

e) Metrorrhagia
f) Metropathia hemorrhagica
g) Menorhagia
h) Polymennorhoea

21.(ii)A 21 year old P1L1 has delivered 45 days back. She is not breastfeeding her infant. She has tested HIV positive during her antenatal checkup. She wants a temporary method of contraception.

What are her options?

e) Combined oral contraceptive pills
f) Copper Intra uterine device
g) LNG implant
h) LNG Intrauterine device

21.(iii)The Lenght of fallopian tube is:

e) 8-12cm
f) 12-15cm
g) 15-18cm
h) 18-20cm

21.(iv)The Corpus luteum secretes:

e) Estrogens
f) Progesterone
g) Both
h) None

21.(v)Test for Tubul patency is

e) Basal body temperature measurement
f) Hysterolaparascopy
g) Fern test
h) Spimbarkeit test

22.(i)Contraceptive method with the highest failure rate is

e) Combined hormonal pills
f) Tubectomy
g) Barrier method
h) Intra uterine devices

22.(ii)Which is the first sign of puberty in a girl?

e) Thelarche
f) Menarche
g) Adrenarche
h) Pubarche

22.(iii)Screening test for carcinoma cervix is:

e) Visual inspection of cervix with acetic acid
f) Conization of cervix
g) Thermal ablation of cervix
h) Trachelectomy

22.(iv)Birth trauma is a risk factor for:

e) Endometriosis
f) Prolapse
g) Abortion
h) PID

22.(v)Which of the following are effects of increased levels of oestrogen in the follicular phase of the menstrual cycle?

e) Hair thinning
f) Thickening of cervical mucous
g) Thinning of cervical mucous
h) Thickening of the endometrium

Sri Siddhartha Academy of Higher Education – Sample question paper

MBBS / PHASE III / PART II DEGREE EXAMINATION

MAX.MARKS: 100 MARKS

OBSTETRICS & GYNAECOLOGY – PAPER -2

LONG ESSAY

2X10=20 marks

1. A 54 year old woman presents with bleeding per vagina after 2 years of cessation of regular menstruation. She is diabetic and hypertensive on treatment since 4 years with a BMI of 30.
   - What is the most likely diagnosis? (2 marks)
   - What is the differential diagnosis of postmenopausal bleeding? (2 marks)
   - Outline the investigations & treatment of the case (3+3marks)
2. A couple married for 2 yrs, unable to conceive despite staying together.
   - What are the probable causes? (3 marks)
   - How will you investigate the couple? (3 marks)
   - Wife has irregular cycles with BMI of 32 and coarse facial hair. Outline the treatment plan for her. (4 marks)

SHORT ESSAYS

8X5=40 MARKS

3. A parous woman of age 42 yrs is having regular cycles is experiencing an increase in the amount and duration of bleeding. She also complains of easy fatigability and weakness. Enumerate the differential diagnosis and how do you work up this case? (2+3 marks)
4. 48yr old multiparous lady is having irregular menstrual periods since one year. She complains of several bouts of hot flushes and night sweats since 6 months. What is your diagnosis and treatment? (1+4 marks)
5. 65 yr old woman, P6L6, complains of something coming out through the vagina since 4 yrs. Since past 3 months she is complaining of occasional bloody discharge and development of a wound over the exposed part. What is the diagnosis. How do you manage the case? (2+3 marks)
6. Discuss the Clinical features and management of genital tuberculosis. (2+3 marks)
7. Indications & contra indications of combined oral contraceptive pills. (3+2 marks)
8. Describe causes, clinical features and enumerate the surgeries for Vesico-vaginal fistula. (2+3 marks)
9. Indications for Endoscopy in gynecology. Enumerate the complications of Hysteroscopy. (2+3 marks)
10. Discuss the diagnosis and treatment of Vaginal Trichomoniasis. (3+2 marks)

SHORT ANSWERS

10X3=30MARKS

11. Describe the course and branches of internal iliac artery. (1+2 marks)
12. Indications and dosage of Methotrexate in gynecology (2+1 marks)
13. Describe the American fertility society classification of uterine anomalies.
14. Indications & complications of cervical biopsy. (1+2 marks)
15. Bethesda classification of Pap smear.
16. Discuss the complications of Radiotherapy in gynecology.
17. What are the causes of precocious puberty?
18. What are the hormonal methods of treatment of endometriosis
19. PALM – COEIN classification.
20. What is Pearl index?

SELECT THE SINGLE BEST RESPONSE TO THE MULTIPLE CHOICE QUESTIONS GIVEN BELOW. 10X1=10 marks

21. Increase in menstrual bleeding in amount of bleeding or duration with regular cycles is called;
    i) Metrorrhagia
    j) Metropathia hemorrhagica
    k) Menorhagia
    l) Polymennorhoea

22. A 21 year old P1L1 has delivered 45 days back. She is not breastfeeding her infant. She has tested HIV positive during her antenatal checkup. She wants a temporary method of contraception.

What are her options?
    i) Combined oral contraceptive pills
    j) Copper Intra uterine device
    k) LNG implant
    l) LNG Intrauterine device

23. The Lenght of fallopian tube is:
    i) 8-12cm
    j) 12-15cm
    k) 15-18cm
    l) 18-20cm

24. The Corpus luteum secretes:
    i) Estrogens
    j) Progesterone
    k) Both
    l) None

25. Test for Tubul patency is
    i) Basal body temperature measurement
    j) Hysterolaparascopy
    k) Fern test
    l) Spimbarkeit test

26. Contraceptive method with the highest failure rate is
    i) Combined hormonal pills
    j) Tubectomy
    k) Barrier method
    l) Intra uterine devices

27. Which is the first sign of puberty in a girl?
    i) Thelarche
    j) Menarche
    k) Adrenarche
    l) Pubarche

28. Screening test for carcinoma cervix is:
    i) Visual inspection of cervix with acetic acid
    j) Conization of cervix
    k) Thermal ablation of cervix
    l) Trachelectomy

29. Birth trauma is a risk factor for:
    i) Endometriosis
    j) Prolapse
    k) Abortion
    l) PID

30. Which of the following are effects of increased levels of oestrogen in the follicular phase of the menstrual cycle?

i) Hair thinning
j) Thickening of cervical mucous
k) Thinning of cervical mucous
l) Thickening of the endometrium

PRACTICAL/CLINICAL EXAMINATION

Principles to be adhered to in practical/clinical examination

- The practical/ clinical examination should include assessment in psychomotor and affective domain.
- **Assessment of clinical and procedural skills should be based on direct observations by the examiners.**
- AETCOM competencies should also be assessed.
- **Practical tests should not become simply tests of knowledge. Avoid making assessment mainly targeted to knowledge domain only.**

Examples

1. **Asking a learner in a room away from actual patient, "how history was taken" is to be avoided. Instead, learner should be observed while he/she is taking history.**
2. **Asking a learner in a room away from the actual patient "Tell us how the obstetric abdominal examination is done" is to be avoided. Instead, learner should be observed when the examination is being performed, and evaluated objectively using checklists/ other suitable scales"**

Tools to be used in practical examination

It is suggested that practical examination should include a combination of the following tools

- Clinical examination using long case – one each in Obstetrics and Gynecology, 80marks each
- Objective Structured Clinical Examination (OSCE) – Observed 4 stations 10marks each

SCHEMA FOR PRACTICAL EXAMINATION (200 MARKS)

	Topic header	Obstetrics	Gynaecology
I	**Eliciting history (1 Obs / 1 Gyn)**	**25**	**25**
II	**Performing examination (1 Obs/ 1 Gyn)**	**25**	**25**

III	**Discussion (1 Obs / 1 Gyn) of management**	**30**	**30**
IV	**4 Viva voce stations with examiner presence (10 marks eachx4=40)**	Station-1: Dummy, pelvis and fetal skull. Station-2: Instruments Station-3: SpecimensStation-4: Drugs and contraception	

SAMPLE PRACTICAL EXAMINATION FORMAT

I. ELICITING HISTORY

A. ELICITING HISTORY IN AN OBSTETRIC PATIENT [15 MARKS]

Role of examiner: To create a simulated patient (For example, an intern or a PG or an SR may be trained to become a simulated patient – as much details as possible to be provided).

Role of student: To elicit detailed obstetric history from a provided simulated patient with all elements

Role of examiner: To **observe and assess the student while student is eliciting history** from the simulated patient and observe regarding arrival at a suitable clinical

interpretation/ conclusion based on the history elicited. Checklist for clear schema of marking may be developed locally.
Time duration is around 5-7 minutes.

B. ELICITING HISTORY IN A GYNECOLOGICAL PATIENT [15 MARKS]

Role of examiner: To create a simulated patient (For example, an intern or a PG or an SR may be trained to become a simulated patient – as much details as possible to be provided).
Role of student: To elicit detailed gynaecological history from a provided simulated patient with all elements
Role of examiner: To **observe and assess the student while student is eliciting history** from the simulated patient and observe regarding arrival at a suitable clinical interpretation/ conclusion based on the history elicited. Checklist for clear schema of marking may be developed locally.
Time duration is around 5-7 minutes.

II. EXAMINATION

A. OBSTETRIC EXAMINATION ASSSESSMENT (25 marks)

Role of the examiner: A gravid / puerperal woman (with any suitable diagnosis, preferable late 2nd or 3rd trimester) should be provided for examination by the student. The brief history of the obstetric patient should be provided to the student.
Student should be allowed to introduce himself/herself and gain confidence of the patient.
Role of the student:
Demonstration of **general physical examination should be observed by the examiner** using a locally developed checklist. (Annexure) [5 marks]
Demonstration of **abdominal obstetric examination should be observed by the examiner** using a locally developed checklist. (Annexure) [10 marks]
Further **discussion** based on the examination findings should be done with focus on the techniques and **nuances of performance on examination** rather than theoretical perspectives on management. [10 marks]

Time duration is around 5-7 minutes.

B. GYNECOLOGY EXAMINATION ASSESSMENT (25 MARKS)

Role of the examiner: A woman with gynaecological pathology should be provided for examination by the student.

The brief history of the gynaecological patient should be provided to the student.

Student should be allowed to introduce himself/herself and gain confidence of the patient.

Role of the student:

Demonstration of general **physical examination should be observed by the examiner** using a locally developed checklist. [5 marks]

Demonstration of abdominal **examination should be observed by the examiner** using a locally developed checklist. [10 marks]

Local examination (such as perineal / speculum and vaginal examination) findings should be provided by the examiner to the student.

Further **discussion based on the examination findings** should be done with focus on the techniques and nuances of **performance on examination** rather than theoretical perspectives on management. [10 marks]

Time duration is around 5-7 minutes.

Discussion on the management of the cases presented

Sri Siddhartha Academy of Higher Education, Tumkur

UNDERGRADUATE LOGBOOK

DEPARTMENT OF OBSTETRICS & GYNAECOLOGY

Purpose of this logbook

The log book is a verified record of the progression of the learner documenting the

Acquisition of there quisite knowledge, skills, attitude and competencies. It is a record of the academic/co-curricular activities of the designated student, who would be responsible for maintaining his/her logbook.

Entries in the logbook will reflect the activities undertaken in the department and has to be scrutinized by the head of the concerned department.

The logbook is a record of various activities by the student like:

- ✓ Overall participation & performance
- ✓ attendance
- ✓ participation in sessions
- ✓ record of completion of pre-determined activities
- ✓ acquisition of selected competencies

The logbook is the record of work done by the candidate in the department and shall be verified by the college before submitting the application of the students for the university examination.

The purposes of this logbook are:

f. To orient the students to holistic patient management by completing the case record, observing and recording procedures and discussing patient treatment in the therapeutics section.
g. To facilitate the student's learning process, document the learning process and assist in student assessment
h. To keep a record of the student's progressing development of the desired skills and attitudes
i. To ensure that the time spent in the department is well utilized
j. To form a basis for continual assessment of the student

This log book is a documentation of cases seen, clerked and witnessed by you during your posting in OBG .It is also a record of various seminars, case-based learning, simulation exercises and other academic activities that the learner has been a part of during course. Though efforts are made to cover as much as possible, in no way should this be considered the syllabus.

Please carry this book whenever you attend the non-lecture academic activities of the department and get it duly signed by the concerned staff at the end of the academic activity.

We expect discipline, honesty, sincerity and punctuality.

The responsibility of completing the logbook and getting it verified/assessed by the faculty lies with the student. The logbook must be carried by the student as per the given instructions.

General Instructions

11. It is expected that the students will adhere to the highest ethical standards and Professionalism.

12. Shall maintain punctuality in respect to arrival and completion of the assigned work

13. Maintain a cordial relationship with peers, unit staff and hospital staff

14. Not indulge in any act which would bring disrepute to the institution.

15. You should wear a clean apron and follow the dress regulations as laid down by the college and maintain proper hygiene with wearing respective identification badge while in college and hospital.

16. You should carry the following with you for the clinics
    a. Clinical textbook
    b. Stethoscope
    c. Clinical kit for examination

17. Respect the patient as an individual and recognize that she also has rights.

18. Cases that are discussed only have to be documented and not the dummy cases.

19. Loss of this logbook at any time may affect the formative assessment results and Impair the student appearing in the summative assessment.

20. Student is solely responsible for maintaining the Logbook and the records. If the student loses the logbook, he/she would be withheld from appearing for the University examination unless Suitable back up proof is provided.

Objectives of learning in OBG Department:

A. KNOWLEDGE

At the end of course, the student should be able to:

1. Outline the anatomy, Physiology and pathophysiology of the reproductive system and the common conditions affecting it.
2. Detect normal pregnancy, labour, puerperium and manage the problems likely to be encounter therein.
3. List the leading causes of maternal and perinatal morbidity and mortality.
4. Understand the principles of contraception and various techniques employed, methods of medical termination of pregnancy, sterilization and their complications.
5. Identify the use, abuse and side effects of drugs in pregnancy, Pre-menopausal and post menopausal periods.
6. Describe the national programme of maternal and child health and family welfare and their implementation at various levels.
7. Identify the common gynecological diseases and describe principles of their management.
8. State the indications, techniques and complications of surgeries like Caesarian section, laprotomy, abdominal and vaginal hysterectomy , Fothergill's operation and vacuum aspiration for MTP

B. SKILLS:

At the end of course, the student should be able to:

1. Examine a pregnant woman: recognize high risk factors.
2. Conduct a normal delivery, recognize complications and early referral. Provide post-natal care.
3. Resuscitate the newborn and recognize congenital anomalies.
4. Advise a couple on the use of various available contraceptive devices and assist in insertion and removal of intra uterine contraceptive devices
5. Perform pelvic examination, diagnose and manage common gynaecological problems including early detection of genital malignancies
6. Make a vaginal cytological smear.
7. Interpretation of data of investigations like biochemical, histopathological, radiological, ultrasound etc.

Name of the student	
Roll No	
University Registration Number	
Batch	
Contact No	
E mail Id	

Guardian/Parent Name Contact Number	
Signature of the student	
Signature of the HOD	

LOGBOOK CERTIFICATE

This is to certify that the candidate ……

Reg No…….. has satisfactorily completed all requirements mentioned in this Logbook for OBG including related AETCOM modules as per the Competency-Based Undergraduate Medical Education Curriculum, Graduate Medical Regulation 2019 during the period from ……. …….to ……..

He/ She is eligible to appear for the summative (University) assessment.

Head of Department: **Faculty Name:**

Name: **Signature:**

Signature:

Date:

INDEX

	Topic	Page No.
1.	Attendance extract	8
2.	Overall Assessment	9-11
3.	Clinical posting 1	12-26
4.	Clinical posting 2	27-34
5.	Clinical posting 3	35-46
6.	Clinical posting 4	47-56
7.	Labour Room Procedures	57-59
8.	Certifiable skill	60
9.	Check lists for skills assessments	61-67
10.	AETCOM modules	68-69
11.	Integrated sessions	70
12.	Self- Directed Learning sessions	71
13.	Seminars presented	72
14.	Research projects/publications	72

15.	**Co - Curricular Activities (Quiz, Poster, Debate, Essay, Skits)**	**73**
16.	**CME/ Conference / Workshop**	**74**
17.	**Awards / recognition**	**74**

ATTENDANCE EXTRACT

Theory classes

Professional Year	Number attended	Number conducted	Percentage of Attendance	Signature of HOD
Second Professional				
Third Professional Part I				
Third Professional Part II				

Bedside clinics:

Professional Year	Unit From (date) To (date)	Number attended	Number conducted	Percentage of Attendance	Signature of Unit Head	Signature of HOD
Second Professional year Posting 1						
Third Professional year Part I Posting 2						
Third Professional Part II Posting 3						
Third Professional year Part II Posting 4						

Note:

Every candidate should have **attendance not less than 75% of the total classes conducted in theory which includes didactic lectures and self-directed learning and not less than 80% of the total classes conducted in practical which includes small group teaching, tutorials, integrated learning and practical sessions** in each calendar year calculated from the date of commencement of the term to the last working day in each of the subjects prescribed to be eligible to appear for the university examination.

SUMMARY OF INTERNAL ASSESSMENT (IA)

Sl. No.	***Internal Assessment***	***Date of Assessment***	***Total marks***		***Marks scored***		***Signature of student with date***	***Signature of teacher with date***
			Theory	*Practical*	*Theory*	*Practical*		
1	First							
2	Second							

3	Third							
4	Remedial							

Total marks obtained on a total of 200 is ----- A student will be permitted to appear for final university exams only if he/she obtains more than 100 marks in the assessments.
Final remarks if any -

Note: A candidate who has not secured requisite aggregate in the internal assessment may be subjected to remedial assessment by the institution. If he/she successfully completes the same, he/she is eligible to appear for University Examinations. The remedial assessment shall be completed before submitting the internal assessment marks online to the University.

Formative Assessment at the end of each posting:

MCQ marks obtained	Second Professional year	Third Professional year Part I	Third Professional year Part II

		1 Posting	2 Posting	3 Posting	4 Posting
		Date	Date	Date	Date
Academic Performance (Case Presentation & Viva Voce) (25+10)					
Marks Obtained					
Feedback Provided	Positive				
	Could be improved				
Professionalism					
Timely submission of record Book (5)					
Behaves respectfully with peers and teachers (5)					
Grooming and adherence to Dress code (5)					
Total (out of 35+15)					
Signature of Student					
Signature of Teacher					

Guidelines for scoring (to be shown to the student and discussed with them)

Attendance – 95 -100% - 5 ; 90-94%-4;85-89%-3 80-84%-2;> 80%-1

Timely submission of record – Always submits the record on time – 5; Often submits the record on time -4; Sometimes submits the record on time -3 ; Rarely submits the record on time – 2 ; Never submits the record on time -1

Behaves respectfully with peers and teachers - Always speaks politely and demonstrates the appropriate body language with peers and teachers -5; Often speaks politely and demonstrates the appropriate body language with peers and teachers -4; Sometimes speaks politely and demonstrates the appropriate body language with peers and teachers – 3 ; Rarely speaks politely and demonstrates the appropriate body language with peers and teachers – 2; Never speaks politely and demonstrates the appropriate body language with peers and teachers -1

Clinical posting 1
Duration 4 weeks
Date of posting From **To**
Unit

Competency to be achieved

1) Obstetric History taking & examination
2) Gynaecological History taking & examination
3) Assessment of postnatal mother
4) Monitoring of labour
5) Active management of 3rd stage of labour

Clinical Posting 1

SLNO	ACTIVITY
1.	Obstetric history taking(OG.8.2) Determine gestational age, EDD and obstetric formula(OG35.5)
2.	Obstetric examination(OG 8.3)
3.	Gynec history taking(OG 24.1)
4.	Gynec examination (OG 24.1)
5.	Monitoring of labour(OG 13.1)
6.	Active Management of third stage of labour(OG 16.1)
7.	History taking and examination of postnatal mother(OG 19.1)

Competency # addressed	**Name of Activity**	**Date completed dd-mm-yyyy**	**Attempt at activity** First or Only (F) Repeat (R) Remedial (Re)	**Rating** Below (B) expectations Meets(M) expectations Exceeds(E) expectations	**Decision of faculty** Completed (C) Repeat(R) Remedial(Re)	**Initial of faculty and date**	**Feedback Received**
OG 8.2 OG35.5	Obstetric history taking Determine gestational age, EDD and obstetric formula						**Initial of learner**
OG 8.3	Obstetrics examination						**Initial of learner**

Learner doctor

Posting 1

A. Competency

1. History

   General

OG 24.1	Gynae history						**Initial of learner**
OG 13.1	Monitoring of Labour						
OG 16.1	Active management 3rd stage of labour						
OG 19.1	History taking and examination of postnatal mother						

method 1

to be achieved-

taking

2. Examination - physical examination
   - Systemic examination
   - Obstetrics examination

3. Communication skills-

One antenatal patient will be allotted to the student. The student is expected to take the history of the patient and examine her. Case record has to be written and daily follow-up till discharge has to be entered. The students will communicate with the patient and doctor about the patient care.

A brief summary is to be written at the time of patient discharge and discuss the case with the teacher.

Learner doctor method

Learner doctor method

Learner doctor method

Learner doctor method

Reflection on the learner doctor method of learning;

What happened?

So what ?

What next?

Signature of faculty :Date :

Learner doctor method 2

B. Competency to be achieved

1. History taking
   Examination - General physical examination
   - Systemic examination
   - Gynaecological examination

One patient will be allotted to the student. The student is expected to take the history of the patient and examine her. Case record has to be written and daily follow-up till discharge has to be entered. The students will communicate with the patient and doctor about the patient care.

A brief summary is to be written at the time of patient discharge and discuss the case with the teacher.

Learner doctor method

Learner doctor method

Learner doctor method

Learner doctor method

Reflection on the learner doctor method of learning;

What happened?

So what ?

What next?

Posting 2
Duration 8 weeks
Date of posting From **To**
Unit :

Signature of faculty: Date :

Competency to be achieved

1) Diagnosis of early pregnancy
2) Antenatal care and advice
3) Identify the high risk factors in pregnancy
4) Methods of Induction of labour
5) Develop a partogram
6) Postnatal care & Advice
7) Pre & Post operative care

Clinical posting 2

SLNO	ACTIVITY (Case Presentation)
1.	Diagnosis of early pregnancy (OG 6.1)
2.	Antenatal care and advice (OG 8.1,8.6)

3.	Diagnosis of high risk (OG 8.1)
4.	Partogram (OG 13.1)
5.	Postnatal care and advice (OG 19.1)
6.	Pre and postoperative care including consent for surgery (OG 34.4, 35.7)

ɔetency lressed	**Name of Activty**	**Date completed dd-mm-yyyy**	**Attempt at activity** First or Only (F) Repeat (R) Remedial (Re)	**Rating** Below (B) expectations Meets(M) expectations Exceeds(E) expectations	**Decision of faculty** Completed (C) Repeat(R) Remedial(Re)	**Initial of faculty and date**	**Feedback Received**

	Diagnosis of early pregnancy						**Initial of students**
1, 5	Antenatal care and advice						**Initial of students**
1	Diagnosis of high risk						**Initial of students**
.1	Partogram						**Initial of students**
.1	Postnatal care and advice						**Initial of students**

4.4, 5.7	Pre and postoperative care including consent for surgery						**Initial of students**

Learner doctor method.

Posting 2

Competency to be achieved

1. History taking
2. Examination - General physical examination
   - Systemic examination
   - Obstetrics examination
3. Indentifying High Risk factors
4. Communication & patients education
5. Selection of appropriate investigation
6. Approach towards the diagnosis

One patient will be allotted to the student. The student is expected to take the history of the patient and examine her. Case record has to be written and daily follow-up till discharge has to be entered. The students will communicate with the patient and doctor about the patient health.

A brief summary is to be written at the time of patient discharge and discuss the case with the teacher.

Learner doctor method.

Learner doctor method.

Learner doctor method.

Learner doctor method

Reflection on the learner doctor method of learning :

What happened?

So what ?

What next?

Signature of the faculty: Date:

Posting 3
Duration 8 weeks
Date of posting From **To**
Unit :

Competency to be achieved

1) Obstetric History taking and complete examination
2) Gynaecological History taking and complete examination
3) Management of medical and obstetric disorders in pregnancy
4) Management of Gynaecological disorder

Clinical Posting 3

SLNO	ACTIVITY (Case Presentation)
1.	Describe clinical features; diagnosis and investigations, complications, principles of management of **multiple pregnancies** (OG11.1)
2.	Define, classify and describe the aetiology, clinical features, ultrasonography, differential diagnosis and management of **antepartum haemorrhage in pregnancy** (OG10.1)
3.	Define, classify and describe the early detection, investigations; principles of management of **hypertensive disorders of pregnancy and eclampsia,** complications of eclampsia.(OG12.1)
4.	Define, classify and describe the diagnosis, investigations, adverse effects on the mother and foetus and the management during pregnancy and labor, and complications of **anemia in pregnancy .** (OG12.2)
5.	Define, classify and describe diagnosis, investigations, criteria, adverse effects on the mother and foetus and the management during pregnancy and labor, and complications of **diabetes in pregnancy** (OG12.3)

6.	Define, classify and describe the etiology, diagnosis, investigations, criteria, adverse effects on the mother and foetus and the management during pregnancy and labor, and complications of **heart diseases in pregnancy** (OG12.4)
7.	Describe the mechanism, prophylaxis, fetal complications, diagnosis and management of **isoimmunization in pregnancy** (OG12.8)
8.	Describe and discuss causes, clinical features, diagnosis, investigations; monitoring of fetal well-being, including ultrasound and fetal Doppler; principles of management; prevention and counselling in **intrauterine growth retardation** (OG16.3)
9.	Define, classify and discuss **abnormal uterine bleeding**, its aetiology, clinical features, investigations, diagnosis and management (OG24.1)
10.	Describe and discuss the clinical features; differential diagnosis; investigations; principles of management, complications of **fibroid uterus** (OG29.1)
11.	Describe and discuss the etiology, classification, clinical features, diagnosis, investigations, principles of management and preventive aspects of **prolapse of uterus** (OG31.1)

ɔetency lressed	**Name of Activity**	**Date completed dd-mm-yyyy**	**Attempt at activity** First or Only (F) Repeat (R) Remedial (Re)	**Rating** Below (B) expectations Meets(M) expectations Exceeds(E) expectations	**Decision of faculty** Completed (C) Repeat(R) Remedial(Re)	**Initial of faculty and date**	**Feedback Received**
.1	Describe the clinical features; diagnosis and investigations, complications, principles of management of **multiple pregnancies**						**Initial of students**
.1	Define, classify and describe the aetiology, clinical features, ultrasonography, differential diagnosis and management of **antepartum haemorrhage** in pregnancy						

							Initial of students
.1	Define, classify and describe the early detection, investigations; principles of management of **hypertensive disorders of pregnancy and eclampsia,** complications of eclampsia						**Initial of students**

petency dressed	**Name of Activity**	**Date completed dd-mm-yyyy**	**Attempt at activity** First or Only (F) Repeat (R) Remedial (Re)	**Rating** Below (B) expectations Meets(M) expectations Exceeds(E) expectations	**Decision of faculty** Completed (C) Repeat(R) Remedial(Re)	**Initial of faculty and date**	**Feedback Received**

.2	Define, classify and describe the diagnosis, investigations, adverse effects on the mother and foetus and the management during pregnancy and labor, and complications of **anemia in pregnancy**						**Initial of students**
.3	Define, classify and describe the diagnosis, investigations, criteria, adverse effects on the mother and foetus and the management during pregnancy and labor, and complications of **diabetes in pregnancy**						**Initial of students**

.4	Define, classify and describe the etiology, diagnosis, investigations, criteria, adverse effects on the mother and foetus and the management during pregnancy and labor, and complications of **heart diseases in pregnancy**						**Initial of students**

ɔetency lressed	**Name of Activity**	**Date completed dd-mm-yyyy**	**Attempt at activity** First or Only (F) Repeat (R) Remedial (Re)	**Rating** Below (B) expectations Meets(M) expectations Exceeds(E) expectations	**Decision of faculty** Completed (C) Repeat(R) Remedial(Re)	**Initial of faculty and date**	**Feedback Received**

.8	Describe the mechanism, prophylaxis, fetal complications, diagnosis and management of **isoimmunization in pregnancy**						**Initial of students**
.3	Describe and discuss causes, clinical features, diagnosis, investigations; monitoring of fetal well-being, including ultrasound and fetal Doppler; principles of management; prevention and counselling in **intrauterine growth retardation**						**Initial of students**
.1	Define, classify and discuss **abnormal uterine bleeding,** its aetiology, clinical features, investigations,						**Initial of students**

	diagnosis and management						

ɔetency lressed	**Name of Activity**	**Date completed dd-mm-yyyy**	**Attempt at activity** First or Only (F) Repeat (R) Remedial (Re)	**Rating** Below (B) expectations Meets(M) expectations Exceeds(E) expectations	**Decision of faculty** Completed (C) Repeat(R) Remedial(Re)	**Initial of faculty and date**	**Feedback Received**

.1	Describe and discuss the clinical features; differential diagnosis; investigations; principles of management, complications of **fibroid uterus**						**Initial of students**
.1	Describe and discuss the etiology, classification, clinical features, diagnosis, investigations, principles of management and preventive aspects of **prolapse of uterus**						**Initial of students**

Learner doctor method.

Posting 3

Competency to be achieved

1. History taking
2. Examination - General physical examination
    - Systemic examination
    - Obstetrics examination
3. Identifying High Risk factors
4. Communication & patients education
5. Selection of appropriate investigation
6. Approach towards the diagnosis
7. Plan of Management.

One patient will be allotted to the student. The student is expected to take the history of the patient and examine her. Case record has to be written and daily follow-up till discharge has to be entered. The students will communicate with the patient and doctor, about the patient care & plan of management

A brief summary is to be written at the time of patient discharge and discuss the case with the teacher.

Learner doctor method.

Learner doctor method.

Learner doctor method.

Learner doctor method

Reflection on the learner doctor method of learning :

What happened?

So what ?

What next?

Signature of the faculty: **Date:**

Posting 4
Duration 4 weeks
Date of posting From **To**
Unit :

Competency to be achieved

1) Gynaecological history taking and complete examination
2) Early detection of genital malignancies
3) Document and maintain a case record
4) Write a discharge summary for the given case
5) Write a Referral note for the given case
6) Take an informed consent for the given procedure

Clinical posting 4

SLNO	ACTIVITY **(Case Presentation)**
1.	Classify, describe and discuss the etiology, clinical features, differential diagnosis, investigations and staging of **cervical cancer**(OG33.1)
2.	Describe and discuss aetiology, staging clinical features, differential diagnosis, investigations, staging laparotomy and principles of management of **endometrial cancer** (OG34.1)
3.	Describe and discuss the etiology, classification, staging of **ovarian cancer**, clinical features, differential diagnosis, investigations, principal of management including staging laparotomy (OG34.2)
4.	Obtain a logical sequence of history, and perform a humane and thorough clinical examination, excluding internal examinations (perrectal and per-vaginal) (OG35.1)
5.	Arrive at a logical provisional diagnosis after examination. (OG35.2)
6.	Write a complete case record with all necessary details (OG35.8)
7.	Write a proper discharge summary with all relevant information (OG35.9)

8.	Write a proper referral note to secondary or tertiary centres or to other physicians with all necessary details (OG35.10)
9.	Take an informed consent from the patient and family for Staging laprotomy (OG34.4, OG35.7)

ɔetency lressed	**Name of Activity**	**Date completed dd-mm-yyyy**	**Attempt at activity** First or Only (F) Repeat (R) Remedial (Re)	**Rating** Below (B) expectations Meets(M) expectations Exceeds(E) expectations	**Decision of faculty** Completed (C) Repeat(R) Remedial(Re)	**Initial of faculty and date**	**Feedback Received**

.1	Classify, describe and discuss the etiology, , clinical features, differential diagnosis, investigations and staging of **cervical cancer**						**Initial of students**
.1	Describe and discuss aetiology,staging clinical features, differential diagnosis, investigations, staging laparotomy and principles of management of **endometrial cancer**						**Initial of students**
.2	Describe and discuss the etiology, classification, staging of **ovarian cancer**, clinical features, differential diagnosis,						

	investigations, principal of management including staging laparotomy						**Initial of students**

ɔetency lressed	**Name of Activity**	**Date completed dd-mm-yyyy**	**Attempt at activity** First or Only (F) Repeat (R) Remedial (Re)	**Rating** Below (B) expectations Meets(M) expectations Exceeds(E) expectations	**Decision of faculty** Completed (C) Repeat(R) Remedial(Re)	**Initial of faculty and date**	**Feedback Received**
;.1	Obtain a logical sequence of history, and perform a humane and thorough clinical examination, excluding internal examinations (perrectal and per-vaginal						**Initial of students**

.2	Arrive at a logical provisional diagnosis after examination.						**Initial of students**
.8	Write a complete case record with all necessary details						**Initial of students**

ɔetency lressed	**Name of Activity**	**Date completed dd-mm-yyyy**	**Attempt at activity** First or Only (F) Repeat (R) Remedial (Re)	**Rating** Below (B) expectations Meets(M) expectations Exceeds(E) expectations	**Decision of faculty** Completed (C) Repeat(R) Remedial(Re)	**Initial of faculty and date**	**Feedback Received**
.9	Write a proper discharge summary with all relevant information						**Initial of students**
.10	Write a proper referral note to secondary or tertiary centres or to other physicians with all necessary details						**Initial of students**

.4, .7	Take an informed consent from the patient and family for Staging laprotomy						**Initial of students**

Learner doctor method.

Posting 4

Competency to be achieved

1. Arriving at diagnosis
2. Planning management
3. Taking consent from the patient for the procedure
4. Assessing post procedure complication
5. Writing discharge summary
6. Advise on discharge

One patient will be allotted to the student. The student is expected to take the history of the patient and examine her. Case record has to be written and daily follow-up till discharge has to be entered. The students will communicate with the patient and doctor about patient care and plan of management.

A brief summary is to be written at the time of patient discharge and discuss the case with the teacher.

Learner doctor method.

Learner doctor method.

Learner doctor method

Reflection on the learner doctor method of learning :

What happened?

So what ?

What next?

Signature of the faculty: **Date:**

LABOUR ROOM PROCEDURES

SLNO	ACTIVITY
1.	Obtain a logical sequence of history, and perform a humane and thorough clinical examination, excluding internal examinations (perrectal and per-vaginal) (OG35.1)
2.	Arrive at a logical provisional diagnosis after examination. (OG35.2)
3.	mechanism of labor in occipito-anterior presentation (OG13.1)

4.	monitoring of labor including partogram (OG13.1)
5.	Induction of Labour
6.	acceleration of labor(OG13.1)
7.	Amniotomy (OG 13.3)
8.	Enumerate and describe the indications, steps and complications of Caesarean Section (OG15.1)
9.	Observe/Assist in operative obstetrics case – Forceps/ vacuum extraction (OG15.2)
10	Describe and discuss the classification; diagnosis; management of abnormal labor (OG 14.4)

Competency # addressed	**Name of Activity**	**Date completed dd-mm-yyyy**	**Observed**	**Assisted**	**Initial of faculty and date**	**Feedback Received**
OG35.1	Obtain a logical sequence of history, and perform a humane and thorough clinical examination, excluding internal examinations (perrectal and per-vaginal					**Initial of students**

OG35.2	Arrive at a logical provisional diagnosis after examination.					**Initial of students**
OG13.1	mechanism of labor in occipito-anterior presentation					**Initial of students**

Competency # addressed	**Name of Activity**	**Date completed dd-mm-yyyy**	**Observed**	**Assisted**	**Initial of faculty and date**	**Feedback Received**
OG13.1	monitoring of labor including partogram					**Initial of students**

Certifiable Skills

Name of Activity:
of a normal vaginal

OG13.1	Induction of labour					**Initial of students**
OG13.1	acceleration of labor					**Initial of students**
OG 13.3	Amniotomy					**Initial of students**
OG15.1	Caesarean section,					**Initial of students**
OG15.2	Instrumental delivery					**Initial of students**
OG14.4	diagnosis; management of abnormal labor					**Initial of students**

Observe and assist the conduct delivery

Competency # addressed	**Date completed dd-mm-yyyy**	**Performed under supervision**	**Initial of faculty and date**	**Feedback Received**
OG13.5				
OG13.5				
OG13.5				
OG13.5				
OG13.5				
OG13.5				
OG13.5				
OG13.5				

OG13.5				
OG13.5				

Checklist for assessment of skills in Skill lab

Sl. no	Skills
1	Speculum Examination /Pap Smear
2	Prevaginal examination
3	Normal Delivery
4	Episotomy
5	Female Urinary Catheterization

1. Speculum Examination / Pap Smear

Sl No	Step/Task	Yes 1	No 0
1	Introduce yourself		
2	Verbal consent		
3	Explain procedure to woman		
4	Ask to empty bladder		
5	Provide adequate privacy		
6	Place in dorsal position		
7	Scrub hands		
8	Wear sterile gloves		
9	Encourage the woman to take deep breath and relax during examination		
10	Separate the labia with left hand, introduce cuscos speculum into vagina with right hand.		
11	Points to observe: a) Direction of cervix		
	B)Cervical lips		
	c) External os		
	d) abnormal discharge or bleeding from any side		
	e) abnormal growth from any side		
12	Take Pap Smear using Ayre's spatula from the cervix \, rotate in a 360^0 movement. The longer projection of the spatula is inserted into the endocervix and shorter end to the ecto cervix		
13	Another sample is collected from the posterior fornix with the flat end of the spatula		
14	The material collected is immediately spread over 2 slides and at once put into the fixative ethyl alcohol 95% before drying or fixed with confixative spray.		

15	The slides are labelled and send to the lab with brief patient history and examination findings and proper patient identification number.		
16	Proper disposal of the gloves		
17	Documentation of findings		

Level of expertise expected - advanced / beginner
Level of expected expertise attained- Yes/no
Needs to repeat the session – Yes/ No
Repeat session: level of expected expertise attained- Yes/ No.

2.Prevaginal examination

Sl No	Step/Task	Yes 1	No 0
1	Introduce yourself		
2	Verbal consent		
3	Ask to empty bladder		
4	Provide adequate privacy		
5	Explain procedure to woman		
6	Place in dorsal position		
7	Scrub hands		
8	Wear sterile gloves		
9	Lubricate fingers with jelly		
10	Separate the labia with left hand, introduce index and middle finger of right hand into vagina,		
11	Encourage the woman to take deep breath and relax during examination		
12	Bimanual examination – to note down a) Direction of the cervix		

	b) consistency of the cervix (firm / hard)		
	c)cervical motion tenderness (tenderness present / absent)		
	d)Whethercervix bleeds on touch		
	e)Uterus - anteverted/ retroverted		
	f)Size of uterus		
	g)Consistency of uterus		
	h)Mobility of uterus		
	i)Surface of Uterus –regular/ irregular		
	j) Palpation of Adnexa – appendages / fornices / describe the mass if palpable		
13	Proper disposal of gloves		
14	Document findings		

Level of expertise expected– advanced/ beginner
Level of expected expertise attained- Yes/no
Needs to repeat the session – Yes/ No
Repeat session: level of expected expertise attained- Yes/ No.

3. Normal delivery

Sl. No.	Procedure	Yes	No	Comments if any
1.	Put on personal protective barriers. (Wear Goggles, Mask, Cap, Shoe cover, Plastic Apron).			

2.	Perform hand hygiene and put on sterile glove			
3.	Empty the bladder			
4.	Paint & drape the parts			
5.	Talk to the woman and encourage woman for breathing & small pushes with contractions			
6.	Once crowning give liberal episiotomy after infiltrating lignocaine			
7.	Control the birth of the head with the fingers of one hand to maintain flexion, allow natural stretching of the perineal tissue, ask the assistant to support perineum			
8.	Feel around the baby's neck for the cord and respond appropriately if the cord is present.			
9.	Allow the baby's head to turn spontaneously and with the hands on either side of the baby's head, delivers the anterior shoulder			
10.	Pull the head upward as the posterior shoulder is born over the perineum			
11.	Support the rest of the baby's body as it slides out and place the baby on the mother's abdomen over the clean towels			
12.	Note the time of birth and sex of the baby			
13	**Active management of third stage of labor (AMTSL)** a) Administer uterotonic Drug – Inj.oxytocin10 IU IM or tab. Misoprostol (600ug) orally			

	b) Perform controlled cord Traction during a contraction by placing one hand on the lower abdomen to support the uterus and gently pulling the clamped cord by the other hand close to perineum			
14.	Examine the vagina and perineum			
15.	Examine the placenta, membranes, and umbilical cord ● Maternal surface of placenta ● Foetal surface ● Membranes Umbilical cord			

Level of expertise expected – advanced / beginner

Level of expected expertise attained – Yes / No

Needs to repeat the session – Yes / No

Repeat session: level of expected expertise attained- Yes/ No

4. Episotomy

Sl No	Step/Task	Yes 1	No 0
1	Informs patient about need for episiotomy and local infiltration		
2	Gives local Inj. Xylocaine in fan shaped manner after checking for inadvertent needle in vessel		
3	Performs the incision with fingers guarding the fetus from injury		
4	Confirms integrity of rectum		

5	Changes gloves		
6	Identifies the apex of the mucosal layer		
7	Ask for appropriate suture material		
8	*Sutures vaginal mucosa first* by continuous suturing		
9	Sutures muscle layer intermittently after vaginal mucosa		
10	Sutures skin after muscular layer		
11	Confirms haemostasis, looks for any forgotten gauze		
12	Do a per rectal examination to feel for any suture passing through rectal mucosa		

Level of expertise expected– advanced/ beginner
Level of expected expertise-attained- Yes/no
Needs to repeat the session – Yes/ No
Repeat session : level of expected expertise attained- Yes/ No.

5. <u>Female Urinary Catheterization</u>

Sl No	Step/Task	Yes 1	No 0
1	Self-Introduce, Explainprocedure & take consent		
2	Arrange Catheter set		
3	Paint external gentialiaupto mid-thigh		
4	Painting- separate labia minora & clean urethral & vaginal region		
5	Draping		
6	Keep kidney tray over drape		
7	Lubricate the tip of the foley 's Catheter with xylocaine gel		
8	Separate labia minora with left hand		
9	Introduce the catheter into the urethra		
10	Drain the urine into the kidney tray		
11	Foley bulb to be inflated with 5 ml distilled water		
12	Connecting the urosac bag		
13	Dispose appropriately (yellow linen – gauze, paper) (red linen – glove)		

Level of expertise expected– advanced/ beginner
Level of expected expertise attained- Yes/no
Needs to repeat the session – Yes/ No
Repeat session : level of expected expertise attained- Yes/ No.

AETCOM MODULES

Module number: Date:
Name of the activity:
Department of Internal Medicine

Competencies
The student should be able to :

Reflection

Feedback

Signature of the student:

Assessment: **Signature of the faculty**

AETCOM MODULES

Module number: Date:
Name of the activity:
Department of Internal Medicine

Competencies
The student should be able to :

Reflection

Feedback

Signature of the student:

Assessment: **Signature of the faculty**

<u>Integrated sessions :</u>

	Date of session	Topics covered	Competency numbers addressed	Departments involved in the conduct of the session	Signature of the student	Signature of the faculty
1						

2						
3						
4						
5						

Self-directed learning sessions:

Sl. No.	Date	Topic	Competency number	Signature of The Faculty
1.				
2.				
3.				
4.				
5.				
6				
7				
8				
9				
10				

Seminars presented

Date	Topic	Content(5)	Clarity of presentation (5)	Interaction (5)	Knowledge (5)	Use of Audio Video aid (5)	Total

Research projects and publications

Sl.no	Name of the topic	Date	Signature of the faculty
1			
2			
3			
4			
5			

Co curricular activities –(quiz, poster, debates, essays, skit)

Sl.no	Name of the topic	Date	Signature of the faculty
1			
2			

3			
4			
5			
6			
7			
8			
9			

10			

Participation in CME, conference, workshops

Sl..no	Name of the topic	Date	Signature of the faculty

1			
2			
3			
4			
5			

Awards and recognition

Sl. no	Name of the topic	Date	Signature of the faculty
1			
2			
3			
4			
5			

Sri Siddhartha Academy of Higher Education, Tumkur

Paediatrics Curriculum

as per

Competency-Based Medical Education Curriculum

Abbreviations

NMC	-	National Medical Council
IMG	-	Indian Medical Graduate
CBME	-	Competency Based Medical Education
SLO	-	Specific Learning Objectives
TL	-	Teaching Learning
P	-	performed
Y/N	-	yes / no
SGD	-	Small group discussion
OSCE	-	Objective structured clinical examination
AETCOM	-	Attitude, Ethics and communication
SAQ	-	short answer question
MCQ	-	multiple choice question

SSAHE Paediatrics Curriculum as per the new Competency Based Medical Education

Preamble

The NMC envisages that the Indian Medical Graduate, should function as the Physician of first contact in the community, to provide holistic health care to the evolving needs of the nation and the world. To fulfil this the IMG should be able to perform the following roles: a clinician, a communicator, a lifelong learner, a professional and a team leader.

Competency-based medical education (CBME) is an outcomes-based training model that has become the new standard of medical education internationally. This new curriculum is being implemented across the country and the first batch has been enrolled since the academic year 2019. The regulatory and accrediting body NMC had started the process by training faculty across the country in the key principles of CBME and developing key competencies for each speciality with the input from expert groups under each speciality.

Paediatrics is an interesting branch of medicine dealing with health and medical care of children. It encompasses a broad spectrum of services ranging from preventive health care to the diagnosis and treatment of acute and chronic childhood illnesses. It is an ever-evolving branch requiring compassion, dedication and precision of care. The Paediatrics undergraduate curriculum provides the IMG the requisite knowledge, essential skills and appropriate attitudes to be able to diagnose and treat common paediatric disorders and also to be able to recognise serious conditions and refer appropriately.

The NMC, in the Graduate medical regulations 2019, has provided the list of paediatric competencies required for an IMG and these have been included in this curriculum document. The Specific learning objectives (SLO's) to achieve each competency has been listed along with the suggested Teaching-Learning methods and preferred assessment methods.

Following this is a detailed **blueprint** showing the weightage and the assessment tool for a particular chapter. This blueprint will ensure that there is an alignment between the SLOs', TL methods and the assessment. A **question paper layout** has also been added to ensure that there is consistency among different paper setters. Finally, the list of practical skills along with the most appropriate TL and assessment methods has been laid out.

Goals and Objectives of the SSAHE Paediatrics Curriculum

Goals:

The course includes systematic instructions in management of common diseases of infancy and childhood, evaluation of growth and development, nutritional needs, and immunization schedule in children, social pediatrics and counseling is also dealt in the course. The aim of teaching undergraduate medical students is to impart appropriate knowledge and skills to optimally deal with major health problems and also to ensure optimal growth and development of children.

Objectives:

(A) Knowledge

At the end of the course, the student shall be able to:

1. *Describe normal growth and development during fetal, neonatal, child and adolescence period.*
2. *Describe the common pediatric disorders and emergencies in terms of epidemiology, etiopathogenesis, clinical manifestations, diagnosis, rational therapy and rehabilitation.*

3. *State age related requirements of calories, nutrients, fluids, drugs etc. in health and disease.*
4. *Describe preventive strategies for common infectious disorders, poisonings, accidents and child abuse.*
5. *Outline national programmes relating to child health including immunization programmes.*

(B) Skills

At the end of the course, the student shall be able to:

1. *Take a detailed pediatric history, conduct an appropriate physical examination of children including neonates, make clinical diagnosis, conduct common bedside investigative procedures, interpret common laboratory investigation results and plan and institute therapy.*
2. *Distinguish between normal newborn babies and those requiring special care and institute early care to all newborn babies including care of preterm and low birth weight babies.*
3. *Take anthropometric measurements, resuscitate newborn infants at birth, prepare oral rehydration solution, perform tuberculin test, administer vaccines available under current national programmes, perform venesection, start an intravenous line and provide nasogastric feeding.*
4. *Would have observed procedures such as lumbar puncture, liver and kidney biopsy, bone marrow aspiration, pleural tap and ascitic tap.*
5. *Provide appropriate guidance and counseling in breast feeding.*
6. *Provide ambulatory care to all sick children, identify indications for specialized/inpatient care and ensure timely referral of those who require hospitalization.*
7. *Be aware and analyse ethical problems that arise during practice and deal with them in an acceptable manner following the code of ethics.*

(C) Attitude and communication skills

At the end of the course, the student shall be able to:

1.Communicate effectively with patients, their families and the public at large.

2. Communicate effectively with peers and teachers and demonstrate the ability to work effectively with peers in a team.

3. Demonstrate professional attributes of punctuality, accountability and respect for teachers and peers.

4. Appreciate the issues of equity and social accountability while undergoing early clinical exposure

(D) Integration

The training in pediatrics should prepare the student to deliver preventive, promotive, curative and rehabilitative services for care of children both in the community and at hospital as part of a team in an integrated form with other disciplines.

List of all Paediatrics competencies with their specific learning objectives, with suggested teaching-learning and assessment methods:

Number	Competency&LearningObjective(s)			Core	Suggested TeachingLearningMethod	SuggestedAssessmentMethod	NumberforCertification	VerticalIntegration	HorizontalIntegration
Topic:NormalGrowthandDevelopment Numberofcompetencies:(7) Numberofproceduresthatrequirecertification:(02)									

PE1.1	**DefinetheterminologiesGrowthandDevelopment and Discuss the factors affecting normal growth anddevelopment**			**Y**	**Lecture/SGD**	**Written/vivavoce**			
1.1.1	DefineGrowthandDevelopment			Y	Lecture/SGD	Written/vivavoce			
1.1.2	Enumerate the factors affecting normal growth anddevelopment			Y	Lecture/SGD	Written/vivavoce			
PE1.2	**DiscussandDescribethepatternsofgrowthin infants,childrenandadolescents**			**Y**	**Lecture/SGD**	**Written/viva voce**			**Psych**
1.2.1	Describethepatternsofgrowth ininfants,childrenandadolescents			Y	Lecture/SGD	Written/vivavoce			
PE1.3	**Discuss and Describe the methods of assessment ofgrowth including use of WHO and Indian nationalstandards. Enumerate the parameters used for assessment ofphysical growth in infants children and adolescents**			**Y**	**Lecture/SGD**	**Written/vivavoce**			**ComMed**
1.3.1	Describe themethodsofassessmentofgrowth includinguseofWHOandIndiannational standards.			Y	Lecture/SGD	Written/vivavoce			
1.3.2	DescribeWHOandIndiannationalstandardsforgrowthofinfants,children andadolescents.			Y	Lecture/SGD	Written/ vivavoce			
1.3.3	Enumeratetheparametersusedforassessmentofphysicalgrowthininfants,children and adolescents.			Y	Lecture/SGD	Written/vivavoce			
PE1.4	**PerformAnthropometricmeasurements,document ingrowthchartsandinterpret**			**Y**	**SGD**	**Documentin Logbook**	**3**		
1.4.1	Performanthropometricmeasurements inchildrenofdifferentagegroups.			Y	Clinicalteaching/ skilllab	Document inLogbook	3		

1.4.2	Documentthemeasuredparametersingrowthcharts andinterpretthefindingson growthcharts.			Y	Clinicalteaching/ skilllab	Document inLogbook	3		
PE1.5	**Define development and Discuss the normaldevelopmentalmilestoneswithrespect tomotor, behavior,social,adaptiveandlanguage**			**Y**	**Lecture/SGD**	**Written/viva voce**			**Psych**
1.5.1	Definedevelopment.			Y	Lecture/SGD	Written/viva voce			
1.5.2	Describe the normal developmental milestones withrespect to motor, behavior, social, adaptive and languagedomains.			Y	Lecture/SGD	Written/viva voce			Psych
PE1.6	**Discussthemethodsofassessmentofdevelopment.**			**Y**	**Lecture/SGD**	**Written/viva voce**			
1.6.1	Discussthemethodsofassessmentofdevelopment			Y	Lecture/SGD	Written/viva voce			
PE1.7	**PerformDevelopmentalassessmentandinterpret**			**N**	**Bedside/skillslab**	**Documentin Logbook**	**3**		
1.7.1	PerformDevelopmentalassessmentininfantsandchildrenandinterpret thefindings.			N	Bedside/skillslab	Document inLogbook/skilllab	3		
Topic:CommonproblemsrelatedtoGrowth				**Numberofcompetencies:(6)**		**Numberofproceduresthatrequirecertification:(NIL)**			
PE2.1	**Discusstheetiopathogenesis,clinicalfeaturesand managementofachildwhofailstothrive**			**Y**	**Lecture/SGD**	**Written/viva voce**			
2.1.1	Discussthe etiopathogenesisofachildwhofailstothrive.			Y	Lecture/SGD	Written/viva voce			
2.1.2	Describetheclinicalfeaturesofachildwhofailstothrive.			Y	Lecture/SGD	Written/viva voce			
2.1.3	Discussthemanagementofachildwhofailstothrive.			Y	Lecture/SGD	Written/viva voce			

PE2.2	**Assessmentofachildwithfailuretothriveincluding elicitinganappropriatehistoryandexamination**			**Y**	**Bedsideclinics**	**Skillsstation**			
2.2.1	Elicitanappropriatehistoryinachildwithfailureto thrive.			Y	Bedsideclinics	OSCE/Clinical case			
2.2.2	Performacompletephysical examinationinachildwithfailureto thrive.			Y	Bedsideclinics	OSCE/Clinicalcase			
PE2.3	**Counselingaparentwithfailingtothrivechild**			**Y**	**OSCE**	**Documentin Logbook**		**AETCOM**	
2.3.1	Counselaparentofachildwith failuretothrive.			Y	Skilllab/roleplay	OSCE/ Documentin Logbook			
PE2.4	**Discuss the etiopathogenesis, clinical features andmanagementofachildwithshortstature**			**Y**	**Lecture/SGD**	**Written/vivavoce**			
2.4.1	Enumeratecausesof shortstatureinchildren.			Y	Lecture/SGD	Written/vivavoce			
2.4.2	Describetheclinicalfeaturesofachildwithshortstature.			Y	Lecture/SGD	Written/vivavoce			
2.4.3	Discussthemanagementofa childwithshortstature.			Y	Lecture/SGD	Written/vivavoce			
PE2.5	**Assessment of a child with short stature: Elicithistory;performexamination,document and present.**			**Y**	**Bedside/skilllab**	**Skillassessment**			
2.5.1	Elicithistoryinachildwithshortstature.			Y	Bedside/skilllab	Bedside/OSCE			
2.5.2	Performacompletephysical examinationinachildwithshortstature.			Y	Bedside/skilllab	Bedside/OSCE			

2.5.1	Documentandpresentassessmentofachildwithshortstature.			Y	Bedside/skilllab	Skillassessment/ bedsidecase			
PE2.6	**Enumeratethereferralcriteriaforgrowthrelated problems**			**Y**	**Lecture/SGD**	**Written/viva voce**			
2.6.1	Enumeratethereferralcriteriaforgrowthrelatedproblems			Y	Lecture/SGD	Written/vivavoce			
Topic:CommonproblemsrelatedtoDevelopment-1 (Developmentaldelay,Cerebralpalsy)		**Numberofcompetencies:(8)**				**Numberofproceduresthatrequirecertification:(NIL)**			
PE.3.1	**Define, Enumerate and Discuss the causes ofdevelopmentaldelayanddisabilityincluding intellectualdisabilityinchildren**			**Y**	**Lecture,SGD**	**Written/viva-voce**			
3.1.1	Definedevelopmentaldelay.			Y	Lecture/SGD	Written/viva-voce			
3.1.2	Enumeratecausesofdevelopmentaldelay.			Y	Lecture/SGD	Written/viva-voce			
3.1.3	DefinedisabilityasperWHO.			Y	Lecture/SGD	Written/viva-voce			
3.1.4	DefineIntellectualdisabilityinchildren.			Y	Lecture/SGD	Written/viva-voce			
3.1.5	Gradeintellectualdisabilityintermsofintelligence quotient(IQ).			Y	Lecture/SGD	Written/viva-voce			
PE3.2	**Discusstheapproachtoachildwithdevelopmental delay**			**Y**	**Lecture,SGD**	**Written/viva-voce**			
3.2.1	Discussclinicalpresentationofcommoncausesofdevelopmentaldelay.			Y	Lecture,SGD	Written/Vivavoce			
3.2.2	Enumerateinvestigationsfordevelopmentaldelay.			Y	Lecture,SGD	Written/ Vivavoce			
3.2.3	Based on clinical presentation, make an			Y	Lecture,SGD	Written/			

	investigation planfora childwith developmentaldelay.					Vivavoce			
3.2.4	Discussdifferentialdiagnosisofdevelopmentaldelay.			Y	Lecture,SGD	Written/Vivavoce			
PE3.3	**Assessmentofachildwithdevelopmentaldelay - elicitdocumentandpresenthistory**			**Y**	**Bedside,Skillslab**	**Skill assessment**			
3.3.1	Elicitdevelopmentalhistoryfromaparent/caretaker.			Y	Bedside,Skillslab	Case/OSCE			
3.3.2	Elicitthecurrentdevelopmentalmilestonesofthechild.			Y	Bedside,Skillslab	OSCE			
3.3.3	Interpret developmental status of a child based on thehistoryand examination.			Y	Bedside,Skillslab	OSCE			
3.3.4	Documentandpresentthedevelopmentalassessment.			Y	Bedside,Skillslab	LOGBOOK			
PE3.4	**Counselaparentofachildwithdevelopmentaldelay**			**Y**	**DOAPSession**	**Documentin Logbook**			
3.4.1	Communicatethedevelopmentalstatusofthechild tothe parent.			Y	DOAPSession	Documentin Logbook			
3.4.2	Counseltheparentsofachildwithdevelopmentaldelay.			Y	DOAPSession	Document inLogbook			
PE3.5	**Discusstheroleofthechilddevelopmentalunitin managementofdevelopmentaldelay**			**N**	**Lecture,SGD**	**Written/Viva voce**		**Com Med**	
3.5.1	Enumeratethestructureand compositionofstaffatachild developmentunit.			N	Lecture/SGD	Written/Vivavoce		Com Med	
3.5.2	Describerolesofachilddevelopmentunit.			N	Lecture/SGD	Written/ Vivavoce		Com Med	
PE3.6	**Discussthereferralcriteriaforchildrenwith developmentaldelay**			**Y**	**Lecture,SGD**	**Written/viva**			

						voce			
3.6.1	Enumerateclinicalcriteriafor referralofachildwithdevelopmentaldelay.			Y	Lecture/SGD	Written/v ivavoce			
PE3.7	**VisitaChildDevelopmentalUnitandObserveits functioning**			**Y**	**Lecture,SGD**	**Logbook entry**		**Com Med**	
3.7.1	Observeandlisttheactivitiesinthechilddevelopme ntal unit.			Y	Lecture,SGD	Logbookentr y		Com Med	
PE3.8	**Discuss the etiopathogenesis, clinical presentationandmultidisciplinaryapproac hinthemanagement ofcerebralpalsy**			**Y**	Lecture/SGD	**Written/vi vavoce**			**PMR**
3.8.1	Definecerebralpalsy.			Y	Lecture/SGD	Written/v ivavoce			
3.8.2	Enumeratecommoncausesofcerebralpalsy.			Y	Lecture/SGD	Written/viva voce			
3.8.3	Describetheetiopathogenesisofcerebralpalsy.			Y	Lecture/SGD	Written/v ivavoce			
3.8.4	Classifycerebralpalsywithrespecttofunctionand topography.			Y	Lecture/SGD	Written/viva voce			
3.8.5	Describe common clinical presentations of different typesofcerebral palsy.			Y	Lecture/SGD	Written/v ivavoce			
3.8.6	Listsomecommonco-morbiditiesinachildwith cerebralpalsy.			Y	Lecture/SGD	Written/v ivavoce			
3.8.7	Describecommoninterventionsformanagemento fachild withcerebralpalsy.			Y	Lecture/SGD	Written/viva voce			
Topic: Common problems related to Development- 2(Scholasticbackwardness,LearningDisabilities,Autis m, ADHD)		**Numberofcompetencies:(6)**				**Numberofproceduresthatrequirecertification:(NIL)**			
PE4.1	**Discussthecausesandapproachtoachildwith scholasticbackwardness**			**N**	**Lecture,SGD**	**Written/ vivavoce**			
4.1.1	Definescholasticbackwardness.			N	Lecture,SGD	Written/viva voce			

4.1.2	Listcommoncausesofscholasticbackwardness.			N	Lecture,SGD	Written/viva voce			
4.1.3	Discussclinicalassessmentofachildwithscholastic backwardness.			N	Lecture,SGD	Written/viva voce			
PE4.2	**Discusstheetiology,clinicalfeatures,diagnosis and managementofachildwithlearningdisabilities**			N	**Lecture,SGD**	**Written/ vivavoce**			
4.2.1	Definelearningdisabilities.			N	Lecture,SGD	Written/viva voce			
4.2.2	Enumeratecausesoflearning disabilities.			N	Lecture,SGD	Written/viva voce			
4.2.3	Describeclinicalpresentationofachildwithlearning disabilities.			N	Lecture,SGD	Written/viva voce			
4.2.4	Discussassessmentofachildwithlearningdisabilities.			N	Lecture,SGD	Written/viva voce			
4.2.5	Discussmanagementoptionsforachildwithlearningdisabilities.			N	Lecture,SGD	Written/viva voce			
PE4.3	**Discusstheetiology,clinicalfeatures,diagnosis andmanagementofachildwithAttentionDeficit HyperactivityDisorder(ADHD)**			N	**Lecture,SGD**	**Written/ vivavoce**			
4.3.1	DefineADHD.			N	Lecture,SGD	Written/viva voce			
4.3.2	DescribeclinicalfeaturesofADHD.			N	Lecture,SGD	Written/viva voce			
4.3.3	Discussdiagnosticassessmentofachildwithsuspected ADHD.			N	Lecture,SGD	Written/viva voce			
4.3.4	EnumeratedrugsfortreatmentofADHD.			N	Lecture,SGD	Written/viva voce			
PE4.4	**Discussetiology,clinicalfeatures,diagnosisandmanagementofa childwithautism**			N	**Lecture,SGD**	**Written/ vivavoce**			

4.4.1	DefineAutismSpectrumDisorders(ASD).			N	Lecture,SGD	Written/viva voce			
4.4.2	DiscusscausesofASD.			N	Lecture,SGD	Written/v ivavoce			
4.4.3	DescribeclinicalfeaturesofASD.			N	Lecture,SGD	Written/viva voce			
4.4.4	DiscussclinicalassessmentofASD.			N	Lecture,SGD	Written/v ivavoce			
4.4.5	DiscussmanagementoptionsforachildwithASD.			N	Lecture,SGD	Written/v ivavoce			
PE4.5	**DiscusstheroleofChildGuidanceClinicinchildr en withDevelopmentalproblems**			**N**	**Lecture,SGD**	**Written/Viv a voce**		**Psych**	
4.5.1	DescribethestructureofaChildGuidanceClinicwit h respecttostaffandfacilities.			N	Lecture,SGD	Written/Viva voce		Psych	
4.5.2	Enumeratethefunctionsofachild guidanceclinic.			N	Lecture,SGD	Written/V ivavoce		Psych	
PE4.6	**VisittotheChildGuidanceClinic**			**N**	**Lecture,SGD**	**Documentin Logbook**		Psych	
4.6.1	Describethefunctioningofchildguidanceclinicinth eirinstitutions.			N	Lecture,SGD	Document inLogboo k		Psych	
Topic:Commonproblemsrelatedtobehaviour Numberofcompetencies:(3) Numberofproceduresthatrequirecertification:(NI L)									
PE 5.1	**Describetheclinicalfeatures,diagnosisand managementofthumbsucking**			**N**	**Lecture,SGD**	**Written**			
5.1.1	Describeclinicalfeaturesofthumbsucking.			N	Lecture,SGD	Written/v ivavoce			
5.1.2	Describediagnosisofthumbsucking.			N	Lecture,SGD	Written/viva voce			
5.1.3	Discuss management strategies for a child with thumbsucking.			N	Lecture,SGD	Written/v ivavoce			

PE 5.2	**Describetheclinicalfeatures,diagnosisand managementoffeedingproblems**			**N**	**Lecture,SGD**	**Written/ vivavoce**			
5.2.1	Enumeratecommonfeedingproblems.			N	Lecture,SGD	Written/v ivavoce			
5.2.2	Discussclinicalpresentationsoffeedingproblems.			N	Lecture,SGD	Written/viva voce			
5.2.3	Discussmanagementstrategiesforachildwithfeed ingproblems.			N	Lecture,SGD	Written/v ivavoce			
PE 5.3	**Describetheclinicalfeatures,diagnosisand managementofnail-biting**			**N**	**Lecture,SGD**	**Written/Viv a Voce**			
5.3.1	Describefeaturesofnailbiting.			N	Lecture,SGD	Written/Viva Voce			
5.3.2	Discussmanagementofnailbiting.			N	Lecture,SGD	Written/V ivaVoce			
PE 5.4	**Describetheclinicalfeatures,diagnosisand managementofbreathholdingspells.**			**N**	**Lecture,SGD**	**Written/Viv a Voce**			
5.4.1	Describeabreathholdingspell.			N	Lecture,SGD	Written/Viva Voce			
5.4.2	Describethetypesofbreathholdingspells.			N	Lecture,SGD	Written/V ivaVoce			
5.4.3	Discusscausesofbreathholdingspells.			N	Lecture,SGD	Written/Viva Voce			
5.4.4	Discussmanagementofbreathholdingspells.			N	Lecture,SGD	Written/V ivaVoce			
PE 5.5	**Describetheclinicalfeatures,diagnosisand managementoftempertantrums**			**N**	**Lecture,SGD**	**Written/Viv a Voce**			Psych
5.5.1	Describepresentationofatempertantrum.			N	Lecture,SGD	Written/V ivaVoce			
5.5.2	Discusscausesoftempertantrum.			N	Lecture,SGD	Written/Viva Voce			
5.5.3	Discussmanagementoftempertantrums.			N	Lecture,SGD	Written/Viva Voce			

PE 5.6	**Describetheclinicalfeatures,diagnosisand managementofpica**			**N**	**Lecture,SGD**	**Written/Viva Voce**			
5.6.1	Definepica.			N	Lecture,SGD	Written/Viva Voce			
5.6.2	Discusscausesofpica.			N	Lecture,SGD	Written/VivaVoce			
5.6.3	Discusstreatmentofpica.			N	Lecture,SGD	Written/VivaVoce			
PE 5.7	**Describetheclinicalfeatures,diagnosisand managementoffussyinfant**			**N**	**Lecture,SGD**	**Written/Viva Voce**			Psych
5.7.1	Describeafussyinfant.			N	Lecture,SGD	Written/Viva Voce			
5.7.2	Enumeratecausesof fussinessinchildren.			N	Lecture,SGD	Written/VivaVoce			
5.7.3	Discussmanagementoffussinessinachild.			N	Lecture,SGD	Written/VivaVoce			
PE 5.8	**Discusstheetiology,clinicalfeaturesand managementofenuresis.**			**N**	**Lecture,SGD**	**Written/Viva Voce**			
5.8.1	Defineprimaryandsecondary enuresisforboysandgirls.			N	Lecture,SGD	Written/Viva Voce			
5.8.2	Discussetiologyofprimaryandsecondaryenuresis.			N	Lecture,SGD	Written/VivaVoce			
5.8.3	Discusspharmacologicalandnon-pharmacological managementstrategiesforenuresis.			N	Lecture,SGD	Written/Viva Voce			
PE 5.9	**Discusstheetiology,clinicalfeaturesand managementofEncopresis.**			**N**	**Lecture,SGD**	**Written/Viva Voce**			
5.9.1	DescribeEncopresis.			N	Lecture,SGD	Written/VivaVoce			

5.9.2	DiscusscausesofEncopresis.			N	Lecture,SGD	Written/VivaVoce			
5.9.3	DescribemanagementofEncopresis.			N	Lecture,SGD	Written/Viva Voce			
PE 5.10	**Discusstheroleofchildguidanceclinicinchildren withbehaviouralproblemsandthereferralcriteria**			**N**	**Lecture,SGD**	**Written/Viva Voce**			**Psych**
5.10.1	Describetheroleofachildguidanceclinicinchildrenwithbehaviouralproblems.			N	Lecture,SGD	Written/VivaVoce			
5.10.2	Enumeratereferralcriteriaforbehaviouralproblemsin children.			N	Lecture,SGD	Written/Viva Voce			
PE 5.11	**VisittoChildGuidanceClinicandobservefunctioning**			**N**	**Lecture,SGD**	**Documentin Logbooks**			
5.11.1	DescribefunctioningofaChildGuidanceClinic.			N	Lecture,SGD	Documentin Logbooks			
Topic:AdolescentHealth&commonproblemsrelatedto Adolescent Health		**Numberofcompetencies:(13)**			**Numberofproceduresthatrequirecertification:(NIL)**				
PE6.1	**DefineAdolescenceandstagesofadolescence**			**Y**	**Lecture,SGD**	**Written/viva voce**			
6.1.1	Defineadolescence.			Y	Lecture,SGD	Written/viva voce			
6.1.2	Enumeratethestagesofadolescence.			Y	Lecture,SGD	Written/vivavoce			
PE 6.2.	**Describethephysical,physiologicalandpsychological changesduringadolescence(Puberty)**			**Y**	**Lecture,SGD**	**Written/viva voce**			**Psych**
6.2.1	Describethephysicalchangesduringadolescence.			Y	Lecture,SGD	Written/viva voce			Psych
6.2.2	Describethephysiologicalchangesduringadolescence.			Y	Lecture,SGD	Written/vivavoce			Psych
6.2.3	Describethepsychologicalchangesduringadolesc			Y	Lecture,SGD	Written/viva voce			Psych

	ence.								
PE6.3	**Discussthegeneralhealthproblemsduring adolescence**			**Y**	**Lecture,SGD**	**Written/viva voce**			
6.3.1	Enumeratethegeneralhealthproblemsofadolescence			Y	Lecture,SGD	Written/vivavoce			
6.3.2	Describethegeneralhealthproblemsofadolescence			Y	Lecture,SGD	Written/vivavoce			
PE6.4	**Describeadolescentsexualityandcommonproblems relatedtoit**			**N**	**Lecture,SGD**	**Written/viva voce**			**Psych**
6.4.1	Describeadolescentsexuality.			N	Lecture,SGD	Written/viva voce			Psych
6.4.2	Enumeratecommonproblemsrelatedtoadolescentsexuality.			N	Lecture,SGD	Written/vivavoce			Psych
PE6.5	**ExplaintheAdolescentNutritionandcommon nutritionalproblem**			**Y**	**Lecture,SGD**	**Written/viva voce**			**Psych**
6.5.1	Describethenutritionalrequirementsofadolescents.			Y	Lecture,SGD	Written/viva voce			
6.5.2	Discussthenutritionalproblemsin adolescents.			Y	Lecture,SGD	Written/vivavoce			Psych
PE6.6	**DiscussthecommonAdolescenteatingdisorders (Anorexianervosa,Bulimia)**			**N**	**Lecture,SGD**	**Written/viva voce**			**Psych**
6.6.1	Describethecommonadolescenteatingproblemslike Anorexianervosaand Bulimianervosa.			N	Lecture,SGD	Written/vivavoce			Psych
PE6.7	**Describethecommonmentalhealthproblemsduring adolescence**			**Y**	**Lecture,SGD**	**Written/viva voce**			**Psych**
6.7.1	Describethecommonmentalhealthproblemsduringadolescence.			Y	Lecture,SGD	Written/vivavoce			Psych

PE6.8	**Respectingpatientprivacyandmaintaining confidentialitywhiledealingwithadolescence**			**Y**	**Bedside**	**Skillstation**			
6.8.1	Interactwithanadolescentin privacyandmaintaining confidentiality.			Y	Bedside	Skillstation			AETCOM
PE6.9	**PerformroutineAdolescentHealthcheckupinc ludingeliciting history, performing examination includingSMR (Sexual Maturity Rating), growth assessments(usingGrowthcharts)andsystemi c examincluding thyroidandBreastexamandtheHEADSSscreen ing**			**Y**	**Bedsideclinic**	**Skillstation**			
6.9.1	Elicitthehistoryfromanadolescent.			Y	Bedside	Skillstation			
6.9.2	Assesssexualmaturityrating(SMR)inanadolescen t.			Y	Bedside	Skillstation			
6.9.3	Evaluatethegrowthofanadolescentusinggrowthc harts.			Y	Bedside	Skillstation			
6.9.4	Examinethethyroidglandofanadolescent.			Y	Bedside	Skillstation			
6.9.5	Performabreastexamination ofanadolescent.			Y	Bedside	Skillstation			
6.9.6	ApplyHEADSSscreeninginadolescentworkup.			Y	Bedside	Skillstation			
PE6.10	**Discuss the objectives and functions of AFHS(AdolescentFriendlyHealthServices)an dthereferral criteria**			**N**	**Lecture,SGD**	**Written/vi vavoce**			
6.10.1	Discusstheobjectivesofadolescentfriendlyhealth services(AFHS).			N	Lecture,SGD	Written/v ivavoce			
6.10.2	Enumeratethefunctionsofadolescentfriendlyheal th services(AFHS).			N	Lecture,SGD	Written/viva voce			
PE6.11	**VisittotheAdolescentClinic**			**Y**	**DOAPsession**	**Documentin Logbook**			
6.11.1	Visitanadolescentclinicatleastonce.			Y	DOAPsession	Document inLogboo k			
PE6.12	**Enumeratetheimportanceofobesityandother NCD**			**Y**	**Lecture,SGD**	**Written/viv a**			

	inadolescents					**voce**			
6.12.1	DefineobesityinadolescenceandEnumeratethe complications.			Y	Lecture,SGD	Written/viva voce			
6.12.2	Analyzetheimportanceofnon-communicablediseasesinadolescence.			Y	Lecture,SGD	Written/v ivavoce			
PE6.13	**Enumerate the prevalence and the importance ofrecognitionofsexualdrugabuseinadolescentsand children**			**N**	**Lecture,SGD**	**Written/vivavoce**			
6.13.1	Statetheprevalenceofsexualanddrugabuseamong adolescentsandchildren.			N	Lecture,SGD	Written/viva voce			
6.13.2	Discuss the importance of recognition of sexual and drugabuseinadolescentsand children.			N	Lecture,SGD	Written/v ivavoce			Psych
Topic:TopromoteandsupportoptimalBreastfeedingfor Infants				**Numberofcompetencies:(11)**		**Numberofproceduresthatrequirecertification:(01)**			
PE7.1	**Awarenessontheculturalbeliefsandpractices of breastfeeding**			**N**	**Lecture,SGD**	**Written/Viva**			**OBG**
7.1.1	Explaintheharmlessandharmfulculturalbe liefsandpracticesof breastfeeding.			N	Lecture,SGD	Written/Viva			
PE7.2	**ExplainthePhysiologyoflactation**			**Y**	**Lecture,SGD**	**Written/Viva**		**Physio**	
7.2.1	DescribetheAnatomy ofbreast.			Y	Lecture,SGD	Written/viva			
7.2.2	ExplainthePhysiologyoflactation.			Y	Lecture,SGD	Written/viva		Physio	
PE7.3	**Describethecompositionandtypesofbreastmilk andDiscussthedifferencesbetweencow'smilk and Humanmilk**			**Y**	**Lecture,SGD**	**Written/vivavoce**		**Physio**	
7.3.1	Describethecompositionofbreastmilk.			Y	Lecture,SGD,	Written/viva voce			

7.3.2	Describethecompositionofcow'smilk.			Y	Lecture,SGD	Written/viva voce			
7.3.3	Enumeratethedifferencesbetweenbreastmilkand cow'smilk.			Y	Lecture,SGD,	Written/viva voce			
7.3.4	Describethe varioustypesofbreastmilkandtheirchara cteristiccomposition.			Y	Lecture,SGD,	Written/viva voce			
PE7.4	**Discusstheadvantagesofbreastmilk**			**Y**	**Lecture,SGD**	**Written/viva voce**			
7.4.1	Enumeratetheadvantagesofbreastmilk.			Y	Lecture,SGD	Written/viva voce			
PE7.5	**Observethecorrecttechniqueof breastfeedingand distinguishrightfromwrongtechnique**			**Y**	**Bedside,Skillslab**	**Skill assessment**	**3**		
7.5.1	Observecorrecttechniqueof breastfeedingnotingsignsofgoodattachmentandc orrectpositioningofmotherand baby.			Y	Bedside teaching/vide o/Skilllab	Logbook	3		
7.5.2	Distinguishcorrectfeedingtechniquefromwron goneonthemother baby dyad.			Y	Bedside,skillslab	OSCE (videoba sed)	3		
PE7.6	**Enumeratethebabyfriendlyhospitalinitiative s**			**Y**	**Lecture,SGD**	**Written/ vivavoce**			
PE7.6.1	Enumeratecomponentsofthebabyfriendlyhospit al initiative.			Y	Lecture,SGD	Writtenshort notes/vivavo ce			
PE7.7	**Perform breast examination and Identify commonproblems during lactation such as retracted nipples,crackednipples,breastengorgemen t,breastabscess**			**Y**	**Bedside,Skillslab**	**skillassess ment**			**OBG**
7.7.1	Enumeratecommonproblemsinthemotherduring lactation.			Y	Lecture,Bedside, skillslab	Written/viva voce			

7.7.2	Examinebreastofalactating motherinanappropriatemanner.			Y	Bedside,skillslab	Skillassessment,OSCE(video based)			
7.7.3	Identifythecommonproblemsafterexaminingthebreastin lactating mother viz retracted nipples, cracked nipples,breastengorgement, breastabscess.			Y	Bedside,skillslab	Skillassessment,OSCE(video based)			
PE7.8	**Educatemothersonantenatalbreastcareandpreparemothersforlactation**			**Y**	**DOAPsession**	**Document inLogbook**			**AETCOM**
7.8.1	Educateandcounselpregnantwomanduringantenatalperiod in preparationforbreastfeeding.			Y	DOAPsession/Clinicalsession	OSCE			
7.8.2	Educatethepregnantwomanforantenatalbreastcare.			Y	DOAPsession/Clinical Session	OSCE			**OBG**
PE7.9	**EducateandcounselmothersforbestpracticesinBreastfeeding**			**Y**	**DOAPsession**	**Logbook,OSCE**			
7.9.1	Enumeratethebestbreastfeedingpractices.			Y	Lecture,SGD	Written/viva voce			
7.9.2	Educatemothersforthebestbreastfeedingpractices.			Y	DOAPsession	Logbook, OSCEwithSP			
PE7.10	**Respectspatientprivacy**			**Y**	**DOAPsession**	**Document inLogbook**			**AETCOM**
7.10.1	Demonstraterespect foramother'sprivacy.			Y	DOAPsession	OSCE			
PE7.11	**ParticipateinBreastfeedingWeekCelebration**			**Y**	**DOAPsession**	**Document inLogbook**			

7.11.1	Participateactivelyin breastfeedingweekcelebrations.			Y	ActiveParticipation in theactivities	Documentin Logbook			
Topic:ComplementaryFeeding		**Numberofcompetencies:(5)**				**Numberofproceduresthatrequirecertification:(NIL)**			
PE8.1	**DefinethetermComplementaryFeeding**			**Y**	**Lecture,SGD**	**Written/Viva voce**		**ComMed**	
PE 8.1.1	Definecomplementaryfeeding.			Y	Lecture,SGD	Written/vivavoce			
PE8.2	**Discusstheprinciples,theinitiation,attributes, frequency,techniqueandhygienerelatedtocomplementaryfeeding includingIYCF**			**Y**	**Lecture,SGD**	**Written/ Vivavoce**		**ComMed**	
8.2.1	Describetheprinciplesofcomplementaryfeeding.			Y	Lecture,SGD	Written/vivavoce			
8.2.2	Narratethetypesandattributesofgoodcomplementaryfoods.			Y	Lecture,SGD	Written/vivavoce			
8.2.3	Describetheinitiationofcomplementaryfeedingindifferentsituations.			Y	Lecture,SGD	Written/vivavoce			
8.2.4	Describethefrequencyofcomplementaryfeedingindifferentsituations.			Y	Lecture,SGD	Written/vivavoce			
8.2.5	Describethecorrecttechniqueofcomplementaryfeeding.			Y	Lecture,SGD	Written/vivavoce			
8.2.6	Enumeratethehygienicpracticestobefolloweddu ringcomplementaryfeeding.			Y	Lecture,SGD	Written/vivavoce			
PE8.3	**Enumeratethecommoncomplimentaryfoods**			**Y**	**Lecture,SGD**	**Written/Viva voce**		**ComMed**	
PE 8.3.1	Enumeratecommonlocallyavailablecomplementaryfoods.			Y	Lecture,SGD	SAQ,vivavoce			
PE8.4	**ElicithistoryontheComplementaryFeedinghabits**			**Y**	**BEDSIDE,SKILLLAB**	**skill assessment**		**ComMed**	
PE 8.4.1	Elicitafocusedanddetailedhistoryforcomplementary			Y	Bedside	OSCE			

	feeding.								
PE8.5	**Counselandeducatemothersonthebestpracticesin complementaryfeeding**			**Y**	**DOAPsession**	**DOCUMENTINLOGBOOK**		**ComMed**	
8.5.1	Counselthemotherforthebestpracticesincomplementaryfeeding.			Y	DOAPsession	OSCE			
Topic:Normalnutrition,assessmentandmonitoring		**Numberofcompetencies:(7)**				**Numberofproceduresthatrequirecertification:(NIL)**			
PE9.1	**Describe the age-related nutritional needs of infants,children and adolescents including micronutrientsandvitamins**			**Y**	**Lecture,SGD**	**Written/ Vivavoce**		**ComMed,Biochemistry**	
9.1.1	Listthemacronutrientsandmicronutrientsrequiredforgrowth.			Y	Lecture,SGD	Written/Vivavoce			
9.1.2	Describe the nutritional needs (calorie, protein,micronutrientsmineralsandvitamins)ofaninfant.			Y	Lecture,SGD	Written/Vivavoce			
9.1.3	Describe the nutritional needs (calorie, protein,micronutrientsmineralsandvitamins)forchildrenof differentages.			Y	Lecture,SGD	Written/ Vivavoce			
9.1.4	Describe the nutritional needs (calorie, protein,micronutrientsmineralsandvitamins)ofadolescentsofboth genders.			Y	Lecture,SGD	Written/ Vivavoce			
PE9.2	**Describe the tools and methods for assessment andclassificationofnutritionalstatusofinfants,children andadolescents**			**Y**	**Lecture,SGD**	**Written/ Vivavoce**		**ComMed**	
9.2.1	Listthetoolsrequiredforanthropometricmeasurements viz.weight,length/height,headcircumference,midarmcircumference.			Y	Lecture,SGD	Written/ Vivavoce			
9.2.2	Describethemethodofassessmentindetailfordifferentanthropometricmeasurementsforallagegrou			Y	Lecture,SGD	**Written/Viva**			

	ps.					**voce**			
9.2.3	ClassifythenutritionalstatusasperWHOclassification basedonanthropometricmeasurementdataforallagegroups.			Y	Lecture,SGD	**Written/ Vivavoce**			
PE9.3	**ExplainsthecalorificvalueofcommonIndianfoods**			**Y**	**Lecture,SGD**	**Written/Viva voce**		**Biochemistry**	
9.3.1	Explainthecalorieandproteincontentofcommonlyuseduncookedand cooked cereals.			Y	Lecture,SGD	**Written/Viva voce**			
9.3.2	Explain the calorie and protein content of commonuncookedfooditemslikedairyproducts,eggs,fruits, vegetablesetc.			Y	Lecture,SGD	**Written/ Vivavoce**			
9.3.3	ExplainthecalorieandproteincontentofcommonIndiancooked food items e.g. dalia, roti, chapati, khichdi, dal,rice,idli.			Y	Lecture,SGD	**Written/ Vivavoce**			
PE9.4	**Elicit,documentandpresentanappropriate nutritionalhistoryandperformadietaryrecall**			**Y**	**Bedside,skilllab**	**Skill Assessment**		**ComMed**	
9.4.1	Takefocusseddietaryhistorybasedonrecallmethodfrom thecaregiver.			Y	Bedside,skilllab	OSCE			
9.4.2	Documentthedietaryhistory andcalculatecalorieandproteincontent.			Y	Bedside,skilllab	OSCE, VIVAVOCE			
9.4.3	Presentthedietaryhistory.			Y	Bedside,skilllab	LONGCASE, VIVAVOCE			
PE9.5	**Calculate the age appropriate calorie requirement inhealthanddiseaseandIdentifygaps**			**Y**	**Bedsideclinic, SGD**	**OSCE,CLINICAL CASE**		**ComMed**	

9.5.1	Calculatetherecommendedcalorieandproteinrequirementforchildrenofallagegroups.			Y	Bedsideclinic,SGD	LONGCASE, VIVA VOCE,OSCE			
9.5.2	Calculatethecalorieandproteincontentof24hourdietary intakeby achild.			Y	Bedsideclinic,SGD	LONGCASE, VIVAVOCE			
9.5.3	Calculatethegap(deficit)betweenrecommendedintakeofcalorieand protein and actual intake.			Y	Bedsideclinic,SGD	LONG CASE,VIVAVOCE			
PE9.6	**Assessandclassifythenutritionstatusofinfants, childrenandadolescentsandrecognizedeviations**			**Y**	**Bedsideclinic, SGD**	**Skill Assessment**		**ComMed**	
9.6.1	Assessnutritionalstatusfromanthropometricparametersforchildren ofall agegroups.			Y	Bedsideclinic,SGD	OSCE,Bedside			
9.6.2	Interprettheanthropometricmeasurementdatabyplottinginappropriate WHO growthchartsforchildrenofallage groupsand gender.			Y	Bedsideclinic,SGD	OSCE			
9.6.3	Classifythetypeanddegreeofundernutritionusing the WHOcharts.			Y	Bedsideclinic,SGD	OSCE			
9.6.4	Identifyovernutrition(overweightandobesity)byusingWHOcharts.			Y	Bedsideclinic,SGD	OSCE			
PE9.7	**Plananappropriatedietinhealthanddisease**			**N**	**Bedsideclinic, SGD**	**Documentin Logbook**		**ComMed**	
9.7.1	Planadietforahealthychildofallagegroups.			N	Bedsideclinic,SGD	Documentin Logbook			
9.7.2	Plananageappropriatedietforchild ofdifferentage groupswithundernutrition/overnutrition.			N	Bedsideclinic,SGD	Documentin Logbook			
9.7.3	Plan an age appropriate diet for child of different agegroupswithfewcommondiseasesviz.Lactose			N	SGD	Documentin Logbook			

	intolerance, Celiacdisease,ChronicKidney disease								
Topic:Providenutritionalsupport,assessmentand monitoringforcommonnutritionalproblems		**Numberofcompetencies:(6)**				**Numberofproceduresthatrequirecertification:(NIL)**			
P E10.1	**Define and Describe the etiopathogenesis, classifyincluding WHO classification, clinical features,complication and management of severe acutemalnourishment(SAM)andmoderateacute Malnutrition(MAM)**			**Y**	**Lecture,SGD**	**Written/ Vivavoce**		**Physio,Biochemistry,**	
10.1.1	Definemalnutrition asperWHO.			Y	Lecture,SGD	Written/Viva voce			
10.1.2	Describetheaetiologyofmalnutrition.			Y	Lecture,SGD	Written/Viva voce			
10.1.3	Discussthepathophysiologyofmalnutrition.			Y	Lecture,SGD	Written/Viva voce			
10.1.4	ClassifythemalnutritionasperWHO.			Y	Lecture,SGD	Written/Viva voce			
10.1.5	Describethecriteriaforsevereacutemalnutrition(SAM)andmoderateacutemalnutrition(MAM)asperWHO.			Y	Lecture,SGD	Written/Viva voce			
10.1.6	DescribetheclinicalfeaturesofMAMandSAMincludingmarasmusand kwashiorkor.			Y	Lecture,SGD	Written/Viva voce			
10.1.7	DescribethecomplicationsofSAM.			Y	Lecture,SGD	Written/Viva voce			
10.1.8	DescribethestepsofmanagementofSAMinvolving stabilizationand rehabilitationphase.			Y	Lecture,SGD	Written/Viva voce			
10.1.9	Describethedomiciliarymanagementofmoderateacutemalnutrition (MAM).			Y	Lecture,SGD	Written/Viva voce			
P E10.2	**Outline the clinical approach to a child with SAM andMAM**			**Y**	**Lecture,SGD**	**Written/ Vivavoce**		**Physio, Biochemistry**	

10.2.1	Describe the clinical approach (algorithmic approachincludingclinicalhistory,examinationandinvestigations)to achild withSAMandMAM.			Y	Lecture,SGD	Written/ Vivavoce			
P E10.3	**Assessment of a patient with SAM and MAM,diagnosis, classification and planning managementincludinghospitalandcommunity-based intervention,rehabilitationandprevention**			**Y**	**Bedside, SkillsLab**	**Skillassessment**		**Physio,Biochemistry**	
10.3.1	Takeclinicalhistoryincludingfocusseddietary historyfromthecaregiver.			Y	Bedside	OSCE, Longcase			
10.3.2	Examinethechildincludinganthropometryandsigns of vitamindeficiency.			Y	Bedside	OSCE,Long case			
10.3.3	Diagnose and classify the patient as having SAM or MAMbasedonclinicalhistory,examinationandanthropometry.			Y	Bedside	OSCE, Longcase			
10.3.4	Plantheindividualised home-basedmanagementinachild withMAMoruncomplicatedSAM.			Y	Bedside	OSCE,Long case			
10.3.5	Planthehospital-basedmanagementofcomplicatedSAMina child.			Y	Bedside	OSCE, Longcase			
10.3.6	Planthehospital-basedrehabilitationphasemanagementofcomplicated SAM in a child.			Y	Bedside	OSCE, Longcase			
10.3.7	Planpreventionofmalnutritionatalllevels.			Y	Bedside	OSCE,Long case			
P E10.4	**Identifychildrenwithundernutritionasper IMNCI criteriaandplanreferral**			**Y**	**DOAPsession**	**Documentin Logbook**		**ComMed**	
10.4.1	IdentifyundernutritionasperIMNCIcriteria.			Y	DOAPsession	Document inLogboo			

						k			
10.4.2	Describepre-referraltreatmentasperIMNCI.			Y	DOAPsession	Documentin Logbook			
10.4.3	Planreferralforchildrenwith undernutritionasperIMNCIguidelines.			Y	DOAPsession	Document inLogboo k			
P E10.5	**CounselparentsofchildrenwithSAM andMAM**			**Y**	**Bedsideclinic, SkillsStation**	**Documentin Logbook**		**AETCOM**	
10.5.1	Counseltheparentsonrehabilitationofchildrenwit hSAMandMAM.			Y	Bedsideclinic, skillstation	OSCE			
10.5.2	Addressthequeriesraisedbytheparents.			Y	Bedsideclinic,skil l Station	OSCE			
P E10.6	**Enumeratetheroleoflocallypreparedtherape utic dietsandreadytousetherapeutic diets**			**N**	**Lecture,SGD**	**Written/Viv a voce**			
10.6.1	EnumeratethecompositionofReadytousethera peuticfoods(RUTF).			N	Lecture,SGD	Written/vi vavoce			
10.6.2	Enumeratethelocallyavailablehomefoodprepare d with cereals,pulses,sugar,oil,milk and/oreggetc.			N	Lecture,SGD	Written/viva voce			
10.6.3	DiscusstheroleofRUTF/locallypreparedfoodt oachievecatch-upgrowthinmalnourishedchild.			N	Lecture,SGD	Written/vi vavoce			
Topic:Obesityinchildren		**Numberofcompetencies:(6)**			**Numberofproceduresthatrequirecertification:(01)**				
P E11.1	**Describe the common etiology, clinical features andmanagement of obesityinchildren**			**Y**	**Lecture/SGD**	**Written/Vi vavoce**	**NIL**	**Physio/ Bioche mistry/ Path**	
11.1.1	DefineObesityandoverweightasperWHOguideline s.			Y	Lecture,SGD	Written/vi vavoce			
11.1.2	EnumeratecommoncausesofObesityamongchildre			Y	Lecture,SGD	Written/viva voce			

	n.								
11.1.3	Describeclinicalfeaturesofobesityincludingco-morbidities.			Y	Lecture,SGD	Written/vivavoce			
11.1.3	OutlineprinciplesofmanagementofObesityinchildren.			Y	Lecture,SGD	Written/vivavoce			
P E11.2	**DiscusstheriskapproachforobesityandDiscuss the preventionstrategies**			**Y**	Lecture,SGD	**Written/Viva voce**		**Physio, Path**	
11.2.1	EnumerateriskfactorsforObesityamongchildren.			Y	Lecture,SGD	Written/vivavoce			
11.2.2	DescribestrategiesforpreventionofObesity.			Y	Lecture,SGD	Written/vivavoce			
P E11.3	**Assessment of a child with obesity with regard toelicitinghistoryincludingphysicalactivity,charting anddietaryrecall**			**Y**	**Bedside,Standardized patients**	**DocumentinLogbook**			
11.3.1	Elicitadetailedhistoryinachildwithobesityincluding activitycharting.			Y	Bedsideskilllab	Logbook			
11.3.2	Obtaindetailed dietaryhistorybyrecallmethod.			Y	Bedsideclinics, skilllab	Logbook			
P E11.4	**Examination including calculation of BMI,measurementofwaisthipratio,Identifying external markers like acanthosis, striae, pseudo-gynecomastiaetc**			**Y**	**Bedside,Standardizedpatients,Videos**	**SkillsStation**			
11.4.1	Performanthropometryinanobesechildincludingcalculation ofBMI andWaist HipRatio.			Y	Bedside /Multimediabased tutorial	OSCE			
11.4.2	Identifyphysicalmarkersofobesitylikeacanthosis,striae,pseudogynecomastia.			Y	Videos/patients	OSCE			
P E11.5	**CalculateBMI, documentinBMIchartandinterpret**			**Y**	**Bedside,SGD**	**DocumentinLogbook**	**3**		

11.5.1	CalculateandChartBMIaccurately.			Y	Clinicalpostings	Record Logbook	3		
11.5.2	InterpretBMIforagivenpatient.			Y	Bedsideclinic	OSCE	3		
P E11.6	**Discusscriteriaforreferral**			**Y**	**Lecture,SGD**	**Written/Viva voce**			
11.6.2	Enumeratecriteriafor referralinanobesechild.			Y	Lecture/SGD	Written/vivavoce			
Topic:MicronutrientsinHealthanddisease-1(Vitamins ADEK,BComplexandC)		**Numberofcompetencies:(21)**			**Numberofproceduresthatrequirecertification:(NIL)**				
PE 12.1	**Discuss the RDA, dietary sources of Vitamin A andtheirrole inhealthanddisease**			**Y**	**Lecture,SGD**	**Written/ Vivavoce**		**Biochemistry**	
12.1.1	RecalltheRDAanddietarysourcesofvitaminAforchildrenofdifferent ages.			Y	Lecture,SGD	Written/vivavoce			
12.1.2	Describethephysiologyandroleofvitamin Ainhealthanddisease.			Y	Lecture,SGD	Written/vivavoce			
PE 12.2	**Describethecauses,clinicalfeatures,diagnosis and managementofDeficiency/excessofVitaminA**			**Y**	**Lecture,SGD**	**Written/Viva voce**		**Biochemistry**	
12.2.1	EnumeratethecausesofVitaminAdeficiency/excessinchildren.			Y	Lecture,SGD	Written/vivavoce			
12.2.2	DescribetheclinicalfeaturesofVitaminADeficiency/excess inchildren.			Y	Lecture,SGD	Written/vivavoce			
12.2.3	DescribethediagnosisandmanagementofVitaminADeficiency/excessinchildren.			Y	Lecture,SGD	Written/vivavoce			
PE 12.3	**Identifytheclinicalfeaturesofdietarydeficiency /excessofVitaminA**			**Y**	**Bedside,SGD**	**Documentin Logbook**		**Biochemistry**	
12.3.1	IdentifytheclinicalfeaturesofVitaminADeficiency/excessinchildren.			Y	SGD/clinicalphotographs/bedside teaching	OSCE/casepresentation		Ophthal	

PE 12.4	**DiagnosepatientswithVitaminAdeficiency(VAD), classifyandplanmanagement**			**N**	**Bedside,Skill Station**	**Documentin Logbook**		**Biochemistry**	
12.4.1	DiagnosepatientswithVAD.			N	Bedside	Document inLogbook		Ophthal mo-logy	
12.4.2	ClassifythepatientwithVADasperWHO.			N	SkillStation,Bedside	Skill station,Documentin Logbook		Ophthal mo-logy	
12.4.3	PlanmanagementofachildwithVAD.			N	SkillStation,Bedside	Skill station,Documentin Logbook			
PE 12.5	**DiscusstheVitaminAprophylaxisprogramandtheir Recommendations**			**Y**	**Lecture,SGD**	**Written/Viva voce**		**Biochemistry**	
12.5.1	EnumeratethecomponentsoftheNationalvitamin Aprophylaxisprogram.			Y	Lecture,SGD	Written/vivavoce		ComMed	
PE 12.6	**DiscusstheRDA,dietarysourcesofVitaminDand its roleinhealthanddisease**			**Y**	**Lecture,SGD**	**Written/Viva voce**		**Biochemistry**	
12.6.1	DescribetheRDAanddietarysourcesofvitaminDforthepediatricagegroups.			Y	Lecture,SGD	Written/vivavoce			
12.6.2	DescribetheroleofvitaminDinhealthanddisease.				Lecture,SGD	Written/vivavoce			
PE 12.7 Rickets	**Describe the causes, clinical features, diagnosis andmanagement of vitamin D deficiency (VDD)/ excess(Rickets&Hypervitaminosis D)**			**Y**	**Lecture,SGD**	**Written / vivavoce**		**Biochemistry, Physio,Path**	
12.7.1	ListthecausesofRickets/HypervitaminosisD inchildren.			Y	Lecture,SGD	Written/vivavoce			
12.7.2	DescribetheclinicalfeaturesandDescribetheunderlyingpathophysiologyofRickets/Hypervitaminosi			Y	Lecture,SGD	Written/vivavoce			

	sD.								
12.7.3	Describe the diagnosis and management of Rickets /HypervitaminosisD.			Y	Lecture,SGD	Written/vivavoce			
PE 12.8	**Identify the clinical features of dietary deficiency ofVitaminD**			**Y**	**Bedside,Skillslab**	**Document inLogbook**		**Biochemistry, Physio,Path**	
12.8.1	IdentifytheclinicalfeaturesofRickets(VDD).			Y	Clinical case orphotographs/bedsideteaching	OSCE/ clinicalcase			
PE 12.9	**AssesspatientswithVitaminDdeficiency,diagnose,classifyandplanmanagement**			**Y**	**Bedside,skilllab**	**Document inLogbook**		**Biochemistr y,Radiology**	
12.9.1	Diagnosepatientswith Rickets.			Y	Bedside	Documentin Logbook/OSCE			
12.9.2	ClassifythepatientwithRickets.			Y	SkillStation,Bedside	Skill station,Document inLogbook			
12.9.3	Planmanagementand follow-upofpatient withRickets.			Y	Skillstation	Logbook			
12.9.4	Identifynon-responsetoVDDmanagementandIdentify needforreferral.			Y	Skillstation	Logbook			
PE 12.10	**DiscusstheroleofscreeningforVitaminDdeficiency**			**Y**	**Lecture,SGD**	**Written/viva voce**			
12.10.1	Listthesociodemographicfactorsassociatedwithvitamin Ddeficiency.			Y	Lecture,SGD	Written/viva voce			

12.10.2	DescribetheprevalenceandpatternsofVD Dintheregion/country.			Y	Lecture,SGD	Written/viva voce			
12.10.3	DiscusstheroleofscreeningforVDDindifferen tgroups(high-risk/population).			Y	Lecture/SGD	Written/viva voce			
PE 12.11	**DiscusstheRDA,dietarysourcesofVitaminEand its roleinhealthanddisease**			**N**	**Lecture,SGD**	**Written/Viva voce**		**Biochemistr y**	
12.11.1	DescribetheRDAanddietarysourcesofvitaminEfor thepediatricage.			**N**	Lecture,SGD	Written/viva voce		Biochemistry	-
12.11.2	DescribetheroleofvitaminE inhealthanddisease.			**N**	Lecture,SGD	Written/viva voce		Biochemistry	
PE12.12	**Describethecauses,clinicalfeatures,dia gnosisandmanagementofdeficiencyofV itaminE**			**N**	**Lecture,SGD**	**Written/V ivavoce**		**Biochemistry**	
12.12.1	ListthecausesofdeficiencyofVitaminEinchildren.			N	Lecture,SGD	Written/viva voce		Biochemistry	
12.12.2	DescribetheclinicalfeaturesofdeficiencyofVitamin E.			N	Lecture,SGD	Written/viva voce		Biochemistry	
12.12.3	Describethediagnosisandmanagementofdeficienc yofVitaminE.			N	Lecture,SGD	Written/viva voce		-	
PE 12.13	**Discuss the RDA, dietary sources of Vitamin K andtheirroleinhealthanddisease**			**N**	**Lecture,SGD**	**Written/ Vivavoce**		**Biochemi stry, Physio, Path**	
12.13.1	DescribetheRDAand dietarysourcesofvitaminKforthepediatricage.			N	Lecture,SGD	Written/viva voce		Biochemistry	-
12.13.2	DescribetheroleofvitaminKinhealthanddisease.			N	Lecture,SGD	Written/viva voce		Biochemistry	
PE 12.14	**Describe the causes, clinical features, diagnosismanagement&preventionofdeficien cyofVitaminK**			**N**	**Lecture group,SmallD iscussion**	**Written/ Vivavoce**		**Biochemi stry, Physio, Path**	
12.14.1	ListthecausesofdeficiencyofVitaminKinchildrenof differentages.			N	Lecture/SGD	Written/viva voce		Biochemistry	

12.14.2	ListtheclinicalfeaturesofdeficiencyofVitaminK.			N	Lecture/SGD	Written/viva voce		Biochemistry	
12.14.3	DescribethediagnosisandmanagementofdeficiencyofVitaminK.			N	Lecture/SGD	Written/viva voce	-	-	
PE 12.15	**DiscusstheRDA,dietarysourcesofVitaminBand its roleinhealthanddisease**				**Lecture,SGD**	**Written/Viva voce**	**-**	**Biochemistry**	
12.15.1	Describe the RDA and dietary sources of various vitamins Bforthepediatricagegroup.			Y	Lecture/SGD	Written/viva voce	-	Biochemistry	-
12.15.2	DescribetheroleofvitaminBinhealthanddisease.			Y	Lecture/SGD	Written/viva voce	-	Biochemistry	
PE 12.16	**Describe the causes, clinical features, diagnosis andmanagementofdeficiencyofBcomplexvitamins**			**Y**	**Lecture,SGD**	**Viva/SAQ/MCQ**	**-**	**Biochemistry, ComMed,Derm, Hematology**	
12.16.1	ListthecausesofdeficiencyofBcomplexvitaminsinchildren			Y	Lecture/SGD	Written/viva voce	-	Biochemistry,ComMed	
12.16.2	DescribetheclinicalfeaturesofdeficiencyofBcomplexvitamins			Y	Lecture/SGD	Written/vivavoce	-	Biochemistry,Derm, Hematology	
12.16.3	Describethediagnosisand managementofdeficiencyofBcomplexvitamins			Y	Lecture/SGD	Written/viva voce	-	Hematology	
PE 12.17	**IdentifytheclinicalfeaturesofVitaminBcomplex Deficiency**			**Y**	**Bedside,Skillslab**	**Documentin Logbook**	**-**	**Derm, Hematology**	
12.17.1	IdentifytheclinicalfeaturesofdeficiencyofBcomplexvitamins			Y	Clinicalcase /slides/bedside teaching	OSCE	-	Derm,Hematology	
PE 12.18	**DiagnosepatientswithvitaminBcomplexdeficiency andplanmanagement**			**Y**	**Bedside, Skillslab**	**Documentin Logbook**	**-**	**Derm Hematology**	
12.18.1	DiagnosepatientswithvitaminBcomplexdeficiency			Y	Bedside, Clinicalphot	DocumentinLogboo	-	Derm,Hematology	

					ographs	k			
12.18.2	Planmanagementforachildwithvitamin Bcomplexdeficiency			Y	SkillStation,Bedside,Case-basedlearning	Skill station,Documentin Logbook	-		
PE 12.19	**DiscusstheRDA,dietarysourcesofvitaminCandtheirroleinhealthanddisease**			**N**	**Lecture,SGD**	**Written/Viva voce**		**Biochemistry**	
12.19.1	ListtheRDAanddietarysourcesofvitaminC forthepediatricage			N	Lecture,SGD	Written/viva voce	-	Biochemistry	-
12.19.2	DescribetheroleofvitaminCinhealthanddisease			N	Lecture,SGD	Written/viva voce	-	Biochemistry	
PE 12.20	**Describethecauses,clinicalfeatures,diagnosis and managementofdeficiencyofvitaminC(scurvy)**			**N**	**Lecture,SGD**	**Written/Viva voce**		**Biochemistry**	
12.20.1	ListthecausesofdeficiencyofVitaminCinchildren			N	Lecture,SGD	Written/viva voce	-	Biochemistry	
12.20.2	Describetheclinicalfeaturesofdeficiencyofvitamin C			N	Lecture,SGD	Written/viva voce	-	Biochemistry	
12.20.3	Describethediagnosisandmanagementofdeficiencyofvitamin C			N	Lecture,SGD	Written/viva voce	-	-	
PE 12.21	**IdentifytheclinicalfeaturesofvitaminCdeficiency**			**N**	**Bedside,Skill lab**	**Documentin Logbook**		**-**	
12.21.1	Identifytheclinicalfeaturesofdeficiencyofvitamin C.			N	Clinicalcase /slides/bedside teaching	Document inLogbookOSCE	-	-	
12.21.2	DifferentiatetheclinicalfeaturesofdeficiencyofvitaminC(scurvy)fromthosedueto VDD(rickets).			N	Clinical case orphotograph/ bedsideteaching	Documentin Logbook,OSCE/ case	-	-	
Topic:MicronutrientsinHealthanddisease-2:Iron,Iodine, Calcium,Magnesium				**Numberofcompetencies:(14)**		**Numberofproceduresthatrequirecertification:(NIL)**			

PE 13.1	**Discuss the RDA, dietary sources of Iron and their roleinhealthanddisease**			**Y**	**Lecture,SGD**	**Written/ Vivavoce**		**Path,Biochemistry**	
13.1.1	RecalltheRDAofIronin childrenofallagegroups.			Y	Lecture,SGD	Written/vivavoce			
13.1.2	EnumeratethedietarysourcesofIronandDiscussth eirrole inhealthanddisease.			Y	Lecture,SGD	Written/vivavoce			
PE 13.2	**Describe the causes, diagnosis and management ofIrondeficiency**			**Y**	**Lecture,SGD**	**Written/vivavoce**		**Path, Biochemistry**	
13.2.1	Enumeratethecausesofirondeficiency.			Y	Lecture,SGD	Written/vivavoce			
13.2.2	Describethediagnosisofirondeficiency.			Y	Lecture,SGD	Written/vivavoce			
13.2.3	Describemanagementofirondeficiency.			Y	Lecture,SGD	Written/vivavoce			
PE 13.3	**Identifytheclinicalfeaturesof dietarydeficiencyofIronandmakeadiagnosis**			**Y**	**Bedside/skilllab**	**Document inLogbook**		**Path,Biochemistry**	
13.3.1	Identifytheclinicalfeaturesofdietaryirondeficiency.			Y	Bedside/skilllab	Document inLogbook /OSCE/Clinical case			
13.3.2	Make a clinical diagnosis of dietary deficiency of Iron afterappropriatehistory and examination.			Y	Bedside/skilllab	Document inLogbook /OSCE/Clinical case			
PE 13.4	**InterprethemogramandIronPanel**			**Y**	**Bedside clinic/Small groupdiscussion**	**SkillAssessment**		**Path,Biochemistry**	
13.4.1	Identifythefeaturesofirondeficiencyanemiaina bloodfilm.			Y	Bedsideclinic/Smallgroupdiscussion	SkillAssessment/ OSCE			

13.4.2	Identifyabnormalhematologicalindicesonahemogram.			Y	Bedsideclinic/Smallgroupdiscussion	SkillAssessment/OSCE			
13.4.3	Interprethemogram.			Y	Bedsideclinic/Smallgroupdiscussion	SkillAssessment/ OSCE			
13.4.4	Interpretabnormalvaluesoftheironpanel.			Y	Bedsideclinic/Smallgroupdiscussion	SkillAssessment/ OSCE			
PE 13.5	**ProposeamanagementplanforIRONdeficiency Anemia**			**Y**	**Bedside/skilllab**	**Skill assessment**		**Path, Pharm**	
13.5.1	MakeamanagementplanforIrondeficiencyanemiainchildrenofdifferent ages.			Y	Bedside/skilllab	Skillassessment/OSCE			
PE 13.6	**DiscusstheNationalanemiacontrolprogramanditsrecommendations**			**Y**	**Lecture,SGD**	**Written/viva voce**		**Pharm, ComMed**	
13.6.1	Describe the components of National anemia controlprogramand itsrecommendations.			Y	Lecture,SGD	Written/vivavoce			
PE 13.7	**DiscusstheRDA,dietarysourcesofIodineanditsrole inHealthanddisease**			**Y**	**Lecture,SGD**	**Written/viva voce**		**Biochemistry**	
13.7.1	RecalltheRDAofIodinein children.			Y	Lecture,SGD	Written/vivavoce			
13.7.2	EnumeratethedietarysourcesofIodineandtheirroleinHealthand disease.			Y	Lecture,SGD	Written/vivavoce			
PE 13.8	**Describethecauses,diagnosisandmanagement of deficiencyofIodine**			**Y**	**Lecture,SGD**	**Written/viva voce**		**Biochemistry**	
13.8.1	EnumeratethecausesofIodinedeficiency.			Y	Lecture,SGD	Written/vivavoce			
13.8.2	DiscussthediagnosisofIodinedeficiency.			Y	Lecture,SGD	Written/vivavoce			

13.8.3	DescribethemanagementofIodinedeficiency.			Y	Lecture,SGD	Written/viva voce			
PE 13.9	**IdentifytheclinicalfeaturesofIodinedeficiency disorders**			**N**	**Bedside clinic**	**Clinical assessment**		**Biochemistry**	
13.9.1	IdentifytheclinicalfeaturesofIodinedeficiencydisorders.			N	Bedside clinic	Clinical assessment			
PE 13.10	**Discuss the National Goiter Control program and itsrecommendations**			**Y**	**Lecture/ Smallgroup discussion**	**Written/viva voce**		**Biochemistry, ComMed**	
13.10.1	Discuss the National Goiter Control program and theRecommendations.			Y	Lecture/Smallgroupdiscussion	Written/viva voce			
PE 13.11	**Discuss the RDA, dietary sources of Calcium and itsroleinhealthanddisease**			**Y**	**Lecture/ Smallgroup discussion**	**Written/viva voce**		**Biochemistry**	
13.11.1	RecalltheRDAofCalciuminchildren.			Y	Lecture/Smallgroup discussion	Written/viva voce			
13.11.2	Enumeratethedietarysourcesofcalcium.			Y	Lecture/Smallgroupdiscussion	Written/viva voce			
13.11.3	Explaintheroleofcalciuminhealthanddisease.			Y	Lecture/Smallgroupdiscussion	Written/viva voce			
PE 13.12	**Describe the causes, clinical features, diagnosis andmanagementofCalciumDeficiency**			**Y**	**Lecture/ Smallgroup discussion**	**Written/viva voce**		**Biochemistry**	
13.12.1	EnumeratethecausesofCalciumDeficiency.			Y	Lecture/Smallgroupdiscussion	Written/viva voce			
13.12.2	DescribetheclinicalfeaturesofCalciumDeficiency.			Y	Lecture/Smallgroupdiscussion	Written/viva voce			
13.12.3	DiscussthediagnosisofCalciumDeficiency.			Y	Lecture/Smallgroup discussion	Written/viva voce			
13.12.4	DiscussthemanagementofCalciumDeficiency.			Y	Lecture/Smallgroupdiscussion	Written/viva voce			

PE 13.13	**Discuss the RDA, dietary sources of Magnesium andtheirroleinhealthanddisease**			**N**	**Lecture/ Smallgroup discussion**	**Written/viva voce**		**Biochemistry**	
13.13.1	RecalltheRDAofMagnesiumin children.			N	Lecture/Smallgroup discussion	Written/viva voce			
13.13.2	ListthedietarysourcesofMagnesiumandtheirroleinhealthand disease.			N	Lecture/Smallgroupdiscussion	Written/vivavoce			
PE 13.14	**Describe the causes, clinical features, diagnosis andmanagementofMagnesium Deficiency**			**N**	**Lecture/Smallgroupdiscussion**	**Written/viva voce**		**Biochemistry**	
13.14.1	EnumeratethecausesofMagnesiumDeficiency.			N	Lecture/Smallgroup discussion	Written/viva voce			
13.14.2	DescribetheclinicalfeaturesofMagnesiumDeficiency.			N	Lecture/Smallgroup discussion	Written/viva voce			
13.14.3	DiscussthediagnosisofMagnesiumDeficiency.			N	Lecture/Smallgroupdiscussion	Written/vivavoce			
13.14.4	DiscussthemanagementofMagnesiumDeficiency.			N	Lecture/Smallgroup discussion	Written/viva voce			
Topic:Toxicelementsandfreeradicalsandoxygentoxicity		**Numberof competencies:(5)**			**Numberofproceduresthatrequirecertification:(NIL)**				
PE 14.1	**Discussstheriskfactors,clinicalfeatures,diagnosis andmanagementofLeadPoisoning**				**Lecture/Small Group discussion**	**Written/viva voce**		**Pharm**	
14.1.1	Enumeratetheriskfactorsforleadpoisoninginchildren.			N	Lecture/Smallgroupdiscussion	Written/vivavoce			
14.1.2	Describetheclinicalfeaturesofleadpoisoning.			N	Lecture/Smallgroup discussion	Written/viva voce			
14.1.3	Discussthediagnosisofleadpoisoning.			N	Lecture/Smallgroupdiscussion	Written/vivavoce			

14.1.4	Describethemanagementofachildwithleadpoisoningincludingprevention.			N	Lecture/Smallgroupdiscussion	Written/vivavoce			
PE 14.2	**Discussstheriskfactors,clinicalfeatures,diagnosis andmanagementofKeroseneaspiration**			**N**	Lecture/Smallgroupdiscussion	Written/vivavoce		**ENT**	
14.2.1	Enumeratetheriskfactorsfor keroseneaspiration.			N	Lecture/Smallgroupdiscussion	Written/vivavoce			
14.2.2	Describetheclinicalfeatures ofkeroseneaspiration.			N	Lecture/Smallgroupdiscussion	Written/vivavoce			
14.2.3	Discussthediagnosisofkeroseneaspiration.			N	Lecture/Smallgroup discussion	Written/vivavoce			
14.2.4	Describe the management of a child with keroseneaspiration.			N	Lecture/Smallgroupdiscussion	Written/vivavoce			
PE 14.3	**Discuss the risk factors, clinical features, diagnosisandmanagementofOrganophosphoruspoisoning**			**N**	**Lecture/ Smallgroup discussion**	**Written/vivavoce**		**Pharm**	
14.3.1	Enumeratetheriskfactorsfororganophosphoruspoisoning.			N	Lecture/Smallgroup discussion	Written/vivavoce			
14.3.2	Describe the clinical features of organophosphoruspoisoning.			N	Lecture/Smallgroupdiscussion	Written/vivavoce			
14.3.4	Discussthediagnosisoforganophosphoruspoisoning.			N	Lecture/Smallgroupdiscussion	Written/vivavoce			
14.3.5	Describethemanagementofachildwithorganophosphorus poisoning.			N	Lecture/Smallgroup discussion	Written/vivavoce			
PE 14.4	**Discussstheriskfactors,clinicalfeatures,diagnosisandmanagementofparacetamolpoisoning**			**N**	**Lecture/ Smallgroup discussion**	**Written/vivavoce**		**Pharm**	
14.4.1	Enumeratetheriskfactorsforparacetamolpoisoning.			N	Lecture/Smallgroupdiscussion	Written/vivavoce			
14.4.2	Describetheclinicalfeaturesofparacetamolpoisoning.			N	Lecture/Smallgroupdiscussion	Written/vivavoce			

14.4.3	Discussthediagnosisofparacetamolpoisoning.			N	Lecture/Smallgroup discussion	Written/viva voce			
14.4.4	Discussthemanagementofa childwithparacetamolpoisoning includingprevention.			N	Lecture/Smallgroupdiscussion	Written/vivavoce			
PE 14.5	**Discussstheriskfactors,clinicalfeatures,diagnosisandmanagement ofOxygentoxicity**			**N**	**Lecture/ Smallgroup discussion**	**Written/vivavoce**			
14.5.1	Enumeratetheriskfactorsforoxygentoxicity.			N	Lecture/Smallgroup discussion	Written/viva voce			
14.5.2	Describetheclinicalfeaturesofoxygentoxicity.			N	Lecture/Smallgroupdiscussion	Written/vivavoce			
14.5.3	Discussthediagnosisofoxygentoxicity.			N	Lecture/Smallgroupdiscussion	Written/vivavoce			
14.5.4	Discussthemanagementofa childwithoxygentoxicity.			N	Lecture/Smallgroup discussion	Written/viva voce			
Topic:Fluidandelectrolytebalance				**Numberofcompetencies:(7)**		**Numberofproceduresthatrequirecertification:(NIL)**			
PE 15.1	**Discussthefluidandelectrolyterequirementinhealthanddisease**			**Y**	**Lecture/ Smallgroup discussion**	**Written/vivavoce**			
15.1.1	Statethefluidrequirementofahealthyneonate.			Y	Lecture/Smallgroupdiscussion	Written/vivavoce			
15.1.2	Describethefluidandelectrolyterequirementsofhealthychildrenofdifferent ages.			Y	Lecture/Smallgroupdiscussion	Written/vivavoce			
15.1.3	Describethefluidrequirementsincommondiseases of children.			Y	Lecture/Smallgroup discussion				
PE 15.2	**Discusstheclinicalfeaturesandcomplicationsof fluid and electrolyte imbalance and outline themanagement**				**Lecture/Small groupdiscussion**				

15.2.1	Definehyponatremiaandhypernatremia.			Y	Lecture/Smallgroup discussion	Written/viva voce			
15.2.2	Definehypokalemiaandhyperkalemia.			Y	Lecture/Smallgroup discussion	Written/viva voce			
15.2.3	Describetheclinicalfeaturesofachildwhohasdehydrationorfluid overload.			Y	Lecture/Smallgroupdiscussion	Written/vivavoce			
15.2.4	Outlinethemanagementofachildwhohasdehydrationorfluidoverload.			Y	Lecture/Smallgroupdiscussion	Written/vivavoce			
15.2.5	EnumeratethesymptomsandsignsofhyponatremiaandHypernatremia.			Y	Lecture/Smallgroupdiscussion	Written/vivavoce			
15.2.6	Enumeratethesymptomsandsignsofhypokalemiaandhyperkalemia.			Y	Lecture/Smallgroupdiscussion	Written/vivavoce			
15.2.7	Outline the management of a child with hyponatremia /hypernatremia.			Y	Lecture/Smallgroupdiscussion	Written/viva			
15.2.8	Outlinethemanagementofachildwithhypokalemia or Hyperkalemia.			Y	Lecture/Smallgroup discussion	Written/viva voce			
PE 15.3	**Calculatethefluidandelectrolyterequirementin health**			**Y**	**Bedside,SGD**	**Skillassessment**			
15.3.1	Calculatefluidrequirementinhealthychildrenofdifferentages.			Y	Bedside,SGD	Skillassessment			
15.3.2	Calculateelectrolyterequirementinhealthychildrenof differentages.			Y	Bedside,SGD	Skillassessment			
PE 15.4	**Interpretelectrolytereport**			**Y**	**Bedside/SGD**	**Skill assessment**			
15.4.1	Interpretreportsofdyselectrolytemia.			Y	Bedside/SGD	Skillassessment			
PE 15.5	**Calculatefluidandelectrolyteimbalance**			**Y**	**Bedside/SGD**	**Skill assessment**			
15.5.1	Calculatefluidrequirementofthechildtocorrectfluidimbalance.			Y	Bedside/SGD	Skillassessment			
15.5.2	Calculateelectrolytecorrectionforagivenscenario.			Y	Bedside/SGD	Skillassessme			

						nt			
PE 15.6	**Demonstratethesteps ofinserting anIVcannulaina model**			**Y**	**Skilllab**	**Skill assessment**			
15.6.1	Demonstrateinsertingan intravenouscannulaonamodelinaskilllaboratory.			Y	Skilllab	Mannequin			
PE 15.7	**Demonstratethestepsofinsertinganinterosseous lineinamannequin**			**Y**	**Skilllab**	**Skill assessment**			
15.7.1	Demonstrateinsertinganintraosseousca nnulainamannequin.			Y	Skilllab	Mannequin			
Topic:IntegratedManagementof NeonatalandChildhood Illnesses(IMNCI)Guideline		**Numberofcompetencies:(3)**			**Numberofproceduresthatrequirecertification:(NIL)**				
PE16.1	**Explain the components of Integrated Management ofNeonatal and Childhood Illnesses (IMNCI) guidelinesandmethodofRiskstratification**			**Y**	**Lecture,SGD**	**Written/vivavoce**			
16.1.1	StatethecomponentsofIMNCIapproach.			Y	Lecture/SGD, IMNCIvideos	Written/vivavoce			
16.1.2	Explaintheriskstratification asperIMNCI.			Y	Lecture/SGD	Written/vivavoce			
PE16.2	**Assesschildren<2monthsusingIMNCIguidelines**			**Y**	**DOAP**	**Documentin Logbook**			
16.2.1	Demonstrateassessmentoftheyounginfant<2monthsageasper IMNCIguidelines.			Y	DOAP, Video	Documentin Logbook/ bedsidesession			
16.2.2	Classifytheyounginfants<2 monthsageaspertheIMNCIclassification.			Y	DOAP, Video	Documentin Logbook/			

						bedside			
16.2.3	Identifythetreatmentinyounginfants<2monthsasperIMNCI.			Y	DOAP,SGD	Documentin Logbook			
16.2.4	CounselparentsasperIMNCIguidelines.			Y	DOAP, SGD,roleplay, Video	Documentin Logbook/			
PE16.3	**Assesschildren>2monthsto5yearsusingIMNCIguidelinesandstratify risk**			**Y**	**DOAP**	**Document inLogbook**			
16.3.1	Demonstrateassessmentofthechild>2monthsto5yearsasperIMNCIformat.			Y	DOAP, Video	Documentin Logbook, OSCE			
16.3.2	Classifythechildren>2monthsto5yearsasperthe IMNCIclassification.			Y	DOAP, Video	Documentin Logbook, OSCE			
16.3.3	Identifythetreatmentinchildren>2monthsto5yearsasperIMNCIguidelines.			Y	DOAP,SGD	Documentin Logbook			
16.3.4	CounselparentsasperIMNCIguidelines.			Y	DOAP, SGD,roleplay,Video	Documentin Logbook,OSCE			
Topic:TheNational Health programs, NHM				**Numberofcompetencies:(02)**		**Numberofproceduresthatrequirecertification:(NIL)**			
PE17.1	**State the vision and outline the goals, strategies andplan of action of NHM and other important nationalprograms pertaining to maternal and child healthincludingRMNCHA+,RBSK,RKSK, JSSK, mission IndradhanushandICDS**			**Y**	**Lecture/SGD**	**Written/vivavoce**		**ComMed**	
17.1.1	Listthenationalhealthprogramspertainingtomaternalandchild health.			Y	Lecture/SGD	Written/vivavoce			

17.1.2	Outlinevision,goals,strategiesandplan ofactionofNHM.			Y	Lecture/SGD	Written/v ivavoce			
17.1.3	Outlinethevision,goals,strategiesandplanofa ctionofotherimportant nationalprogramsfor maternalandchildhealth – RMNCHA+,RBSK,RKSK,JSSK, missionIndradhanushandICDS.			Y	Lecture/SGD	Written/v ivavoce			
PE17.2	**Analyze the outcomes and appraise the monitoringandevaluation ofNHM**			**Y**	**Debate**	**Written/vi vavoce**		**ComMed**	
17.2.1	Critically analyzetheimpactofNHMandothernational healthprogramsonmaternal andchildhealth.			Y	Debate, SGD	Written/viva voce			
17.2.2	AppraisethemonitoringandevaluationofNHMa ndotherhealthprograms.			Y	Debat e,SGD	Written/v ivavoce			
Topic:TheNationalHealthPrograms:RCH		**Numberofcompetencies:(8)**				**Numberofproceduresthatrequirecertification:(NI L)**			
PE18.1	**List and explain the components, plan, outcome ofReproductive Child Health (RCH) program and appraiseitsmonitoring and evaluation**			**Y**	**Lectur e/SGD**	**Written/vi vavoce**		**ComMed**	**OBG**
18.1.1	Statethecomponents, strategyandtargetedoutcomeofRCHprogram.			Y	Lecture/SGD	Written/v ivavoce			
18.1.2	Listtheprerequisitesandroleofaccredited socialhealthactivist(ASHA).			Y	Lecture/SGD	Written/v ivavoce			

18.1.3	AnalyzethemonitoringandevaluationofRCHprogram.			Y	Lecture/SGD	Written/viva voce			
PE 18.2	**Explainpreventiveinterventionsforchildsurvivaland safemotherhood**			**Y**	**Lecture/ SGD**	**Written/viva voce**		**ComMed**	**OBG**
18.2.1	Listthepreventiveinterventionsforchildsurvivalandsafe motherhood.			Y	Lecture/SGD	Written/viva voce			
18.2.2	Explainthepreventiveinterventionsforchildsurvivalandsafe motherhood.			Y	Lecture/SGD	Written/viva voce			
PE 18.3	**Conduct antenatal examination of womenindependentlyandapplyat-riskapproachinantenatal care**			**Y**	**Bedside**	**Skillstation**		**ComMed**	**OBG**
18.3.1	Conductantenatalexaminationofwomenindependently.			Y	Bedside, Video	Skillstation			
18.3.2	Applyat-riskapproachinantenatalcare.			Y	Bedside,Video	Skillstation			
PE 18.4	**Provideintra-natalcareandconductanormaldelivery inasimulatedenvironment**			**Y**	**DOAPsession, Skillslab**	**Documentin Logbook**		**ComMed**	**OBG**
18.4.1	Demonstratethestepsofintra-natalmonitoringinasimulatedenvironment.			Y	DOAPsession,Skills Lab,Video	Documentin Logbook			
18.4.2	Demonstratetheuseofaportogram.			Y	DOAPsession,SkillsLab, Video	Document inLogbook			
18.4.3	Conductanormaldeliveryinasimulatedenvironment.			Y	DOAPsession,Skillslab, Video	Document inLogbook			
PE 18.5	**Provideintra-natalcareandobservetheconductofa normaldelivery**			**Y**	**DOAPsession**	**Documentin Logbook**			OBG

18.5.1	Demonstratethepreparationofvariouscomponentsofintranatalcare.			Y	DOAPsession	Document inLogbook			
18.5.2	Observeandassistinconductofanormaldelivery.			Y	DOAPsession	Documentin Logbook			
PE 18.6	**PerformPostnatalassessmentofnewbornandmother, provide advice on breastfeeding, weaning andonfamily planning**			**Y**	**Bedside, SkillLab**	**SkillAssessment**		**ComMed**	**OBG**

18.6.1	Performpostnatalassessmentofnewborn.			Y	Bedside, SkillLab	SkillAssessment			
18.6.2	Performpostnatalassessmentofmother.			Y	Bedside,Skill Lab	SkillAssessment			
18.6.3	Giveadvicetothemotheroninitiationandmaintenanceofexclusive breastfeeding, common problems seen duringbreastfeeding,weaningand familyplanning.			Y	Bedside, SkillLab	SkillAssessment			
PE 18.7	**Educateandcounselcaregiversofchildren**			**Y**	**roleplay**	**OSCE/Skill Assessment**		**AETCOM**	
18.7.1	Educateandcounselcaregiversofchildrenonnewborncare includingprovidingwarmth,feeding,andprevention ofinfection,immunizationand dangersigns.			Y	Role playVideo	SkillAssessmentOSCE			
PE18.8	**Observetheimplementationoftheprogramby visitingtheRuralHealthCenter**			**Y**	**Bedside,Skill Lab**	**Documentin Logbook**		**ComMed**	OBG
18.8.1	Makeobservationsontheimplementationoftheprogramby visitingtheRuralHealth Center.			Y	Ruralhealth center visit	Documentin Logbook			
Topic:NationalPrograms,RCH-UniversalImmunization program				**Numberofcompetencies:(16)**			**Numberofproceduresthatrequirecertification:(01)**		
PE19.1	**Explain the components of the UniversalImmunizationProgram(UIP)anddtheNationalImmunization Program(NIP)**			**Y**	**Lecture /SGD**	**Written/vivavoce**		**Com Med,Micro,Biochemistry**	
19.1.1	ExplainthecomponentsofUIPandNIP.			Y	Lecture/ SGD	Written/vivavoce			
19.1.2	ListthevaccinescoveredunderUIPandNIP.			Y	Lecture/SGD	Written/vivavoce			

PE 19.2	**Explain the epidemiology of vaccine preventablediseases(VPDs)**			**Y**	**Lectur e/SGD**	**Written/vi vavoce**		**Com Med,Mic ro, Biochemist ry**	
19.2.1	DescribetheepidemiologyofindividualVPDs.			Y	Lecture/ SGD	Written/viva voce			
PE 19.3	**Vaccinedescriptionwithregardtoclassification of vaccines,strainused,dose,route,schedule,risks,**			**Y**	Lecture/ SGD	**Written/viva voce**		**ComMed, Micro,**	

	benefitsandsideeffects, indicationsand contraindications							**Biochemistry**	
19.3.1	Classifyvaccinesaccordingtotypeofvaccine.			Y	Lecture/SGD	Written/vivavoce			
19.3.2	DescribethecompositionoftheNIPvaccinesincludingthestrainused.			Y	Lecture/SGD	Written/vivavoce			
19.3.3	Statethedose,routeandscheduleofallvaccinesunderNIP.			Y	Lecture/SGD	Written/vivavoce			
19.3.4	Recalltherisks,benefits,sideeffects,indicationsandcontraindicationsofvaccinesunderNIP.			Y	Lecture/ SGD	Written/vivavoce			
PE 19.4	**Define cold chain and discuss the methods of safestorageand handlingofvaccines**			**Y**	Lecture/SGD	**Written/vivavoce**		**Com Med,Micro, Biochemistry**	
19.4.1	Definecoldchainanddiscussitsimportanceforvaccines.			Y	Lecture/SGD	Written/vivavoce			
19.4.2	Listthevariouscoldchainequipment.			Y	Lecture/SGD	Written/vivavoce			
19.4.3	Describe the appropriate storage of vaccines in domesticrefrigerator,icelinedrefrigerator(ILR) andvaccinecarriers.			Y	Lecture/SGD	Written/vivavoce			
19.4.4	Enumerate the precautions for maintaining vaccines atappropriatetemperatureincludingtheuseofvaccinevial monitor(VVM).			Y	Lecture/SGD	Written/vivavoce			
19.4.5	Explainthemethodofcoldchainmaintenanceduring a vaccinesession.			Y	Lecture/SGD	Written/vivavoce			
PE 19.5	**Discuss immunization in special situations – HIVpositive children, immunodeficiency, pre-term, organtransplants, those who received blood and bloodproducts,splenectomisedchildren,adolescents, and travelers**			**Y**	**Lecture/ SGD**	**Written/vivavoce**		**Com Med,Micro,Biochemistry**	

19.5.1	Explain immunization in special situations – HIV positivechildren,immunodeficiency,pre-term,organtransplants,thosewhoreceivedblo odandblood products, splenectomisedchildren,adolescents,travelers.			Y	Lecture/SGD	Written/v ivavoce			

PE 19.6	**Assess patient forfitness for immunization and prescribe an age appropriate immunization schedule**			**Y**	**Out Patient clinics,Skillslab**	**SkillAsse ssment**	**5**		
19.6.1	Assesspatientfitnessforimmunization.			Y	OutPatientclin ics,Skillslab	SkillAssessm entOSCE	5		
19.6.2	Makeanageappropriateplanforimmunizationi ncludingcatchup doses.			Y	OutPatientclin ics,Skillslab	SkillAssessm entOSCE	5		
19.6.3	Prescribethecorrectvaccine,dose,routeofadminist ration forthechild.			Y	OutPatientclinics, Skillslab	SkillAssessme nt	5		
PE 19.7	**Educateandcounselapatientforimmunization**			**Y**	**DOAPsession**	**Documentin Logbook**			
19.7.1	Educatetheparentsabouttheimportanceofvaccines .			Y	DOAP session,Role play	Document inLogboo k			
19.7.2	Counselparentsforageappropriatevaccines,thesch edule andtimingandtheexpectedsideeffects.			Y	DOAPsession, Roleplay	Documentin Logbook,OSC E			
PE 19.8	**Demonstrate willingness to participate in the nationalandsubnational immunizationdays**			**Y**	**Lecture/s mallgrou p discussion**	**Document inLogbook**		**ComMed**	
19.8.1	Participateinthenational(NIDs)andsub nationalimmunization days(SNIDs).			Y	Small group,NIDs andSNIDs	Document inLogboo k			
PE 19.9	**Describe the components of safe vaccine practice –Patient education/ counselling; adverse eventsfollowing immunization, safe injection practices,documentationandmedico-legalimplications**			**Y**	**Lecture/s mall groupdisc ussion/ Immunizati onclinic**	**Written/vi vavoce**		**AETCOM**	
19.9.1	Describethecomponentsofsafevaccinepractices-patient education/counseling.			Y	Lecture/SGD	Written/viva voce		AETCOM	

19.9.2	Describeadverseeventsfollowingimmunization andstandardprecautionstoprevent them.			Y	Lecture/SGD	Written/viva voce			
19.9.3	Listsafeinjectionpracticesanddocumentation duringimmunization.			Y	Lecture/SGD	Written/viva voce			
19.9.4	Demonstratenecessarydocumentationandmedicolegalimplicationsofimmunization.			Y	Lecture/SGD	Written/viva voce			

PE 19.10	**Observethehandlingandstoringofvaccines**			**Y**	**DOAPsession**	**Written/viva voce**			
19.10.1	Observe and note the correct handling and storing ofvaccines.			Y	DOAP session,Videos	Vivavoce/OSCE			
PE 19.11	**DocumentImmunizationinanimmunizationrecord**			**Y**	**OutPatientclinics, Skillslab**	**Skill assessment**			
19.11.1	DocumentImmunizationinanimmunizationrecord.			Y	OutPatien tclinics, Skillslab	Skillassessment OSCE			
PE 19.12	**ObservetheadministrationofUIPvaccines**			**Y**	**DOAPsession**	**Documentin Logbook**		**ComMed**	
19.12.1	Observeanddocumenttheadministrationofvaccines.			Y	DOAPsession	Document inLogbook			
PE 19.13	**Demonstratethecorrectadministrationofdifferent vaccinesinamannequin**			**Y**	**DOAPsession**	**Documentin Logbook**		**ComMed**	
19.13.1	Preparevaccinesbymaintaininghandhygieneandskinsterilization.			Y	DOAP session,Skill station	Document inLogbook, OSCE			
19.13.2	Administeravaccineinthemannequinbycorrectroute(IM,SC,ID)for thecorrectvaccine.			Y	DOAP session,Skill station	Document inLogbook, OSCE			
PE 19.14	**PracticeInfectioncontrolmeasuresandappropriate handlingofthesharps**			**Y**	**DOAPsession**	**Documentin Logbook**		**ComMed**	
19.14.1	PracticeInfectioncontrolmeasures.			Y	DOAPsession	Documentin Logbook			
19.14.2	Practiceappropriatehandlingofthesharps.			Y	DOAPsession	Document inLogbook			

PE 19.15	**ExplainthetermimpliedconsentinImmunization services**			**Y**	**Smallgroup discussion**	**Written/viva voce**			
19.15.1	ExplainthetermimpliedconsentinImmunizationservices.			Y	Smallgroup discussion	Written/viva voce			
PE 19.16	**Enumerate available newer vaccines and theirindicationsincludingpentavalentpneumococcal, rotavirus,JE,typhoidIPV& HPV**			**N**	**Lecture/smallgroup discussion**	**Written/vivavoce**			
19.16.1	Enumeratenewervaccines(pneumococcal,rotavirus,JEtyphoid,IPV, influenza&HPVvaccines).			N	Lecture/SGD	Written/vivavoce			

19.16.2	Listtheindicationsfornewervaccinessuchaspneumococcal,JE,typhoid, influenza&HPV vaccines			N	Lecture/SGD	Written/vivavoce			
Topic:CareoftheNormalNewbornandHighriskNewborn Numberofcompetencies:(20) Numberofproceduresthatrequirecertification:(NIL)									
PE 20.1	**Definethecommonneonatalnomenclaturesincludingthe classification and describe the characteristics of aNormalTermNeonateandHighRiskNeonates**			**Y**	**Lecture/ SGD**	**Written/vivavoce**			
20.1.1	DefinetheNeonatalandPerinatalperiod.			Y	Lecture/SGD	Written /Vivavoce			
20.1.2	Definelivebirthandstillbirth.			Y	Lecture/SGD	Written/Vivavoce			
20.1.3	Classifytheneonateaccordingtobirthweightinto differentcategories.			Y	Lecture/SGD	Written /Vivavoce			
20.1.4	Classifytheneonateaccordingtoperiodofgestation.			Y	Lecture/SGD	Written /Vivavoce			
20.1.5	Classifytheneonateasperintrauterinegrowthpercentiles.			Y	Lecture/SGD	Written/Vivavoce			
20.1.6	DefineNeonatalMortalityRate(NMR)andPerinatalMortalityRate.			Y	Lecture,SGD.	Written /Vivavoce			
20.1.7	Describethecharacteristicsofanormaltermneonate.			Y	Lecture,SGD.	Written/Vivavoce			
20.1.8	Describethecharacteristicsofthehigh-riskneonate.			Y	Lecture,SGD.	Written /Vivavoce			
PE 20.2	**Explainthecareofanormalneonate**			**Y**	**Lecture,SGD**	**Written/Viva voce**			
20.2.1	EnumeratethecomponentsofEssentialNewbornCare			Y	Lecture,SGD	Written /Vivavoce			
20.2.2	Enumeratethestepsofcareofthenormalneonateatbirth.			Y	Lecture,SGD.	Written/Vivavoce			
20.2.3	Explainthecareofthenormal neonateduringthepostnatalperiod.			Y	Lecture,SGD.	Written /Vivavoce			

20.2.4	Listthecriteriafordischargeofanormalneonatefrom the Hospital			Y	Lecture,SGD.	Written/Viva voce			
PE 20.3	**PerformNeonatalresuscitationinamanikin**			**Y**	**DOAP/SKILLLAB**	**Logbook**			
20.3.1	Performallthestepsofroutinecareona manikin.			Y	DOAP/skilllab	Logbook/OSCE			

20.3.2	Demonstratetheinitialstepsofneonatalresuscitationinamanikininthecorrectsequence.			Y	DOAP	Logbook entry/OSCE			
20.3.3	Demonstratethemethodofcountingtheheartrateofthe neonateduringresuscitation.			Y	DOAP	Skilllab/OSCE			
20.3.4	Demonstratethemethodofadministeringfreeflowoxygenduringresuscitation.			Y	DOAP	Skillstation/OSCE			
20.3.5	Checkthefunctionsofallpartsofthe self-inflatingbag.			Y	DOAP	Logbook entry/OSCE			
20.3.6	Demonstrate the method of positive pressure ventilation(PPV)inamanikinusingappropriatesizeofbagandmask.			Y	DOAP	Logbook entry/OSCE			
20.3.7	Checksthesignsofeffectivepositivepressureventilation.			Y	DOAP	Logbook/OSCE			
20.3.8	Initiatecorrectivestepsincorrectsequenceforin effectiveventilationinsimulatedsettings.			Y	DOAP	Logbook entry/OSCE			
20.3.9	Demonstratethemethodofplacementoforogastrictubeduringprolonged PPV in a manikin.			Y	DOAP	Logbookentry			
20.3.10	Demonstratethe‘thumbtechnique’and‘twofingertechnique’ofprovidingchestcompressionina manikin.			Y	DOAP	Logbookentry/ skill station/OSCE			
20.3.11	Preparecorrectdilutionofadrenalineinjection.			Y	DOAP	Logbook			
20.3.12	IdentifythecorrectsizeofLaryngoscopeandendotrachealtubebasedongivenbirth weight/gestationcorrectly.			Y	DOAP	Logbook entry/OSCE			
20.3.13	Demonstratethetechniqueofendotrachealintubationina manikincorrectly.			Y	DOAP	Logbookentry			
PE 20.4	**Assessmentofanormalneonate**			**Y**	**Bedside/Skilllab**	**Skill assessment**			
20.4.1	Elicittherelevantgeneral,antenatal,natalandpostnatalhistoryofthemother.			Y	Bedside/Skilllab	Skillassessment			

20.4.2	Demonstratethetouchmethodofassessmentoftemperatureina newborn.			Y	Bedside/Skilllab	Skillassessment			
20.4.3	Demonstratethemethodofrecordingaxillaryandrectal temperatureinaneonatalmanikin.			Y	Bedside/Skilllab	Skillassessment			
20.4.4	Demonstratethecountingofrespiratoryrateinaneonate.			Y	Bedside/Skilllab	Skillassessment			
20.4.5	DemonstratetheelicitingofcapillaryrefilltimeCRTinanewborn.			Y	Bedside/Skilllab	Skillassessment			

20.4.6	Demonstratecountingtheheartrateinaneonate.			Y	Bedside/Skilllab	Skillassessment			
20.4.7	Measureweight,length,headcircumferenceandchestcircumferencein aneonate/manikin accurately.			Y	Bedside/Skilllab	Skillassessment			
20.4.8	Performagestationalassessmentbyphysicaland neurologicalcriteriainaneonate.			Y	Bedside/Skilllab	Skillassessment			
20.4.9	Performaheadtotoeexaminationoftheneonate.			Y	Bedside/Skilllab	Skillassessment			
20.4.10	Elicitcommonneonatalreflexeslikerooting,sucking,grasp, andMoro'sreflexcorrectly.			Y	Bedside/Skilllab	Skillassessment			
20.4.11	Performarelevantsystemicexaminationofaneonate			Y	Bedside/Skilllab	Skillassessment			
PE 20.5	**Counsel/educatemothersonthecareofneonates**			**Y**	**DOAP**	**Logbookentry**			
20.5.1	CounselmothersusingtheGALPACtechnique(Greet,Ask,Listen,Praise,Advise,Checkforunderstanding) appropriately.			Y	DOAP	Logbookdocumentation/ OSCE			
20.5.2	Educatemothersregardingcareoftheeyes,skinandcordstumpofthe neonate.			Y	DOAP	Logbookdocumentation			
20.5.3	Educatethemotherforpreventionofinfections.			Y	DOAP	Logbookdocumentation/ OSCE			
20.5.4	Educatemothersregardingbathingroutineandcleanliness.			Y	DOAP	Logbookdocumentation/ OSCE			
20.5.5	Counselthemotherregardingherownnutritionand health.			Y	DOAP	Logbookdocumentation			
PE 20.6	**Explain the follow-up care for neonates includingBreastfeeding,Temperaturemaintenance, immunization,importanceofgrowthmonitoringandredflags.**			**Y**	**DOAP**	**Logbookdocumentation**			
20.6.1	Counselthemothersabouttheimportanceofexclusive			Y	DOAP	Logbook documentatio			

	breastfeedingappropriately.					n			
20.6.2	Educate the mother regarding harmful effects of pre-lactealsandnon-humanmilk.			Y	DOAP	Logbookdocumentation			
20.6.3	Explaintothemothertheimportanceoffrequentbreastfeedingincludingnightfeeds.			Y	DOAP	Logbookdocumentation			

20.6.4	Educatethemotherregardingcommonlactationproblems			Y	DOAP	Logbookdocumentation			
20.6.5	Explaintothemotherthemethodsofkeepingthebabywarmathome.			Y	DOAP	Logbookdocumentation/ OSCE			
20.6.6	DemonstratethetechniqueofKangarooMotherCareinamanikinand simulated mother.			Y	DOAP	Logbookdocumentation/ OSCE			
20.6.7	Explainthescheduleofimmunizationasperthenationalimmunizationschedulecorrectly.			Y	DOAP	Logbookdocumentation/ OSCE			
20.6.8	Counseltheparentsonimportanceofregularvisittothewellbabyclinic for growth monitoring.			Y	DOAP	Logbookdocumentation/ OSCE			
20.6.9	Explaintotheparentstheredflagsignsforurgentvisittohospital.			Y	DOAP	Logbookdocumentation/ OSCE			
PE 20.7	**Discusstheetiology,clinicalfeaturesand managementofBirthasphyxia**			**Y**	**Lecture/ SGD**	**Written/Viva voce**			
20.7.1	DefinebirthasphyxiaasperNNF(NationalNeonatologyForum)and WHO,AAP guidelines.			Y	Lecture/SGD	Written /Vivavoce			
20.7.2	Enumeratetheetiologyofbirthasphyxiabasedonantenatal,nataland postnatal factors.			Y	Lecture,SGD	Written /Vivavoce			
20.7.3	Describetheclinicalfeaturesofbirthasphyxia.			Y	Lecture,SGD	Written/Viva voce			
20.7.4	Listthecomplicationsofhypoxicischemicencephalopathy.			Y	Lecture,SGD	Written /Vivavoce			
20.7.5	Describethepostresuscitationmanagementoftheasphyxiatedneonate.			Y	Lecture,SGD	Written/Viva voce			
PE 20.8	**Discuss the etiology, clinical features and managementofrespiratorydistressinNewborn includingmeconium aspirationandtransienttachypneaofnewborn.**			**Y**	**Lecture,SGD**	**Written /Vivavoce**			
20.8.1	DefineRespiratoryDistressinaneonate(asperNN			Y	Lecture,SGD	Written			

	Fguidelines).					/Vivavoce			

20.8.2	Enumeratethecommonetiologiesofrespiratoryd istressbasedon timeofonset andgestation.			Y	Lecture,SGD	Written /Vivavoce			
20.8.3	EnumeratetheparametersoftheDownesscorefor assessmentofseverityofrespiratorydistress.			Y	Lecture,SGD	Written/Viva voce			
20.8.4	DescribetheclinicalfeaturesandcomplicationsofMe coniumAspiration Syndrome (MAS).			Y	Lecture,SGD	Written /Vivavoce			
20.8.5	DiscussthemanagementofMAS.			Y	Lecture,SGD	Written/Viva voce			
20.8.6	DiscusstheclinicalfeaturesandmanagementofTr ansientTachypneaofNewborn.			Y	Lecture,SGD	Written /Vivavoce			
20.8.7	Describetheetiologyandclinicalfeaturesof HyalineMembraneDisease.			Y	Lecture,SGD	Written /Vivavoce			
20.8.8	DiscussthemanagementincludingpreventionofHM D.			Y	Lecture,SGD	Written/Viva voce			
PE 20.9	**Discusstheetiology,clinicalfeaturesandmanag ement ofbirthinjuries.**			**Y**	**Lecture,SGD**	**Written/Viv a voce**			
20.9.1	Definebirthinjury(asperNationalVitalStatisticsRep ort).			Y	Lecture,SGD	Written /Vivavoce			
20.9.2	Enumeratethecommonbirthinjuriesinneonates			Y	Lecture,SGD	Written /Vivavoce			
20.9.3	Discusstheetiologyandriskfactorsofbirthinjuries			Y	Lecture,SGD	Written/Viva voce			
20.9.4	Discuss the clinical features of common birth injuries like,cephalhematoma,subgalealhemorrhage,brac hialplexusandfacialnerveinjury, boneandsoft tissueinjuriesand intra-abdominalinjuries,fractures.			Y	Lecture,SGD	Written /Vivavoce			
20.9.5	Discussthemanagementincludingpreventionofc ommonbirth injuries			Y	Lecture,SGD	Written /Vivavoce			
PE 20.10	**Discusstheetiology,clinicalfeaturesandmanag ement ofhemorrhagicdiseaseofnewborn**			**Y**	**Lecture,SGD**	**Written/Viv a voce**			

20.10.1	Enumeratethecausesofhemorrhagicdiseaseofnewborn accordingtotimeofonset.			Y	Lecture,SGD	Written/Viva voce			
20.10.2	DiscusstheroleofvitaminKdeficiencyinhemorrhagicdiseaseofnewborn.			Y	Lecture,SGD	Written /Vivavoce			

20.10.3	Describetheclinicalfeaturesofearly,classicalandlateonsethemorrhagicdiseaseofnewborn.			Y	Lecture,SGD	Written /Vivavoce			
20.10.4	Outlinethestepsofmanagementandpreventionofhemorrhagicdiseaseofnewborn.			Y	Lecture,SGD	Written/Vivavoce			
PE 20.11	**Discusstheclinicalcharacteristics,complicationsandmanagementoflowbirthweight(preterm andsmall forgestation).**			**Y**	**Lecture,SGD**	**Written /Vivavoce**			
20.11.1	Describetheclinicalcharacteristicsofpreterm, smallforgestationand lowbirthweightnewborns.			Y	Lecture,SGD	Written /Vivavoce			
20.11.2	Enumeratethecomplicationsinthepreterm,smallfor gestationandlowbirthweightnewborns			Y	Lecture,SGD	Written/Vivavoce			
20.11.3	Describethemanagementofthepreterm,small fordateandlowbirthweight newborns.			Y	Lecture,SGD	Written /Vivavoce			
20.11.4	Enumeratethecriteriafordischargeoflowbirthweightbabiesfrom hospital-basedcare.			Y	Lecture,SGD	Written /Vivavoce			
20.11.5	Listthefollowupadvicefor lowbirthweightnewborns.			Y	Lecture,SGD	Written/Vivavoce			
PE 20.12	**Discussthetemperatureregulationinneonates, clinicalfeaturesandmanagementofNeonatal Hypothermia.**			**Y**	**Lecture,SGD**	**Written /Vivavoce**			
20.12.1	Enumeratethemodesofheatlossinanewborn.			Y	Lecture,SGD	Written/Vivavoce			
20.12.2	Describethemechanismofthermoregulationinthe newborn.			Y	Lecture,SGD	Written/Vivavoce			
20.12.3	ClassifyhypothermiainnewbornsasperNNFcriteria.			Y	Lecture,SGD	Written /Vivavoce			
20.12.4	Describetheclinicalfeaturesofanewbornwithcoldstress,moderatehypothermiaandseverehypothermia.			Y	Lecture,SGD	Written /Vivavoce			
20.12.5	Discussthemanagementofcoldstress,moderate hypothermiaandseverehypothermia.			Y	Lecture,SGD	Written/Vivavoce			

20.12.6	Outlinethepreventionofhypothermiainnewbornby‘tenstepsofthewarmchain’.			Y	Lecture,SGD	Written /Vivavoce			
20.12.7	ExplaintheKangarooMotherCareforpreventionofhypothermiainnewborns.			Y	Lecture,SGD	Written/Vivavoce			

PE 20.13	**Discusstheetiology,clinicalfeaturesandmanagement ofNeonatalhypoglycemia.**			**Y**	**Lecture,SGD**	Written/Viva voce			
20.13.1	Definehypoglycemiainnewborn.			Y	Lecture,SGD	Written /Vivavoce			
20.13.2	Enumeratetheetiologyofhypoglycemiainthenewborn.			Y	Lecture,SGD	Written/Viva voce			
20.13.3	Enumeratethe“atrisknewborns”needingroutineblood sugarmonitoringforhypoglycemia.			Y	Lecture,SGD	Written /Vivavoce			
20.13.4	Describetheclinicalfeaturesofhypoglycemiainthe newborn.			Y	Lecture,SGD	Written/Viva voce			
20.13.5	Discussthemanagementofa newbornwithasymptomaticandsymptomatic hypoglycemia.			Y	Lecture,SGD	Written /Vivavoce			
20.13.6	Enumeratethemeasuresfor preventionofhypoglycemiainnewborn.			Y	Lecture,SGD	Written /Vivavoce			
PE 20.14	**Discusstheetiology,clinicalfeaturesandmanagement ofNeonatalhypocalcemia.**			**Y**	**Lecture,SGD**	**Written/Viva voce**			
20.14.1	Defineneonatalhypocalcemia.			Y	Lecture,SGD	Written/Viva voce			
20.14.2	Enumeratetheriskfactorsfor earlyandlateonset hypocalcemia.			Y	Lecture,SGD	Written/Viva voce			
20.14.3	Describetheclinicalfeaturesofneonatalhypocalcemia.			Y	Lecture,SGD	Written/Viva voce			
20.14.4	Outlinethemanagementofneonatalhypocalcemia.			Y	Lecture,SGD	Written /Vivavoce			
PE 20.15	**Discusstheetiology,clinicalfeaturesandmanagement ofneonatalseizures.**			**Y**	**Lecture,SGD**	**Written/Viva voce**			
20.15.1	Enumeratetheclinicaltypesofseizuresinthenewborn.			Y	Lecture,SGD	Written /Vivavoce			
20.15.2	Enumeratethekeydifferentiatingfeaturesbetween seizures			Y	Lecture,SGD	Written/Viva voce			

	andjitteriness.								
20.15.3	Describethecommoncausesofneonatalseizuresaccordingtotimeofonset ofseizure.			Y	Lecture,SGD	Written /Vivavoce			
20.15.4	Discusstheclinicalfeaturesofthecommoncauses ofneonatalseizures.			Y	Lecture,SGD	Written /Vivavoce			

20.15.5	Listtheprimarydiagnostictestsindicatedin neonatalseizures.			Y	Lecture,SGD	Written /Vivavoce			
20.15.6	Elaboratethestepwisealgorithmicapproachforthe managementofneonatalseizures.			Y	Lecture,SGD	Written/Viva voce			
PE 20.16	**Discusstheetiology,clinicalfeaturesandmanag ement ofneonatalsepsis.**			**Y**	**Lecture,SGD**	**Written/Viv a voce**			
20.16.1	Defineneonatalsepsis,probablesepsis,severesepsi s,septicshock			Y	Lecture,SGD	Written /Vivavoce			
20.16.2	ClassifyEarlyandlateneonatalsepsis.			Y	Lecture,SGD	Written/Viva voce			
20.16.3	Enumeratetheorganismsresponsibleforcausing earlyandlateonset sepsis.			Y					
20.16.4	Enumeratetheriskfactorsofearlyandlateonsetne onatalsepsiscorrectly.			Y	Lecture,SGD	Written /Vivavoce			
20.16.5	Describetheclinicalfeaturesofearlyonsetandlateon set neonatalsepsis			Y	Lecture,SGD	Written/Viva voce			
20.16.6	Enumeratethecommonlyusedlaboratorytestsfor diagnosisofneonatal sepsis.			Y	Lecture,SGD	Written /Vivavoce			
20.16.7	Recalltheinterpretationofapositive sepsisscreen.			Y	Lecture/SGD	Written /Vivavoce			
20.16.8	Describetheapproachtoanewbornwithsuspectede arly onsetsepsis.			Y	Lecture,SGD	Written/Viva voce			
20.16.9	Describetheapproachtoanewbornwithsuspe ctedlateonset sepsis.			Y	Lecture,SGD	Written /Vivavoce			
20.16.8	Listthecommonlyusedantibiotics(withdosageand duration oftherapy)inthemanagementofneonatalsepsis.			Y	Lecture,SGD	Written/Viva voce			
20.16.9	Describethesupportiveand adjunctivetherapyinmanagementofneo natalsepsis.			N	Lecture/SGD	Written/v ivavoce			
20.16.9	Discussthemeasuresforpreventionofearlyonset			Y	Lecture,SGD	Written			

	andlateonsetsepsis.					/Vivavoce			
PE 20.17	**Discusstheetiology,clinicalfeaturesandmanagement ofPerinatalinfections.**			**Y**	**Lecture,SGD**	**Written/Viva voce**			
20.17.1	DefinePerinatalinfection.			Y	Lecture,SGD	Written/Viva voce			

20.17.2	Discuss the etiology and risk factors for acquisition ofcommon Perinatal infections like Herpes, Cytomegalovirus,Toxoplasmosis,Rubella,HIV,Varicella,HepatitisBvirusand syphilis.			Y	Lecture,SGD	Written /Vivavoce			
20.17.3	DescribetheclinicalfeaturesofthecommonPerinatalinfections.			Y	Lecture,SGD	Written /Vivavoce			
20.17.4	OutlinethemanagementofthecommonPerinatalinfections.			Y	Lecture,SGD	Written/Vivavoce			
20.17.5	Enumeratethemeasuresfor preventionofcommonPerinatalinfections.			Y	Lecture,SGD	Written /Vivavoce			
PE 20.18	**IdentifyandstratifyriskinasickneonateusingIMNCI guidelines**			**Y**	**DOAP**	**Documentin Logbook**			
20.18.1	Identifypossibleseriousbacterialinfection/jaundice and stratifythesickneonateasperIMNCI.			Y	DOAP	Documentin Logbook			
20.18.2	Identifyandstratifydehydrationinasickneonatewithdiarrheaasper IMNCI.			Y	DOAP	Document inLogbook			
20.18.3	Classifydiarrheaintoseverepersistentdiarrheaandseveredysenteryasper IMNCIguidelines.			Y	DOAP	Document inLogbook			
20.18.4	Checkforfeedingproblemandmalnutritionandstratify.			Y	DOAP	Documentin Logbook			
20.18.5	Assessbreastfeedingandcheckforsignsofgoodattachmenttothebreastina neonate.			Y	DOAP	Document inLogbook			
20.18.6	Interpretandclassifytheneonateonthebasisofweightforagez scoresweightcategoriesaccurately.			Y	DOAP	Document inLogbook			
PE 20.19	**Discusstheetiology,clinicalfeaturesandmanagement ofNeonatalhyperbilirubinemia.**			**Y**	**Lecture/SGD**	**Written/Viva voce**			

20.19.1	Describetheetiologyofneonatalhyperbilirubinemia			Y	Lecture/SGD	Written/Viva voce			
20.19.2	Differentiatethecausesofneonataljaundicebasedonageofonsetand duration ofjaundice.			Y	LectureSGD	Written /Vivavoce			
20.19.3	Enumeratethecommoncausesofunconjugatedand conjugatedhyperbilirubinemiainthenewborn.			Y	Lecture/SGD	Written/Viva voce			
20.19.4	Differentiatebetweenphysiologicalandpathologicaljaundiceinthenewborn.			Y	Lecture/SGD	Written /Vivavoce			

20.19.5	Discusstheclinicalfeaturesofcommoncausesofneonataljaundice			Y	Lecture/SGD	Written /Vivavoce			
20.19.6	Describetheimportantclinicalfeaturesofacutebilirubin encephalopathy.			Y	LectureSGD	Written/Viva voce			
20.19.7	Listtheinvestigationstobeperformedintheevaluationofneonatalhyperbilirubinemia.			Y	Lecture/SGD	Written /Vivavoce			
20.19.8	Categorizetheriskinneonatalhyperbilirubinemiabasedon theAmericanAcademyofPediatricsBilirubinNomogram.			Y	Lecture/SGD	Written/Viva voce			
20.19.9	Identify a neonate requiring phototherapy as per theAmericanAcademyofPediatricsBilirubinNomogram.			Y	Lecture/SGD	Written /Vivavoce			
20.19.10	IdentifyaneonaterequiringexchangetransfusionaspertheAmerican AcademyofPediatricsBilirubinNomogram correctly.			Y	Lecture/SGD	Written /Vivavoce			
20.19.11	Describethecareofthebabyreceivingphototherapy.			Y	Lecture/SGD	Written /Vivavoce			
20.19.12	Explainthemechanismofphototherapy.			Y	Lecture/SGD	Written /Vivavoce			
20.19.13	Detailthemethodofadministeringphototherapy.			Y	Lecture/SGD	Written/Viva voce			
PE 20.20	**Identify clinical presentations of common surgicalconditions in the newborn including TEF, esophagealatresia,analatresia,cleftlipandpalate,congenital diaphragmaticherniaandcausesofacuteabdomen.**			**Y**	**Lecture/ SGD**	**Written/ vivavoce**			
20.20.1	Describeclinicalpresentationsofcommonsurgical conditionsin the newborn like Tracheo-esophageal fistula (TEF),esophagealatresia,analatresia,cleftlip andpalateand			Y	Lecture/SGD	Written /Vivavoce			

	congenitaldiaphragmaticherniacorrectly.								
20.20.2	Enumeratethecausesofacuteabdomeninthenewborn			Y	Lecture/SGD	Written /Vivavoce			
20.20.3	Recallthecausesofacuteabdomeninthenewbornbasedon thepresentingclinicalfeatures.			Y	Lecture/SGD	Written/Vivavoce			

Topic:Genito-Urinarysystem		**Numberofcompetencies:(17)**			**Numberofproceduresthatrequirecertification:(NIL)**				
PE21.1	**Enumeratetheetiopathogenesis,clinicalfeatures,complicationsandmanagementofUrinary Tract infection(UTI)inchildren**			**Y**	**Small groupdiscussion**	**Written /Vivavoce**		**Micro**	
21.1.1	DefineUTIasperstandardcriteria.			Y	Lecture/SGD	Written/Vivavoce			
21.1.2	EnumeratetheorganismscausingUTIinchildrenofdifferentages.			Y	Lecture/SGD	Written /Vivavoce			
21.1.3	Describetheclinicalfeaturesofsimple&complicated UTI.			Y	Lecture/SGD	Written/Vivavoce			
21.1.4	OutlinediagnosticworkupforchildrenwithUTIat differentages.			Y	Lecture/SGD	Written /Vivavoce			
21.1.5	Describe the treatment including the choice of antibiotics anddurationofantibiotic therapyfor treatingsimple& complicatedUTI.			Y	Lecture/SGD	Written /Vivavoce			
21.1.6	EnumeratethecomplicationsofUTIchildren.			Y	Lecture/SGD	Written /Vivavoce			
PE21.2	**Enumeratetheetiopathogenesis,clinicalfeatures, complications and management of acute post-streptococcalGlomerularNephritisinchildren**			**Y**	**Lecture/ SGD**	**Written /Vivavoce**		**Path**	
21.2.1	Defineacuteglomerulonephritis.			Y	Lecture/SGD	Written/Vivavoce			
21.2.2	Elaboratepathogenesisofimmunemediated nephriticsyndrome			Y	Lecture/SGD	Written /Vivavoce			
21.2.3	DescribetheclinicalfeaturesofPost-StreptococcalGlomerulonephritis(PSGN)			Y	Lecture/SGD	Written /Vivavoce			

21.2.4	EnumeratethecomplicationsofPSGN.			Y	Lecture/SGD	Written/Viva voce			
21.2.5	EnumeratetheinvestigationsforPSGN.			Y	Lecture/SGD	Written /Vivavoce			
21.2.6	EnumerateindicationsofkidneybiopsyinPSGN.			Y	Lecture/SGD	Written/Viva voce			
21.2.7	OutlinemanagementofPSGN.			Y	Lecture/SGD	Written /Vivavoce			

PE21.3	**Discusstheapproachandreferralcriteriatoachild withProteinuria**			**Y**	**Lecture/ SGD**	**Written/Viva voce**		**Path**	
21.3.1	Listcausesofglomerular&nonglomerularProteinuria.			Y	Lecture/SGD	Written /Vivavoce			
21.3.2	Definenephroticsyndrome.			Y	Lecture/SGD	Written/Viva voce			
21.3.3	Enumeratecausesofnephroticsyndrome.			Y	Lecture/SGD	Written /Vivavoce			
21.3.4	Outlinetheapproachtoachildwithfirstepisodeofnephrotic syndrome.			Y	Lecture/SGD	Written/Viva voce			
21.3.5	Listthecomplicationsofnephroticsyndrome.			Y	Lecture/SGD	Written /Vivavoce			
21.3.6	Listindicationsofkidneybiopsyinnephroticsyndrome.			Y	Lecture/SGD	Written /Vivavoce			
21.3.7	Outlinethemanagementofinitialepisode nephrotic syndromeandsubsequentrelapse.			Y	Lecture/SGD	Written/Viva voce			
21.3.8	ListtheCriteriaforreferralofachildwithproteinuria.			Y	Lecture/SGD	Written /Vivavoce			
PE21.4	**Discusstheapproachandreferralcriteriatoachild withhematuria**			**Y**	**Lecture/ SGD**	**Written/Viva voce**		**Anat**	
21.4.1	Enumeratecausesofhematuriainchildrenofdifferentages			Y	Lecture/SGD	Written/Viva voce			
21.4.2	Outlinedifferencesbetweenglomerular&nongl omerularhematuria			Y	Lecture/SGD	Written /Vivavoce			
21.4.3	Listinvestigationsforachildwithhematuria			Y	Lecture/SGD	Written /Vivavoce			
21.4.4	Listindicationsofkidneybiopsyin hematuria			Y	Lecture/SGD	Written/Viva voce			
21.4.5	Listcriteria forreferralforachildwithhematuria			Y	Lecture/SGD	Written /Vivavoce			

PE21.5	**Enumerate the etiopathogenesis, clinical features,complicationsandmanagementofAcuteRenalFailure inchildren**			**Y**	**Lecture/ SGD**	**Written /Vivavoce**		**Path**	
21.5.1	Defineacutekidneyinjury(AKI)asperKDIGO.			Y	Lecture/SGD	Written/Vivavoce			

21.5.2	OutlineclassificationofAKI.			Y	Lecture/SGD	Written /Vivavoce			
21.5.3	EnumeratecausesofAKI.			Y	Lecture/SGD	Written/Viva voce			
21.5.4	ListinvestigationsforAKIinchildren.			Y	Lecture/SGD	Written /Vivavoce			
21.5.5	DescribethemanagementofAKI.			Y	Lecture/SGD	Written/Viva voce			
21.5.6	ListindicationsofrenalreplacementtherapyinAKI.			Y	Lecture/SGD	Written /Vivavoce			
21.5.7	EnumeratecomplicationsofAKI.			Y	Lecture/SGD	Written /Vivavoce			
PE21.6	**Enumerate the etiopathogenesis, clinical features,complicationsandmanagementof chronickidney disease in children.**			**Y**	**Lecture/ SGD**	**Written /Vivavoce**		**Path**	
21.6.1	Definechronickidneydisease(CKD)&itsstaginginchildren.			Y	Lecture/SGD	Written/Viva voce			
21.6.2	OutlinetheclinicalfeaturesofCKDinchildren.			Y	Lecture/SGD	Written /Vivavoce			
21.6.3	ListcausesofCKDinchildren.			Y	Lecture/SGD	Written/Viva voce			
21.6.4	EnumeratecomplicationsofCKDinchildren.			Y	Lecture/SGD	Written /Vivavoce			
21.6.5	OutlinemanagementofCKD &itscomplications.			Y	Lecture/SGD	Written /Vivavoce			
PE21.7	**Enumeratetheetiopathogenesis,clinicalfeatures, complicationsandmanagementofWilmsTumor.**			**Y**	**Lecture/ SGD**	Written/Viva voce		**Path**	
21.7.1	DescribeEtiopathogenesisofWilmstumor.			Y	Lecture/SGD	Written/Viva voce			
21.7.2	DescribeclinicalfeaturesofWilmstumor.			Y	Lecture/SGD	Written /Vivavoce			

21.7.3	ListinvestigationsforapatientwithWilmstumor.			Y	Lecture/SGD	Written/Viva voce			
21.7.4	OutlinethemanagementofWilmstumor.			Y	Lecture/SGD	Written /Vivavoce			

PE21.8	**Elicit, documentandpresentahistorypertainingto diseasesoftheGenitourinarytract**			**Y**	**Bedside,Skillslab**	**Skill Assessment**			
21.8.1	Elicitclinicalhistorypertainingtogenitourinary diseasesinchildren.			Y	Bedside,Skillslab	SkillAssessment			
21.8.2	Performacompletephysicalexaminationforachild with genitourinarydiseases.			Y	Bedside,Skillslab	SkillAssessment			
21.8.4	Documentthecompletehistoryinthe Logbook.			Y	Bedside,Skillslab	SkillAssessment			
PE21.9	**IdentifyexternalmarkersforKidneydisease,like Failingtothrive,hypertension,pallor,Icthyosis,anasarca**			**Y**	**Bedside,Skillslab**	**Document inLogbook**			
21.9.1	IdentifyexternalmarkersforKidneydisease,likeFailingto thrive,hypertension,pallor,Icthyosis,anasarca.			Y	Bedside,Skillslab	Documentin Logbook			
PE21.10	**Analyzesymptomandinterpretthephysicalfindingsandarriveatanappropriateprovisionaldifferential diagnosis**			**Y**	**Bedside,Skillslab**	**Logbook**			
21.10.1	Analyzesymptomsandinterpretthephysicalfindingsand arriveatanappropriateprovisionaldifferentialdiagnosis.			Y	Bedside,Skillslab	Logbook			
PE21.11	**PerformandinterpretthecommonanalytesinaUrine examination**			**Y**	**Bedside,Skillslab**	**Skill assessment**		**Biochemistr, Path**	
21.11.1	PerformatleastonetesttoelicitProteinuria.			Y	Bedside,Skillslab	Skillassessment			
21.11.2	Interpretthetestsforproteinuriaandtheirsignificance.			Y	Bedside,Skillslab	Skillassessment			
21.11.3	Performtest forevaluatingUrinePH.			Y	Bedside,Skillslab	Skillassessment			
21.11.4	Performurinemicroscopy.			Y	Bedside,Skillslab	Skillassessment			

21.11.5	IdentifytheabnormaldepositsandInterprett heurinemicroscopyfindings.			Y	Bedside,Skillslab	Skillassessme nt			
21.11.6	Testtheurineforglucosuria.			Y	Bedside,Skillslab	Skillassessme nt			
21.11,7	Interprettheurinesugarresults.			Y	Bedside,Skillslab	Skillassessme nt			
PE21.12	**InterpretreportofPlainXRayofKUB**			**Y**	**Bedside,Skillsla b**	**Logbook**			**Radio D**
21.12.1	Identifyany abnormalitiesonX-Ray KUB.			Y	Bedside,Skillslab	Logbook			
PE21.13	**Enumeratetheindicationsfor andInterpretthe writtenreportofUltrasonogramofKUB**			**Y**	**Bedside,Skillsla b**	**Logbook**			**Radio D**

21.13.1	EnumerateindicationsforUltrasoundKUB.			Y	Bedside,Skillslab	Logbook			
21.13.2	InterpretthewrittenreportofultrasonogramofKUB.			Y	Bedside,Skillslab	Logbook			
PE21.14	**Recognize common surgical conditions of theabdomen and genitourinary system and enumeratethe indications for referral including acute andsubacute intestinal obstruction, appendicitis,pancreatitis, perforation intussusception, Phimosis, undescendedtestis,Chordee,hypospadias,Torsion testis,herniaHydrocele,VulvalSynechiae**			**Y**	**Bedside,Skillslab**	**Bedside, Skillslab**			**Surg**
21.14.1	Recognize common surgical conditions of the abdomen andgenitourinary system and enumerate the indications forreferral including acute and subacute intestinal obstruction,appendicitis, pancreatitis, perforation intussusception,Phimosis,undescendedtestis,Chordee,hypospadias,Torsion testis,herniaHydrocele,VulvalSynechiae.			Y	Bedside,Skillslab	Bedside, Skillslab			
PE21.15	**Discussandenumeratethereferralcriteriaforchildren withgenitourinarydisorder**			**Y**	**Lecture/ SGD**	**Written/viva voce**			
21.15.1	EnumeratereferralcriteriainachildwithGenitourinarydisorder.			Y	Lecture/SGD	Written/vivavoce			
PE21.16	**Counsel/educateapatientforreferralappropriately**			**Y**	**DOAP**	**Logbook**		AETCOM	
21.16.1	Counsel/educateapatientforreferralappropriately.			Y	DOAP	Logbook			
PE21.17	**Describetheetiopathogenesis,grading,clinical featuresandmanagementofhypertensioninchildren**			**Y**	**Lecture/ SGD**	**Written/viva voce**			
21.17.1	DefineHypertension(HTN)&itsstagingasperAAP 2017guidelines.			Y	Lecture/SGD	Written/ vivavoce			
21.17.2	Enumeratecausesofhypertensioninchildren.			Y	Lecture/SGD	Written/viva voce			
21.17.3	DescribetheclinicalpresentationofachildwithHT.			Y	Lecture/SGD	Written/ vivavoce			

21.17.4	ListcomplicationsofHTin children.			Y	Lecture/SGD	Written/ vivavoce			
21.17.5	Enumerateinvestigationsforhypertensioninchildren.			Y	Lecture/SGD	Written/viva voce			

21.17.6	Outlinetreatmentofhypertension(asperguidelines)inchildren.			Y	Lecture/SGD	Written/ vivavoce			
Topic:Approachtoandrecognitionofachildwithpossible Rheumatologicproblem				**Numberofcompetencies:(3)**		**Numberofproceduresthatrequirecertification:(NIL)**			
PE 22.1	**EnumeratethecommonRheumatologicalproblemsinchildren.Discuss the clinical approach to recognitionandreferralofachildwithRheumatologicalproblem**			**Y**	**Lecture/SGD**	**Written / vivavoce**			
22.1.1	EnumeratethecommonRheumatologicalproblemsinchildren.			Y	Lecture/SGD	Written/vivavoce			
22.1.2	Describetheclinicalapproachtoachild withRheumatologicalproblem.			Y	Lecture/SGD	Written/vivavoce			
22.1.3	Enumeratetheindicationsfor referralofachildwithRheumatologicalproblem.			Y	Lecture/SGD	Written/vivavoce			
PE 22.2	**CounselapatientwithChronicillness**			**N**	**Bedsideclinic/skill lab**	**Logbook**			
22.2.1	Counselachild /parentsofachildwithachronicillness.			N	Bedsideclinic/skill lab	Logbook			
PE 22.3	**Describethediagnosisandmanagementofcommon vasculitic disorders including Henoch SchonleinPurpura, KawasakiDisease, SLE, JIA**			**N**	**Lecture/SGD**	**Written / vivavoce**			
22.3.1	Listthecommoncausesofvasculitisinchildren.			Y	Lecture/SGD	Written/Viva voce			
22.3.2	EnumerateClinical featuressuggestiveofvasculitisinachild			N	Lecture/SGD	Written/viva voce			
22.3.3.	ListtheclinicalfeaturesofHenochSchonleinPurpura (HSP).			N	Lecture/SGD	Written/vivavoce			

22.3.4	ListthediagnosticcriteriaofHSP.			N	Lecture/SGD	Written/vivavoce			
22.3.5	OutlinethemanagementofachildwithHSP.			N	Lecture/SGD	Written/vivavoce			
22.3.6	Enumeratetheclinical featuresofKawasakidisease(KD).			N	Lecture/SGD	Written/vivavoce			

22.3.7	DefinediagnosticcriteriaofKawasakidisease.			N	Lecture/SGD	Written/vivavoce			
22.3.8	Outlinethemanagementofa childwithKawasaki Disease.			N	Lecture/SGD	Written/vivavoce			
22.3.9	DefinediagnosticcriteriaofSLE.			N	Lecture/SGD	Written/vivavoce			
22.3.10	Outlinethemanagementofachild withSLE.			N	Lecture/SGD	Written/vivavoce			
22.3.11	DefinediagnosticcriteriaofJIA.			N	Lecture/SGD	Written/vivavoce			
22.3.12	OutlinethemanagementofachildwithJIA.			N	Lecture/SGD	Written/vivavoce			
Topic:Cardiovascularsystem-HeartDiseases		**Numberofcompetencies:(18)**				**Numberofproceduresthatrequirecertification:(NIL)**			
PE 23.1	**Discuss the Hemodynamic changes, clinicalpresentation, complications and management ofacyanoticHeartDiseases-VSD,ASDandPDA**			**Y**	**Lecture/SGD**	**Written/ Vivavoce**		**Physio,Path**	
23.1.1	Explain and illustrate diagrammatically the hemodynamicchangesseeninacyanoticcongenitalheart diseases viz VSD,ASD,PDA.			Y	Lecture/SGD	Written/VivaVoce		Physio,Path	
23.1.2	Describethesignsandsymptoms,timingofpresentationofaboveacyanotic congenitalheart diseases.			Y	Lecture/SGD	Written/VivaVoce			
23.1.3	Enumeratethecomplicationsofacyanoticcongenitalheartdiseases.			Y	Lecture/SGD	Written/VivaVoce			
23.1.4	Outlinethemedicalmanagementofcongenitalacyanotic heartdiseaseasabove.			Y	Lecture/SGD	Written/Viva Voce			
23.1.5	Enumeratethesurgicaltreatments forVSA,ASD,PDA.			Y	Lecture/SGD	Written/VivaVoce			
PE 23.2	**Discuss the Hemodynamic changes, clinicalpresentation,complicationsandmanagementof**			**Y**	**Lecture/SGD**	**Written/VivaVoce**		**Physio,Path**	

	CyanoticHeartDiseases–FallotPhysiology								
23.2.1	Enumeratetheessentialcomponentsof FallotPhysiologyand ListthecardiacconditionswiththeFallotPhysiology.			Y	Lecture/SGD	Written/Viva Voce			
23.2.2	Describe and illustrate diagrammatically the hemodynamicchangesseeninFallotPhysiologyc yanoticcongenitalheartdiseases.			Y	Lecture/SGD	Written/V ivaVoce			

23.2.3	Explaintheclinicalpresentationandcomplication sofFallotPhysiologycyanoticcongenitalheart diseases.			Y	Lecture/SGD	Written/V ivaVoce			
23.2.5	Describeacyanoticspellandthepharmacologicalan dnon-pharmacologicalmanagementofcyanoticspells.			Y	Lecture/SGD	Written/Viva Voce			
23.2.6	DescribethetreatmentoptionsforlesionswithFal lotPhysiology.			Y	Lecture/SGD	Written/V ivaVoce			
PE 23.3	**Discusstheetiopathogenesis,clinicalpresentati onand managementofcardiacfailureininfantandchild ren**			**Y**	**Lecture/SGD**	**Written/Viv a Voce**		**Physio,Pat h**	
23.3.1	Enumeratecausesofcongestiveheartfailurein childrenas pertheageofpresentation.			Y	Lecture/SGD	Written/Viva Voce			
23.3.2	Describethehemodynamicchangesincongest iveheartfailure.			Y	Lecture/SGD	Written/V ivaVoce			
23.3.3	Describethesignsandsymptomsofleft side,rightsideandcombinedcongestiveheart failure.			Y	Lecture/SGD	Written/V ivaVoce			
23.3.4	Enumeratethevariousmanagementoptionsavailab lefor congestiveheartfailure.			Y	Lecture/SGD	Written/Viva Voce			
23.3.5	Explaintheroleofdiuretics,inotropes,inodilators, andafterload reducingagentsintreatmentof CCF.			Y	Lecture/SGD	Written/V ivaVoce			
PE 23.4	**Discusstheetiopathogenesis,clinicalpresentati onand managementofAcuteRheumaticFeverinchildre n**			**Y**	**Lecture/SGD**	**Written/Viv a Voce**		**Physio,Pat h**	
23.4.1	ExplaintheetiopathogenesisofAcuterheumaticfeve r.			Y	Lecture/SGD	Written/Viva Voce			
23.4.2	Describethemodified JonescriteriatodiagnosetheAcuterheumaticfev er.			Y	Lecture/SGD	Written/V ivaVoce			

23.4.3	DescribelaboratorychangesinAcuterheumaticfever.			Y	Lecture/SGD	Written/VivaVoce			
PE 23.5	**Discusstheclinicalfeatures,complications, diagnosis,managementand preventionofAcuteRheumaticFever**			**Y**	**Lecture/SGD**	**Written/VivaVoce**		**Physio,Path**	
23.5.1	Describetheclinicalfeaturesofacuterheumatic fever.			Y	Lecture/SGD	Written/VivaVoce			
23.5.2	Listthelong-termcomplicationsofAcuteRheumaticfever.			Y	Lecture/SGD	Written/Viva Voce			

23.5.3	Outlinethemedical managementofacuterheumatic fever.			Y	Lecture/SGD	Written/V ivaVoce			
23.5.4	Discussstrategiesfortheprimaryand secondaryprevention oftheacuterheumatic fever.			Y	Lecture/SGD	Written/Viva Voce			
PE 23.6	**Discusstheetiopathogenesis,clinicalfeaturesand managementofInfectiveendocarditisinchildren**			**Y**	**Lecture/SGD**	**Written/Viva Voce**		**Physio,Path, Micro**	
23.6.1	Enumerate the common predisposing conditions andetiopathogenesisofInfectiveendocarditisinchildren			Y	Lecture/SGD	Written/V ivaVoce			
23.6.2	ListcriteriausedtodiagnoseInfectiveendocarditis.			Y	Lecture/SGD	Written/Viva Voce			
23.6.3	Describetheclinicalfeaturesofinfectiveendocarditisinchildren.			Y	Lecture/SGD	Written/V ivaVoce			
23.6.4	Outlinethemanagementofinfectiveendocarditisinchildren.			Y	Lecture/SGD	Written /Vivavoce			
23.6.5	Statethelong-termcomplicationsofInfectiveendocarditis.			Y	Lecture/SGD	Written/Viva Voce			
23.6.6	Enumeratetheconditionsrequiringprophylaxisforinfectiveendocarditis.			Y	Lecture/SGD	Written/V ivaVoce			
PE 23.7	**Elicitappropriatehistoryforacardiacdisease,analyzethe symptoms e.g. breathlessness, chest pain,tachycardia, feeding difficulty, failing to thrive,reducedurinaryoutput,swelling, syncope,cyanotic spells,Suckrestcycle,frontalswellingininfants.**			**Y**	**Bedside,Skillslab**	**Bed side/skillassessment**			
23.7.1	Elicitappropriatehistoryrelevanttothecardiacdiseaseandanalyze the importance of symptoms e.g. breathlessness,chest pain, tachycardia, feeding difficulty, failing to thrive,reducedurinaryoutput,swelling,syncope, cyanoticspells, Suckrestcycle,frontalswellingininfants.			Y	Bedside,skillslab	Bed side/skillassessment			

23.7.2	Documentandpresentthehistorytakeninappropriatemanner.			Y	Bedside,skillslab	Bedside/skill assessment			
PE 23.8	**Identify external markers of a cardiac disease e.g.Cyanosis,Clubbing,dependentedema,dentalcaries arthritis, erythema rash, chorea, subcutaneousnodules,Oslernode,Janewaylesionsanddocument**			**Y**	**Bedside,SkillsLab**	**Bedside/skillassessment**			

23.8.1	Identify and document the external markers of heartdisease in general physical examination e.g. Cyanosis,Clubbing, dependent edema, dental caries, arthritis,erythemarash,chorea,subcutaneousnodules,Osler node, Janewaylesions.			Y	Bedside, skills lab	Bed side/skillassessment			
PE 23.9	**Recordpulse,bloodpressure,temperatureandrespiratoryrateandinterpretaspertheage**			**Y**	**Bedside,Skillslab**	**Bedside/skill assessment**			
23.9.1	Recordanddemonstratevariousparametersofthepulse.			Y	Bedside,Skillslab	OSCE/bedside assessment			
23.9.2	Recordcorrectlythesystolicanddiastolicblood pressureusingappropriateequipment.			Y	Bedside/skilllab	OSCE /bedsideassessment			
23.9.3	UsetheagespecificnomogramstointerprettheBPreadings.			Y	Bedside,Skillslab	OSCE/bedside assessment			
23.9.4	Measurebodytemperatureusingathermometer.			Y	Bedside,Skillslab	OSCE /bedsideassessment			
23.9.5	Countttherespiratoryrateandinterpretaspertheage.			Y	Bedside,Skillslab	OSCE /bedsideassessment			
PE 23.10	**Perform independently examination of thecardiovascular system – look for precordial bulge,pulsations in the precordium, JVP and its significancein children and infants, relevance of percussion inPediatricexamination,Auscultationandothersystem examinationanddocument**			**Y**	**Bedside,Skillslab**	**Bed side/skillassessment**			
23.10.1	PerformindependentCVSexaminationlookingforprecordialbulgeandpulsations,auscultationofareasofprecordium.			Y	Bedside,Skillslab	Bedside,OSCE			

23.10.2	LookforandmeasureJVP.			Y	Bedside,Skillslab	bedside assessment			
23.10.3	Describerelevanceofpercussioninthecardio vascularexamination.			Y	SGD	Viva			
23.10.4	Documentthefindingsofthecardiovascularandot hersystemexam.			Y	Bedside,Skillslab	Logbook			
PE 23.11	**Develop a treatment plan and prescribe appropriatedrugsincludingfluidsincardiacdi seases,anti -failure drugs,andinotropicagents**			**Y**	**Bedside,Skillsla b**	**written/Vi vavoce**			
23.11.1	Makeanappropriatetreatmentplanforachildwit hcardiacdiseaseincludingantifailure drugs,inotropsandfluids.			Y	Bedside class/papercas es	OSCE/Logboo k			
PE 23.12	**InterpretachestXrayandrecognizeCardiomega ly**			**Y**	**Bedside,Skillsla b**	**Logbookentr y**		**RadioD**	
23.12.1	Calculatecardiothoracicratioandinterpretaccordin gtoage.			Y	Bedside,Skillslab	vivavoce,OSC E		**RadioD**	
23.12.2	StatefeaturesofcardiomegalyonthechestX-ray.			Y	Bedside,Skillslab	OSCE,vivavoc e		**RadioD**	
23.12.3	Identifythepathognomonicradiologicalfeatures ofvariouscongenitalheart diseaseson chest xray.			Y	Bedside,Skillslab	OSCE,vivavoc e			
23.12.4	Identifypleuraleffusionandthepulmonaryedemao nachestX-ray.			Y	Bedside,Skillslab	OSCE,vivavoc e			
PE 23.13	**ChooseandInterpretbloodreportsinCardiacilln ess**			**Y**	**Bedside,SGD**	**Logbookentr y**			
23.13.1	Listbloodtestsrelevantforthecardiacdiseases.			Y	Bedside,Skillslab	vivavoce			
23.13.2	Interpretthebloodtestsreportsforthecardiacdiseas e.			Y	Bedside,Skillslab	vivavoce,OSC E			
PE 23.14	**InterpretPediatricECG**			**Y**	**Bedside,Skillsla b**	**Logbookentr y**			
23.14.2	InterpretfewcommonECGabnormalitiesinchildren .			Y	SGD,skilllab	OSCE,vivavoc e			
PE 23.15	**UsetheECHOreportsinmanagementofcases**			**Y**	**Bedside**	**Logbookentr y**		**Cardio**	

23.15.1	UsetheECHOreportsinmanagementofcases.			Y	Bedside,Skillslab	Logbookentry			
PE 23.16	**Discusstheindicationsandlimitationsof Cardiac catheterization**			**Y**	**Lecture/ SGD**	**Written/Viva Voce**			
23.16.1	EnumeratetheindicationsofCardiaccatheterization.			**Y**	Lecture/SGD	Written/ VivaVoce			
23.16.2	ListthelimitationsofCardiaccatheterization.			**Y**	Lecture/SGD	Written/Viva Voce			
PE 23.17	**Enumeratesomecommoncardiacsurgerieslike BT shunt,PottsandWaterston'sandcorrectivesurgeries**			**Y**	**Lecture/ SGD**	**Written/Viva Voce**			
23.17.1	Enumeratecommoncardiacsurgeriesandtheirindicationsinchildren.			Y	Lecture/SGD	Written/ VivaVoce			
PE23.18	**Demonstrateempathywhiledealingwithchildrenwithcardiac diseasesineverypatientencounter**			**Y**	**SGD, Bedside,Skillslab**	**Document inLogbook ,Directobservation, OSCE**		**AETCOM**	
23.18.1	Demonstrateempathywhiledealingwithchildrenwithcardiacdiseasesineverypatient encounter.			Y	Bedside,Skillslab	Directobservation, OSCE		AETCOM	
23.18.2	Demonstrateempathywhiledealingwithparentsofchildrenwithcardiac diseasesin everycontact.			Y	Bedside,Skillslab	Directobservation, OSCE		AETCOM	
Topic:DiarrhoealdiseasesandDehydration				**Numberofcompetencies:(17)**		**Numberofproceduresthatrequirecertification:(03)**			
PE 24.1	**Discusstheetiopathogenesis,classification,clinical presentation and management of diarrheal diseases inchildren.**			**Y**	**Lecture/ SGD**	**Written / vivavoce**		**Path Micro**	
24.1.1	ExplainetiopathogenesisofDiarrhealdiseasesinchildren.			Y	Lecture/SGD	Written/ VivaVoce		Path Micro	

24.1.2	ClassifyDiarrhealdiseasebasedondurationandetiology.			Y	Lecture/SGD	Written/Viva Voce		Path Micro	
24.1.3	DescribesymptomsandsignsofDiarrhealdiseaseinchildren.			Y	Lecture/SGD	Written/ VivaVoce			
24.1.4	EnumerateinvestigationsrequiredforDiarrhealdiseaseinchildren.			Y	Lecture/SGD	Written/ VivaVoce		Path Micro	
24.1.5	OutlinethetreatmentplanofDiarrhealdiseaseinchildren.			Y	Lecture/SGD	Written/Viva Voce			
PE 24.2	**Discusstheclassificationandclinicalpresentationof varioustypesofdiarrhealdehydration**			**Y**	**Lecture/SGD**	**Written/viva voce**		**Path, Micro**	
24.2.1	Enumerateallthesignsandsymptomsofdehydrationinchildren.			Y	Lecture/Smallgroupactivity	Written/ VivaVoce			
24.2.2	ClassifydehydrationasperWHOguidelines.			Y	Lecture/SGD	Written/Viva Voce			
24.2.3	Enumeratetheclinicalfeaturesofdehydrationofdifferentseverity.			Y	Lecture/SGD	Written/V ivaVoce			
PE 24.3	**DiscussthephysiologicalbasisofORT,typesof ORSand the composition of various types of ORS inchildren**			**Y**	**Lecture/ SGD**	**Written/ vivavoce**			
24.3.1	ExplainpathophysiologyoffluidandelectrolytelossinDiarrhealdiseases.			Y	Lecture/SGD	Written/V ivavoce			
24.3.2	StatethebasisoffluidandelectrolytereplacementinDiarrhealdiseases.			Y	Lecture/SGD	Written/V ivavoce			
24.3.3	RecallcompositionofWHOstandardORS.			Y	Lecture/SGD	Written/V ivavoce			
24.3.4	RecallcompositionofothertypeofORS vizResoMal,Low osmolarityORS.			Y	Lecture/SGD	Written/Viva voce			
PE 24.4	**Discussthetypesoffluidusedin Pediatricdiarrheal**			**Y**	**Lecture/SGD**	**Written/viva voce**			

	diseasesandtheircomposition								
24.4.1	Enumeratethetypesoffluidsusedinmanagement ofdehydrationinchildren.			Y	LectureSGD	Written/Vivavoce			
24.4.2	DescribethecompositionofRingerlactateandNormalsaline andrationaleoftheirusein correctionofdehydration.			Y	LectureSGD	Written/Vivavoce			
PE 24.5	**Discuss the role of antibiotics, antispasmodics, anti-secretorydrugs,probiotics, anti-emeticsinacute diarrhealdiseases**			**Y**	**Lecture/SGD**	**Written / vivavoce**		**Pharm,Microbiology**	
24.5.1	Describeharmfulpracticesintreatmentofdiarrhealdiseasesin children			Y	LectureSGD	Written/Vivavoce			
24.5.2	Enumeratetheindicationsofantibiotictherapyindiarrheal diseasesinchildren			Y	LectureSGD	Written/Vivavoce			
24.5.3	Describerole,dosageanddurationofZinctherapyinDiarrhealdiseasesinchildren			Y	LectureSGD	Written/Vivavoce			
24.5.4	Interpret selective role of probiotics, anti-secretory drugs,antispasmodicsandantiemeticsinacutediarrhealdiseases.			Y	LectureSGD	Written/Vivavoce			
PE 24.6	**Discussthecauses,clinicalpresentationand managementofpersistentdiarrheainchildren**			**Y**	**Lecture/SGD**	**Written/vivavoce**	**Nil**	**Micro**	
24.6.1	DefinePersistentdiarrheainchildren.			Y	LectureSGD	Writtenandvivavoce			
24.6.2	Enumeratecausesofpersistentdiarrheainchildren.			Y	SGD	Written andvivavoce			
24.6.3	Describeclinicalpresentationinchildwithpersistentdiarrhea.			Y	LectureSGD	Written andvivavoce			

24.6.4	Listinvestigationsinpersistentdiarrhea.			Y	LectureSGD	Written andvivav oce			
24.6.5	Outlinethetreatmentplaninpersistentdiarrhea.			Y	LectureSGD	Writtenand vivavoce			
PE 24.7	**Discussthecauses,clinicalpresentationand managementofchronicdiarrheainchildren.**			**Y**	**Lecture/SGD**	**Written/ via voce**			
24.7.1.	Definechronicdiarrheainchildren.			Y	Lecture/SGD	Written/viva			
24.7.2	Enumeratethecommoncausesofchronicdia rrheainchildren.			Y	Lecture/SGD	Written andvivav oce			
24.7.3	Describesymptomsandsignsofchronicdiarrhea.			Y	Lecture/SGD	Writtenand vivavoce			
24.7.4	Enumerateinvestigationsfor chronicdiarrhea.			Y	Lecture/SGD	Written andvivav oce			
24.7.5	Outlinetreatmentofchronicdiarrhea.			Y	Lecture/SGD	Written andvivav oce			
24.7.6	Identifyneedofreferralinacaseofchronicdiarrhea.			Y	Lecture/SGD	Writtenand vivavoce			
PE 24.8	**Discussthecauses,clinicalpresentationand managementofdysenteryinchildren**			**Y**	**Lecture/SGD**	**Written/viva voce**	**Nil**	**Pharm, Micro**	
24.8.1	Definedysenteryinchildren.			Y	Lecture/SGD	Written, Vivavoce			
24.8.2	Enumeratetheetiologicalagentscausingdysenteryi n children.			Y	Lecture/SGD	Written/viva		Micro	
24.8.3	Describesymptomsandsignsofdysenteryinchildre n.			Y	Lecture/SGD	Written, Vivavoce			
24.8.4	Outlinetheantibiotictherapyinchildrenwithdysent ery.			Y	Lecture/SGD	Written/viva		Pharm	

PE 24.9	**Elicit, document and present history pertaining todiarrhealdiseases**			**Y**	**Bedside,Skilllab**	**Clinicalcase/ OSCE/ski llassessm ent**			
24.9.1	Elicithistoryfordiarrhealdiseasesinchildren.			Y	Bedside,Skilllab	Clinical case/OSC E/skill assessment			
24.9.2	Documentgatheredinformationinhistorysheet.			Y	Bedside,Skilllab	clinicalcase/ skill assessment			
24.9.3	Presentthehistorypertainingtodiarrhealdiseases.			Y	Bedside,Skilllab	Clinicalcase, skill assessment,			
PE 24.10	**Assessforsignsofdehydration,documentandpr esent**			**Y**	**Bedside,skilllab**	**Skill Assessment**			
24.10.1	Assessclinicalsignsofdehydration.			Y	Bedside,skilllab	SkillAssessme nt			
24.10.2	Correlateclinicalsignstoseverityofdehydration.			Y	Bedside,skilllab	SkillAssessme nt			
24.10.3	Documentandpresentthesignsofdehydrationperta iningto diarrhealdiseases.			Y	Bedside,skilllab	SkillAssessme nt			
PE 24.11	**ApplytheIMNCIguidelinesinriskstratificationo f childrenwithdiarrhealdehydrationandrefer**			**Y**	**Bedside/skilllab**	**Documentin Logbook**			
24.11.1	Applyriskstratificationofchildrenwithdiarrhealde hydrationasper IMNCIguidelines.			Y	Bedside/skilllab	Document inLogboo k			
24.11.2	Identifyneedforreferralinacaseofdiarrhealdehy drationbasedon riskstratification as perIMNCI.			Y	Bedside,Skilllab	Document inLogboo k			
PE24.12.1	**Performandinterpretstoolexaminationincludi ng HangingDrop**			**N**	**Bedside,Skilllab**	**Documentin Logbook**		**Micro**	

24.12.1	Prepareslideforstoolexaminationunder microscope.			N	Bedside,Skilllab	Documentin Logbook			
24.12.2	Correctlyidentifypathogenaftermicroscopicexamination ofstool.			N	Bedside,Skilllab	Document inLogbook			
24.12.3	Correctlyperformhangingdroppreparationfromstool samplegiven.			N	Bedside,Skilllab	Documentin Logbook			
PE 24.13	**InterpretRFTandelectrolyte report**			**Y**	**Bedside/skilllab / SGD**	**Documentin Logbook**			
24.13.1	Interpretthegivenreportsfor valuesofurea,creatinine,sodiumandpotassium.			Y	Bedside/skilllab/SGD	Document inLogbook			
PE 24.14	**PlanfluidmanagementaspertheWHOcriteria**			**Y**	**Bedside,Small groupactivity**	**Skilllab**			
24.14.1	Select appropriate type of fluid and Calculate amount, routeanddurationoftherapyoffluidtobegivenasperPlanA,foragiven ageand weight ofa child.			Y	Bedside,Smallgroupactivity	Skilllab			
24.14.2	Select appropriate type of fluid and Calculate amount, routeanddurationoftherapyoffluidtobegivenasperPlanB,for agivenageandweight ofa child.			Y	Bedside,Smallgroupactivity	Skilllab			
24.14.3	SelectappropriatetypeoffluidandCalculateamount, routeanddurationoftherapyoffluidtobegivenasperPlan Cfor ageand weightofachild.			Y	Bedside,Smallgroupactivity	Skilllab			
PE 24.15	**PerformNGtubeinsertioninamanikin**			**Y**	**DOAPsession**	**Documentin Logbook**	**2**		
24.15.1	Identifysizeofnasogastrictubeasperageof child.			Y	DOAPsession	Documentin Logbook	2		
24.15.2	Demonstratelandmarksformeasurementoflength ofNGtubeto beinserted on a manikin.			Y	DOAPsession	Document inLogbook	2		

24.15.3	CorrectlymeasurethelengthofNGtubetobeinserted.			Y	DOAPsession	Document inLogbook	2		
24.15.4	Insertthetubeandcheckits position.			Y	DOAPsession	Documentin Logbook	2		
24.15.5	Demonstratesallthestepstocheckcorrectpositio nofNGtubeand fixNGtube.			Y	DOAPsession	Document inLogbook	2		
PE 24.16	**PerformIVcannulationinamodel**			**Y**	**DOAPsession**	**Documentin Logbook**	**2**		
24.16.1	IdentifysizeofIVcannulaasperageofchild.			Y	DOAPsession	Documentin Logbook	2		
24.16.2	Demonstrate all steps of infection control policy likehandwashing,wearinggloves,properfillingoffluidinsyringe.			Y	DOAPsession	Document inLogbook	2		
24,16.3	DemonstratecommonsitesforIVcannulationinchildrenand preparationofsite.			Y	DOAPsession	Documentin Logbook	2		
24.16.4	CorrectlyinsertIVcannulainamodelandlookforfreeflowofblood.			Y	DOAPsession	Document inLogbook	2		
24.16.5	ProperlyfixIVcannulaandcorrectlydemonstratedisposalofbiomedicalwaste.			Y	DOAPsession	Document inLogbook	2		
PE 24.17	**PerformInterosseousinsertionmodel**			**Y**	**DOAPsession**	**Documentin Logbook**	**2**		
24.17.1	Identifysiteforintraosseousinsertioninchildren basedonlandmarks.			Y	DOAPsession	Document inLogbook	2		
24.17.2	Demonstrateallstepsofinfectioncontrol.			Y	DOAPsession	Documentin Logbook	2		
24.17.3	InserttheIntraosseouscannulaanddemonstrate howtocheckitsproper insertioninmodel.			Y	DOAPsession	Document inLogbook	2		

24.17.4	FixIntraosseouscannulaandcorrectlydemonstrate disposal ofbiomedical waste.			Y	DOAPsession	Documentin Logbook	2		
Topic:Malabsorption		**Numberofcompetencies:(1)**				**Numberofproceduresthatrequirecertification:(NIL)**			
PE25.1	**Discuss the etiopathogenesis, clinical presentation andmanagement of Malabsorption in Children and itscausesincludingceliacdisease.**			**N**	**Lecture/SGD**	**Written/ vivavoce**		**Path**	
25.1.1	Definemalabsorptioninchildren.			N	Lecture/SGD	Written/Viva Voce			
25.1.2	Enumeratecausesofmalabsorptionin children.			N	Lecture/SGD	Written/ VivaVoce			
25.1.3	Describeetiopathogenesisofmalabsorptioninchildren.			N	Lecture/SGD	Written/ VivaVoce			
25.1.4	Describecommonsymptomsandsignsofmalabsorption in children.			N	Lecture/SGD	Written/Viva Voce			
25.1.5	Describepresentationsofceliacdiseaseinchildren.			N	Lecture/SGD	Written/ VivaVoce			
25.1.6	Enumerateinvestigationsincaseofceliacdisease.			N	Lecture/SGD	Written/ VivaVoce			
25.1.7	Enumeratestepsoftreatmentplanin caseofceliacdisease.			N	Lecture/SGD	Written/Viva Voce			
Topic:Acuteandchronicliverdisorders		**Numberofcompetencies:(13)**				**Numberofproceduresthatrequirecertification:(NIL)**			
PE26.1	**Discuss the etiopathogenesis, clinical features andmanagementofacutehepatitis inchildren**			**Y**	**Lecture/ SGD**	**Written/ VivaVoce**		**Path Micro**	
26.1.1	DefineAcuteHepatitisinchildren.			Y	Lecture/SGD	Written/Viva Voce			

26.1.2	EnumeratecommoncausesofAcuteHepatitisinchildren.			Y	Lecture/SGD	Written/ VivaVoce			
26.1.3	DescribepathogenesisofAcuteHepatitisinchildren.			Y	Lecture/SGD	Written/Viva Voce			
26.1.4	Describetheclinicalfeaturesandcomplication sofAcuteHepatitis.			Y	Lecture/SGD	Written/ VivaVoce			
26.1.5	Listtheinvestigationsrequiredfordiagnosisof Acute Hepatitis.			Y	Lecture/SGD	Written/Viva Voce			
26.1.6	Describethemanagement andprevention ofAcuteHepatitis.			Y	Lecture/SGD	Written/ VivaVoce			
PE 26.2	**Discusstheetiopathogenesis,clinicalfeaturesand managementofFulminantHepaticFailureinchildren**			**Y**	**Lecture/ SGD**	**Written/Viva Voce**		**Path Micro**	
26.2.1	DefineFulminantHepaticFailureinChildren.			Y	Lecture/SGD	Written/V ivaVoce			
26.2.2	Enumeratethefactorswhich precipitateFulminantHepatic Failure.			Y	Lecture/SGD	Written/Viva Voce			
26.2.3	DescribethepathogenesisofFulminantHepaticFailure.			Y	Lecture/SGD	Written/V ivaVoce			
26.2.4	DescribetheclinicalfeaturesofFulminantHepaticFailure.			Y	Lecture/SGD	Written/V ivaVoce			
26.2.5	EnumeratetheinvestigationsforachildwithFulminant HepaticFailure.			Y	Lecture/Smallgroup activity	Written/Viva Voce			
26.2.6	DescribethemanagementofFulminantHepaticFailure.			Y	Lecture/Smallgroupactivity	Written/V ivaVoce			
PE 26.3	**Discusstheetiopathogenesis,clinicalfeaturesand managementofchronicliverdiseasesinchildren.**			**Y**	**Lecture/ SGD**	**Written/Viva voce**		**Path Micro**	
26.3.1	DefineChronicLiverDiseaseinchildren.			Y	Lecture/SGD	Written/Viva voce			

26.3.2	Enumeratethecausesofchronicliverdiseasesinchildren.			Y	Lecture/SGD	Written/Vivavoce			
26.3.3	DiscussthepathogenesisofcommonchronicLiverDiseases.			Y	Lecture/SGD	Written/Vivavoce			
26.3.4	Describetheclinicalfeaturesofchronicliverdisease.			Y	Lecture/SGD	Written/Viva voce			

26.3.5	EnumeratetheinvestigationsfordiagnosisofChronicLiverDisease.			Y	Lecture/SGD	Written/Vivavoce			
26.3.6	DescribethemanagementofChronicliverdisease.			Y	Lecture/SGD	Written/Viva voce			
PE 26.4	**Discusstheetiopathogenesis,clinicalfeaturesand managementofPortalHypertensioninchildren**			**Y**	**Lecture/SGD**	**Written/Viva voce**		**Path**	
26.4.1	DefinePortalHypertensioninchildren.			Y	Lecture/SGD	Written/Vivavoce			
26.4.2	Classifydifferenttypesofportalhypertension.			Y	Lecture/SGD	Written/Viva voce			
26.4.3	Enumeratethecausesofportalhypertension.			Y	Lecture/SGD	Written/Vivavoce			
26.4.4	Explainthepathogenesisofportalhypertension.			Y	Lecture/SGD	Written/Vivavoce			
26.4.5	Describetheclinicalfeaturesofportalhypertension.			Y	Lecture/SGD	Written/Viva voce			
26.4.6	Outlinethemanagementofportalhypertension.			Y	Lecture/SGD	Written/Vivavoce			
PE 26.5	**Elicit document and present the history related todiseasesofGastrointestinalsystem**			**Y**	**Bedside,SkillsLab**	**Skillsstation/bedside/OSCE**			
26.5.1	ElicitthehistoryfordiseasesofGastrointestinalsystem.			Y	Bedside,SkillsLab	Skillsstation /bedside /OSCE			
26.5.2	Documentthehistory.			Y	Bedside,SkillsLab	Skillsstation			
26.5.3	PresentthehistoryrelatedtoGastrointestinalsystem.			Y	Bedside,SkillsLab	Skillsstation/bedside			
PE 26.6	**IdentifyexternalmarkersforGIandLiverdisorders e.g. Jaundice, Pallor, Gynecomastia, Spider angioma,Palmar erythema, Icthyosis, Caput medusa, Clubbing,Failingtothrive,**			**Y**	**Bedside,SkillsLab**	**SkillAssessment/OSCE**			

	VitaminAandDdeficiency								
26.6.1	Detect Jaundice, pallor, Gynecomastia, Spider angioma,clubbing,Caputmedusa,Ichthyosisandfailuretothrive,signs ofvitamindeficiency.			Y	Bedside,SkillsLab	SkillAssessment/OSCE			

PE26.7	**Performexaminationoftheabdomen,demonstrate organomegaly,ascitesetc.**			Y	Bedside clinic,Skills Lab	Skill Assessment			
26.7.1	Performanexaminationoftheabdomeninchildrenofdifferentages.			Y	Bedsideclinic,SkillsLab	SkillAssessment			
26.7.2	Detectorganomegalyonabdominalexaminationgiving detailsoftheaffectedorgan/s.			Y	Bedsideclinic,Skills Lab	Bedside/skill lab/OSCE			
26.7.3	Examineforascitesinchildren.			Y	Bedsideclinic,SkillsLab	SkillAssessment			
26.7.4	Examineforotherpalpablemassesinabdomen.			Y	Bedsideclinic,Skills Lab	SkillAssessment			
PE 26.8	**Analyzesymptomsandinterpretphysicalsignsto makeaprovisional/differentialdiagnosis**			**Y**	**Bedsideclinic, SkillsLab**	**Skill Assessment**			
26.8.1	Analyzethesymptomsinachildwithgastrointestinaldisorder.			Y	Bedside clinic,Skills Lab	SkillAssessment			
26.8.2	Interpretthephysicalsignsinachildwithgastrointestinaldisorder.			Y	Bedside clinic,Skills Lab	SkillAssessment			
26.8.3	Formulateaprovisionalanddifferentialdiagnosisrelatedto clinicalpresentation.			Y	Bedsideclinic,Skills Lab	SkillAssessment			
PE26.9	**InterpretLiverFunctionTests,viralmarkers,Ultra sonogramreport**			**Y**	**Bedside/skilllab**	**Bedside/ OSCE**		**Path Biochemistry**	
26.9.1	Interpretthegivenreportsofliver functiontests.			Y	Bedside/skilllab	Bedside/OSCE			
26.9.2	Interpretheviralmarkersrelatedtoviralhepatitis.			Y	Bedside/skilllab	Bedside/OSCE			
26.9.3	Interpretthegivenreportofabdominal/liverUltrasonography.			Y	Bedsideclinic,SkillsLab	SkillAssessment			

PE 26.10	**Demonstratethetechniqueofliverbiopsyina PerformLiverBiopsyinasimulatedenvironmen t**			**Y**	**DOAP**	**Documentin Logbook**			
26.10.1	Demonstratethetechniqueofliverbiopsyinasimulat ed environment.			Y	DOAP	Documentin Logbook			
PE 26.11	**EnumeratetheindicationsforUpperGIendoscop y**			**Y**	**Lecture/SGD**	**Written,Viva voce**			
26.11.1	Enumeratetheindicationsof upperGIendoscopyin children.			Y	Lecture/SGD	Written, Vivavoce			

PE26.12	**DiscussthepreventionofHepB infection–Universal precautionsandImmunization**			**Y**	**Lecture/SGD**	**Written,Viva voce**		**Micro**	
26.12.1	Enumeratedifferentpreventivemeasuresagainsthepatitis Bvirusinfection.			Y	Lecture/SGD	Written, Vivavoce			
26.12.2	Listuniversalprecautions.			Y	Lecture/SGD	Written,Viva voce			
26.12.3	DescribetheimmunizationscheduleofHepatitisB.			Y	Lecture/SGD	Written/V ivavoce			
PE 26.13	**Counselandeducatepatientsandtheirfamily appropriatelyonliverdiseases**			**Y**	**Bedsideclinic, SkillsLab**	**Documentin Logbook**			
26.13.1	Counselthefamily onliverdiseasein thechild.			Y	Bedsideclinic SkillsLab	Documentin Logbook			
26.13.2	Educatethefamilyaboutpreventionofliverdisease.			Y	Bedsideclinic,S killsLab	Document inLogboo k			
Topic:PediatricEmergencies–CommonPediatric Emergencies		**Numberofcompetencies:(35)**				**Numberofproceduresthatrequirecertification:(10)**			
PE 27.1	**Listthecommoncausesofmorbidityandmortalityintheunder fivechildren**			**Y**	**Lecture/SGD**	**Written/viva-voce**			
27.1.1	Enumeratethecommoncausesofmorbidityandmortalityin underfivechildren.			Y	Lecture/SGD	Written/viva			
PE 27.2	**Describetheetiopathogenesis,clinicalapproach and managementofcardiorespiratoryarrestinchildren**			**Y**	**Lecture/SGD**	**Written/Viva voce**			
27.2.1	Enumeratethecausesofcardiorespiratoryarrestinchildren.			Y	Lecture/SGD	Written/ Vivavoce			
27.2.2	Discussthepathogenesisofrespiratoryandcardiacfailure leadingtocardiorespiratoryarrest.			Y	Lecture/SGD	Written/Viva voce			
27.2.3	Describetheclinicalapproachtoachildincardiorespiratoryarrest.			Y	Lecture/SGD	Written/ Vivavoce			

27.2.4	Describethemanagementofachildincardiores piratoryarrest.			Y	Lecture/SGD	Written/ Vivavoce			
PE 27.3	**Describetheetiopathogenesisofrespiratorydist ress inchildren**			**Y**	**Lecture/SGD**	**Written/Viv a voce**			
27.3.1	Enumeratethecausesofrespiratorydistressinchildr enof differentagegroups.			Y	Lecture/SGD	Written/Viva voce			

27.3.2	Explainthepathogenesisofrespiratorydistressinchildren.			Y	Lecture/SGD	Written/ Vivavoce			
PE 27.4	**Describetheclinicalapproachandmanagement of respiratorydistressinchildren**			**Y**	**Lecture/SGD**	**Written/Viva voce**			
27.4.1	Discusstheclinicalapproachbasedonhistory,examinationandinvestigationalgorithmof childrenofdifferentages presentingwithrespiratorydistress.			Y	Lecture/SGD	Written/ Vivavoce			
27.4.2	Outlinethetreatmentinchildrenwithrespiratorydistress.			Y	Lecture/SGD	Written/ Vivavoce			
PE 27.5	**Describetheetiopathogenesis,clinicalapproach and managementofShockinchildren**			**Y**	**Lecture/SGD**	**Written/Viva voce**			
27.5.1	Defineshockincludingdifferenttypesofshock.			Y	Lecture/SGD	Written/Viva voce			
27.5.2	Enumeratethecausesleadingtodifferenttypesofshockvizhypovolemic,septicand cardiogenicshock.			Y	Lecture/SGD	Written/ Vivavoce			
27.5.3	Explainpathogenesisofdifferenttypesofshockinchildren.			Y	Lecture/SGD	Written/Viva voce			
27.5.4	Describeclinicalapproachtoidentifydifferenttypesofshock.			Y	Lecture/SGD	Written/ Vivavoce			
27.5.4	Outlineanalgorithmapproachtothemanagementofdifferenttypesofshockin children.			Y	Lecture/SGD	Written/ Vivavoce			
PE 27.6	**Describetheetiopathogenesis,clinicalapproach and managementofStatusepilepticus**			**Y**	**Lecture/SGD**	**Written/ Viva voce**			
27.6.1	DefineStatusepilepticus.			Y	Lecture/SGD	Written/Viva voce			
27.6.2	Discussthepathogenesisofstatusepilepticusin children.			Y	Lecture/SGD	Written/ Vivavoce			
27.6.3	Discuss the underlying diagnosis based on clinical history,examinationandinvestigationalgorithmin			Y	Lecture/SGD	Written/ Vivavoce			

	achildwithstatus epilepticus.								
27.6.4	Outlinethetreatmentalgorithmasperrecentguide linesinachild with statusepilepticus.			Y	Lecture/SGD	Written/ Vivavoce			
PE 27.7	**Describetheetiopathogenesis,clinicalapproach and managementofanunconsciouschild**			**Y**	**Lecture,SGD**	**Written/Viva voce**			

PE27.7.1	Define differentlevelsofconsciousnessinchildren.			Y	Lecture/SGD	Written/Viva voce			
27.7.2	Enumeratethe causesofalteredsensorium/comain children.			Y	Lecture/SGD	Written/Viva voce			
27.7.3	Explainpathogenesisofalteredsensorium/coma.			Y	Lecture/SGD	Written/Viva voce			
27.7.4	Describetheclinicalapproachbasedonclinicalhistory, examinationina childwithaltered sensorium/coma.			Y	Lecture/SGD	Written/Viva voce			
27.7.5	Listtheinvestigationsasguided bytheclinical assessmentofthepatient.			Y	Lecture/SGD	Written/Viva voce			
27.7.4	Outline thetreatmentplanfor acomatose child.			Y	Lecture/SGD	Written/Viva voce			
PE 27.8	**Discussthecommontypes,clinicalpresentation sand managementofpoisoninginchildren**			**Y**	**Lecture,Small groupdiscussion**	**Written/Viva voce**			
27.8.1	Enumeratethecommonpoisoninginchildren.			Y	Lecture/SGD	Written/Viva voce			
27.8.1	Elaborateontheclinicalsignandsymptomsofcommon poisoninginchildren(kerosene,organophosphorus,paracetamoland corrosive).			Y	Lecture/SGD	Written/ Vivavoce			
27.8.1	Discussthemanagementofcommonpoisoninginchildren (kerosene,organophosphorus,paracetamolandcorrosive).			Y	Lecture/SGD	Written/Viva voce			
PE 27.9	**Discussoxygentherapy,inPediatricemergencie sand modesofadministration**			**Y**	**Lecture/SGD**	**Written/Viva voce**			
27.9.1	Enumeratetheindicationsofoxygentherapyinpediatricemergencies.			Y	Lecture/SGD	Written/ Vivavoce			
27.9.2	Describedifferentmodalitiesforoxygendelivery.			Y	Lecture/SGD	Written/ Vivavoce			

PE 27.10	**ObservethevariousmethodsofadministeringOxygen**			**Y**	**Demonstration**	**DocumentinLogbook**			
27.10.1	Observedandnotedvariousmethodsofoxygendelivery.			Y	DemonstrationBedside	DocumentinLogbook			
27.10.2	Monitoroxygen deliveryinapatient.			Y	DemonstrationBedside	DocumentinLogbook			

PE 27.11	**Explaintheneedandprocessoftriageofsickchildren broughttohealthfacility**			**Y**	**Lecture,SGD**	**Written/Viva voce**			
27.11.1	Discussstheneedoftriageofsickchildespeciallyinresourcelimitedsetting.			Y	Lecture,SGD	Written/ Vivavoce			
27.11.2	Explaintheprocessoftriageofsickchildren.			Y	Lecture,SGD	Written/Viva voce			
PE 27.12	**Enumerateemergencysignsandprioritysigns**			**Y**	**Lecture,SGD**	**Written/Viva voce**			
27.12.1	Enumeratevariousemergencyandprioritysignsinasickchild.			Y	Lecture,SGD,	Written/ Vivavoce			
PE 27.13	**Listthesequentialapproachof assessmentof emergencyandprioritysigns**			**Y**	**Lecture,SGD**	**Written/Viva voce**			
27.13.1	Discuss the systematic approach for assessing a sick childbasedon emergencyandprioritysignsasperWHO–ETAT guidelines.			Y	Lecture,SGD	Written/ Vivavoce			
PE 27.14	**Assessemergencysignsandprioritize**			**Y**	**DOAPsession, Skills lab**	**Skills Assessment**			
27.14.1	Assessandrecognize emergencysignsinasickchild andprioritizetreatment.			Y	Bedside,skilllab	Skillassessment			
PE 27.15	**Assessairwayandbreathing:recognizesignsofsevere respiratorydistress.Checkforcyanosis,severechestindrawing,grunting**			**Y**	**DOAPsession, Skillslab**	**SkillsAssessment**			
27.15.1	Recognizesignsofsevererespiratorydistressbyassessing cyanosis,severechestindrawingandgrunting.			Y	Bedside,DOAP session	skillassessment, OSCEwithvideo	3		
PE 27.16	**Assessairwayandbreathing.Demonstratethemethod of positioning of an infant & child to open**			**Y**	**DOAP session,Skills Lab**	**SkillsAssessment**	**3**		

	airway in asimulatedenvironment								
27.16.1	Demonstrate the methods of opening the airway in infantsandchildrenbyhead tilt–chinliftandjawthrustmethodson mannequin.			Y	BLStrainingsessionusingmannequin	OSCE usingmannequin	3		
PE 27.17	**Assessairwayandbreathing:administeroxygen using correcttechniqueandappropriateflowrate**			**Y**	**DOAPsession, Skills Lab**	**Skills Assessment**	**3**		

27.17.1	Demonstratetheappropriateuseofvariousoxygendeliverysystems in different clinical scenarios along withrecommendedflow rateofoxygen			Y	DOAPsession,SkillsLab	Skillassessment,OSCEusing mannequin	3		
PE 27.18	**Assess airway and breathing: perform assistedventilation by Bag and mask in a simulatedenvironment**			**y**	**DOAP session,Skills Lab**	**Skillassessment,OSCEusing mannequin**	**3**		
27.18.1	Demonstrateassistedventilationusingbagand maskinasimulatedenvironment			y	DOAPsession,SkillsLab	Skillassessment,OSCEusing mannequin	3		
PE 27.19	**Checkforsignsofshocki.e.pulse,Bloodpressure, CRT**			**y**	**DOAP session,SkillsLab**	**Skillassessment,**	**3**		
27.19.1	Checkpulseasasignofshock.			Y	DOAPsession,SkillsLab	Skillassessment,	3		
27.19.2	Measurebloodpressuretocheckforshock.			Y	DOAPsession,SkillsLab	Skillassessment,	3		
27.19.3	AssessCRTforcheckingfor shock.			Y	DOAPsession,Skills Lab	Skillassessment	3		
PE 27.20	**SecureanIVaccessinasimulatedenvironment**			**Y**	**DOAP session,SkillsLab**	**Skillassessment,**	**3**		
27.20.1	CollectallthenecessaryitemsforIVaccess.			Y	DOAPsession,SkillsLab	Skillassessment	3		
27.20.2	Identifyanappropriatesiteandvein.			Y	DOAPsession,Skills Lab	Skillassessment	3		
27.20.3	ObtainIVaccessinthemanikin.			Y	DOAPsession,SkillsLab	Skillassessment	3		
27.20.4	SecuretheIVlineappropriately.			Y	DOAPsession,SkillsLab	Skillassessment	3		

27.20.5	Maintainasepsisthroughouttheprocedure.			Y	DOAPsession,Skills Lab	Skillassessment	3		

PE 27.21	**Choosethetypeoffluidandcalculatethefluid requirementinshock**			**Y**	**DOAPsession, SkillsLab**	**Skill assessment**	**3**		
27.21.1	Chooseappropriatefluidaccordingtodifferenttypesofshock.			Y	DOAPsession,SkillsLab	Skillassessment	3		
27.21.2	Calculatethefluidfor managingdifferenttypesofshockat differentage/sizeofthechild.			Y	DOAPsession,Skills Lab	Skillassessment	3		
PE 27.22	**Assess level of consciousness & provide emergencytreatment to a child with convulsions/ coma - Positionanunconsciouschild - Positionachildwithsuspectedtrauma - AdministerIV/perrectalDiazepamforaconvulsingchildinasimulatedenvironment**			**Y**	**DOAP session,SkillsLab**	**Skillassessment**	**3**		
27.22.1	Assesslevelofconsciousness			Y	DOAPsession,Skills Lab	Skillassessment	3		
27.22.2	Provideemergencytreatmenttoachildwithconvulsions/comaincludingABCDE			Y	DOAPsession,SkillsLab	Skillassessment	3		
27.22.3	AdministerIV/perrectalDiazepamforaconvulsingchildinasimulatedenvironment			Y	DOAPsession,SkillsLab	Skillassessment	3		
27.22.4	Positionanunconsciouschildappropriately.			Y	DOAPsession,Skills Lab	Skillassessment	3		
27.22.5	Positionachildwithsuspectedtraumakeepingthenecessaryprecautions.			Y	DOAPsession,SkillsLab	Skillassessment	3		
PE 27.23	**Assesssignsofseveredehydration**			**Y**	**DOAPsession, SkillsLab**	**Skill assessment**	**3**		
27.23.1	Identifysignsofseveredehydration			Y	DOAPsession,Skills Lab	Skillassessment	3		
PE 27.24	**Monitoringandmaintainingtemperature:define hypothermia. Describe the clinical features,complicationsandmanagementofH**			**Y**	**Lecture/SGD**	**Written/ Vivavoce**			

	ypothermia								
27.24.1	DefineHypothermia.			Y	Lecture/SGD	Written/Viva voce			
27.24.2	DescribeclinicalfeaturesofHypothermia.			Y	Lecture/SGD	Written/ Vivavoce			

27.24.3	Enumeratecomplicationsofhypothermia.			Y	Lecture/SGD	Written/ Vivavoce			
27.24.4	DescribemanagementofHypothermia.			Y	Lecture/SGD	Written/Viva voce			
PE 27.25	**Describetheadvantagesandcorrectmethodof keepinganinfant warmbyskintoskincontact**			**Y**	**Lecture/SGD**	**Written/Viva voce**			
27.25.1	Describethecorrectmethodofkeepinginfantwar mbyskintoskincontact			Y	Lecture/SGD	Written/ Vivavoce			
27.25.2	Enumeratetheadvantagesofprovidingwarmthbysk into skincontact			Y	Lecture/SGD	Written/Viva voce			
PE 27.26	**Describetheenvironmentalmeasurestomaintai n temperature**			**Y**	**Lecture/SGD**	**Written/Viva voce**			
27.26.1	Describetheenvironmentalmeasuresto maintaintemperatureinsick children.			Y	Lecture/SGD	Written/ Vivavoce			
PE 27.27	**Assessforhypothermiaandmaintaintemperatu re**			**Y**	**SkillsLab**	**Skill assessment**			
27.27.1	Assessasickchildforhypothermia.			Y	SkillsLab	Skillassessm ent			
27.27.2	Applymeasurestomaintaintemperatureinsickchild ren.			Y	SkillsLab	Skillassessm ent			
PE 27.28	**ProvideBLSforchildreninmanikin**			**Y**	**SkillsLab**	**Skill assessment**	**3**		
27.28.1	PerformallthestepsofBLSinchildren.			Y	SkillsLab	Skillassessm ent	3		
PE 27.29	**Discussthecommoncauses,clinicalpresentatio n, medico-legalimplicationsofabuse**			**Y**	**Lecture/SGD**	**Written/Viva voce**			
27.29.1	Enumeratecommoncausesofchildabuse.			Y	Lecture/SGD	Written/Viva voce			
27.29.2	Describeclinicalpresentationsofchildabuse.			Y	Lecture/SGD	Written/ Vivavoce			

27.29.3	Discussmedicolegalimplicationsofchildabuse.			Y	Lecture/SGD	Written/Viva voce			
PE 27.30	**Demonstrateconfidentialitywithregardtoabuse**			**Y**	**Skilllab,simulated patients**	**Skill assessment**			
27.30.1	Maintains confidentiality with regard to child abuse in asimulatedsetting			Y	Skilllab,simulatedpatients	Skillassessment			

PE 27.31	**Assesschildforsignsofabuse**			**Y**	**DOAP,SkillsLab**	**Logbook,**			
27.31.1	Elicitappropriatehistoryforsuspectedchildabuse.			Y	DOAP,SkillsLab	Logbook			
27.31.2	Examinethechildforevidenceofchildabuse.			Y	DOAP,SkillsLab	Logbook			
27.31.3	Basedonhistoryandexaminationmakeapro visionaldiagnosisofspecifictypeofchildabu se			Y	DOAP,SkillsLab	Logbook			
PE 27.32	**Counselparentsofdangerouslyill/terminallyill child tobreak abadnews**			**Y**	**DOAP,SkillsLab**	**Logbook,**			
27.32.1	Communicate with empathy and counsel parents ofdangerouslyill/terminallyillchild tobreakabadnewsusing anappropriatetechnique			Y	DOAP,SkillsLab	Logbook			
27.32.2	Answerthequeries/questionsofparentsappropriat ely			Y	DOAP,SkillsLab	Logbook			
27.32.3	Provideemotionalsupporttoparents			Y	DOAP,SkillsLab	Logbook			
PE 27.33	**ObtainInformedConsent**			**Y**	**DOAP,SkillsLab**	**Logbook,**			
27.33.1	Provideadequateinformationaspertheneedinalang uage understoodbytheconsentgiver			Y	DOAP,SkillsLab	Logbook			
27.33.2	Answerqueries/questionsappropriately			Y	DOAP,SkillsLab	Logbook			
27.33.3	Obtaintheconsentonanappropriatedocument.			Y	DOAP,SkillsLab	Logbook			
PE 27.34	**Willingtobeapart oftheER team**			**Y**	**DOAP,SkillsLab**	**Logbook,**			
27.34.1	TakesanactivepartintheERteamperformingthea ssignedroleand responsibilities			Y	DOAP,SkillsLab	Logbook			
PE 27.35	**Attendstoemergencycalls promptly**			**Y**	**DOAP,SkillsLab**	**Logbook,**			
27.35.1	Respondspromptlytoemergencycalls			Y	DOAP,SkillsLab	**Logbook,**			
Topic:Respiratorysystem		**Numberofcompetencies:(20)**			**Numberofproceduresthatrequirecertification:(NI**				

					L)				
PE28.1	**Discuss the etiopathogenesis, clinical features andmanagementofNasopharyngitis**			**Y**	**Lecture,SGD**	**Written/ Vivavoce**		**ENT**	

28.1.1	EnumeratetheetiologicalfactorsforNasopharyngitis.			Y	lecture,SGD	Written/ Vivavoce			
28.1.2	DescribetheclinicalfeaturesofNasopharyngitis			Y	lecture, SGD	Written/Viva voce			
28.1.3	OutlinethemanagementofNasopharyngitis			Y	lecture,SGD	Written/ Vivavoce			
PE28.2	**DiscusstheetiopathogenesisofPharyngotonsillitis**			**Y**	**Lecture,SGD**	**Written/Viva voce**		**ENT**	
28.2.1	EnumeratetheetiologicalfactorscausingPharyngo-tonsillitis.			Y	lecture,SGD	Written/ Vivavoce			
PE28.3	**DiscusstheclinicalfeaturesandmanagementofPharyngotonsillitis**			**Y**	**Lecture,SGD**	**Written/Viva voce**		**ENT**	
28.3.1	DescribetheclinicalfeaturesofPharyngotonsillitis.			Y	lecture,SGD	Written/Vivavoce			
28.3.2	OutlinethemanagementofacutePharyngo-tonsillitis.			Y	lecture,SGD	Written/Viva voce			
PE28.4	**Discusstheetiopathogenesis,clinicalfeaturesand managementofAcuteOtitisMedia(AOM)**			**Y**	**Lecture,SGD**	**Written/Viva voce**		**ENT**	
28.4.1	ListthecommonetiologicalagentcausingAcuteOtitisMedia (AOM)			Y	lecture, SGD	Written/Viva voce			
28.4.2	DiscussthepathogenesisofAcuteOtitisMedia(AOM),			Y	lecture,SGD	Written/ Vivavoce			
28.4.3	EnumeratetheclinicalfeaturesofAcuteOtitisMedia(AOM),recurrentAOM and OMwitheffusion			Y	lecture,SGD	Written/ Vivavoce			
28.4.4	OutlinethemanagementofAcuteOtitisMedia(AOM),recurrentAOM andOM witheffusion			Y	lecture,SGD	Written/ Vivavoce			
PE28.5	**Discusstheetiopathogenesis,clinicalfeaturesand**			**Y**	**Lecture,SGD**	**Written/Viva**		**ENT**	

	managementofEpiglottitis					**voce**			
28.5.1	Describetheetiopathogenesisof Epiglottitis			Y	Lecture,SGD	Written/ Vivavoce			
28.5.2	Enumeratetheclinicalfeaturesof Epiglottitis			Y	Lecture,SGD	Written/ Vivavoce			

28.5.3	OutlinethemanagementofEpiglottitisincludingacutecare			Y	Lecture,SGD	Written/ Vivavoce			
PE28.6	**Discuss the etiopathogenesis, clinical features andmanagementofAcutelaryngotracheobronchitis**			**Y**	**Lecture, Smallgroup Discussion**	**Written/ Vivavoce**		**ENT**	
28.6.1	DescribetheetiopathogenesisofAcutelaryngo-tracheo-bronchitis(croup)			Y	Lecture,SGD	Written/ Vivavoce			
28.6.2	Describe the clinical features of Acute laryngo-tracheo-bronchitis			Y	Lecture,SGD	Written/ Vivavoce			
28.6.3	OutlinethemanagementofAcutelaryngo-tracheo-bronchitis.			Y	Lecture,SGD	Written/Vivavoce			
PE28.7	**Discusstheetiology,clinicalfeaturesandmanagement ofStridorinchildren**			**Y**	**Lecture,SGD**	**Written/Viva voce**		**ENT**	
28.7.1	Enumeratetheetiologyofstridorinchildren			Y	lecture,SGD	Written/ Vivavoce			
28.7.2	Describetheclinicalfeaturesofstridorinchildren			Y	Lecture,SGD	Written/ Vivavoce			
28.7.3	Discussthedifferentialdiagnosisofstridor			Y	Lecture,SGD	Written/Vivavoce			
28.7.4	Outlinethemanagementofstridor.			Y	Lecture,SGD	Written/ Vivavoce			
PE28.8	**Discuss the types, clinical presentation, andmanagementofforeignbodyaspirationininfantsand children**			**Y**	**Lecture,SGD**	**Written/ Vivavoce**		**ENT**	
28.8.1	Listtheobjectscommonlyaspiratedbychildren			Y	Lecture,SGD	Written/Vivavoce			
28.8.2	EnumeratetheclinicalfeaturesofFBaspiration			Y	Lecture,SGD	Written/ Vivavoce			
28.8.3	Describe‘Heimlich maneuver’forachildand‘5backslaps and5chestthrust’foran infant			Y	Lecture,SGD	Written/Vivavoce			

28.8.5	OutlinethemanagementofFBaspiration			Y	Lecture,SGD	Written/ Vivavoce			

PE28.9	**Elicit, document and present age appropriate historyofachildwithupperrespiratoryproblemincluding Stridor**			**Y**	**Bedside, skilllab**	**SkillAssessment**		**ENT**	
28.9.1	Elicitdetailedhistoryofachildwithupperrespiratory problemincludingstridor			Y	Bedside,skilllab	OSCE/Skills Assessment			
28.9.2	Documentthehistoryofachildwithupperrespiratoryproblemincludingstridor			Y	Bedside,skilllab	Logbook			
28.9.3	Presentthehistoryofachildwithupperrespiratoryproblemincludingstridor			Y	Bedside,skilllab	Logbook			
PE28.10	**Performotoscopicexaminationoftheear**			**Y**	**DOAPsession**	**Skills Assessment**		**ENT**	
28.10.1	Counseltheparentand childtoprepareforotoscopic examination			Y	Bedside,skilllab	OSCE/Skills Assessment			
28.10.2	Positionthechildandperformotoscopicexamination			Y	Bedside,skilllab	OSCE/ SkillsAssessment			
PE28.11	**Performthroatexaminationusingtonguedepressor**			**Y**	**DOAPsession**	**Skills Assessment**		**ENT**	
28.11.1	Counseltheparentandchildtoprepareforthroat examination			Y	Bedside,skilllab	OSCE/Skills Assessment			
28.11.2	Positionthechildandperformthroatexaminationusingatonguedepressor			Y	Bedside,skilllab	OSCE/SkillsAssessment			
PE28.12	**Performexaminationofthenose**			**Y**	**DOAPsession**	**Skills Assessment**		**ENT**	
28.12.1	Positionthechildandperformnoseexamination			Y	Bedside,skilllab	OSCE/SkillsAssessment			
PE 28.13	**Analyze the clinical symptoms and interpret physicalfindingsandmakeaprovisional/differentialdiagnosis inachildwithENTsymptoms**			**Y**	**Bedside**	**SkillsAssessment**			

28.13.1	Discusstheprovisional/differentialdiagnosisina childwithENTsymptomsafteranalysis ofhistoryandphysical examination.			Y	Bedside	SkillsAssess ment/OS CE/ClinicalCa se			
PE 28.14	**Developatreatmentplananddocumentappropr iately inachildwithupperrespiratorysymptoms**			**Y**	**Bedside**	**Skills Assessment**			

28.14.1	Plantreatmentinachildwithupperrespiratorysymptoms			Y	Bedside	OSCE/SkillsAssessment			
28.14.2	Prescribesupportiveandsymptomatictreatment forupperrespiratorysymptoms			Y	Bedside	OSCE/ SkillsAssessment			
PE 28.15	**StratifyriskinchildrenwithstridorusingIMNCIguidelines**			**Y**	**Bedside**	**Logbookdocumentation**			
28.15.1	Classifythechildwith stridorasperIMNCIguidelines			Y	Bedside	Logbookdocumentation/ clinicalcase			
PE 28.16	**Interpretbloodtestsrelevanttoupperrespiratory problems**			**N**	**Bedside,SGD**	**Logbook**			
28.16.1	Planandinterprettherelevantbloodtestinapatientwithupperrespiratory problems			N	Bedside,SGD	Logbook			
PE 28.17	**Interpret X-ray of the paranasal sinuses and mastoid;and /or use, written report in case of management.Interpret CXR in foreign body aspiration and lowerrespiratorytractinfection,understandthe significance ofthymicshadow inpediatricchestX-rays**			**Y**	**Bedside,SGD**	**SkillsAssessment**		**ENT,RadioD**	
28.17.1	InterprettheX-rayofparanasalsinusesandmastoidforvariouscommon diseases			Y	Bedside,SGD	OSCE/ SkillsAssessment			
28.17.2	InterpretthechestX-rayforidentifyingsuspectedFBaspirationandlowerrespiratorytractinfection			Y	Bedside,SGD	SkillsAssessment/OSCE			
28.17.3	IdentifythymicshadowinchestX-ray.			Y	Bedside,SGD	SkillsAssessment/OSCE			

28.17.4	Plan the treatment after interpreting X-ray and/or its writtenreport.			Y	Bedside,SGD	SkillsAssessment/ OSCE			
PE 28.18	**Describetheetiopathogenesis,diagnosis,clinical features,managementandpreventionoflower**			**Y**	**SGD, Lecture**	**Written,Viva voce**			
	respiratoryinfectionsincludingbronchiolitis,wheeze associatedLRTIPneumoniaandempyema								
28.18.1	EnumeratethecommonorganismscausingLRTI			Y	Lecture,SGD,	Written /Vivavoce			
28.18.2	DiscussthepathogenesisofLRTIincludingbronchiolitis, WALRI,pneumoniaandempyema.			Y	Lecture,SGD,	Written/Viva voce			
28.18.3	DescribetheclinicalfeaturesofLRTIincludingbronchiolitis,WALRI,pneumonia and empyema			Y	Lecture,SGD,	Written/Vivavoce			
28.18.4	DiscussthediagnosisofLRTIincludingbronchiolitis,WALRI,pneumoniaandempyemaaftertakingrelevantclinical historyandexamination.			Y	Lecture,SGD,	Written/Vivavoce			
28.18.5	DescriberelevantinvestigationsinachildwithLRI			Y	Lecture,SGD,	Written,Vivavoce			
28.18.6	DiscussthetreatmentofLRTI includingbronchiolitis,WALRI, pneumoniaandempyema			Y	Lecture,SGD,	Written,Viva voce			
28.18.7	DiscussthepreventivestrategiesforLRTI			Y	Lecture,SGD,	Viva voce,SAQ/MCQ			
PE 28.19	**Describetheetiopathogenesis,diagnosis,clinical features, management and prevention of asthma inchildren**			**Y**	**Lecture,SGD**	**Written/ Vivavoce**		**Resp Med**	
28.19.1	DefineAsthmainchildrenasperATMguidelines.			Y	Lecture,SGD,	Written,Viva voce			
28.19.2	Discussthepathophysiologyofasthmainchildren.			Y	Lecture,SGD,	Written			

						test,Vivavoce			
28.19.3	Describetheclinicalfeaturesofasthma			Y	Lecture,SGD,	Written test,Vivavoce			
28.19.4	Discussthediagnosisofasthmabasedonrelevantclinical history,familyhistoryandphysicalexamination.			Y	Lecture,SGD,	Vivavoce			
28.19.5	EnumeratetheinvestigationsinachildwithAsthma			Y	Lecture,SGD,	Vivavoce			
28.19.6	Listthedrugsusedfortreatingasthmainchildren			Y	Lecture,SGD,	Written test,Vivavoce			
28.19.7	Describethetreatmentofacuteattackofasthma			Y	Lecture,SGD,	Writtentest, Vivavoce			
28.19.8	Describethestepwiseapproachofpreventer therapyforasthmaasper ATM/GINA guidelines			Y	Lecture,SGD,	Written test,Vivavoce			
28.19.9	Describevariousdrugdelivery devicesforasthma			Y	Lecture,SGD	Written, Vivavoce			
28.19.10	Enumerateasthmatriggers			Y	Lecture,SGD,	Written,Vivavoce			
PE 28.20	**Counsel the child with asthma on the correct use ofinhalersinasimulatedenvironment**			**Y**	**Bedside, SGD,Lecture**	**SkillsAssessmentWrittenVivavoce**		**Resp Med**	
28.20.1	Counselthechildandthecaretakerforcorrectuseo fMDIandspaceratinitiationoftherapyandonfollowup			Y	Skilllab,clinics,lecture	OSCE			
Topic:AnemiaandotherHemato-oncologicdisordersin Children				**Numberofcompetencies:(20)**		**Numberofproceduresthatrequirecertification:(NIL)**			
PE29.1	**Discuss the etiopathogenesis, clinical features,classificationandapproachtoachild with anemia**			**Y**	**Lecture,SGD**	**Written, viva-voce**		**Path, Physio**	

29.1.1	DefineanemiaasperWHOGUIDELINES			Y	Lecture,SGD	Written, viva-voce			
29.1.2	Enumeratethecausesofanemia.			Y	Lecture,SGD	Written,viva-voce			
29.1.3	Describethepathogenesisofanemia.			Y	Lecture,SGD	Written, viva-voce			
29.1.4	Enumerateclinicalfeaturesofanemia			Y	Lecture,SGD	Written, viva-voce			
29.1.5	ClassifyAnemiaaccordingtoredcellmorphology			Y	Lecture,SGD	Written,viva-voce			
29.1.6	DescribetheapproachtoachildwithAnemia.			Y	Lecture,SGD	Written, viva-voce			
29.1.7	Listtheinvestigationsinchildwithanemia.			Y	Lecture,SGD	Written, viva-voce			
PE 29.2	**Discusstheetiopathogenesis,clinicalfeaturesand managementofirondeficiencyanemia.**			**Y**	**Lecture,SGD**	**Written/Viva-voce**		**Path, Physio**	
29.2.1	Enumeratethecausesofirondeficiencyanemiainchildren			Y	Lecture,SGD	Written, viva-voce			
29.2.2	Describethepathogenesisofirondeficiencyanemia.			Y	Lecture,SGD	Written, viva-voce			
29.2.3	Describeclinicalfeaturesofirondeficiencyanemiainchildren.			Y	Lecture,SGD	Written, viva-voce			
29.2.4	Listtheinvestigationsinachildwithirondeficiency.			Y	Lecture,SGD	Written,viva-voce			
29.2.5	Describethetreatmentofirondeficiencyanemiainchildren.			Y	Lecture,SGD	Written, viva-voce			
PE 29.3	**Discusstheetiopathogenesis,clinicalfeatures andmanagementofVitaminB-12,Folatedeficiency anemia.**			**Y**	**Lecture,SGD**	**Written/Viva-voce**		**Path,Physio**	
29.3.1	EnumeratethecausesofvitaminB-12andfolicacid deficiency.			Y	Lecture,SGD	Written,viva-voce			
29.3.2	DescribethepathogenesisofVitaminB-			Y	Lecture,SGD	Written,			

	12deficiency.					viva-voce			
29.3.3	Describethepathogenesisoffolatedeficiency.			Y	Lecture,SGD	Written, viva-voce			
29.3.4	DescribetheclinicalfeaturesofvitaminB-12andFolate deficiency.			Y	Lecture,SGD	Written,viva-voce			
29.3.5	Enumerate the investigations for a child of Vitamin B-12 andFolatedeficiency.			Y	Lecture,SGD	Written, viva-voce			
29.3.6	Describethetreatmentforachildsufferingfrom VitaminB-12andFolicaciddeficiency.			Y	Lecture,SGD	Written,viva-voce			
PE29.4	**Discuss the etiopathogenesis, clinical features andmanagement of Hemolytic anemia, ThalassemiaMajor, Sickle cell anemia, Hereditary spherocytosis,Auto-immunehemolyticanemiaandhemolyticuremic syndrome.**			**Y**	**Lecture,SGD**	**Written, viva-voce**		**Path,Physio**	
29.4.1	DefineHemolyticAnemia.			Y	Lecture,SGD	Written, viva-voce			
29.4.2	Enumeratethecausesofhemolyticanemiainchildren.			Y	Lecture,SGD	Written,viva-voce			
29.4.3	Describethepathogenesisofdifferenttypesofhemolyticanemia.			Y	Lecture,SGD	Written, viva-voce			
29.4.4	Describetheclinicalfeaturesofhemolytic anemia,ThalassemiaMajor,Sicklecellanemia,Hereditary			Y	Lecture,SGD	Written, viva-voce			
	spherocytosis,Auto-immunehemolyticanemiaandhemolyticuremic syndrome								
29.4.5	Listtheinvestigationsfordiagnosisofhemolyticanemia.			Y	Lecture,SGD	Written,viva-voce			

29.4.6	Differentiatevarioustypesofhemolyticanemiabasedonclinicalfeaturesandinvestigations.			Y	Lecture,SGD	Written, viva-voce			
29.4.7	DescribetreatmentofhemolyticanemiaThalassemiaMajor, Sicklecellanemia,Hereditaryspherocytosis,Auto-immunehemolyticanemiaandhemolyticuremic syndrome**.**			Y	Lecture,SGD	Written, viva-voce			
29.4.8	Describetheroleofchelationtherapyandrecallthedrugs,dosagesand side-effectsofthedrugs.			Y	Lecture,SGD	Written, viva-voce			
PE29.5	**DiscusstheNationalAnemiaControlProgram.**			**Y**	**Lecture,SGD**	Written,viva-voce		**ComMed**	
29.5.1	DescribeNationalAnemiaControlProgram.			Y	Lecture,SGD	Written, viva-voce			
PE29.6	**Discussthecauseofthrombocytopeniainchildren:describetheclinicalfeaturesandmanagementof idiopathicThrombocytopenicPurpura.**			**Y**	**Lecture,SGD**	Written, viva-voce		**Path**	
29.6.1	Definethrombocytopenia			Y	Lecture,SGD	Written, viva-voce			
29.6.2	Enumeratethecausesofthrombocytopeniainchildren.			Y	Lecture,SGD	Written,viva-voce			
29.6.3	DescribethepathogenesisofITP.			Y	Lecture,SGD	Written, viva-voce			
29.6.4	DescribetheclinicalfeaturesofITP.			Y	Lecture,SGD	Written,viva-voce			
29.6.5	OutlinetheinvestigationsofITP			Y	Lecture,SGD	Written, viva-voce			
29.6.6	OutlinethemanagementofITP.			Y	Lecture,SGD	Written, viva-voce			
PE29.7	**Discusstheetiology,classification,pathogenesis and clinicalfeaturesofHemophiliainchildren.**			**Y**	**Lecture,SGD**	Written,viva-voce		**Path**	
29.7.1	Describetheetiologyofhemophilia.			Y	Lecture,SGD	Written,viva-voce			

29.7.2	Classifyhemophilia.			Y	Lecture,SGD	Written, viva-voce			
29.7.3	Describethepathogenesisofhemophilia.			Y	Lecture,SGD	Written,viva-voce			
29.7.4	Enumeratetheclinicalfeaturesofhemophilia.			Y	Lecture,SGD	Written, viva-voce			
PE29.8	**Discuss the etiology, clinical presentation andmanagementofAcuteLymphoblasticLeukemiain Children.**			**N**	**Lecture,SGD**	**Written, Viva-voce**		**Path**	
29.8.1	StatetheetiologiesofAcuteLymphoblasticLeukemia(ALL).			N	Lecture,SGD	Written,viva-voce			
29.8.2	Enumerateriskfactorsforchildhoodleukemia.			N	Lecture,SGD	Written, viva-voce			
29.8.3	DescribetheclinicalpresentationofALL.			N	Lecture,SGD	Written, viva-voce			
29.8.4	Outlinetheinvestigationsfor diagnosisofALL.			N	Lecture,SGD	Written,viva-voce			
29.8.5	OutlinethetreatmentforALL.			N	Lecture,SGD	Written, viva-voce			
PE29.9	**Discusstheetiology,clinicalpresentationand managementofLymphomainchildren.**			**N**	**Lecture,SGD**	**Written,Viva - Voce**		**Path**	
29.9.1	Definelymphoma.			N	Lecture,SGD	Written,viva-voce			
29.9.2	StatetheetiologyofLymphomaanditstypes.			N	Lecture,SGD	Written, viva-voce			
29.9.3	Describethepathologyoflymphomas.			N	Lecture,SGD	Written, viva-voce			
29.9.4	RecalltheclinicalfeaturesofLymphomas.			N	Lecture,SGD	Written,viva-voce			
29.9.5	Outlinetheinvestigations(diagnosticworkup)forLymphomas.			N	Lecture,SGD	Written, viva-voce			
29.9.6	EnumeratethetreatmentmodalitiesforLymphoma			N	Lecture,SGD	Written,viva-voce			

	s.								
PE29.10	**Elicit,documentandpresentthehistoryrelatedto Hematology.**			**Y**	**Bedside,Skillslab**	**SkillStation**			
29.10.1	Elicitthehistoryrelatedtoahematologicaldisorder.			Y	Bedside,Skillslab	SkillStation			
29.10.2	Documentthehistory.			Y	Bedside,Skillslab	SkillStation			
29.10.3	Presentthehistory			Y	Bedside,Skillslab	SkillStation			
PE29.11	**Identifyexternalmarkersforhematologicaldisorders e.g.Jaundice,Pallor,Petechiae,Purpura,Ecchymosis,Lymphadenopathy,bonetenderness,lossofweight, Mucosalandlargejointbleed.**			**Y**	**Bedside,SkillsLab**	**Skillassessment**			
29.11.1	Identifyjaundice,pallor,petechialspots,purpura, ecchymosis, lymphadenopathy, bone tenderness, Mucosalandlargejointbleedinapatientofhematologicaldisorder.			Y	Bedside,SkillsLab	Skillassessment			
PE29.12	**Performexaminationoftheabdomen,demonstrate Organomegaly.**			**Y**	**Bedside,SkillsLab.**	**Skill assessment**			
29.12.1	Performperabdomenexamination.			Y	Bedside,SkillsLab	Skillassessment			
29.12.2	Demonstrateorganomegalyinachildafterabdominal examination.			Y	Bedside,SkillsLab	Skillassessment			
PE29.13	**Analyzesymptomsandinterpretphysicalsignsto makeaprovisional/differentialdiagnosis.**			**Y**	**Bedside,SkillsLab**	**Skill assessment**			
29.13.1	Analyzesymptomsrelatedtohemato-oncologicalconditions.			Y	Bedside,SkillsLab	Skillassessment			
29.13.2	interpretphysicalsignstomakeaprovisionaldiagnosis			Y	Bedside,SkillsLab	Skillassessment			
29.13.3	Producedifferentialdiagnosiskeepinginmindthesymptoms andsignsrelatedtohaemato-oncologicalconditions.			Y	Bedside,SkillsLab	Skillassessment			

PE29.14	**InterpretCBC, LFT**			**Y**	**Bedside,SkillsLab**	**Skill assessment**			
29.14.1	interpretCompleteBloodCountReport			Y	Bedside,SkillsLab	Skillassessment			
29.14.2	InterpretLiverFunctionTestsReport.			Y	Bedside,SkillsLab	Skillassessment			
PE29.15	**PerformandInterpretperipheralsmear.**			**Y**	**DOAPsession**	**Documentin Logbook**			
29.15.1	Prepareaperipheralbloodfilm.			Y	DOAPsession	Documentin Logbook			
29.15.2	Interpretheperipheralbloodfilm.			Y	DOAPsession	Document inLogbook			
29.15.3	Makediagnosisofperipheral bloodfilm.			Y	DOAPsession	Documentin Logbook			
PE29.16	**DiscusstheindicationsforHemoglobinelectrophoresis andinterpret thereport.**			**N**	**Lecture,SGD**	**Written/Viva-voce**		**Biochemistry**	
29.16.1	EnumeratetheindicationsforHemoglobinelectrophoresis			N	Lecture,SGD	Written/Viva-voce			
29.16.2	interpretthereportofHemoglobinelectrophoresis			N	Lecture,SGD	Written/Viva-voce			
PE29.17	**Demonstrateperformanceofbonemarrowaspiration inmannequin.**			**Y**	**Skillslab**	**Documentin Logbook**			
29.17.1	identifythesitesofbonemarrowaspiration			Y	SkillsLab	Document inLogbook			
29.17.2	Demonstratethecorrectstepsofbonemarrowaspiration underasepticconditionsonamannequin.			Y	SkillsLab	Document inLogbook			
PE29.18	**EnumeratethereferralcriteriaforHematological conditions.**			**Y**	**Bedside,Small groupactivity**	**Written/Viva-voce**			

29.18.1	Enumeratethecriteria forreferringapatientwithHematological conditions			Y	Smallgroupactivity	Written/ Viva-voce			
PE29.19	**Counselandeducatepatientsaboutpreventionand treatmentofanemia.**			**Y**	**Bedside,SkillsLab**	**Documentin Logbook**			
29.19.1	Counseltheparentsempatheticallyaboutthedietand preventivemeasuresforanemia.			Y	Bedside,SkillsLab	Document inLogbook			
29.192	Educatethepatients/parentsaboutthecorrectusageof drugs.			Y	Bedside,SkillsLab	Document inLogbook			
PE29.20	**Enumeratetheindicationsforsplenectomyand precautions**			**N**	**Smallgroup activity**	**Written/Viva-voce**			
29.20.1	Enumeratetheindicationsforsplenectomy			N	Smallgroupactivity	Written/ Viva-voce			
29.20.2	Explainabouttheimmunizationandantibioticprophylaxis			N	Smallgroupactivity	Written/ Viva-voce			
Topic:SystemicPediatrics-CentralNervoussystem				**Numberofcompetencies:(23)**		**Numberofproceduresthatrequirecertification:(NIL)**			
PE 30.1	**Discusstheetiopathogenesis,clinicalfeatures, complications, management and prevention ofmeningitisinchildren**			**Y**	**Lecture,SGD**	**Written/ Vivavoce**		**Micro**	
30.1.1	Enumerateallcommoncausesofmeningitisinchildren.			Y	Lecture,SGD	Written/Viva voce			
30.1.2	Describepathogenesisofmeningitisinchildren.			Y	Lecture,SGD	Written/ Vivavoce			
30.1.3	Describealltheclinicalfeaturesofmeningitisinchildren.			Y	Lecture,SGD	Written/ Vivavoce			
30.1.4	Enumeratealltthecomplicationsofmeningitisinchildren.			Y	Lecture,SGD	Written/ Vivavoce			

30.1.6	Enumerateallthe investigations to diagnose meningitis in children.			Y	Lecture,SGD	Written/ Vivavoce			
30.1.7	Describe the CSF picture diagnostic of pyogenic meningitis.			Y	Lecture,SGD	Written/ Vivavoce			
30.1.8	Describe the standard treatment of meningitis based on age of patient and organism if identified.			Y	Lecture,SGD	Written/ Vivavoce			
30.1.9	Enumerate various preventive measures for meningitis.			Y	Lecture,SGD	Written/ Vivavoce			
PE 30.2	**Distinguish bacterial, viral and tuberculous meningitis**			**Y**	**Lecture,SGD**	**Written/ Vivavoce**		**Micro**	
30.2.1	Differentiate the clinical features of bacterial, viral and tubercular meningitis in a child			Y	Lecture,SGD	Written/ Vivavoce			
30.2.2	Differentiate the cerebrospinal fluid (CSF) picture of bacterial, viral and tubercular meningitis in a child			Y	Lecture,SGD	Written/ Vivavoce			
PE 30.3	**Discuss the etiopathogenesis, classification, clinical features, complication and management of Hydrocephalus in children**			**Y**	**Lecture,SGD**	**Written/ Vivavoce**			
30.3.1	Define hydrocephalus.			Y	Lecture,SGD	Written/ Vivavoce			
30.3.2	Enumerate all causes of hydrocephalus.			Y	Lecture,SGD	Written/Vivavoce			
30.3.3	Describe normal CSF circulation and pathogenesis of hydrocephalus			Y	Lecture,SGD	Written/ Vivavoce			
30.3.4	Classify types of hydrocephalus			Y	Lecture,SGD	Written/ Vivavoce			
30.3.5	Describe all the clinical features of hydrocephalus.			Y	Lecture,SGD	Written/ Vivavoce			
30.3.6	Enumerate all the complications of hydrocephalus.			Y	Lecture,SGD	Written/ Vivavoce			
30.3.7	Describe the radiological picture (USG, CT scan or MRI)			Y	Lecture,SGD	Written/ Vivavoce			

	diagnosticofhydrocephalus								
30.3.8	Enumeratetheinvestigationsrequiredtomakeaneti ological diagnosisofhydrocephalus			Y	Lecture,SGD	Written/ Vivavoce			
30.3.9	Describethestandardtreatmentforhydrocephalusi ncluding medicalandsurgicalmodalities.			Y	Lecture,SGD	Written/ Vivavoce			
PE 30.4	**Discuss the etiopathogenesis, classification, clinicalfeatures,andmanagementofMicroc ephalyin children**			**Y**	**Lecture,SGD**	**Written/ Vivavoce**			
30.4.1	Definemicrocephaly.			Y	Lecture,SGD	Written/ Vivavoce			
30.4.2	Enumerateallcausesofmicrocephalyinchildren			Y	Lecture,SGD	Written/ Vivavoce			
30.4.3	Describepathogenesisofmicrocephalyinchildren			Y	Lecture,SGD	Written/Viva voce			
30.4.4	Classifytypesofmicrocephalyinchildren			Y	Lecture,SGD	Written/ Vivavoce			
30.4.5	Describealltheclinicalfeaturesofmicrocephaly			Y	Lecture,SGD	Written/ Vivavoce			
30.4.6	Describetreatmentformicrocephaly.			Y	Lecture,SGD	Written/ Vivavoce			
PE 30.5	**Enumerate the Neural tube defects. Discuss thecauses,clinicalfeatures,types,andmanage ment ofNeuralTubedefect**			**Y**	**Lecture,SGD**	**Written/ Vivavoce**			
30.5.1	DefineNeuraltubedefects.			Y	Lecture,SGD	Written/ Vivavoce			
30.5.2	EnumerateallcausesofNeuraltubedefects.			Y	Lecture,SGD	Written/Viva voce			
30.5.3	DescribepathogenesisofNeuraltubedefects.			Y	Lecture,SGD	Written/Viva voce			
30.5.4	ClassifytypesofNeuraltubedefects.			Y	Lecture,SGD	Written/ Vivavoce			

30.5.5	Describealltheclinicalfeaturesofthecommontypes of Neuraltubedefects			Y	Lecture,SGD	Written/ Vivavoce			
30.5.6	Describeradiologicalinvestigations(USGlocalandUSGHead, CTscanandMRI)andtherelevantfindingstodiagnoseNeuraltubedefectsandassociated conditions			Y	Lecture,SGD	Written/ Vivavoce			
30.5.7	Outlinemedicalandsurgicalmanagementincluding immediatetreatmentofneuraltubedefects.			Y	Lecture,SGD	Written/ Vivavoce			
30.5.8	Enumerateindicationsandcontraindicationsof conservativeandsurgicalmodalitiestotreatneuraltubedefects.			Y	Lecture,SGD	Written/ Vivavoce			
30.5.9	Enumeratestepsforpreventionofneuraltubedefects.			Y	Lecture,SGD	Written/Vivavoce			
PE 30.6	**Discusstheetiopathogenesis,clinicalfeatures,and managementofInfantilehemiplegia**			**Y**	**Lecture,SGD**	**Written/ Vivavoce**			
30.6.1	Defineinfantilehemiplegia.			Y	Lecture,SGD	Written/ Vivavoce			
30.6.2	Enumerateallcausesofinfantilehemiplegia.			Y	Lecture,SGD	Written/ Vivavoce			
30.6.3	Describepathogenesisofinfantilehemiplegia.			Y	Lecture,SGD	Written/Vivavoce			
30.6.4	Describealltheclinicalfeaturesofinfantilehemiplegia.			Y	Lecture,SGD	Written/ Vivavoce			
30.6.5	Enumerateinvestigationstodiagnoseinfantilehemiplegia.			Y	Lecture,SGD	Written/ Vivavoce			
30.6.6	Describeallthetreatmentmodalitiesforinfantilehemiplegiaincluding medical management, occupational therapy andphysiotherapy.			Y	Lecture,SGD	Written/ Vivavoce			
PE 30.7	**Discuss the etiopathogenesis, clinical features,complicationsandmanagementofFebrileseizuresin children**			**Y**	**Lecture,SGD**	**Written/ Vivavoce**			

30.7.1	DefineFebrileseizures.			Y	Lecture,SGD	Written/Viva voce			
30.7.2	EnumeratecausesofFebrileseizures.			Y	Lecture,SGD	Written/ Vivavoce			
30.7.3	DescribethepathogenesisofFebrileseizures.			Y	Lecture,SGD	Written/ Vivavoce			
30.7.4	ClassifytypesofFebrileseizures.			Y	Lecture,SGD	Written/Viva			

						voce			
30.7.5	Describetheclinicalfeaturesofdifferenttypesof Febrile seizures.			Y	Lecture,SGD	Written/ Vivavoce			
30.7.6	EnumeratecomplicationsofFebrileseizures.			Y	Lecture,SGD	Written/ Vivavoce			
30.7.7	Enumeratetheinvestigationsfordiagnosisof Febrile seizures andthecauseoftheunderlyingfever.			Y	Lecture,SGD	Written/ Vivavoce			
30.7.8	Describe the standard treatment for Febrile seizures inchildrenincludingintermittentprophylaxisand treatmentof causeoffever.			KH	Lecture,SGD	Written/ Vivavoce			
PE 30.8	**Defineepilepsy.Discussthepathogenesis,clinical types, presentation and management of Epilepsy inchildren**			K	**Lecture,SGD**	**Written/ Vivavoce**			
30.8.1	DefineEpilepsy.			KH	Lecture,SGD	Written/ Vivavoce			
30.8.2	DescribethepathogenesisofEpilepsy.			Y	Lecture,SGD	Written/Viva voce			
30.8.3	ClassifyclinicaltypesofEpilepsy.			Y	Lecture,SGD	Written/ Vivavoce			
30.8.4	DescribethevariouspresentationsofEpilepsy.			Y	Lecture,SGD	Written/ Vivavoce			
30.8.5	EnumerateandDescribetheinvestigationsrequired to diagnoseEpilepsy.			Y	Lecture,SGD	Written/ Vivavoce			
30.8.6	OutlinethemedicalandsurgicalmanagementofEpilepsy			Y	Lecture,SGD	Written/ Vivavoce			
30.8.7	EnumeratecommonAntiepilepticdrugsandthetypesof Epilepsyinwhichtheyareindicated.			Y	Lecture,SGD	Written/ Vivavoce			
30.8.8	EnumeratethesideeffectsofcommonlyusedAntiepileptic drugs.			Y	Lecture,SGD	Written/ Vivavoce			

PE 30.9	**DefineStatusEpilepticus.Discusstheclinical presentationandmanagement**			**Y**	**Lecture,SGD**	**Written/ Vivavoce**			
30.9.1	DefineStatusepilepticus.			Y	Lecture,SGD	Written/ Vivavoce			
30.9.2	Describetheclinicalpresentationofstatusepilepticus			Y	Lecture,SGD	Written/ Vivavoce			
30.9.4	Enumerateinvestigationsrequiredfordiagnosisofstatus			Y	Lecture,SGD	Written/Viva			

	epilepticus					voce			
30.9.5	Describe management of status epilepticus in a step wisemannerbasedonthestandardalgorithmofmanagementof statusepilepticusofthePICU			Y	Lecture,SGD	Written/ Vivavoce			
PE 30.10	**Discusstheetiopathogenesis,clinicalfeaturesand managementofMentalretardationinchildren**			**Y**	**Lecture,SGD**	**Written/ Vivavoce**			
30.10.1	DefineMentalRetardation(Intellectualdisability)			Y	Lecture,SGD	Written/Vivavoce			
30.10.2	EnumeratethecausesofMentalRetardation(Intellectual disability)			Y	Lecture,SGD	Written/ Vivavoce			
30.10.3	DescribethepathogenesisofMentalRetardation (Intellectualdisability)			Y	Lecture,SGD	Written/ Vivavoce			
30.10.4	ClassifyMentalRetardation(Intellectualdisability).			Y	Lecture,SGD	Written/ Vivavoce			
30.10.5	EnumerateandDescribeclinicalfeaturesofMental Retardation(Intellectualdisability)including dysmorphicfeatures.			Y	Lecture,SGD	Written/ Vivavoce			
30.10.6	DescribetheinvestigationsfordiagnosisofMental Retardation(Intellectualdisability).			Y	Lecture,SGD	Written/ Vivavoce			
30.10.7	Describetheinvestigations(includinggenetictests) required foridentifyingtheetiologyofMentalRetardation(Intellectualdisability).			Y	Lecture,SGD	Written/ Vivavoce			
30.10.8	Describethemultidisciplinary approachtomanagementof MentalRetardation(Intellectualdisability).			Y	Lecture,SGD	Written/ Vivavoce			
30.10.9	Describethetreatmentofpreventableandtreatable causes ofMentalRetardation(Intellectualdisability).			Y	Lecture,SGD	Written/ Vivavoce			
PE 30.11	**Discusstheetiopathogenesis,clinicalfeaturesand managementofchildrenwithcerebralpalsy**			**Y**	**Lecture,SGD**	**Written/ Vivavoce**			

30.11.1	DefineCerebralPalsy			Y	Lecture,SGD	Written/ Vivavoce			
30.11.2	EnumeratethecausesofCerebralPalsy			Y	Lecture,SGD	Written/Viva voce			
30.11.3	DescribethepathogenesisofCerebralPalsy			Y	Lecture,SGD	Written/Viva voce			
30.11.4	ClassifyCerebralPalsy.			Y	Lecture,SGD	Written/Viva			

						voce			
30.11.5	EnumerateandDescribeclinicalfeaturesofdifferent types ofCerebralPalsy			Y	Lecture,SGD	Written/ Vivavoce			
30.11.6	Describetheinvestigationsrequiredforidentifyingt he etiologyofCerebralPalsy.			Y	Lecture,SGD	Written/ Vivavoce			
30.11.7	Describethemultidisciplinary approachtomanagementof CerebralPalsy.			Y	Lecture,SGD	Written/ Vivavoce			
30.11.8	Describethetreatmentofpreventableandtreatable causes ofCerebralPalsy.			Y	Lecture,SGD	Written/ Vivavoce			
PE30.12	**Enumerate the causes of floppiness in an infant anddiscusstheclinicalfeatures,differentialdiag nosisand management**			**Y**	**Lecture,SGD**	**Written/ Vivavoce**			
30.12.1	Definefloppinessinaninfant.			Y	Lecture,SGD	Written/Viva voce			
30.12.2	Enumeratethecausesoffloppinessinaninfant.			Y	Lecture,SGD	Written/ Vivavoce			
30.12.3	Describethepathogenesisoffloppinessinaninfant			Y	Lecture,SGD	Written/ Vivavoce			
30.12.4	Describetheclinicalfeaturesoffloppinessinaninfan t			Y	Lecture,SGD	Written/Viva voce			
30.12.5	Describethedifferentialdiagnosisof floppinessinaninfant			Y	Lecture,SGD	Written/ Vivavoce			
30.12.6	Enumeratetheinvestigationsforfloppinessinaninfa nt			Y	Lecture,SGD	Written/ Vivavoce			
30.12.7	Describetreatmentapproachtoafloppyinfant,inclu ding occupationaltherapyandphysiotherapy.			Y	Lecture,SGD	Written/ Vivavoce			
PE30.13	**Discuss the etiopathogenesis, clinical features,managementandpreventionofPolio myelitisin children**			**Y**	**Lecture,SGD**	**Written/ Vivavoce**		**Micro**	

30.13.1	Defineacuteflaccidparalysis(AFP).			Y	Lecture,SGD	Written/ Vivavoce			
30.13.2	ListcausesofAcuteFlaccidParalysis.			Y	Lecture,SGD	Written/ Vivavoce			
30.13.3	EnumeratethevirusescausingPoliomyelitis.			Y	Lecture,SGD	Written/ Vivavoce		**Micro**	
30.13.4	DescribethepathogenesisofPoliomyelitis			Y	Lecture,SGD	Written/Viva			

						voce			
30.13.5	DescribealltheclinicalfeaturesofPoliomyelitis.			Y	Lecture,SGD	Written/ Vivavoce			
30.13.6	DiscussthedifferentialdiagnosisofAFP.			Y	Lecture,SGD	Written/ Vivavoce			
30.13.7	DescribeallthetreatmentmodalitiesforPoliomyelitis/AFPincludingmedicalmanagement,occupationaltherapyand physiotherapy.			Y	Lecture,SGD	Written/ Vivavoce			
30.13.8	DescribethevariousavailablePoliovaccinesandtheirrole inpreventionofpoliomyelitis.			Y	Lecture,SGD	Written/ Vivavoce			
PE30.14	**Discusstheetiopathogenesis,clinicalfeaturesand managementofDuchenemusculardystrophy**			**Y**	**Lecture,SGD**	**Written/ Vivavoce**			
30.14.1	DefineDuchenemusculardystrophy.			Y	Lecture,SGD	Written/ Vivavoce			
30.14.2	DescribetheetiopathogenesisofDuchenemuscular dystrophy			Y	Lecture,SGD	Written/ Vivavoce			
30.14.3	DescribetheclinicalfeaturesofDuchenemuscular dystrophy.			Y	Lecture,SGD	Written/ Vivavoce			
30.14.4	Enumerateinvestigationsrequiredincludinggenetic testingtodiagnoseDuchenemusculardystrophy.			Y	Lecture,SGD	Written/ Vivavoce			
30.14.5	DescribethetreatmentmodalitiesforDuchenemuscular dystrophyincludingoccupationaltherapyandphysiotherapy.			Y	Lecture,SGD	Written/ Vivavoce			
PE30.15	**Discusstheetiopathogenesis,clinicalfeaturesand managementofAtaxiainchildren**			**Y**	**Lecture,SGD**	**Written/ Vivavoce**			
30.15.1	DefineAtaxiainchildren.			Y	Lecture,SGD	Written/ Vivavoce			
30.15.2	EnumerateallcausesofAtaxiainchildren.			Y	Lecture,SGD	Written/ Vivavoce			
30.15.3	DescribethepathogenesisofAtaxiainchildren.			Y	Lecture,SGD	Written/ Vivavoce			

30.15.4	DescribealltheclinicalfeaturesofAtaxiainchildren.			Y	Lecture,SGD	Written/ Vivavoce			
30.15.5	Enumeratetheinvestigationsinevaluationof Ataxiain children.			Y	Lecture,SGD	Written/ Vivavoce			
30.15.7	Describethetreatmentavailableforthevariouscausesof			Y	Lecture,SGD	Written/Viva voce			

	Ataxiainchildren.								
PE30.16	**Discuss the approach to and management of a childwithheadache**			**Y**	**Lecture,SGD**	**Written/ Vivavoce**			
30.16.1	Enumeratecausesofheadacheinchildren			Y	Lecture,SGD	Written/Viva voce			
30.16.2	Enumeratethetypesofheadache			Y	Lecture,SGD	Written/ Vivavoce			
30.16.3	Describetheclinicalfeaturesofvarioustypesofhe adachesinchildren			Y	Lecture,SGD	Written/ Vivavoce			
30.16.4	Enumerateallinvestigationstodiagnosecauseandt ypeof headache.			Y	Lecture,SGD	Written/ Vivavoce			
30.16.5	Analysethehistoryandinterprettheexaminatio nfindingsand investigations using an algorithm to come to adifferentialdiagnosis/diagnosisofheadache			Y	Lecture,SGD	Written/ Vivavoce			
30.16.6	Discussapproachtomanagementofheadache basedonhistory,examination andinvestigations			Y	Lecture,SGD	Written/ Vivavoce			
30.16.7	Describetreatmentofachildwithheadache.			Y	Lecture,SGD	Written/Viva voce			
PE30.17	**Elicit,documentandpresentanageappropriate historypertainingtotheCNS**			**Y**	**Bedside, Skillslab**	**SkillAsse ssment**			
30.17.1	Elicitageappropriatedetailed historypertainingtoCNS			Y	Bedside,Skills lab	Clinical case/OSC E			
30.17.2	Writedownageappropriatehistoryincludinghistor y pertainingtoCNSunderappropriateheadings			Y	Bedside,Skills lab	Logbook			
30.17.3	Presentthedocumentedageappropriatehistoryper taining toCNS			Y	Bedside,Skills lab	Logbook			
PE30.18	**Demonstrate the correct method for physicalexamination of CNS including identification ofexternalmarkers.Documentandpresentcli nical findings**			**Y**	**Bedside,Skillsla b**	**SkillAsse ssment**			

30.18.1	Measureheadcircumferenceaccurately.			Y	Bedside,Skills lab	OSCE			
30.18.2	Recognizeneurocutaneousmarkers.				Bedside/skilllab/ pictures/video	OSCE			
30.18.3	DoacompleteCNSexaminationinchildrenofdifferent				Bedside/skilllab	Skilllab			

	ages.								
30.18.4	Recognizeinvoluntarymovements.				Bedside/skilllab/ pictures/video	OSCE			
30.18.5	Examineforsignsofmeningealirritation.				Bedside/skilllab	Skilllab			
30.18.6	Documentandpresentclinicalfindings.				Bedside/skilllab	Clinicalcase			
PE30.19	**Analysesymptomsandinterpretphysicalfindings andproposeaprovisional/differentialdiagnosis**			**Y**	**Bedside,Skillslab**	**SkillAssessment**			
30.19.1	Analysesymptomsandproposeaprovisional/ differentialdiagnosis			Y	Bedside/skilllab	Clinicalcase			
30.19.2	Interpretphysicalfindingsandproposeaprovisional/ differentialdiagnosis			Y	Bedside/skilllab	Clinicalcase			
30.19.3	Combine analysis of symptoms and interpretation ofphysicalfindingstoproposea provisional/differential diagnosis			Y	Bedside/skilllab	Clinicalcase			
PE30.20	**InterpretandexplainthefindingsinaCSFanalysis**			**Y**	**SGD**	**Logbook**		**Micro**	
30.20.1	Interpretthefindings(cells,proteinsandsugarlevels)inaCSFanalysis. .			Y	Skilllab	OSCE			
30.20.2	Explainthesignificanceoffindings(cells, proteinsandsugarlevels)in a CSFanalysis			Y	SGD	SAQ/viva			
PE30.21	**Enumeratetheindicationanddiscussthe limitationsofEEG,CT,MRI**			**N**	**Bedside**	**Logbook**			
30.21.1	EnumeratetheindicationsofEEG.			N	Bedside	Logbook			
30.21.2	DiscussthelimitationsofEEG.			N	Bedside	Logbook			
30.21.3	EnumeratetheindicationsofCTscan			N	Bedside	Logbook			
30.21.4	DiscussthelimitationsofCTscan.			N	Bedside	Logbook			
30.21.5	EnumeratetheindicationsofMRI.			N	Bedside	Logbook			
30.21.6	DiscussthelimitationsofMRI.			N	Bedside	Logbook			
PE30.22	**InterpretthereportsofEEG,CT,MRI**			**Y**	**Bedside,Skillslab**	**Logbook**		**RadioD**	
30.22.1	InterpretEEGreports			Y	Bedside,Skillslab	Logbook			

30.22.2	InterpretCTscan(BrainandSpine)reports			Y	Bedside,Skillslab	Logbook		**RadioD**	
30.22.3	InterpretMRI(Brain&Spine) reports			Y	Bedside,Skillslab	Logbook		**RadioD**	

PE30.23	**Perform in a mannequin lumbar puncture. Discusstheindications,contraindicationof theprocedure**			**Y**	**Bedside, Skillslab**	**SkillAsse ssment**			
30.23.1	Performlumbarpunctureonamannequin.			Y	Skilllab	SKILL assessment			
30.23.2	Enumerateallindicationsoflumbarpuncture.			Y	SGD	OSCE/VIVA			
30.23.3	Enumeratecontraindicationsoflumbarpuncture			Y	SGD	OSCE/VIVA			
Topic:AllergicRhinitis,AtopicDermatitis,Bronchial Asthma,UrticariaAngioedema		**Numberof competencies:(12)**				**Numberofproceduresthatrequirecertification:(NIL)**			
PE 31.1	**Describetheetiopathogenesis,managementa ndpreventionofAllergicRhinitisinChildren**			**Y**	**Lecture,SGD**	**Written/ Vivavoce**		**ENT**	
31.1.1	Defineallergicrhinitisin children			Y	Lecture,SGD	Written/ Vivavoce		ENT	
31.1.2	Enumerateriskfactorsanddescribepathogenesisfo rallergic rhinitisin children			Y	Lecture,SGD	Writtenand vivavoce		ENT	
31.1.3	Describetreatmentandpreventionfor allergicrhinitisinchildren			Y	Lecture,SGD	Written andvivav oce		ENT	
PE 31.2	**RecognizetheclinicalsignsofAllergicRhinitis**			**Y**	**Bedside,SkillLab**	**Skill assessment**		**ENT**	
31.2.1	identifyclinicalsignofallergicrhinitisin children			Y	Bedside,SkillLab	Skillassessme nt		ENT	
PE 31.3	**Describetheetiopathogenesis,clinicalfeaturesa nd managementofAtopicdermatitisinChildren**			**Y**	**Lecture,SGD**	**Written/Viv a voce**		**Derm**	
31.3.1	Describeetiopathogenesisofatopicdermatitisinchil dren.			Y	Lecture,SGD	Written/Viva voce		Derm	
31.3.2	Describeclinicalfeaturesofatopicdermatitisinchild ren.			Y	Lecture,SGD	Written andvivav oce			

31.3.3	Describetreatmentforpreventionandcontrolofatopic dermatitisinchildren			Y	Lecture,SGD	Writtenand vivavoce			
PE 31.4	**Identifyclinicalfeaturesofatopicdermatitisand manage**			**Y**	**Bedside,skilllab**	**Skill assessment**		**Derm**	
31.4.1	Identifyclinicalfeaturesofatopicdermatitis			Y	Bedside,skilllab	Skillassessment		Derm	

31.4.2	Makeaplanforlocalandsupportivetherapyforchildrenwithatopic dermatitis			Y	Bedside,skilllab	Skillassessment			
31.4.3	Planappropriatesystemictherapyforchildrenwithatopicdermatitis			Y	Bedside,skilllab	Skillassessment			
PE 31.5	**Discuss the etiopathogenesis, clinical types,presentations,managementandprevention of childhoodAsthma**			**Y**	**Lecture/SGD**	**Written / vivavoce**			
31.5.1	Describeetiopathogenesisofchildhoodasthma			Y	Lecture/SGD	Written/Vivavoce			
31.5.2	Describetypes/patternsofchildhoodasthmaasperATMmodule.			Y	Lecture/SGD	Written andvivavoce			
31.5.3	Enumeratecommontriggersinchildhoodasthma			Y	Lecture/SGD	Written andvivavoce			
31.5.4	Describeclinicalpresentationsofchildhoodasthma			Y	Lecture/SGD	Written andvivavoce			
31.5.5	Enumerateinvestigationsinchildhoodasthma			Y	Lecture/SGD	Written andvivavoce			
31.5.6	Discusstreatmentoptionsforchildhoodasthma.			Y	Lecture/SGD	Writtenand vivavoce			
31.5.7	Discusspreventionforchildhoodasthma.			Y	Lecture/SGD	Written andvivavoce			
PE 31.6	**Recognizesymptomsandsignsofasthmainachild**			**Y**	**Bedside,skilllab**	**Skill assessment**			
31.6.1	Recognize symptomsandsignsofasthmainachild			Y	Bedside,skilllab	Skillassessment			
PE 31.7	**Developatreatmentplanforachildwithappropriate totheseverityandclinicalpresentation**			**Y**	**Bedside,skilllab**	**Skill assessment**			

31.7.1	Developatreatmentplanappropriatefortheseverity and clinicalpresentationofachildwithasthma			Y	Bedside,skilllab	Skillassessment			
31.7.2	Makeatreatmentplanforachildwithacutesevere asthma(statusasthmaticus)			Y	Bedside,skilllab	Skillassessment			
31.7.3	Observeanddocumentstepsofuseofmetereddosein halerwithspacer in a child withasthma.			Y	Bedside,skilllab	Skillassessment			
PE 31.8	**Enumeratethecriteriaforreferralinachildwith asthma**			**Y**	**Lecture,SGD**	**Written/Viva voce**			
31.8.1	EnumeratethecriteriaforreferralinachildwithAsth ma.			Y	Lecture,SGD	Written/ Vivavoce			
PE 31.9	**InterpretCBC andCXRayinAsthma**			**Y**	**Bedsideclinic, SGD**	**Skillassessment/ OSCE**			
31.9.1	InterpretCBCfindingsinrelationtoasthmafromgi vencasereport.			Y	Bedsideclinic,SGD	Skill assessment/OSCE			
31.9.2	InterpretfindingsonagivenX-Rayofachildwithasthma			Y	Bedsideclinic,	Skillassessment			
PE 31.10	**EnumeratetheindicationsforPFT.**			**N**	**Lecture,SGD**	**Written/Viva voce**		**Pulmonary medicine**	
31.10.1	EnumeratetheindicationsofpulmonaryfunctionTe st(PFT) inchildhoodasthma			N	Lecture,SGD	Written/Viva voce		Pulmonary medicine	
PE 31.11	**ObserveadministrationofNebulization**			**Y**	**DOAP**	**Documentin Logbook**			
31.11.1	Observeanddocumentstepsofadministrationof Nebulizationto achildwithasthma			Y	DOAP	Document inLogboo k			
PE 31.12	**Discusstheetiopathogenesis,clinicalfeatures, complications and management of UrticariaAngioedema.**			**Y**	**Lecture,SGD**	**Written/ Vivavoce**			

31.12.1	Describeetiopathogenesisofurticaria/angioedema in children			Y	Lecture/SGD	Written/Viva voce			
31.12.2	Describeclinicalfeaturesofurticaria/angioedema			Y	Lecture/SGD	Written andvivavoce			
31.12.3	Enumeratecommoncomplicationsofurticaria/angioedemainchildren			Y	Lecture/SGD	Written andvivavoce			
31.12.4	Enumerateinvestigationsincaseofurticaria/angioedemain children			Y	Lecture/SGD	Writtenand vivavoce			
31.12.5	Describetreatmentplanofurticaria/angioedemain children			Y	Lecture/SGD	Written andvivavoce			
Topic:ChromosomalAbnormalities				**Numberofcompetencies:(13)**		**Numberofproceduresthatrequirecertification:(NIL)**			
PE32.1	**Discussthegeneticbasis,riskfactors,complications,prenatal diagnosis, management and geneticcounsellingin Down Syndrome**			**Y**	**Lecture, Smallgroup discussion**	**Written**		**HumanAnat**	
32.1.1	Describethegeneticbasisof Downsyndrome			Y	Lecture/SGD	MCQ/SAQ,/ Vivavoce		Anat,Biochemistry	OBG
32.1.2	EnumeratetheriskfactorsforDownsyndrome			Y	Lecture/SGD	MCQ/SAQ,/ Vivavoce			
32.1.3	EnumeratethecomplicationsofDownsyndrome			Y	Lecture/SGD	MCQ/SAQ,/ Vivavoce			
32.1.4	DescribetheprenataldiagnosisofDown syndrome			Y	Lecture/SGD	MCQ/SAQ,/ Vivavoce			
32.1.5	DescribethemanagementofDownsyndrome			Y	Lecture/SGD	MCQ/SAQ,/ Vivavoce			
32.1.6	DescribethegeneticcounselingforDownsyndrome			Y	Lecture/SGD	MCQ/SAQ,/ Vivavoce			
PE 32.2	**IdentifytheclinicalfeaturesofDownSyndrome**			**Y**	**Bedside,Skillslab**	**Logbook**		**Med**	

32.2.1	Identifycommonclinicalfeaturesinachildwithdownsyndrome			Y	Bedsideclinic	Bedside/OSCE			
PE 32.3	**InterpretnormalKaryotypeandrecognizeTrisomy21**			**Y**	**Bedside,Skillslab**	**Logbook**			**Med**
32.3.1	ReadanormalKaryotypeandrecognizetrueTrisomy 21			Y	Skilllab	OSCE/Logbook			
32.3.2	RecognizedifferenttypesofKaryotype abnormalitiesin DownSyndrome			N	Skilllab	OSCE		Anat/Path	**Med**
PE 32.4	**DiscussthereferralcriteriaandMultidisciplinary approachtomanagement**			**Y**	**Lecture,SGD**	**Written/Viva voce**			
32.4.1	EnumeratethereferralcriteriaforDownsyndrome.			Y	SGD	SAQ/Viva		AnatBiochemistry	Med
32.4.2	Describeamultidisciplinaryapproachtomanagementofa childwithDownsyndrome			Y	Lecture/SGD	MCQ/SAQ			
PE 32.5	**Counselparentsregarding1.Presentchild 2.Riskinthenextpregnancy**			**N**	**Bedside,Skillslab**	**Logbook**			
32.5.1	CounseltheparentsofachildwithDownsyndrome inacomprehensive manner including care, possiblecomplications,futureoutcomes			Y	DOAP/bedside/ skilllab/roleplay	Logbook/roleplay			
32.5.2	Counselparentsforriskinfuturepregnancies			Y	Simulation,Roleplay	OSCE/Logbook			
PE 32.6	**Discussthegeneticbasis,riskfactors,clinicalfeatures,complications,prenataldiagnosis,managementand geneticcounselinginTurnerSyndrome**			**N**	**Lecture,SGD**	**Written/ Vivavoce**		**Med,OBG**	
32.6.1	DescribethegeneticbasisofTurnersyndrome			N	Lecture/SGD	MCQ/SAQ,/ Vivavoce		Anat, Biochemistry	OBG
32.6.2	EnumeratetheriskfactorsforTurnersyndrome			N	Lecture/SGD	MCQ/SAQ,/ Vivavoce			
32.6.3	Describetheclinicalfeaturesof Turnersyndrome			N	Lecture/SGD	MCQ/SAQ,/ Vivavoce			
32.6.4	EnumeratethecomplicationsofTurnersyndrome			N	Lecture/SGD	MCQ/SAQ,/ Vivavoce			

32.6.5	DescribetheprenataldiagnosisofTurnersyndrome			N	Lecture/SGD	MCQ/SAQ,/ Vivavoce			
32.6.6	DescribethemanagementofTurnersyndrome			N	Lecture/SGD	MCQ/SAQ,/ Vivavoce			
32.6.7	DescribethegeneticcounselingforTurnersyndrom e			N	Lecture/SGD	MCQ/SAQ,/ Vivavoce			
PE 32.7	**IdentifytheclinicalfeaturesofTurnerSyndrome**			**N**	**Bedside,Skillsla b**	**Logbook**		**Med**	
32.7.1	Identifyclinicalfeaturesof Turnersyndrome			N	Bedside,Photo	Bedside /Logbook			
PE 32.8	**Interpret normal Karyotype and recognize TurnerKaryotype**			**N**	**Bedside,Skillsla b**	**Logbook**			**Med**
32.8.1	ReadanormalKaryotypeandrecognize Turnerkaryotype			N	Skilllab	Logbook			
PE 32.9	**Discuss the referral criteria and Multidisciplinaryapproachtomanageme nt**			**N**	**Lecture,SGD**	**Written/Viv a voce**			
32.9.1	Enumeratethereferralcriteriafor Turnersyndrome.			N	SGD	SAQ/Viva		Anat Biochemistr y	**Med**
32.9.2	Describeamultidisciplinaryapproachtomanag ementofachild withTurner syndrome			N	Lecture/SGD	MCQ/SAQ			
PE 32.10	**Counselparentsregarding1.Presentchild 2.Riskinthenextpregnancy**			**N**	**Bedside,Skillsla b**	**Logbook**			Med, ObsG ynae
32.10.1	Counseltheparentsofachildwith Turnersyndromeinacomprehensivemannerincl udingcare, possible complications,futureoutcomes			N	DOAP/bedside/ skilllab/rolepla y	Logbook/r oleplay			
32.10.2	Counselparentsforriskinfuturepregnancies			N	Simulation,Rolepl ay	Logbook			
PE 32.11	**Discussthegeneticbasis,riskfactors,complica tions,prenataldiagnosis,managementandge netic counsellinginKlinefelterSyndrome**			**Y**	**Lecture/ SGD**	**Written/viva**			Med

32.1.1	Discussthegeneticbasis,riskfactors,complications, prenataldiagnosis,managementandgeneticcounsellinginKlinefelter Syndrome			Y	Lecture/SGD	Written/viva			
PE 32.12	**IdentifytheclinicalfeaturesofKlinefelterSyndrome**			**N**	**Bedside/ photo**	**LOGBOOK**			Med
	IdentifytheclinicalfeaturesofKlinefelterSyndrome			N	Bedside/photo/	LOGBOOK			
PE 32.13	**InterpretnormalKaryotypeandrecognizethe KlinefelterKaryotype**			**N**	**Bedside/ photo**	**LOGBOOK**			Med
Topic:Endocrinology				**Numberofcompetencies:(11)**		**Numberofproceduresthatrequirecertification:(02)**			
PE33.1	**Describe the etiopathogenesis clinical features,managementofHypothyroidisminchildren**			**Y**	**Lecture,SGD**	**written/vivavoce**			
33.1.1	Describethepathogenesisofhypothyroidisminchildren			Y	**Lecture/ SGD**	Written/viva			
33.1.2	Enumeratethecausesofcongenitalanda cquiredhypothyroidisminchildren.			Y	Lecture,SGD	Written/viva			
33.1.4	Describetheclinicalfeaturesofcongenitaland acquiredhypothyroidism			Y	Lecture,SGD	Written/viva			
33.1.5	Discusstheapproachtoacaseofcongenital/acquired hypothyroidisminchildren			Y	Lecture,SGD	Written/viva			
33.1.6	Outlinethetreatmentofhypothyroidisminchildren.			Y	Lecture,SGD	Written/viva			
PE33.2	**RecognizetheclinicalsignsofHypothyroidisma nd refer**			**Y**	**Bedside,SkillLab**	**Skill Assessment**			
33.2.1	Recognizehypothyroidismbytakingappropriatehistoryandfocused physicalexamination			Y	Bedside	Skillassessment			
33.2.2	Identifytheneedtoreferthechildtohighercenter			Y	Bedside,skilllab	OSCEwithSP			
PE33.3	**Interpretandexplainneonatalthyroidscreening report**			Y	**Bedside,SGD**	**Skill Assessment**			
33.3.1	Interpretthegivenneonatalthyroidscreeningreport			Y	SGD,Bedside	OSCE/vivavoce			
33.3.2	Explainthegiventhyroidscreeningreport			Y	Bedside,SGD	OSCE			

PE33.4	**Discuss the etiopathogenesis, clinical types,presentations,complicationandmanagementof Diabetesmellitusinchildren**			Y	**Lecture,SGD**	**Written/ Vivavoce**			
33.4.1	ExplaintheetiopathogenesisofDiabetesmellitusinchildren.			Y	Lecture/SGD	Written/viva		Biochemistry, Physio	
33.4.2	DiscussclinicaltypesofDMinchildren.			Y	Lecture/SGD	Written/viva			
33.4.4	DescribetheclinicalfeaturesofDMinchildren.			Y	Lecture/SGD	Written/viva			
33.4.5	EnumeratethecomplicationsofDM.			Y	Lecture/SGD	Written/viva			
33.4.6	Describethecomprehensivemanagementforchildren withDM.			Y	Lecture/SGD	Written/viva			
PE33.5	**Interpret Blood sugar reports and explain thediagnosticcriteriaforType1 Diabetes**			**Y**	**Bedside clinic,small group activity**	**SkillAssessment**			
33.5.1	IdentifyType1Diabetesfromagivenbloodreportasperlatestdiagnosticcriteriaof DM (AmericanDiabetes Association,2016)			Y	Bedside,SGD	OSCE			
PE33.6	**PerformandinterpretUrineDipStickforSugar**			**Y**	**DOAPsession**	**Skill Assessment**	**3**	**Biochemistry**	
33.6.1	Performurinedipsticktestfor sugarandinterpretitcorrectly			Y	DOAPsession	OSPE			
PE33.7	**PerformgenitalexaminationandrecognizeAmbiguous Genitaliaandreferappropriately**			**Y**	**Bedside,skilllab**	**Skill Assessment**			
33.7.1	Identifythedeviationfromnormalwhileperforming genital examinationmaintainingfulldignityofthepatient			Y	Bedside,skilllab	OSCE			
33.7.2	Counseltheparentsforreferraltospecialistafterrecognizingambiguousgenitalia			Y	Bedside,skilllab	OSCEstationwithSP			
PE33.8	**DefineprecociousanddelayedPuberty**			**Y**	**Lecture,SGD**	**Written/Viva voce**			
33.8.1	DiscussnormalPhysiologyofpubertyanddefinep			Y	Lecture,SGD	Written/viva			

	recociousanddelayed puberty								
PE33.9	**PerformSexualMaturityRating(SMR)and interpret**			**Y**	**Bedside,skilllab**	**Skill Assessment**			
33.9.1	PerformSMR stagingmaintainingfulldignityofthe adolescentpatientandinterpretitcorrectly			Y	Bedside,skilllab	OSCE			
PE33.10	**RecognizeprecociousanddelayedPubertyandrefer**			**Y**	**Bedside,skilllab**	**Logbook**			

33.10.1	Recognize featuresofprecociousanddelayedpubertyin achild			Y	Bedside/skilllab	Logbook			
33.10.2	Counseltheparentsforneedtoreferthechildtohigher centerafterdiagnosingprecociousordelayedPuberty			Y	Bedside,skilllab	OSCEwithSP			
PE33.11	**Identifydeviationsingrowthandplanappropriate referral**			**Y**	**Bedside,skilllab**	**Logbook**	2		
33.11.1	Identifytheabnormalgrowthpatternin achild			Y	Bedside,skilllab	OSCE	2		
33.11.2	Planthereferralofachild withabnormalgrowthtoaspecialistandcounseltheparentsaccordingly			Y	Bedside,skilllab	OSCEwithSP	2		
Topic:VaccinepreventableDiseases-Tuberculosis				**Numberofcompetencies:(20)**		**Numberofproceduresthatrequirecertification:(03)**			
PE 34.1	**Discuss the epidemiology, clinical features, clinicaltypes, complications of Tuberculosis in Children andAdolescents**			**Y**	**Lecture/SGD**	**Written/vivavoce**		**Micro**	**RespMed**
34.1.1	discusstheepidemiologyofTuberculosisinChildrenandAdolescents			Y	Lecture/SGD	Written/vivavoce			
34.1.2	DescribetheclinicalfeaturesofTuberculosisinChildrenand Adolescents			Y	Lecture/ SGD	Written/viva voce			
34.1.3	EnumeratetheclinicaltypesofTuberculosisinChildrenandAdolescents			Y	Lecture/SGD	Written/vivavoce			
34.1.4	ListthecomplicationsofTuberculosisin ChildrenandAdolescents			Y	Lecture/SGD	Written/vivavoce			
PE 34.2	**Discussthevariousdiagnostictoolsforchildhood tuberculosis**			**Y**	**Lecture/** SGD	**Written/viva voce**		**Micro**	**Resp Med**
34.2.1	Describethe variousdiagnostictoolsforchildhood tuberculosis			Y	Lecture/ SGD	Written/viva voce			

PE 34.3	**DiscussthevariousregimensformanagementofTuberculosisasperNationalGuidelines**			**Y**	**Lecture/SGD**	**Written/vivavoce**		**Micro,ComMed, Pharm**	**RespMed**
34.3.1	DescribethevariousregimensformanagementofTuberculosisasperNational Guidelines			Y	Lecture/SGD	Written/vivavoce			
PE 34.4	**Discussthepreventivestrategiesadoptedandthe objectives and outcome of the National TuberculosisProgram**			**Y**	**Lecture/ SGD**	**Written/vivavoce**		**Micro, Com Med,Pharm**	**RespMed**

34.4.1	Describethepreventivestrategiesadoptedu ndertheNationalTuberculosisProgram			Y	Lecture/SGD	Written/v ivavoce			
34.4.2	ListtheobjectivesoftheNationalTuberculosisProgr am			Y	Lecture/SGD	Written/viva voce			
34.4.3	DiscusstheoutcomeoftheNationalTuberculosisPro gram			Y	Lecture/SGD	Written/v ivavoce			
PE 34.5	**Abletoelicit,documentandpresenthistoryofcon tact withtuberculosisineverypatientencounter**			**Y**	**Bedside,Skillsla b**	**Skill Assessment**			**Resp Med**
34.5.1	Elicithistoryofcontactwithtuberculosisineverypati ent encounter			Y	Bedside,Skillslab	SkillAssessme nt			
34.5.2	Documenthistoryofcontactwithtuberculosisine verypatientencounter			Y	Bedside,Skillslab	SkillAssessme nt			
34.5.3	Presenthistoryofcontactwithtuberculosisinever ypatientencounter			Y	Bedside,Skillslab	SkillAssessme nt			
PE 34.6	**IdentifyaBCGscar**			**Y**	**Bedside,Skillsla b**	**Skill Assessment**	**3**	**Micro**	**Resp Med**
34.6.1	IdentifyaBCG scarinachild			Y	Bedside,Skillslab	SkillAssessme nt	3		
PE 34.7	**InterpretaMantouxTest**			**Y**	**Bedside**	**Skill Assessment**	**3**	**Micro**	**Resp Med**
34.7.1	ReadaMantouxTest			Y	Bedside	SkillAssessme nt	3		
34.7.2	InterpretaMantouxTest			Y	Bedside	SkillAssessme nt	3		
PE 34.8	**Interpretachestradiograph**			**Y**	**Bedside**	**Skill Assessment**		**Radiod**	**Resp Med**
34.8.1	Identifyabnormalitiescausedbytuberculosis inachestradiograph			Y	Bedside	SkillAssessme nt			
PE 34.9	**Interpretbloodtestsinthecontextoflaboratory evidencefortuberculosis**			**N**	**Bedside,SGD**	**Logbook**		**Micro**	**Resp Med**
34.9.1	interpretbloodtestsinthecontextoflaboratoryevid ence fortuberculosis			N	Bedside,SGD	Logbook			

PE 34.10	**Discussthevarioussamplesfordemonstratingthe organisme.g.GastricAspirate,Sputum,CSF,FNAC**			**Y**	**Bedside,SGD**	**Written/viva voce**		**Micro**	**Resp Med**
34.10.1	Describe the various samples for demonstrating themycobacteriae.g.GastricAspirate,Sputum,CSF,FNAC			Y	Bedside,SGD	Written/vivavoce			

PE 34.11	**PerformAFBstaining**			**Y**	**DOAPsession**	**Logbook/Jour nal**	**3**	**Micro**	**Resp Med**
34.11.1	PerformAFB staining			Y	DOAPsession	Logbook/Journal	3		
PE 34.12	**Enumeratetheindicationsanddiscussthelimitations ofmethodsofculturingM.Tuberculosis**			**Y**	**SGD**	**Written/viva voce**		**Micro**	**Resp Med**
34.12.1	EnumeratetheindicationsofculturingM.tuberculosis			Y	SGD	Written/viva voce			
34.12.2	EnumeratethemethodsofculturingM. tuberculosis			Y	SGD	Written/viva			
34.12.3	DescribethelimitationsofdifferentmethodsofculturingM.tuberculosis			Y	SGD	Written/vivavoce			
PE 34.13	**EnumeratethenewerdiagnostictoolsforTuberculosis includingBACTECCBNAATandtheirindications**			**N**	**Lecture/ SGD**	**Written/viva voce**			
34.13.1	EnumeratethenewerdiagnostictoolsforTuberculosis includingBACTECandCBNAAT			N	Lecture/SGD	Written/viva voce			
34.13.2	recalltheindicationsforusingthenewerdiagnostictoolsforTuberculosisincludingBACTECand CBNAAT			N	Lecture/SGD	Written/vivavoce			
PE 34.14	**Enumerate the common causes of fever and discusstheetiopathogenesis,clinicalfeatures, complications andmanagementoffeverinchildren**			**Y**	**Lecture/ SGD**	**Written/vivavoce**		**Micro**	
34.14.1	Enumeratethecommoncausesoffeverinchildren.			Y	Lecture/SGD	Written/viva voce			
34.14.2	Describethepathophysiologyoffeverinchildren.			Y	Lecture/SGD	Written/vivavoce			
34.14.3	List the clinical features associated with fever in childrenwhich aidindiagnosis.			Y	Lecture/SGD	Written/vivavoce			
34.14.4	Recallthecomplicationsoffeverinchildren.			Y	Lecture/SGD	Written/viva voce			

34.14.5	Elaboratethemanagementoffeverinchildren.			Y	Lecture/SGD	Written/v ivavoce			
PE 34.15	**Enumerate the common causes of fever and discusstheetiopathogenesis,clinicalfeatures, complications andmanagementofchildwithexanthematousillnesslikeMeasles,Mumps,Rubella&Chickenpox**			**Y**	**Lecture/ SGD**	**Written/vivavoce**		**Micro**	

34.15.1	Enumeratethecommoncausesofexanthematousillness(feverwith rash) in children			Y	Lecture/SGD	Written/vivavoce			
34.15.2	discussthepathogenesisofMeasles,Mumps,Rubella& Chickenpox			Y	Lecture/SGD	Written/viva voce			
34.15.3	DescribetheclinicalfeaturesofMeasles,Mumps,Rubella&Chickenpox inchildren andadolescents			Y	Lecture/SGD	Written/vivavoce			
34.15.4	EnumeratethecomplicationsofMeasles,Mumps,Rubella & Chickenpoxinchildrenand adolescents			Y	Lecture/SGD	Written/viva voce			
34.15.5	outlinethemanagementofMeasles,Mumps,Rubella&Chickenpoxin childrenand adolescents			Y	Lecture/SGD	Written/vivavoce			
PE 34.16	**Enumerate the common causes of fever and discusstheetiopathogenesis,clinicalfeatures, complicationsandmanagementofchildwithDiphtheria,Pertussis, Tetanus**			**Y**	**Lecture/ SGD**	**Written/vivavoce**		**Micro**	
34.16.1	discussthepathogenesisofDiphtheria,Pertussisand Tetanus			Y	Lecture/SGD	Written/viva voce			
34.16.2	DescribetheclinicalfeaturesofDiphtheria,PertussisandTetanusinchildrenand adolescents.			Y	Lecture/SGD	Written/vivavoce			
34.16.3	EnumeratethecomplicationsofDiphtheria,PertussisandTetanusinchildren andadolescents			Y	Lecture/SGD	Written/vivavoce			
34.16.4	outlinethemanagementofDiphtheria,Pertussisand Tetanus inchildrenandadolescents			Y	Lecture/SGD	Written/viva voce			
PE 34.17	**Enumerate the common causes of fever and discusstheetiopathogenesis,clinicalfeatures, complications andmanagementofchildwithTyphoid**			**Y**	**Lecture/ SGD**	**Written/vivavoce**		**Micro**	**-**
34.17.1	discussthepathophysiologyofTyphoidfever			Y	Lecture/SGD	Written/vivavoce			
34.17.2	DescribetheclinicalfeaturesofTyphoidfeverinchildren			Y	Lecture/SGD	Written/viva voce			

34.17.3	EnumeratethecomplicationsofTyphoidfeverinchildren			Y	Lecture/SGD	Written/viivavoce			
34.17.4	outlinethemanagementofTyphoidfeverinchildren			Y	Lecture/SGD	Written/viivavoce			

PE 34.18	**Enumerate the common causes of fever and discusstheetiopathogenesis,clinicalfeatures, complicationsandmanagementofchildwithDengue,Chikungunya andothervectorbornediseases**			**Y**	**Lecture/ SGD**	**Written/vivavoce**		**Micro**	**-**
34.18.1	Enumeratecommoncausesoffeverresultingfrom vectorbornediseasesinchildren(EgDengue,Chikungunyaand others)			Y	Lecture/SGD	Written/vivavoce			
34.18.2	discussthepathophysiologyofvectorbornediseasesinchildren(EgDengue,Chikungunya,andothers)			Y	Lecture/SGD	Written/vivavoce			
34.18.3	listtheclinicalfeaturesofvectorbornediseasesinchildren (EgDengue,Chikungunya,andothers)			Y	Lecture/SGD	Written/vivavoce			
34.18.4	recallthecomplicationsofvectorbornediseasesin children(EgDengue, Chikungunya,and others)			Y	Lecture/SGD	Written/vivavoce			
34.18.5	elaboratethemanagementofvectorbornediseasesinchildren(EgDengue,Chikungunya,andothers)			Y	Lecture/SGD	Written/vivavoce			
PE 34.19	**Enumerate the common causes of fever and discussthe etiopathogenesis, clinical features, complicationsand management of children with Common ParasiticInfections,malaria,leishmaniasis,filariasis,helminthic infestations,amebiasis,giardiasis**			**Y**	**Lecture/SGD**	**Written/vivavoce**		**Micro**	**-**
34.19.1	Enumerate the common causes of fever resulting fromparasiticinfectionslikemalaria,leishmaniasis,filariasis,helminthicinfestations,amebiasisandgiardiasis			Y	Lecture/SGD	Written/vivavoce			
34.19.2	DiscussthepathophysiologyofCommonParasiticInfectionslikemalaria,leishmaniasis,filariasis,helminthicinfestations, amebiasisandgiardiasis			Y	Lecture/SGD	Written/vivavoce			

34.19.3	ListtheclinicalfeaturesofCommonParasiticInfections likemalaria,leishmaniasis,filariasis,helminthicinfestations, amebiasisandgiardiasis			Y	Lecture/SGD	Written/vivavoce			
34.19.4	RecallthecomplicationsofCommonParasiticInfections likemalaria, leishmaniasis, filariasis, helminthic infestations,amebiasisand giardiasis			Y	Lecture/SGD	Written/vivavoce			
34.19.5	Elaborate the management of Common Parasitic Infectionslikemalaria,leishmaniasis,filariasis,helminthicinfestations, amebiasisandgiardiasis			Y	Lecture/SGD	Written/vivavoce			
PE 34.20	**Enumerate the common causes of fever and discusstheetiopathogenesis,clinicalfeatures, complications andmanagementofchildwithRickettsialdiseases**			**Y**	**Lecture/SGD**	**Written/vivavoce**		**Micro**	**-**
34.20.1	Enumeratethecommoncausesoffeverresultingfrom Rickettsialdiseases			Y	Lecture/SGD	Written/vivavoce			
34.20.2	DiscussthepathophysiologyofRickettsialdiseases			Y	Lecture/SGD	Written/vivavoce			
34.20.3	ListtheclinicalfeaturesofRickettsialdiseasesinchildren			Y	Lecture/SGD	Written/vivavoce			
34.20.4	RecallthecomplicationsofRickettsialdiseasesin children			Y	Lecture/SGD	Written/vivavoce			
34.20.5	ElaboratethemanagementofRickettsialdiseasesinchildren			Y	Lecture/SGD	Written/vivavoce			
Topic:Theroleofthephysicianin thecommunity				**Numberofcompetencies:(1)**		**Numberofproceduresthatrequirecertification:(NIL)**			
PE 35.1	**Identify, discuss and defend medicolegal, socio-cultural and ethical issues as they pertain to healthcareinchildren(includingparentalrightsandrightto refusetreatment)**			**Y**	**Small groupdiscussion**	**Written /Vivavoce**			

35.1.1	Listcommonmedicolegalissuesrelatedtoheal thcareinchildren			Y	Interactivelecture	Written/viva	-	Forensic	
35.1.2	Listcommonsocio-culturalissuesrelatedtohealthcareinchildren			Y	Interactive lecture/comm unityvisit	Written/viva	-	ComMed	
35.1.3	Identify the important socio-cultural and ethical issuesrelatedtohealthcareinchildreninaclini calcaseduringbedsideteaching			Y	Bedsideteaching	Long caseOS CE Reflecti vewriti ng			
35.1.4	Discuss the common medico-legal, socio-cultural and ethicalissuesrelated to healthcareinchildren			Y	Case-based learning/SGD	OSCE Reflecti vewriti ng			

Summary of course content, teaching and learning methods and student assessment for the undergraduate (MBBS) Curriculum in Paediatrics

Course content

The course content has been given in detail in the above Table, which includes competencies, specific learning objectives for each competencies and the suggested Teaching-Learning methods and assessment methods. The competencies have been developed by an expert group nominated by NMC, while the SLOs, T-L methods and assessments methods have been written by the expert committee constituted by Sri Siddhartha Academy of Higher Education, with inputs taken from IAP Taskforce.

Teaching-Learning methods and Time allotted

	Clinics	Lectures	Small group discussion	Self-directed learning	No. o hour
Professional year II	2 weeks (3 hours per day, 6 days a week)	-	-	-	36 h
Professional year III Part I	4 weeks (3 hours per day, 6 days a week)	20	30	5	127
Professional year III Part II	4 weeks (3 hours per day, 6 days a week)	20	35	10	137

Teaching-learning methods shall be learner centric and shall predominantly include small group learning, interactive teaching methods and case-based learning. Didactic lectures not to exceed one-third of the total teaching time. The teaching learning activity focus should be on application of knowledge rather than acquisition of knowledge.

The curricular contents shall be vertically and horizontally aligned and integrated to the maximum extent possible to enhance learner's interest and eliminate redundancy and overlap. Integration allows the student to understand the structural basis of paediatric problems, their management and correlation with function, rehabilitation and quality of life.

Acquisition and certification of skills shall be through experiences in patient care, diagnostic and skill laboratories. Use of skill lab to train undergraduates is desirable.

Newer T-L method like Learner-doctor method (Clinical clerkship) should be mandatorily implemented, from 1st clinical postings itself.

The goal of this type of T-L activity is to provide learners with experience in longitudinal patient care, being part of the health care team, and participate in hands-on care of patients in outpatient and inpatient setting. During the 1st clinical postings, the students are oriented to the working of the department. During the subsequent clinical postings the students are allotted patients, whom they follow-up through their stay in

the hospital, participating in that patient's care including case work-up, following-up on investigations, presenting patient findings on rounds, observing procedures, if any, till patient is discharged.

The development of ethical values and overall professional growth as integral part of curriculum shall be emphasized through a structured longitudinal and dedicated programme on professional development including attitude, ethics, and communication which is called the AETCOM module. The purpose is to help the students apply principles of bioethics, system based care, apply empathy and other human values in patient care, communicate effectively with patients and relatives and to become a professional who exhibits all these values. This will be a longitudinal programme spread across the continuum of the MBBS programme including internship.

Assessment
Eligibility to appear for University examinations is dependent on fulfilling criteria in two main areas – attendance and internal assessment marks

Attendance
Attendance requirements are 75% in theory and 80% in clinical postings for eligibility to appear for the examinations in Paediatrics.
75% attendance in AETCOM Module is required for eligibility to appear for final examination in Professional year III part II.

Internal Assessment
Progress of the medical learner shall be documented through structured periodic assessment that includes formative and summative assessments. Logs of skill-based training shall be also maintained.
There shall be no less than three internal assessment examinations in Paediatrics. An end of posting clinical assessment shall be conducted for each of the Paediatric clinical postings.
Day to day records and logbook (including required skill certifications) should be given importance in internal assessment. Internal assessment should be based on competencies and skills.
Learners must secure at least 50% marks of the total marks (combined in theory and clinical; not less than 40 % marks in theory and practical separately) assigned for internal assessment in Paediatrics in order to be eligible for appearing at the final University examination.
Internal assessment marks will reflect as separate head of passing at the summative examination.
The results of internal assessment should be displayed on the notice board within 1-2 weeks of the test.
Remedial measures should be offered to students who are either not able to score qualifying marks or have missed on some assessments due to any reason.
Learners must have completed the required certifiable competencies for that phase of training and Paediatric logbook entry completed to be eligible for appearing at the final university examination.

AETCOM assessment will include: (a) Written tests comprising of short notes and creative writing experiences, (b) OSCE based clinical scenarios / viva voce.

University examinations

University exam shall be held at the end of Professional year III part II of training (Final year MBBS) in the subjects of Paediatrics, General Medicine, Obstetrics and gynaecology and General Surgery.

University examinations are to be designed with a view to ascertain whether the candidate has acquired the necessary knowledge, minimal level of skills, ethical and professional values with clear concepts of the fundamentals which are necessary for him/her to function effectively and appropriately as a physician of first contact. Assessment shall be carried out on an objective basis to the extent possible.

Marks allotted:

Paediatrics	**Theory**	**Clinical examination**
Total marks	100 marks	100 marks
	Long essay 2X10= 20	Two cases x40marks=80marks
	Short essay 6x5=30 marks	Viva voce 4 x 5=20marks
	Short answer question 10x3=30marks	
	MCQs 20x1=20marks	

The theory paper should include different types such as structured essays, short essays, Short Answers Questions (SAQ) and MCQs (Multiple Choice Questions). Marks for each part should be indicated separately.

All the question papers to follow the suggested **blueprint(APPENDIX 1). It is desirable that t**he marks allotted to a particular topic are adhered to.

A minimum of **80%** of the marks should be from the **must know (core)** component of the curriculum. A maximum of **20%** can be from the **desirable to know** component.

All **main essay questions** to be from the **must know component** of the curriculum.

Main essay questions to be of the **modified variety** containing a clinical case scenario. At least 30% of questions should be clinical case scenario based. Questions to be constructed to test higher cognitive levels.

Clinical examinations will be conducted in the hospital wards. Clinical cases kept in the examination must be common conditions that the learner may encounter as a physician of first contact in the community. Selection of rare syndromes and disorders asexamination cases is to be discouraged. Emphasis should be on candidate's capability to elicit history, demonstrate physical signs, write a case record, analyze the case and develop a management plan.

Viva/oral examination should assess approach to patient management, emergencies, attitudinal, ethical and professional values. Candidate's skill in interpretation of common investigative data, X-rays, identification of specimens, ECG, etc. is to be also assessed.

At least one question in each paper of the clinical specialties in the University examination should test knowledge competencies acquired during the professional development programme. Skill competencies acquired during the Professional Development Programme must be tested during the clinical, practical and viva voce.

There shall be one main examination in an academic year and a supplementary to be held not later than 90 days after the declaration of the results of the main examination.

Pass criteria

Internal Assessment: 50% combined in theory and practical (not less than 40% in each) for eligibility for appearing for University Examinations
University Examination: Mandatory 50% marks separately in theory and clinicals (clinicals = clinical + viva)
The grace marks up to a maximum of five marks may be awarded at the discretion of the University to a learner for clearing the examination as a whole but not for clearing a subject resulting in exemption.

Appointment of Examiners

Person appointed as an examiner in the particular subject must have at least four years of total teaching experience as assistant professor after obtaining postgraduate degree in the subject in a college affiliated to a recognized/approved/permitted medical college.

For the Practical/ Clinical examinations, there shall be at least four examiners for 100 learners, out of whom not less than 50% must be external examiners. Of the four examiners, the senior-most internal examiner will act as the Chairman and coordinator of the whole examination programme so that uniformity in the matter of assessment of candidates is maintained.

Where candidates appearing are more than 100, two additional examiners (one external & one internal) for every additional 50 or part there of candidates appearing, be appointed.

All eligible examiners with requisite qualifications and experience can be appointed as internal examiners by rotation.
External examiners may not be from the same University.

There shall be a Chairman of the Board of paper-setters who shall be an internal examiner and shall moderate the questions.
All theory paper assessment should be done as central assessment program (CAP) of concerned university.

APPENDIX 1: Blueprint for Paediatric theory Examinations

Topics	Marks allotted
• Growth, development & Adolescent health • Nutrition and micronutrients	15
Neonatology	10
Fluid & Electrolytes	3
• Immunity & Immunization • Infections & Infestation	15
Gastrointestinal system	5
Hematology including malignancies	10
• Respiratory system • Cardiovascular system	15
Endocrine, metabolic & genetic disorders	3
Central Nervous system, neuromuscular disorders	10
Disorders of kidney & urinary tract	5
Pediatric emergencies	3
Miscellaneous – Eye, ENT, skin, Rheumatology, Psychiatry & social paediatrics	6
Total	100

UNDER GRADUATE PAEDIATRIC LOG BOOK

As per Competency-Based Medical Education Curriculum

Sample template

College Logo

Student's Stamp size photo

(Name of the medical college)

DEPARTMENT OF PAEDIATRICS

UNDERGRADUATE PAEDIATRIC

LOG BOOK

Name of the student:
Contact Number:
Email id:
Date of admission to MBBS course:
Date of beginning of the current phase:
Reg. No. (College ID):
Reg. No. (University ID):

Sample template

DEPARTMENT OF PAEDIATRICS

(Name of the medical college)

LOG BOOK CERTIFICATE

Certified that this is a bonafide record of the work done by _____ in the department during his/her clinical postings.

He/she will be appearing for the Final M.B.B.S.(Phase 3, part 2) examination of Sri Siddhartha Academy of Higher Education, Tumkur, in February/August 20

Signature of faculty **Signature of Head of the department**

Name :

Reg No. :

Batch :

Posting in the Dept : **From** **To**

I

II

III

ATTENDANCE

		Classes held	Classes attended	Percentage	Faculty sign
Clinical Posting	I				
	II				
	III				
Theory Attendance	PY3P1				
	PY3P2				
Small group discussions	PY3P1				
	PY3P2				

INTERNAL ASSESSMENT MARKS		
	Theory	**Clinicals**
	1st test:	**1st :**
	2nd test:	**2nd:**
		3rd:
Final Internal Assessment Marks		

INDEX

S. NO:	CONTENT	PAGE NUMBER
1.	Abbreviations	2
2.	Summary of Certifiable Competencies	3-4
3.	Documentation of Case Presentations	5
PROFESSIONAL YEAR II		
1.	Learning objectives	7
2.	Certifiable competencies	8-19
3.	Reflections	20
PROFESSIONAL YEAR III PHASE I		
1.	Learning objectives	22
2.	Certifiable competencies	23-29
3.	Competencies requiring documentation	29-33
4.	AETCOM competencies	34-35
5.	Self directed learning	36-37
6.	Integrated learning	38
7.	Reflections	39
	ELECTIVES IN PAEDIATRICS	40
PROFESSIONAL YEAR III PHASE II		
1.	Learning objectives	42
2.	Certifiable competencies	43-53
3.	Competencies requiring documentation	54-58
4.	AETCOM competencies	59
5.	Self directed learning	60-61
6.	Integrated learning	62
7.	Reflections	63
	CLINIC/ FIELD VISITS	64-65

ABBREVIATIONS

F / R / RE – First or Only / Repeat / Remedial

- First or only – Student completed the task in the first attempt
- Repeat – Student completed the task in multiple attempts
- Remedial – Student completed the task after remedial measures

B / M / E – Below expectation / Meets expectation / Exceeds expectation

- Below expectation – Student did not complete the task
- Meets Expectation – Student completed the task with minimal prompts
- Exceeds expectation – Student completed the task without any prompts

C / R / RE – Completed / Repeat / Remedial

- Completed – Student has successfully completed the task
- Repeat – Student had to repeat the task in the same briefing
- Remedial – Student needs to undergo briefing again and repeat the task

AETCOM – Attitude, Ethics and Communication Module

SUMMARY OF CERTIFIABLE COMPETENCIES

Competency no.	Competency details	No required to certify	Date completed	Reference page no
PE1.4	Perform anthropometric measurements, document in growth charts and interpret	**3**		**8**
PE1.7	Perform developmental assessment and interpret	**3**		**14**
PE 7.5	Observe the correct technique of breast feeding and distinguish right from wrong techniques	**3**		**23**
PE11.5	Calculate BMI, document in BMI chart and interpret	**3**		**15**
PE19.6	Assess patient for fitness for immunization and prescribe an age-appropriate immunization schedule	**5**		**18**
PE24.15	Perform NG tube insertion in a manikin	**2**		**25**
PE24.16	Perform IV cannulation in a mode	**2**		**43**
PE24.17	Perform intraosseous insertion model	**2**		**44**
PE27.15	Assess airway and breathing: recognize signs of severe respiratory distress. Check for cyanosis, severe chest indrawing, grunting	**3**		**45**
PE27.16	Assess airway and breathing. Demonstrate the method of positioning of an infant & child to open airway in a simulated environment	**3**		**46**
PE27.17	Assess airway and breathing: administer oxygen using correct technique and appropriate flow rate	**3**		**47**
PE27.18	Assess airway and breathing: perform assisted ventilation by bag and mask in a simulated environment	**3**		**48**

PE27.19	Check for signs of shock i.e. pulse, blood pressure, CRT	**3**		**49**
PE27.20	Secure an IV access in a simulated Environment	**2**		**43**
PE27.21	Choose the type of fluid and calculate the fluid requirement in shock	**3**		**50**
PE27.22	Assess level of consciousness & provide emergency treatment to a child with convulsions/coma3 Position an unconscious3 child Position a child with suspected trauma Administer IV/per rectal Diazepam for a convulsing child in a simulated environment	**3**		**51**
PE27.23	Assess for signs of severe dehydration	**3**		**52**
PE27.28	Provide BLS for children in manikin	**3**		**53**
PE33.6	Perform and interpret urine dip stick for sugar	**3**		**26**
PE33.11	Identify deviations in growth and plan appropriate referral	**2**		**13**
PE34.6	Identify a BCG scar	**3**		**27**
PE34.7	Interpret a Mantoux test	**3**		**28**
PE34.11	Perform AFB staining	**3**		**29**

Student's Signature

Signature of Faculty
(Name and Designation)

DOCUMENTATION OF CASE PRESENTATIONS

S. No	Date	Patient Name and ID	Diagnosis	Case Presented/ Attended (P/A)	Year/ Phase	Grade (B/M/E)	Teacher's Signature

PROFESSIONAL YEAR II

LEARNING OBJECTIVES 1st CLINICAL POSTING (2 WEEKS)

At the end of the first posting, students are expected to:

1. Perform, interpret and document anthropometric measurements in children
2. Use the appropriate growth chart for a child and interpret them correctly
3. Perform, interpret and document nutritional history taking and development of a dietary plan for all children
4. Perform, interpret and document developmental history taking in all children
5. Conduct a developmental assessment in children and interpret them correctly
6. Assess patient for fitness for immunization and prescribe an age-appropriate immunization schedule

PE 1.4 Perform anthropometric measurements, document in growth charts and Interpret

Minimum number required to certify-3*

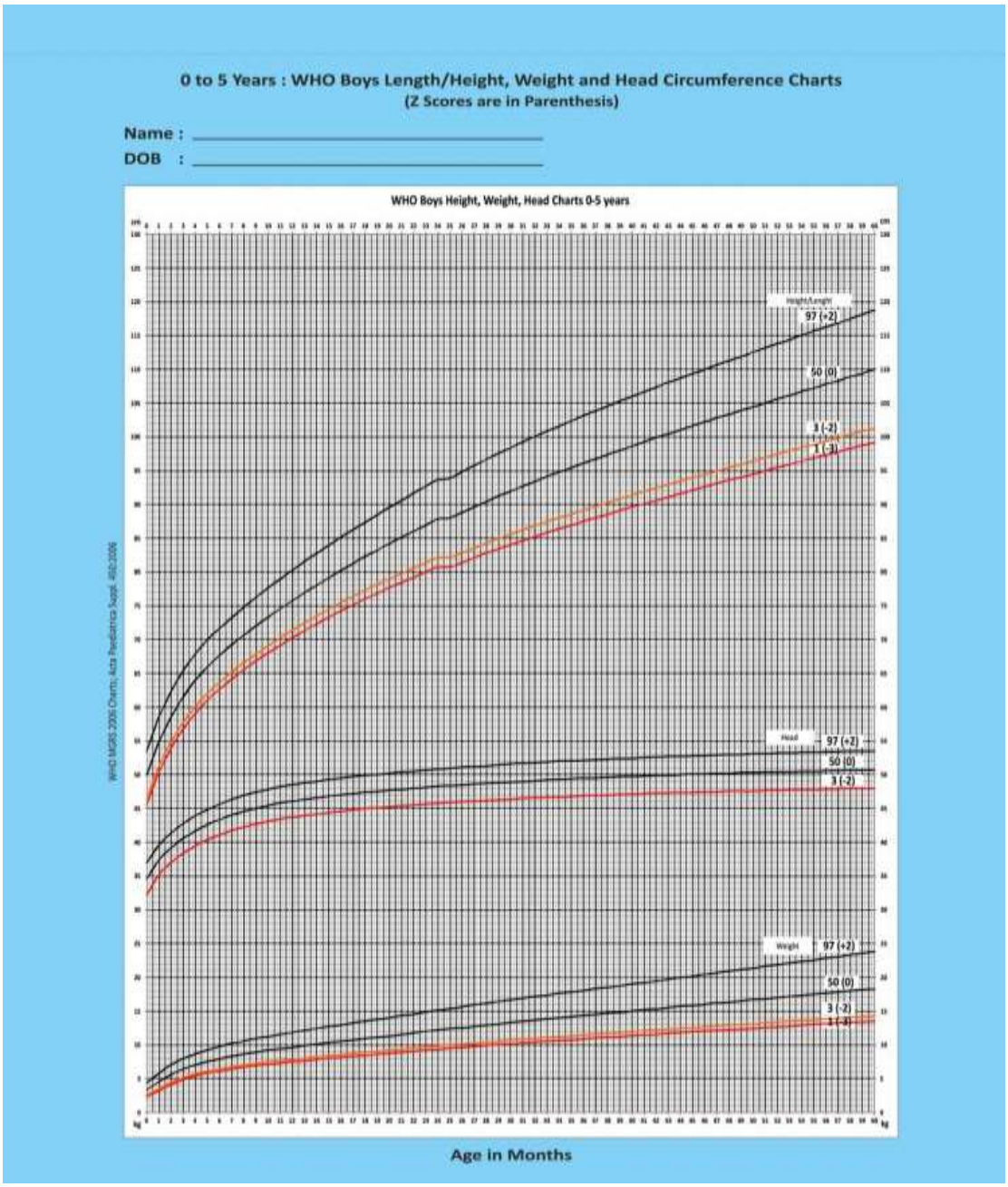
Growth assessment

No	Name	Age	Sex	Weight			Height/Length			MAC			HC			Wt for Ht		
				A	E	I	A	E	I	A	E	I	A	E	I	A	E	I
1																		
2																		
3																		
4																		
5																		

A – Actual E – Expected I – Inference

Using growth charts

Anthropometric values to be given here for each batch. They have to mark the values on the chart and interpret the growth pattern (No. Required - 3)



Interpretation:

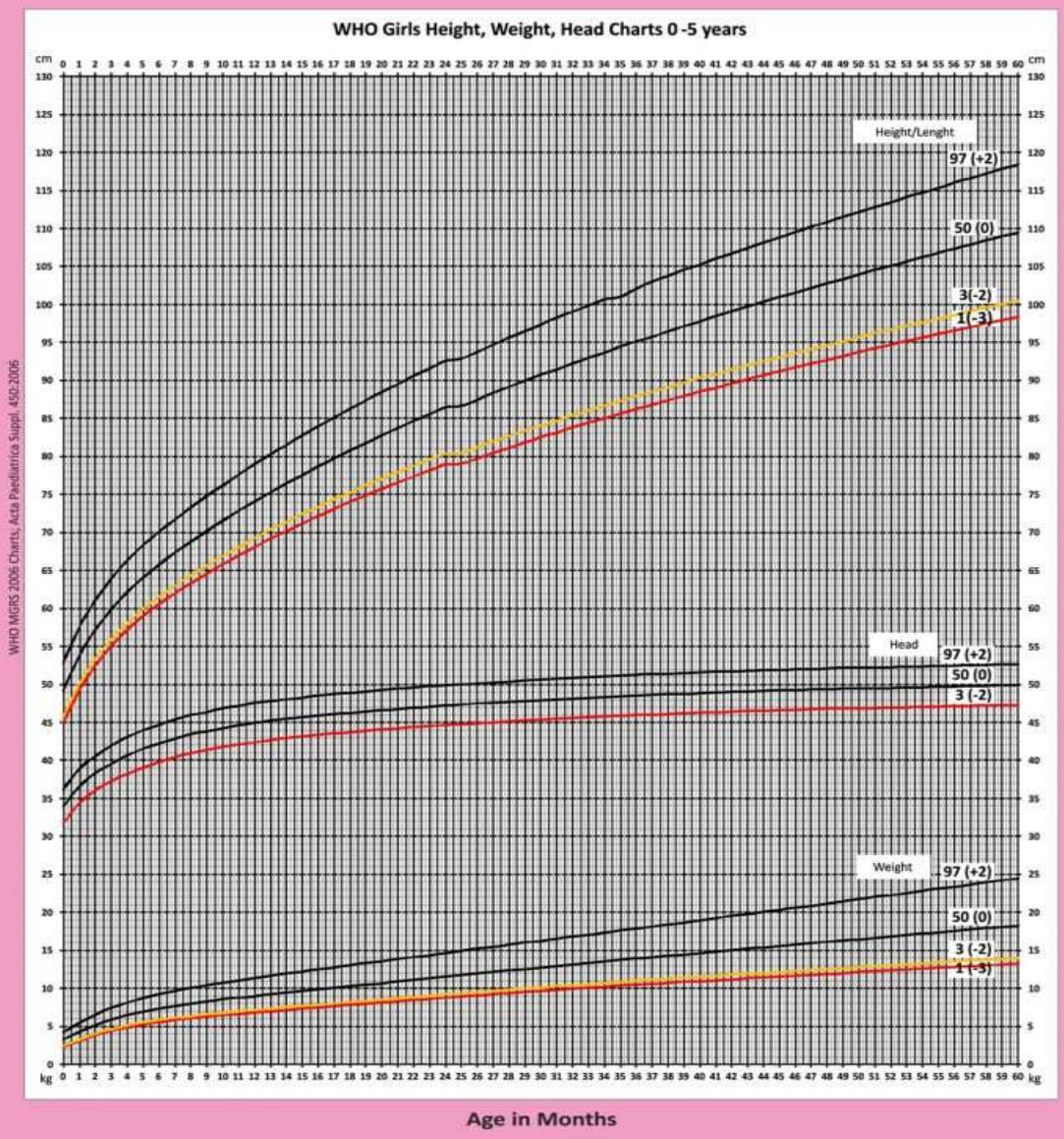
1.
2.
3.

0 to 5 Years : WHO Girls Length/Height, Weight and Head Circumference Charts

(Z Scores are in Parenthesis)

Name : _____

DOB : _____

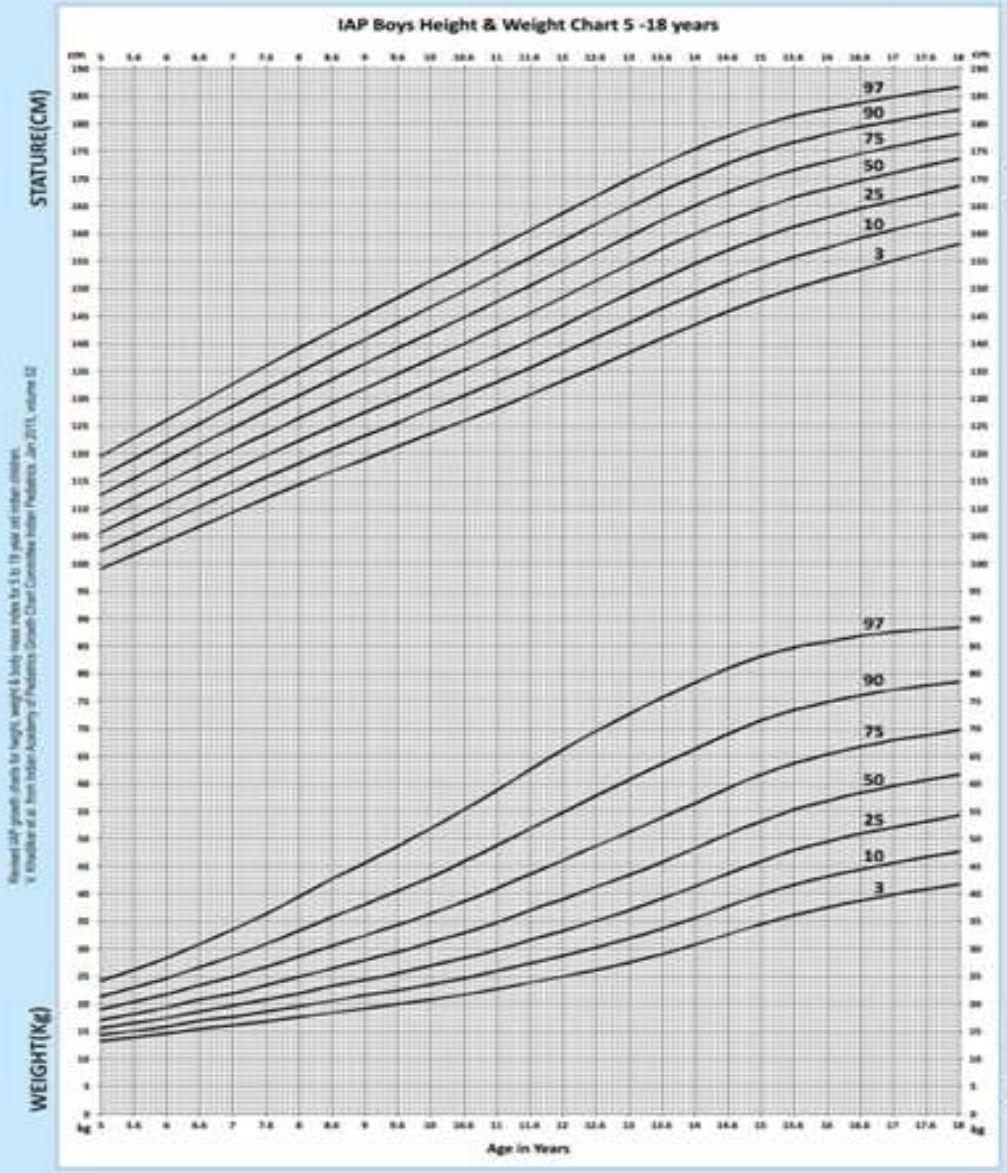


Interpretation:

1.
2.
3.

5 to 18 Years : IAP Boys Height and Weight Charts

Father's Height_____, Mother's Height_____, Target Height_____

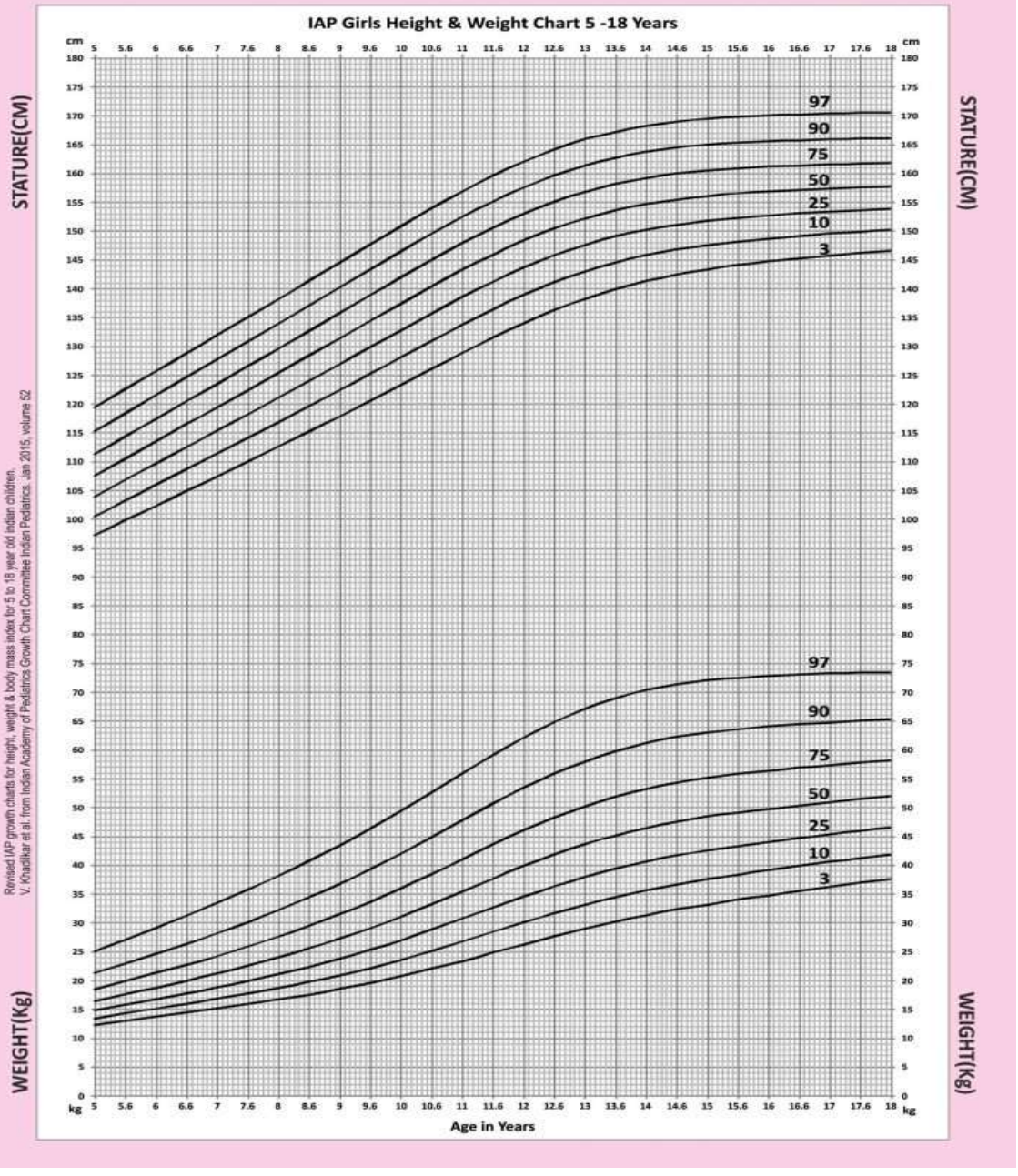


Interpretation:

1.
2.
3.

5 to 18 Years : IAP Girls Height and Weight Charts

Father's Height _____, Mother's Height_____, Target Height_____



Interpretation:

1.
2.
3.

Date Completed	Attempt at Competency (F/R/Re)	Rating (B/M/E)	Decision of Faculty (C/R/Re)	Initial of Faculty & Date	Feedback Received Initial of Learner with Date

PE33.11 Identify deviations in growth (Using the above growth charts) and plan appropriate referral.

Minimum number required to certify-2

If requiring referral, mention the reasons for referral

(Case 1)

1.
2.
3.
4.
5.

(Case 2)

1.
2.
3.
4.
5.

Date Completed	Attempt at Competency (F/R/Re)	Rating (B/M/E)	Decision of Faculty (C/R/Re)	Initial of Faculty & Date	Feedback Received Initial of Learner with Date

PE1.7 Perform developmental assessment and interpret

Minimum number required to certify-3

Take a detailed developmental history and perform developmental assessment. Indicate the present milestone attained in each category. Calculate the developmental age for each domain

S. No	Name	Age	Sex	Gross Motor	Fine Motor	Language	Social	Developmental age				Inference
								GM	FM	L	S	
1												
2												
3												
4												
5												

Date Completed	Attempt at Competency (F/R/Re)	Rating (B/M/E)	Decision of Faculty (C/R/Re)	Initial of Faculty & Date	Feedback Received Initial of Learner with Date

PE11.5 Calculate BMI, document in BMI chart and interpret

Minimum number required to certify-3

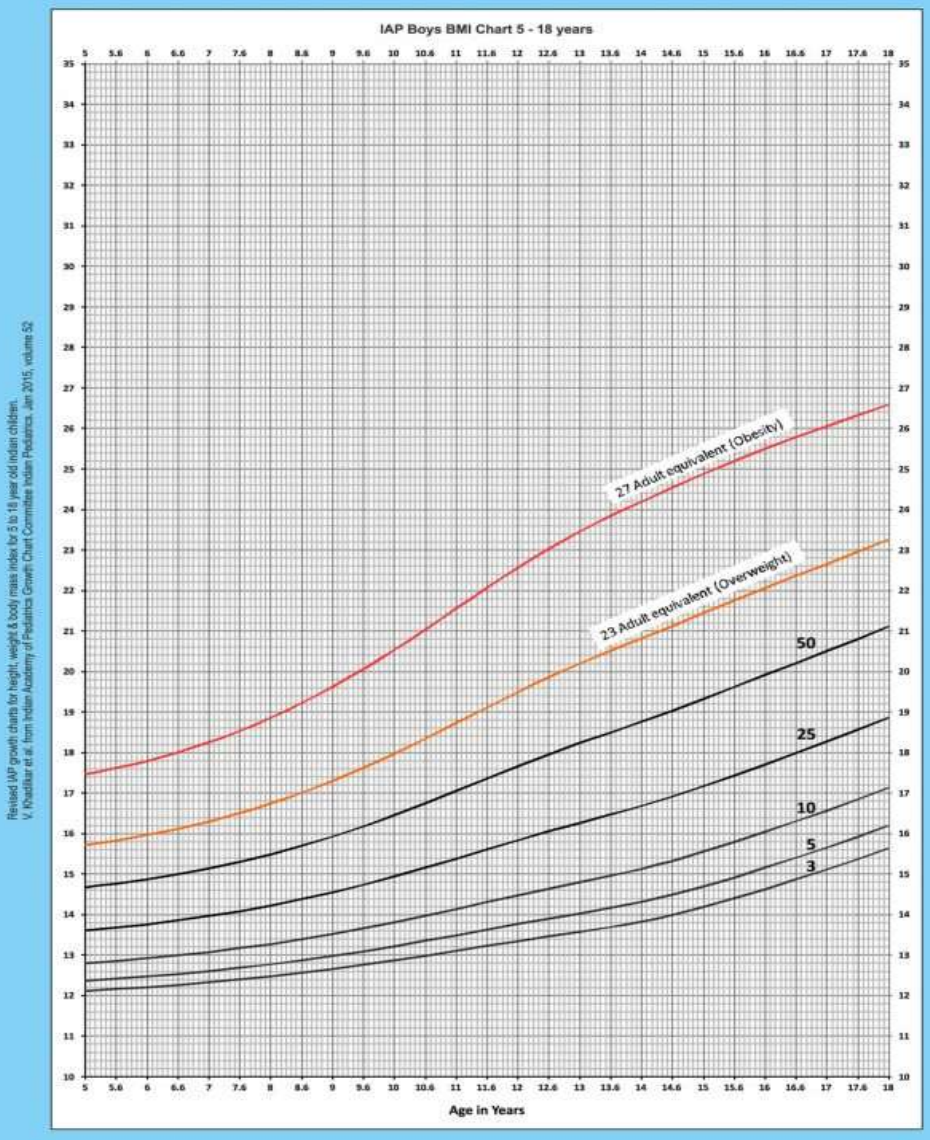
Calculate the BMI for 3 children (above 5 years) and enter in this table and also mark in the appropriate graph

S. No	Name	Age	Sex	Weight	Height	BMI	Normal	Inference
1								
2								
3								
4								
5								

5 to 18 Years : IAP Boys Body Mass Index Charts

Name _____

DOB _____



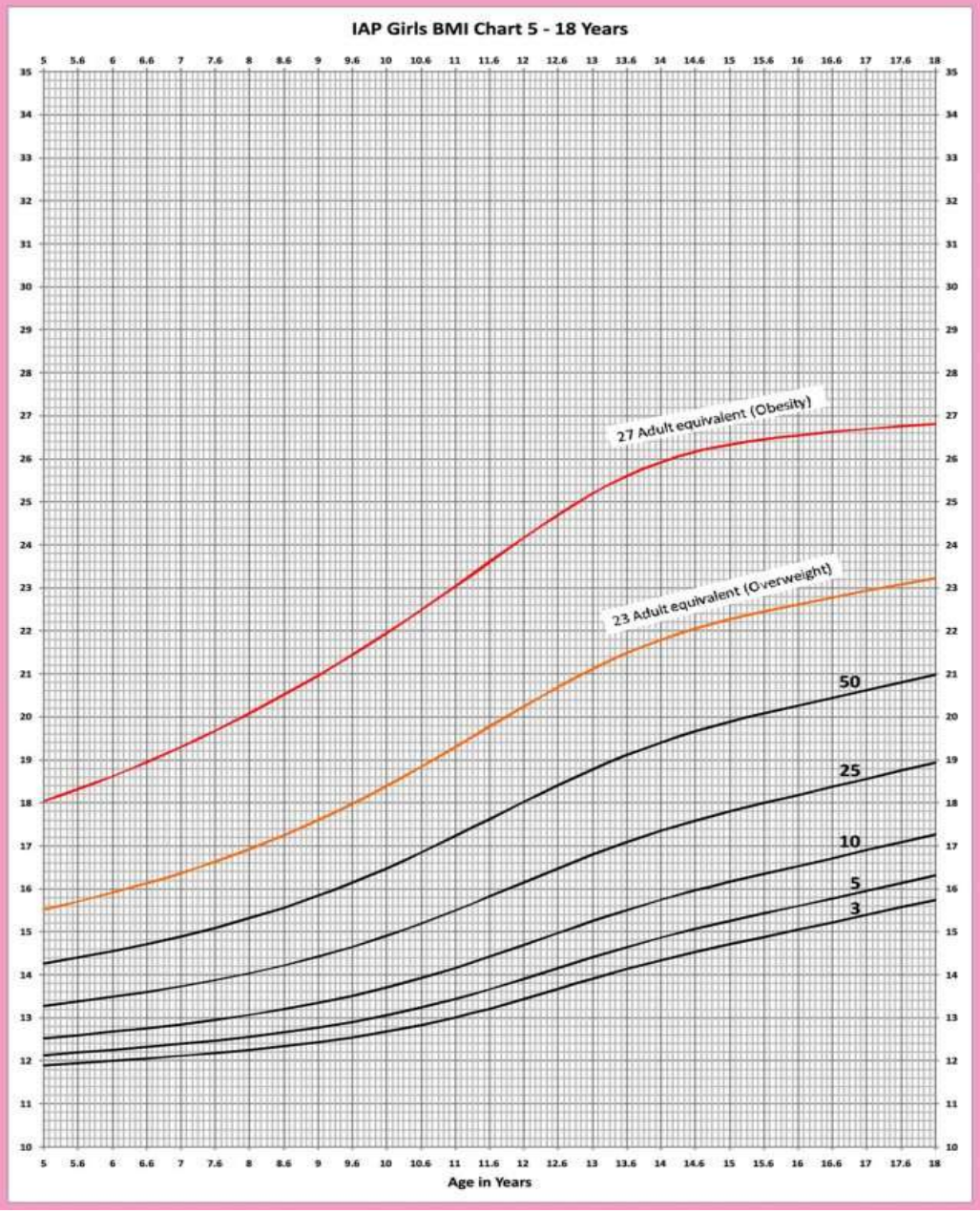
Interpretation:

1.
2.
3.

5 to 18 Years : IAP Girls Body Mass Index Charts

Name _____

DOB _____



Interpretation:

1.
2.
3.

Date Completed	Attempt at Competency (F/R/Re)	Rating (B/M/E)	Decision of Faculty (C/R/Re)	Initial of Faculty & Date	Feedback Received Initial of Learner with Date

PE19.6 Assess patient for fitness for immunization and prescribe an age-appropriate immunization schedule

Minimum number required to certify-5

Assessment of immunization status:

S. No	Name	Age	Sex	Vaccines received till date	Plan for further immunisation
1					
2					
3					
4					
5					

Date Completed	Attempt at Competency (F/R/Re)	Rating (B/M/E)	Decision of Faculty (C/R/Re)	Initial of Faculty & Date	Feedback Received Initial of Learner with Date

REFLECTIONS:

Your thoughts about the procedures requiring certification (any 7 where you committed mistakes)

Competency no	Competency details	Why I went wrong	Was this exercise useful	Faculty remarks

PROFESSIONAL YEAR III PHASE I

LEARNING OBJECTIVES

1. Observe the correct technique of breast feeding and distinguish right from wrong techniques

2. Perform NG tube insertion in a manikin correctly

3. Perform and interpret urine dip stick for sugar correctly

4. Identify a BCG scar accurately

5. Interpret a Mantoux test correctly

6. Perform AFB staining correctly

7. Write 4 Paediatric and 1 neonatal case sheets

PE7.5 Observe the correct technique of breast feeding and distinguish right from wrong techniques

Minimum number required to certify-3

Observe the process of breast feeding (under supervision and a chaperone being present) and note the following points

Position of mother and baby.

Cradle. The baby is held in the crook or elbow area of the arm on same side as breast to be used for feeding; mother supports breast with opposite hand; baby's body is rolled in toward mother's body so they are belly-to-belly.

Cross-cradle. The baby's head is supported by the hand opposite the breast to be used for feeding; mother supports breast with hand; baby is rolled in toward mother's body belly-to-belly.

Football or clutch. Baby's head is supported by the hand on the same side as breast to be used for feeding; baby's body is supported on a pillow and tucked under the arm on the same side as breast to be used for feeding.

Side-lying using modified cradle. In this position, the baby lies next to the mother with their bodies facing each other. If a pillow under the arm is uncomfortable, try placing the baby in the crook of the arm. This way, it is unlikely for the mother to roll over on the baby should the mother doze off. This position also keeps the baby's head at a good angle to bring baby and breast together, with the baby's head higher than his or her tummy, which can be helpful for babies who are more likely to spit up.

Laid-back breastfeeding. In this position, the mother is leaning back in a recliner or reclining in bed. The baby is lying on his or her stomach and is pressed against the mother's body. She can support the side of her baby's head if baby cannot hold it by him- or herself. In this position, both mother and baby can relax. She can allow her baby to explore her breast and latch on at his or her leisure. This is a great position if mother has had a cesarean delivery.

Latching.

The latch should be comfortable and pain free.

The baby's chest and stomach rest against the mother's body, so that baby's head is straight, not turned to the side.

Baby's chin touches her breast.

Baby's mouth opens wide around her breast, not just the nipple.

Baby's lips turn out.

Baby's tongue cups under her breast.

Mother hears or sees swallowing.

S. No	Position of mother	Position of child	Attachment (latching)	Comments
1				
2				

3				
4				
5				

Date Completed	Attempt at Competency (F/R/Re)	Rating (B/M/E)	Decision of Faculty (C/R/Re)	Initial of Faculty & Date	Feedback Received Initial of Learner with Date

PE24.15 Perform NG tube insertion in a manikin

Minimum Number required to certify-2

Demonstrate the following steps in inserting a NG tube in a manikin

S. No	Identify size of nasogastric tube as per age of child.	Demonstrate landmarks for measurement of length of NG tube to be inserted on a manikin	Correctly measure the length of NG tube to be inserted	Insert the tube and check its position

1				
2				
3				

Date Completed	Attempt at Competency (F/R/Re)	Rating (B/M/E)	Decision of Faculty (C/R/Re)	Initial of Faculty & Date	Feedback Received Initial of Learner with Date

PE33.6 Perform and interpret urine dip stick for sugar

Minimum number required to certify- 3

Demonstrate the steps to perform and interpret the urine dip stick for sugar

S. no	Urine sugar by dipstick	Interpretation
1		
2		
3		

Date Completed	Attempt at Competency (F/R/Re)	Rating (B/M/E)	Decision of Faculty(C/R/Re)	Initial of Faculty & Date	Feedback Received Initial of Learner with Date

PE34.6 Identify a BCG scar

Minimum number required to certify- 3

Demonstrate the following steps to identify a BCG scar

S.No	Age of the child	Size of BCG scar	Quality of the scar
1			
2			
3			
4			

Date Completed	Attempt at Competency (F/R/Re)	Rating (B/M/E)	Decision of Faculty(C/R/Re)	Initial of Faculty & Date	Feedback Received Initial of Learner with Date

PE34.7 Interpret a Mantoux test

Minimum number required to certify- 3

Demonstrate the following steps to interpret a Mantoux test

S. No	Age	Measure induration (horizontal/transverse)	Interpretation
1			
2			
3			
4			
5			

Date Completed	Attempt at Competency (F/R/Re)	Rating (B/M/E)	Decision of Faculty(C/R/Re)	Initial of Faculty & Date	Feedback Received Initial of Learner with Date

PE34.11 Perform AFB staining
****Shared with Microbiology**

Minimum number required to certify- 3

Date Completed	Attempt at Competency (F/R/Re)	Rating (B/M/E)	Decision of Faculty(C/R/Re)	Initial of Faculty & Date	Feedback Received Initial of Learner with Date

SUMMARY OF COMPETENCIES REQUIRING DOCUMENTATION
(to be observed in ward/PICU/NICU/LT)

S. no	Competency no	Competency detail	Minimum No. to be done	Date completed	Faculty signature
1	18.5	Provide intra-natal care and observe the conduct of a normal delivery	**3**		
2	27.10	Observe the various methods of administering Oxygen	**3**		
3	31.11	Observe administration of Nebulization	**3**		

Competencies requiring documentation
(to be done as part of seminar, demonstration, case presentation)

S.no	Competency no	Competency detail	Minimum No. to be done	T/L method	Date completed	Faculty signature
1	9.7	Plan an appropriate diet in health and disease	**3**			
2	11.3	Assessment of a child with obesity with regard to eliciting history including physical activity, charting and dietary recall	**3**			

3	12.3	Identify the clinical features of dietary deficiency /excess of Vitamin A	**3**			
4	12.4	Diagnose patients with Vitamin A deficiency (VAD), classify and plan management	**3**			
5	12.8	Identify the clinical features of dietary deficiency of Vitamin D	**3**			
6	12.9	Assess patients with Vitamin D deficiency, diagnose, classify and plan management	**3**			
7	12.17	Identify the clinical features of Vitamin B complex deficiency	**3**			
8	12.18	Diagnose patients with vitamin B complex deficiency and plan management	**3**			
9	12.21	Identify the clinical features of	**3**			

		Vitamin C deficiency				
10	13.3	Identify the clinical features of dietary deficiency of Iron and make a diagnosis	**3**			
11	24.12	Perform and interpret stool examination including Hanging Drop	**2**			
12	27.31	Assess child for signs of abuse	**2**			
13	32.2	Identify the clinical features of Down Syndrome	**3**			
14	32.7	Identify the clinical features of Turner Syndrome	**2**			
15	32.12	Identify the clinical features of Klinefelter Syndrome	**2**			
16	33.10	Recognize precocious and delayed Puberty and refer	**2**			

17	20.6	Explain the follow-up care for neonates including Breastfeeding, Temperature maintenance, immunization, importance of growth monitoring and red flags.	**3**			

Competencies requiring documentation
(to be done by giving actual blood reports/case scenarios/x-rays/CT/MRI /EEG/ECG reports)

S . no	**Competency no**	**Competency detail**	**Minimum No. to be done**	**T/L method**	**Date completed**	**Faculty signature**
1	28.16	Interpret blood tests relevant to upper respiratory problems	**3**			

2	29.15	Perform and Interpret peripheral smear.	**3**			
3	32.3	Interpret normal Karyotype and recognize Trisomy 21	**2**			
4	32.8	Interpret normal Karyotype and recognize Turner Karyotype	**2**			
5	32.13	Interpret normal Karyotype and recognize the Klinefelter Karyotype	**2**			
6	34.9	Interpret blood tests in the context of laboratory evidence for tuberculosis	**2**			

AFFECTIVE COMPETENCIES REQUIRING DOCUMENTATION
(To be done as part of AETCOM)

S. No	**Competency no**	**Competency detail**	**Minimum No. to be done**	**Date completed**	**Faculty signature**
1	2.3	Counseling a parent with failing to thrive child	**3**		
2	3.4	Counsel a parent of a child with developmental delay	**3**		

3	6.8	Respecting patient privacy and maintaining confidentiality while dealing with adolescence	**3**		
4	7.8	Educate mothers on antenatal breast care and prepare mothers for lactation	**3**		
5	7.9	Educate and counsel mothers for best practices in Breastfeeding	**3**		
6	7.10	Respect patient privacy	**3**		
7	8.5	Counsel and educate mothers on the best practices in complementary feeding	**3**		
8	10.5	Counsel parents of children with SAM and MAM	**3**		
9	19.7	Educate and counsel a patient for immunization	**3**		
10	19.8	Demonstrate willingness to participate in the national and subnational immunization days	**3**		
11	20.5	Counsel/educate mothers on the care of neonates	**3**		
12	21.16	Counsel / educate a patient for referral appropriately	**3**		

13	22.2	Counsel a patient with Chronic illness	**3**		
14	23.18	Demonstrate empathy while dealing with children with cardiac diseases in every patient encounter	**3**		
15	29.19	Counsel and educate patients about prevention and treatment of anemia.	**3**		
16	32.5	Counsel parents regarding 1. Present child 2. Risk in the next pregnancy (Down syndrome)	**2**		
17	32.10	Counsel parents regarding 1. Present child 2. Risk in the next pregnancy (Turner syndrome)	**2**		

SELF- DIRECTED LEARNING

List of Self-Directed Learning Topics

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.

11.

12.

13.

14.

15.

SELF- DIRECTED LEARNING:

1)
Topic:

Objectives:

Task:

Impressions:

2)
Topic:

Objectives:

Task:

Impressions:

INTEGRATED LEARNING

Summary of integrated learning sessions:

S.No	Competency No.	Topic	Departments involved	Date

REFLECTIONS:

Your thoughts about the procedures requiring certification (any 7 where you committed mistakes)

Competency no	Competency details	Why I went wrong	Was this exercise useful	Faculty remarks

ELECTIVE POSTINGS (If done in Paediatrics)

Na of bl	Name of elective	Location of elective	Name of internal preceptor	Attendance	Daily rounds	Assignments	Case presentation	Remark of the precept
1								
2								

3								

PROFESSIONAL YEAR III PHASE II

LEARNING OBJECTIVES

1. Perform IV cannulation in a simulated environment
2. Perform intraosseous insertion in a simulated environment
3. Assess airway, breathing and circulation in a sick child, give appropriate and accurate treatment
4. Choose the type of fluid and calculate the fluid requirement in shock in children
5. Assess level of consciousness & provide emergency treatment to a child with convulsions/ coma
6. Assess for signs of severe dehydration
7. Provide BLS for children in a manikin
8. Write 4 Paediatric and 1 neonatal case sheet

PE24.16 / PE 27.20 Perform IV cannulation in a model
Minimum number required to certify-2

Perform IV cannulation in a manikin by observing the following steps

S.no	Identify size of IV cannula as per age of child.	Demonstrate all steps of infection control policy like handwashing, wearing gloves, proper filling of fluid in syringe	Choose and prepare the site	Correctly insert the cannula and look for free flow of blood	Fix the cannula and properly dispose the biomedical waste
1					
2					
3					

Date Completed	Attempt at Competency (F/R/Re)	Rating (B/M/E)	Decision of Faculty (C/R/Re)	Initial of Faculty & Date	Feedback Received Initial of Learner with Date

PE24.17 Perform intraosseous insertion in a model

Minimum number required to certify-2

Perform intraosseous insertion in a model in these following steps

S.no	Identify site for intraosseous insertion in children based on landmarks.	Demonstrate all steps of infection control	Insert the Intraosseous cannula and demonstrate how to check its proper insertion in model	Fix Intraosseous cannula and correctly demonstrate disposal of biomedical waste
1				
2				
3				

Date Completed	Attempt at Competency (F/R/Re)	Rating (B/M/E)	Decision of Faculty (C/R/Re)	Initial of Faculty & Date	Feedback Received Initial of Learner with Date

PE27.15 Assess airway and breathing: recognize signs of severe respiratory distress. Check for cyanosis, severe chest indrawing, grunting

Minimum number required to certify- 3

Check for the following signs in a child with respiratory distress

S.no	Respiratory rate	Intercostal retractions	Alae nasi flaring	Drowsiness	Grunt or stridor	Cyanosis
1						
2						
3						

Date Completed	Attempt at Competency (F/R/Re)	Rating (B/M/E)	Decision of Faculty (C/R/Re)	Initial of Faculty & Date	Feedback Received Initial of Learner with Date

PE27.16 Assess airway and breathing. Demonstrate the method of positioning of an infant & child to open airway in a simulated environment

Minimum number required to certify- 3

Assess whether the student performs the steps in a correct manner

S.no	Head tilt manoeuvre performed	Chin lift manoeuvre performed	Jaw thrust manoeuvre performed	Remarks of the facilitator
1				
2				
3				

Date Completed	Attempt at Competency (F/R/Re)	Rating (B/M/E)	Decision of Faculty(C/R/Re)	Initial of Faculty & Date	Feedback Received Initial of Learner with Date

PE27.17 Assess airway and breathing: administer oxygen using correct technique and appropriate flow rate

Minimum number required to certify- 3

Demonstrate the various methods of administering oxygen and at specific rates

S. no	Head box	Nasal cannula	High flow nasal cannula	Face mask	Non rebreathing mask	Rate of delivery of oxygen

1						
2						
3						

Date Completed	Attempt at Competency (F/R/Re)	Rating (B/M/E)	Decision of Faculty(C/R/Re)	Initial of Faculty & Date	Feedback Received Initial of Learner with Date

PE27.18 Assess airway and breathing: perform assisted ventilation by Bag and mask in a simulated environment

Minimum number required to certify- 3

Demonstrate assisted ventilation using bag and mask in a simulated environment

S. no	Chosen the correct size mask	Chosen the correct bag	Head and neck in proper position	Used the correct pressure to inflate	Looked for chest rise	Used the correct rate of ventilation
1						

2						
3						

Date Completed	Attempt at Competency (F/R/Re)	Rating (B/M/E)	Decision of Faculty(C/R/Re)	Initial of Faculty & Date	Feedback Received Initial of Learner with Date

PE27.19 Check for signs of shock i.e., Pulse, Blood Pressure, Capillary Refill time

Minimum number required to certify- 3

Check for the signs of shock

S. no	Check for volume of pulse	Check BP	Check for saturation	Check for CRT	Check for skin colour and temperature	Check for sensorium
1						
2						

3						

Date Completed	Attempt at Competency (F/R/Re)	Rating (B/M/E)	Decision of Faculty(C/R/Re)	Initial of Faculty & Date	Feedback Received Initial of Learner with Date

PE27.21 Choose the type of fluid and calculate the fluid requirement in shock

Minimum number required to certify- 3

Choose appropriate fluid according to different types of shock. Calculate the fluid for managing different types of shock at different age/size of the child.

S.no	Type of shock	Assess weight of child	Choose the appropriate fluid for bolus administration	Calculate the amount of fluid to be administered for bolus and continuation	Remarks
1	Hypovolemic				
2	Septic				
3	Cardiogenic				

4	Obstructive				
5	Burns				

Date Completed	Attempt at Competency (F/R/Re)	Rating (B/M/E)	Decision of Faculty(C/R/Re)	Initial of Faculty & Date	Feedback Received Initial of Learner with Date

PE27.22 Assess level of consciousness & provide emergency treatment to a child with convulsions/ coma

Minimum number required to certify- 3

S. no	Assess level of consciousness (Glasgow or AVPU)	Position a child in coma correctly	Position a child with head/spine trauma correctly	Assess ABCD	Demonstrate how to give rectal diazepam	Calculate how much IV diazepam and give it correctly in a manikin	Adminis nasal midazol spray
1							
2							
3							

Date Completed	Attempt at Competency (F/R/Re)	Rating (B/M/E)	Decision of Faculty(C/R/Re)	Initial of Faculty & Date	Feedback Received Initial of Learner with Date

PE27.23 Assess for signs of severe dehydration

Minimum number required to certify- 3

S.no	Thirst	Urine output	Sensorium	Mucus membrane	Skin turgor	Pulse	Blood pressure	AF if open
1								
2								
3								

Date Completed	Attempt at Competency (F/R/Re)	Rating (B/M/E)	Decision of Faculty(C/R/Re)	Initial of Faculty & Date	Feedback Received Initial of Learner with Date

PE27.28 Provide BLS for children in manikin

Minimum number required to certify- 3

Either a certificate that they have attended a formal BLS course or a modified BLS session has to be attached

S.No	Check for response	Call for help	Check pulse and breathing simultaneously	Start chest compression	Make airway patent and give 2 rescue breaths	Repeat above CPR
1						
2						
3						

Date Completed	Attempt at Competency (F/R/Re)	Rating (B/M/E)	Decision of Faculty(C/R/Re)	Initial of Faculty & Date	Feedback Received Initial of Learner with Date

SUMMARY OF COMPETENCIES REQUIRING DOCUMENTATION
(to be done as part of seminar, demonstration, case presentation)

S.no	Competency no	Competency detail	Minimum No. to be done	T/L method	Date completed	Faculty signature
1	21.9	Identify external markers for Kidney disease, like Failing to thrive, hypertension, pallor, Icthyosis, anasarca	**3**			
2	21.10	Analyze symptom and interpret the physical findings and arrive at an appropriate	**3**			

		provisional differential diagnosis				
3	21.14	Recognize common surgical conditions of the abdomen and genitourinary system and enumerate the indications for referral including acute and subacute intestinal obstruction, appendicitis, pancreatitis, perforation intussusceptio n, Phimosis, undescended testis, Chordee, hypospadias, Torsion testis, hernia Hydrocele, Vulval Synechiae	**3**			
4	21.16	Counsel / educate a patient for referral appropriately	**3**			
5	23.11	Develop a treatment plan and prescribe appropriate drugs including fluids in cardiac	**3**			

		diseases, anti - failure drugs, and inotropic agents				

Competencies requiring documentation
(To be done as part of IMNCI assessment)

S. no	Competency no	Competency detail	Minimum No.to be done	Date completed	Faculty signature
1	10.4	Identify children with under nutrition as per IMNCI criteria and plan referral	**3**		
2	16.2	Assess children <2 months using IMNCI guidelines	**3**		
3	16.3	Assess children >2 months to 5 years using IMNCI guidelines and stratify risk	**3**		
4	20.18	Identify and stratify risk in a sick neonate using IMNCI guidelines	**3**		
5	24.11	Apply the IMNCI guidelines in risk stratification of children with diarrhoeal dehydration and refer	**3**		
6	28.15	Stratify risk in children with stridor using IMNCI guidelines	**3**		

Competencies requiring documentation
(to be done in a simulated environment)

S. no	Competency no	Competency detail	Minimum No. to be done	Date completed	Faculty signature
1	18.4	Provide intra-natal care and conduct a normal delivery in a simulated environment	**3**		
2	19.13	Demonstrate the correct administration of different vaccines in a mannequin	**3**		
3	20.3	Perform Neonatal resuscitation in a manikin	**3**		
4	26.10	Demonstrate the technique of liver biopsy in a manikin Perform Liver Biopsy in a simulated environment	**2**		
5	29.17	Demonstrate performance of bone marrow aspiration in mannequin.	**2**		

Competencies requiring documentation
(to be done by giving actual blood reports/case scenarios/x-rays/CT/MRI/ EEG/ECG reports)

S. no	Competency no	Competency detail	Minimum No. to be done	T/L method	Date completed	Faculty signature
1	21.12	Interpret report of Plain X Ray of KUB	**3**			
2	21.13	Enumerate the indications for and Interpret the written report of Ultra sonogram of KUB	**3**			
3	23.12	Interpret a chest X ray and recognize Cardiomegaly	**3**			
4	23.13	Choose and Interpret blood reports in Cardiac illness	**3**			
5	23.14	Interpret Pediatric ECG	**3**			
6	23.15	Use the ECHO reports in management of cases	**3**			
7	24.13	Interpret RFT and electrolyte report	**3**			
8	30.20	Interpret and explain the findings in a CSF analysis	**3**			
9	30.21	Enumerate the indication and discuss the	**3**			

		limitations of EEG, CT, MRI				
10	30.22	Interpret the reports of EEG, CT, MRI	**3**			
11	34.9	Interpret blood tests in the context of laboratory evidence for tuberculosis	**3**			

AFFECTIVE COMPETENCIES REQUIRING DOCUMENTATION
(To be done as part of AETCOM)

S. no	Competency no	Competency detail	Minimum No. to be done	Date completed	Faculty signature
1	23.18	Demonstrate empathy while dealing with children with cardiac diseases in every patient encounter	**3**		
2	26.13	Counsel and educate patients and their family appropriately on liver diseases	**3**		

3	27.32	Counsel parents of dangerously ill/ terminally ill child to break a bad news	**2**		
4	27.33	Obtain Informed Consent	**2**		
5	27.34	Willing to be a part of the ER team	**3**		
6	27.35	Attends to emergency calls promptly	**3**		

SELF-DIRECTED LEARNING

List of Self-Directed Learning Topics

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.

11.

12.

13.

14.

15.

SELF-DIRECTED LEARNING:

1)
Topic:

Objectives:

Task:

Impressions:

2)
Topic:

Objectives:

Task:

Impressions:

INTEGRATED LEARNING

Summary of integrated learning sessions

S.No	Competency No	Topic	Departments involved	Date

REFLECTIONS:

Your thoughts about the procedures requiring certification (any 7 where you committed mistakes)

Competency no	Competency details	Why I went wrong	Was this exercise useful	Faculty remarks

Other activities :

1. **Participation in departmental activities- children's day, breast feeding week, ORS week, disease specific days (if being celebrated)**
2. **STS/ college grant project submitted**
3. **Participation in IAP quiz competition**
4. **Participation in any research projects/student conference**

CLINIC/FIELD VISITS

. o	Visit to	Competency no	Competency	Year/Phase	Date completed	Report submitted	Facu sign	e
	Child development unit	3.7	Visit a Child Developmental Unit and Observe its functioning **Topic:** Developmental delay and cerebral palsy					

	Child guidance clinic	4.6	Visit to the Child guidance clinic **Topic:** Scholastic backwardness, learning disabilities, Autism, ADHD				
		5.11	Visit to Child guidance clinic and observe functioning **Topic:** Common problems related to behaviour				
	Adolescent clinic	6.11	Visit to the Adolescent clinic				
	Rural health centre	18.8	Observe the implementation of the program by visiting the Rural Health Center				
	Immunization clinic	19.10	Observe the handling and storing of vaccines				
		19.11	Document Immunization in an immunization record				
		19.12	Observe the administration of UIP vaccines				
		19.14	Practice Infection				

			control measures and appropriate handling of the sharps				

NOTES

NOTES

Sri Siddhartha Academy of Higher Education, Tumkur

UNDER GRADUATE PAEDIATRIC

LOG BOOK

As per Competency-Based Medical

Education Curriculum

Sample template

College Logo

Student's Stamp size photo

(Name of the medical college)

DEPARTMENT OF PAEDIATRICS

UNDERGRADUATE PAEDIATRIC

LOG BOOK

Name of the student:
Contact Number:
Email id:
Date of admission to MBBS course:
Date of beginning of the current phase:
Reg. No. (College ID):
Reg. No. (University ID):

Sample template

DEPARTMENT OF PAEDIATRICS

(Name of the medical college)

LOG BOOK CERTIFICATE

Certified that this is a bonafide record of the work done by _____ in the department during his/her clinical postings.

He/she will be appearing for the Final M.B.B.S.(Phase 3, part 2) examination of Sri Sri Siddhartha Academy of Higher Education, Tumkur, in February/August 20

Signature of faculty **Signature of Head of the department**

Name :

Reg No. :

Batch :

Posting in the Dept : **From** **To**

I

II

III

ATTENDANCE

		Classes held	Classes attended	Percentage	Faculty sign
Clinical Posting	I				
	II				
	III				
Theory Attendance	PY3P1				
	PY3P2				
Small group discussions	PY3P1				
	PY3P2				

INTERNAL ASSESSMENT MARKS		
	Theory	**Clinicals**
	1st test:	**1st :**
	2nd test:	**2nd:**
		3rd:
Final Internal Assessment Marks		

INDEX

S. NO:	CONTENT	PAGE NUMBER
4.	Abbreviations	2
5.	Summary of Certifiable Competencies	3-4
6.	Documentation of Case Presentations	5
PROFESSIONAL YEAR II		
4.	Learning objectives	7
5.	Certifiable competencies	8-19
6.	Reflections	20
PROFESSIONAL YEAR III PHASE I		
8.	Learning objectives	22
9.	Certifiable competencies	23-29
10.	Competencies requiring documentation	29-33
11.	AETCOM competencies	34-35
12.	Self directed learning	36-37
13.	Integrated learning	38
14.	Reflections	39
	ELECTIVES IN PAEDIATRICS	40
PROFESSIONAL YEAR III PHASE II		
8.	Learning objectives	42
9.	Certifiable competencies	43-53
10.	Competencies requiring documentation	54-58
11.	AETCOM competencies	59
12.	Self directed learning	60-61
13.	Integrated learning	62

14.	Reflections	63
	CLINIC/ FIELD VISITS	64-65

ABBREVIATIONS

F / R / RE – First or Only / Repeat / Remedial

- First or only – Student completed the task in the first attempt
- Repeat – Student completed the task in multiple attempts
- Remedial – Student completed the task after remedial measures

B / M / E – Below expectation / Meets expectation / Exceeds expectation

- Below expectation – Student did not complete the task
- Meets Expectation – Student completed the task with minimal prompts
- Exceeds expectation – Student completed the task without any prompts

C / R / RE – Completed / Repeat / Remedial

- Completed – Student has successfully completed the task
- Repeat – Student had to repeat the task in the same briefing
- Remedial – Student needs to undergo briefing again and repeat the task

AETCOM – Attitude, Ethics and Communication Module

SUMMARY OF CERTIFIABLE COMPETENCIES

Competency no.	Competency details	No required to certify	Date completed	Reference page no
PE1.4	Perform anthropometric measurements, document in growth charts and interpret	**3**		**8**
PE1.7	Perform developmental assessment and interpret	**3**		**14**
PE 7.5	Observe the correct technique of breast feeding and distinguish right from wrong techniques	**3**		**23**
PE11.5	Calculate BMI, document in BMI chart and interpret	**3**		**15**
PE19.6	Assess patient for fitness for immunization and prescribe an age-appropriate immunization schedule	**5**		**18**
PE24.15	Perform NG tube insertion in a manikin	**2**		**25**
PE24.16	Perform IV cannulation in a mode	**2**		**43**
PE24.17	Perform intraosseous insertion model	**2**		**44**

PE27.15	Assess airway and breathing: recognize signs of severe respiratory distress. Check for cyanosis, severe chest indrawing, grunting	**3**		**45**
PE27.16	Assess airway and breathing. Demonstrate the method of positioning of an infant & child to open airway in a simulated environment	**3**		**46**
PE27.17	Assess airway and breathing: administer oxygen using correct technique and appropriate flow rate	**3**		**47**
PE27.18	Assess airway and breathing: perform assisted ventilation by bag and mask in a simulated environment	**3**		**48**
PE27.19	Check for signs of shock i.e. pulse, blood pressure, CRT	**3**		**49**
PE27.20	Secure an IV access in a simulated Environment	**2**		**43**
PE27.21	Choose the type of fluid and calculate the fluid requirement in shock	**3**		**50**
PE27.22	Assess level of consciousness & provide emergency treatment to a child with convulsions/coma3 Position an unconscious3 child Position a child with suspected trauma Administer IV/per rectal Diazepam for a convulsing child in a simulated environment	**3**		**51**
PE27.23	Assess for signs of severe dehydration	**3**		**52**

PE27.28	Provide BLS for children in manikin	**3**		**53**
PE33.6	Perform and interpret urine dip stick for sugar	**3**		**26**
PE33.11	Identify deviations in growth and plan appropriate referral	**2**		**13**
PE34.6	Identify a BCG scar	**3**		**27**
PE34.7	Interpret a Mantoux test	**3**		**28**
PE34.11	Perform AFB staining	**3**		**29**

Student's Signature

Signature of Faculty
(Name and Designation)

DOCUMENTATION OF CASE PRESENTATIONS

S. No	Date	Patient Name and ID	Diagnosis	Case Presented/ Attended (P/A)	Year/ Phase	Grade (B/M/E)	Teacher's Signature

PROFESSIONAL YEAR II

LEARNING OBJECTIVES 1st CLINICAL POSTING (2 WEEKS)

At the end of the first posting, students are expected to:

7. Perform, interpret and document anthropometric measurements in children
8. Use the appropriate growth chart for a child and interpret them correctly
9. Perform, interpret and document nutritional history taking and development of a dietary plan for all children
10. Perform, interpret and document developmental history taking in all children
11. Conduct a developmental assessment in children and interpret them correctly
12. Assess patient for fitness for immunization and prescribe an age-appropriate immunization schedule

PE 1.4 Perform anthropometric measurements, document in growth charts and Interpret

Minimum number required to certify-3*

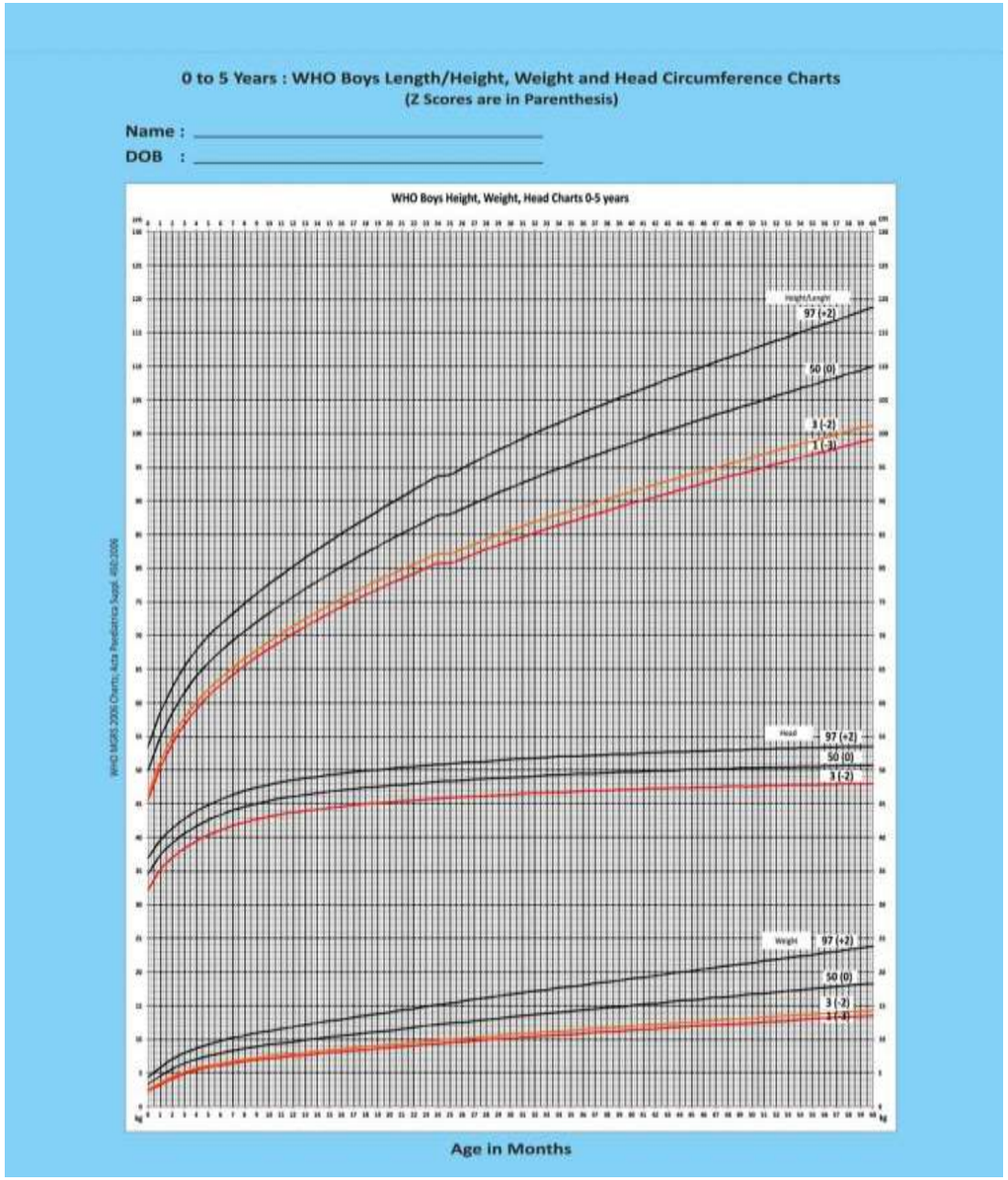
Growth assessment

No	Name	Age	Sex	Weight			Height/Length			MAC			HC			Wt for Ht		
				A	E	I	A	E	I	A	E	I	A	E	I	A	E	I
1																		
2																		
3																		
4																		
5																		

A – Actual E – Expected I – Inference

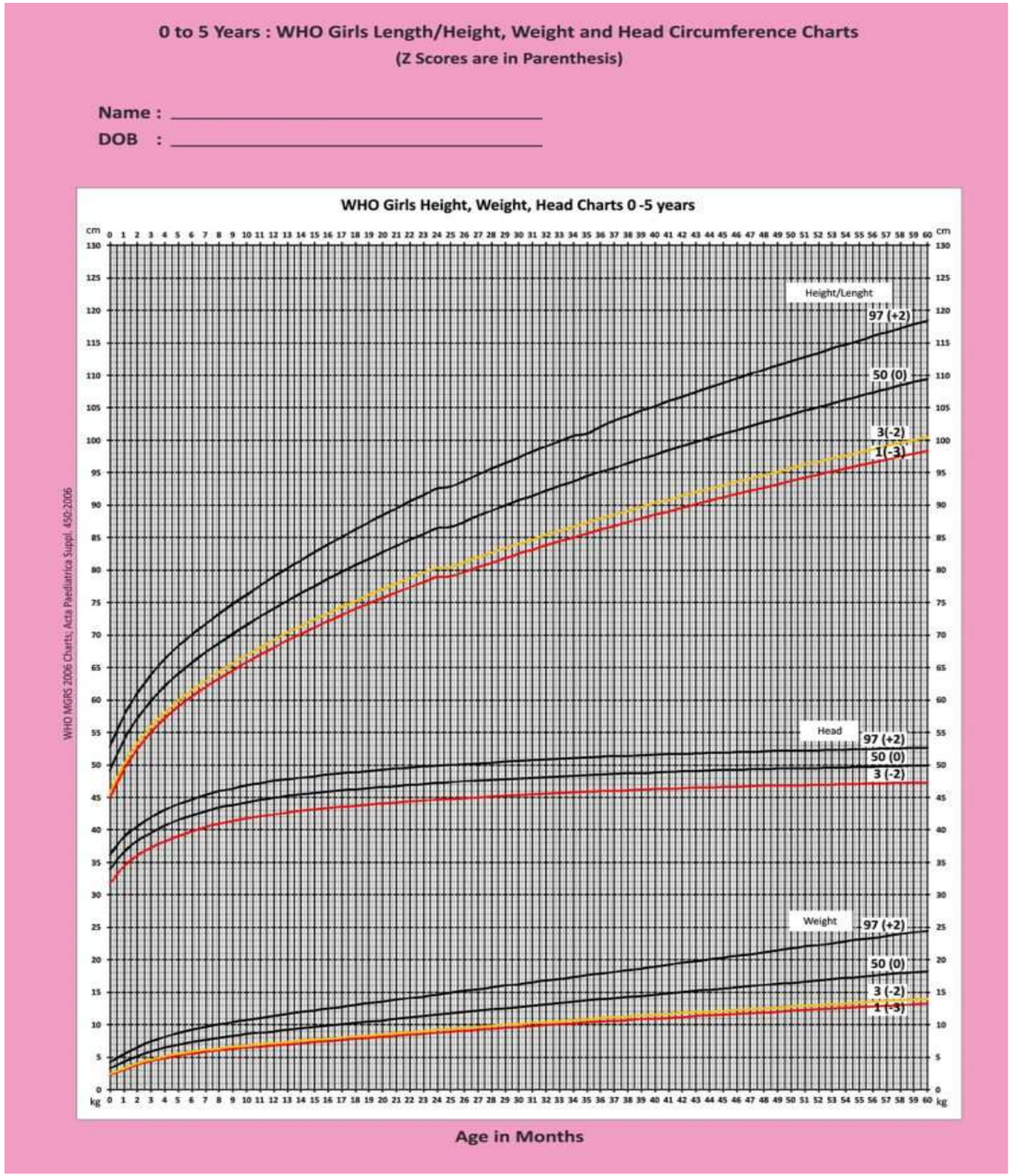
Using growth charts

Anthropometric values to be given here for each batch. They have to mark the values on the chart and interpret the growth pattern (No. Required - 3)



Interpretation:
1.
2.

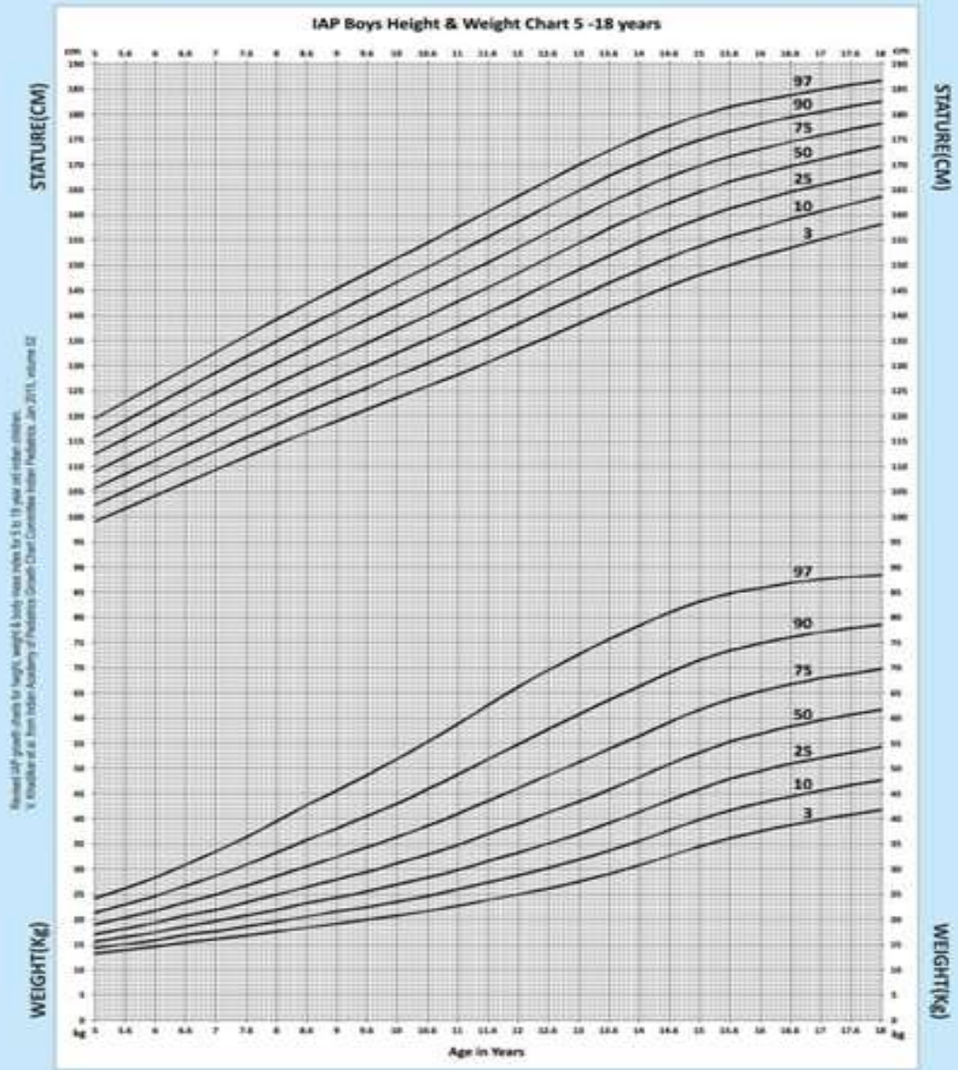
3.


0 to 5 Years : WHO Girls Length/Height, Weight and Head Circumference Charts
(Z Scores are in Parenthesis)
Name : _____
DOB : _____
WHO Girls Height, Weight, Head Charts 0 -5 years
WHO NGRS 2006 Charts; Acta Paediatrica Suppl. 450:2006
Height/Lenght
97 (+2)
50 (0)
3(-2)
1(-3)
Head
97 (+2)
50 (0)
3 (-2)
Weight
97 (+2)
50 (0)
3 (-2)
1 (-3)
Age in Months

Interpretation:
1.
2.
3.

5 to 18 Years : IAP Boys Height and Weight Charts

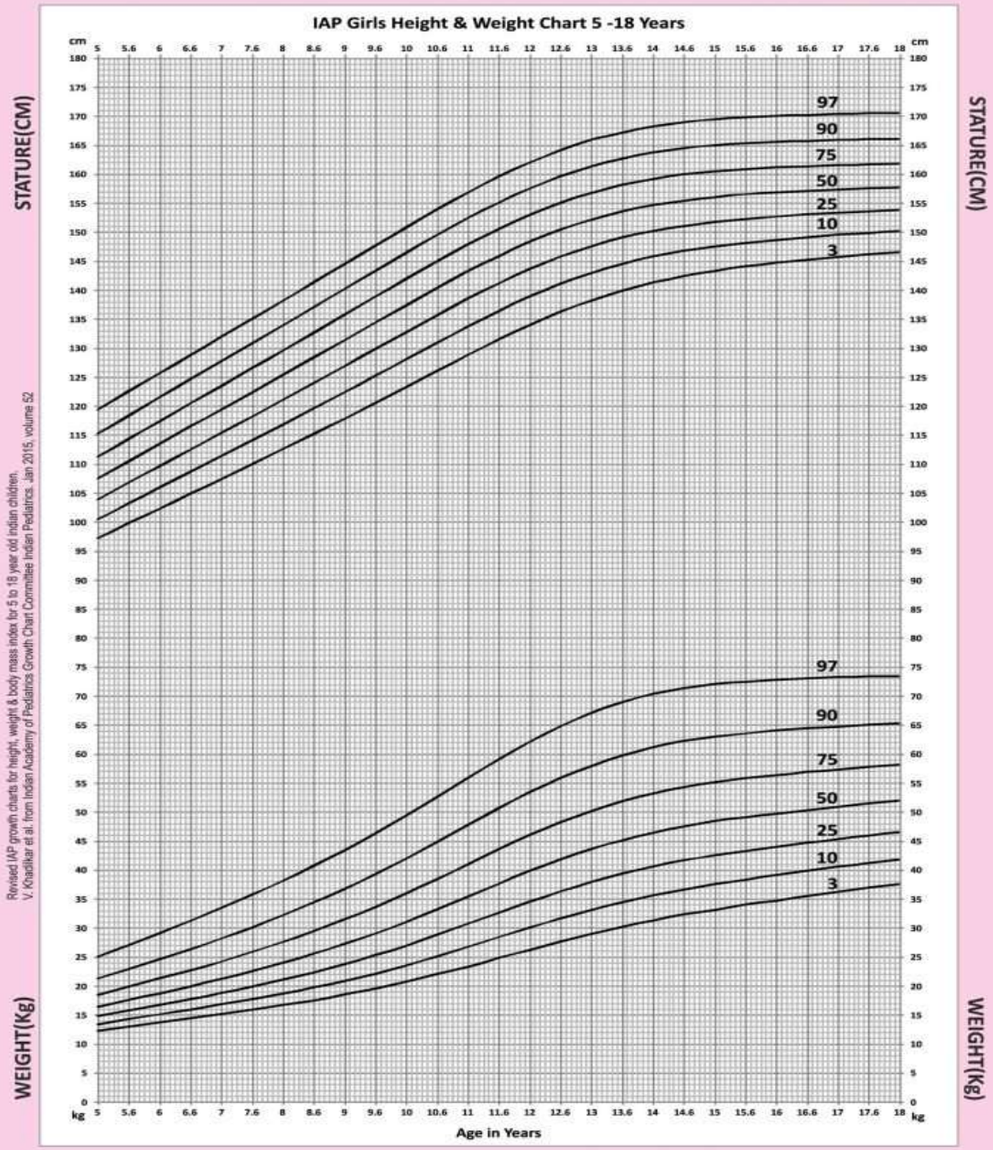
Father's Height_____, Mother's Height_____, Target Height_____



Interpretation:
1.
2.
3.

5 to 18 Years : IAP Girls Height and Weight Charts

Father's Height _____, Mother's Height_____, Target Height_____



Interpretation:
1.
2.
3.

Date Completed	Attempt at Competency (F/R/Re)	Rating (B/M/E)	Decision of Faculty (C/R/Re)	Initial of Faculty & Date	Feedback Received Initial of Learner with Date

5.

(Case 2)

1.
2.
3.
4.
5.

PE33.11 Identify deviations in growth (Using the above growth charts) and plan appropriate referral.

Minimum number required to certify-2

If requiring referral, mention the reasons for referral

(Case 1)

1.
2.
3.
4.

Date Completed	Attempt at Competency (F/R/Re)	Rating (B/M/E)	Decision of Faculty (C/R/Re)	Initial of Faculty & Date	Feedback Received Initial of Learner with Date

PE1.7 Perform developmental assessment and interpret

Minimum number required to certify-3

Take a detailed developmental history and perform developmental assessment. Indicate the present milestone attained in each category. Calculate the developmental age for each domain

S. No	Name	Age	Sex	Gross Motor	Fine Motor	Language	Social	Developmental age				Inference
								GM	FM	L	S	
1												
2												
3												
4												
5												

Date Completed	Attempt at Competency (F/R/Re)	Rating (B/M/E)	Decision of Faculty (C/R/Re)	Initial of Faculty & Date	Feedback Received Initial of Learner with Date

PE11.5 Calculate BMI, document in BMI chart and interpret

Minimum number required to certify-3

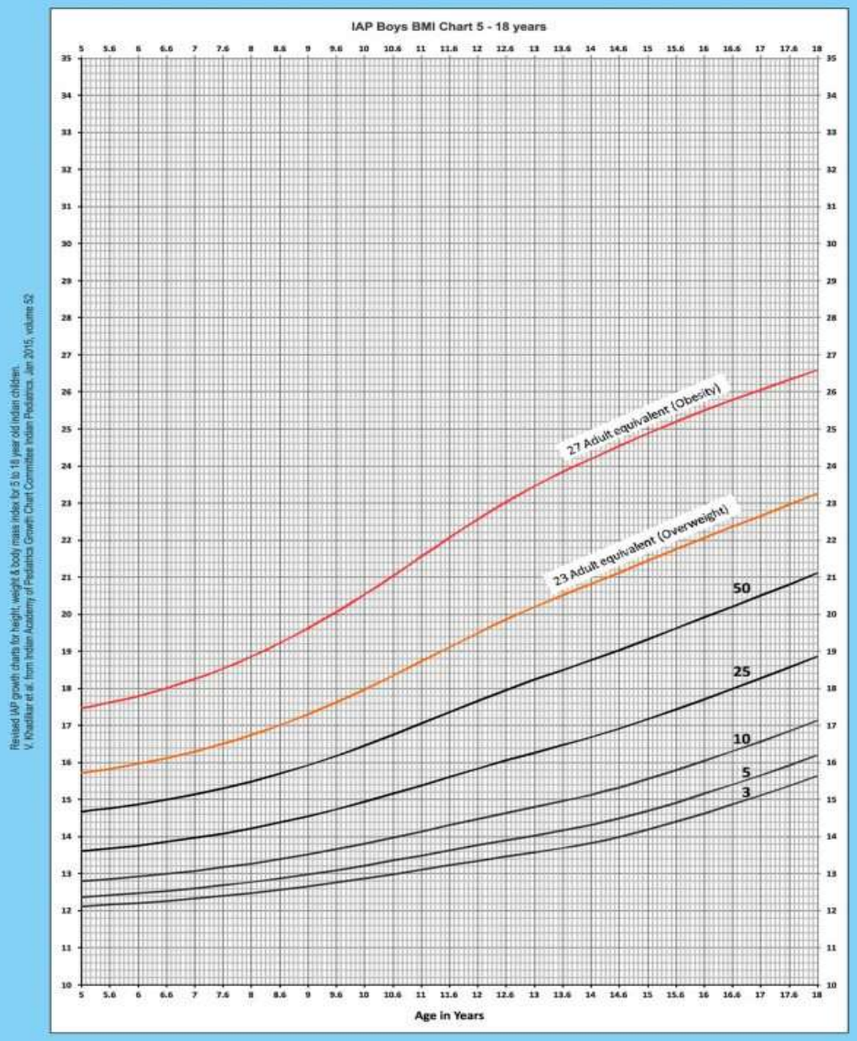
Calculate the BMI for 3 children (above 5 years) and enter in this table and also mark in the appropriate graph

S. No	Name	Age	Sex	Weight	Height	BMI	Normal	Inference
1								
2								
3								
4								
5								

5 to 18 Years : IAP Boys Body Mass Index Charts

Name _____

DOB _____

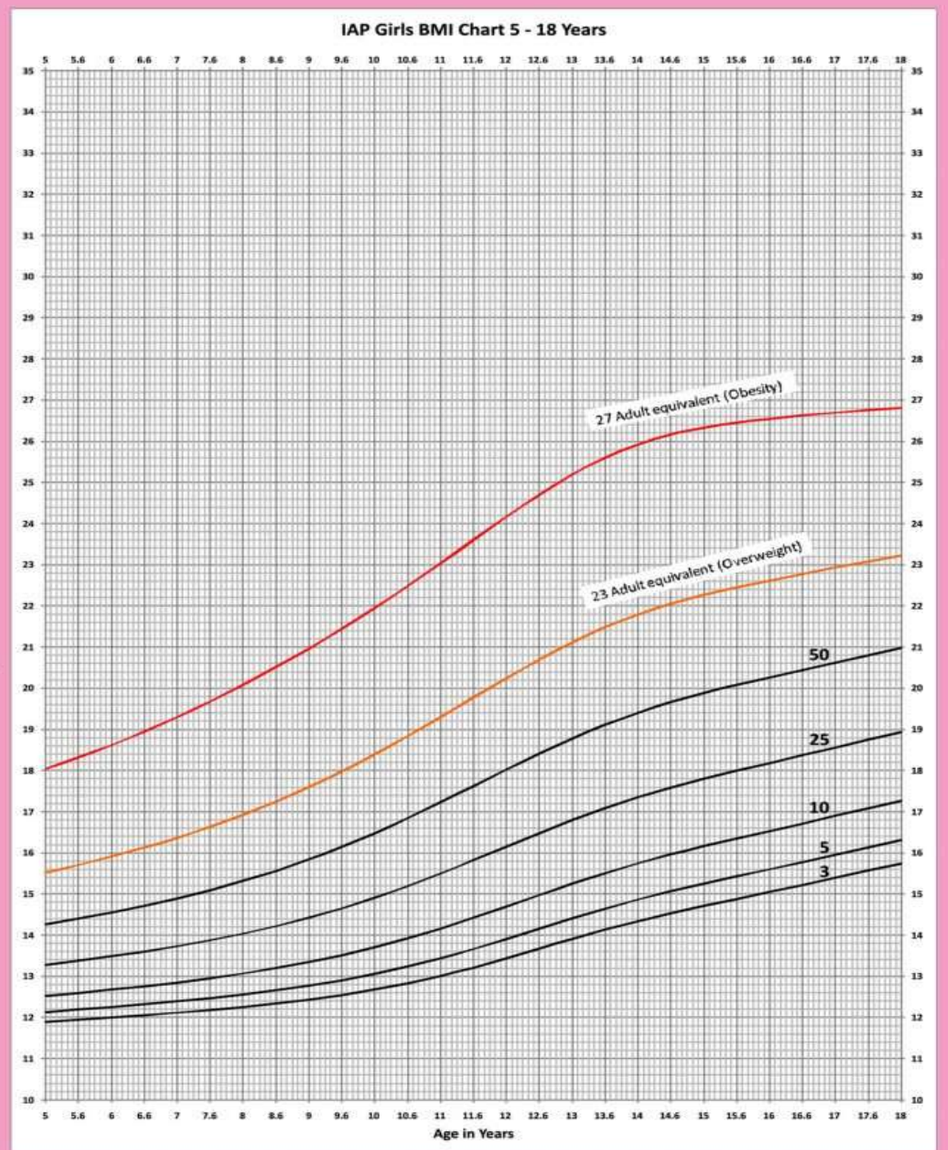


Interpretation:
1.
2.
3.

5 to 18 Years : IAP Girls Body Mass Index Charts

Name _____

DOB _____



Interpretation:
1.
2.
3.

Date Completed	Attempt at Competency (F/R/Re)	Rating (B/M/E)	Decision of Faculty (C/R/Re)	Initial of Faculty & Date	Feedback Received Initial of Learner with Date

PE19.6 Assess patient for fitness for immunization and prescribe an age-appropriate immunization schedule

Minimum number required to certify-5

Assessment of immunization status:

S. No	Name	Age	Sex	Vaccines received till date	Plan for further immunisation
1					

2					
3					
4					
5					

Date Completed	Attempt at Competency (F/R/Re)	Rating (B/M/E)	Decision of Faculty (C/R/Re)	Initial of Faculty & Date	Feedback Received Initial of Learner with Date

REFLECTIONS:

Your thoughts about the procedures requiring certification (any 7 where you committed mistakes)

Competency no	Competency details	Why I went wrong	Was this exercise useful	Faculty remarks

PROFESSIONAL YEAR III PHASE I

LEARNING OBJECTIVES

1. Observe the correct technique of breast feeding and distinguish right from wrong techniques

2. Perform NG tube insertion in a manikin correctly

3. Perform and interpret urine dip stick for sugar correctly

4. Identify a BCG scar accurately

5. Interpret a Mantoux test correctly

6. Perform AFB staining correctly

7. Write 4 Paediatric and 1 neonatal case sheets

PE7.5 Observe the correct technique of breast feeding and distinguish right from wrong techniques

Minimum number required to certify-3

Observe the process of breast feeding (under supervision and a chaperone being present) and note the following points

Position of mother and baby.
Cradle. The baby is held in the crook or elbow area of the arm on same side as breast to be used for feeding; mother supports breast with opposite hand; baby's body is rolled in toward mother's body so they are belly-to-belly.
Cross-cradle. The baby's head is supported by the hand opposite the breast to be used for feeding; mother supports breast with hand; baby is rolled in toward mother's body belly-to-belly.
Football or clutch. Baby's head is supported by the hand on the same side as breast to be used for feeding; baby's body is supported on a pillow and tucked under the arm on the same side as breast to be used for feeding.
Side-lying using modified cradle. In this position, the baby lies next to the mother with their bodies facing each other. If a pillow under the arm is uncomfortable, try placing the baby in the crook of the arm. This way, it is unlikely for the mother to roll over on the baby should the mother doze off. This position also keeps the baby's head at a good angle to bring baby and breast together, with the baby's head higher than his or her tummy, which can be helpful for babies who are more likely to spit up.
Laid-back breastfeeding. In this position, the mother is leaning back in a recliner or reclining in bed. The baby is lying on his or her stomach and is pressed against the mother’s body. She can support the side of her baby's head if baby cannot hold it by him- or herself. In this position, both mother and baby can relax. She can allow her baby to explore her breast and latch on at his or her leisure. This is a great position if mother has had a cesarean delivery.
Latching.
The latch should be comfortable and pain free.
The baby's chest and stomach rest against the mother’s body, so that baby's head is straight, not turned to the side.
Baby's chin touches her breast.
Baby's mouth opens wide around her breast, not just the nipple.
Baby's lips turn out.
Baby's tongue cups under her breast.
Mother hears or sees swallowing.

S. No	Position of mother	Position of child	Attachment (latching)	Comments
1				

2				
3				
4				
5				

Date Completed	Attempt at Competency (F/R/Re)	Rating (B/M/E)	Decision of Faculty (C/R/Re)	Initial of Faculty & Date	Feedback Received Initial of Learner with Date

PE24.15 Perform NG tube insertion in a manikin

Minimum Number required to certify-2

Demonstrate the following steps in inserting a NG tube in a manikin

S. No	Identify size of nasogastric tube as per age of child.	Demonstrate landmarks for measurement of length of NG tube to be inserted on a manikin	Correctly measure the length of NG tube to be inserted	Insert the tube and check its position
1				
2				
3				

Date Completed	Attempt at Competency (F/R/Re)	Rating (B/M/E)	Decision of Faculty (C/R/Re)	Initial of Faculty & Date	Feedback Received Initial of Learner with Date

PE33.6 Perform and interpret urine dip stick for sugar

Minimum number required to certify- 3

Demonstrate the steps to perform and interpret the urine dip stick for sugar

S. no	Urine sugar by dipstick	Interpretation
1		
2		
3		

Date Completed	Attempt at Competency (F/R/Re)	Rating (B/M/E)	Decision of Faculty(C/R/Re)	Initial of Faculty & Date	Feedback Received Initial of Learner with Date

PE34.6 Identify a BCG scar

Minimum number required to certify- 3

Demonstrate the following steps to identify a BCG scar

S.No	Age of the child	Size of BCG scar	Quality of the scar
1			
2			
3			
4			

Date Completed	Attempt at Competency (F/R/Re)	Rating (B/M/E)	Decision of Faculty(C/R/Re)	Initial of Faculty & Date	Feedback Received Initial of Learner with Date

PE34.7 Interpret a Mantoux test

Minimum number required to certify- 3

Demonstrate the following steps to interpret a Mantoux test

S. No	Age	Measure induration (horizontal/transverse)	Interpretation
1			
2			
3			
4			
5			

Date Completed	Attempt at Competency (F/R/Re)	Rating (B/M/E)	Decision of Faculty(C/R/Re)	Initial of Faculty & Date	Feedback Received Initial of Learner with Date

PE34.11 Perform AFB staining
****Shared with Microbiology**

Minimum number required to certify- 3

Date Completed	Attempt at Competency (F/R/Re)	Rating (B/M/E)	Decision of Faculty(C/R/Re)	Initial of Faculty & Date	Feedback Received Initial of Learner with Date

SUMMARY OF COMPETENCIES REQUIRING DOCUMENTATION

(to be observed in ward/PICU/NICU/LT)

S. no	Competency no	Competency detail	Minimum No. to be done	Date completed	Faculty signature
1	18.5	Provide intra-natal care and observe the conduct of a normal delivery	**3**		
2	27.10	Observe the various methods of administering Oxygen	**3**		
3	31.11	Observe administration of Nebulization	**3**		

Competencies requiring documentation

(to be done as part of seminar, demonstration, case presentation)

S.no	Competency no	Competency detail	Minimum No. to be done	T/L method	Date completed	Faculty signature
1	9.7	Plan an appropriate diet in health and disease	**3**			

2	11.3	Assessment of a child with obesity with regard to eliciting history including physical activity, charting and dietary recall	**3**			
3	12.3	Identify the clinical features of dietary deficiency /excess of Vitamin A	**3**			
4	12.4	Diagnose patients with Vitamin A deficiency (VAD), classify and plan management	**3**			
5	12.8	Identify the clinical features of dietary deficiency of Vitamin D	**3**			
6	12.9	Assess patients with Vitamin D deficiency, diagnose, classify and	**3**			

		plan management				
7	12.17	Identify the clinical features of Vitamin B complex deficiency	**3**			
8	12.18	Diagnose patients with vitamin B complex deficiency and plan management	**3**			
9	12.21	Identify the clinical features of Vitamin C deficiency	**3**			
10	13.3	Identify the clinical features of dietary deficiency of Iron and make a diagnosis	**3**			
11	24.12	Perform and interpret stool examination including Hanging Drop	**2**			

12	27.31	Assess child for signs of abuse	**2**			
13	32.2	Identify the clinical features of Down Syndrome	**3**			
14	32.7	Identify the clinical features of Turner Syndrome	**2**			
15	32.12	Identify the clinical features of Klinefelter Syndrome	**2**			
16	33.10	Recognize precocious and delayed Puberty and refer	**2**			
17	20.6	Explain the follow-up care for neonates including Breastfeeding, Temperature maintenance, immunization, importance of growth monitoring and red flags.	**3**			

Competencies requiring documentation
(to be done by giving actual blood reports/case scenarios/x-rays/CT/MRI /EEG/ECG reports)

S . no	Competency no	Competency detail	Minimum No. to be done	T/L method	Date completed	Faculty signature
1	28.16	Interpret blood tests relevant to upper respiratory problems	**3**			
2	29.15	Perform and Interpret peripheral smear.	**3**			
3	32.3	Interpret normal Karyotype and	**2**			

		recognize Trisomy 21				
4	32.8	Interpret normal Karyotype and recognize Turner Karyotype	**2**			
5	32.13	Interpret normal Karyotype and recognize the Klinefelter Karyotype	**2**			
6	34.9	Interpret blood tests in the context of laboratory evidence for tuberculosis	**2**			

AFFECTIVE COMPETENCIES REQUIRING DOCUMENTATION
(To be done as part of AETCOM)

S. No	**Competency no**	**Competency detail**	**Minimum No. to be done**	**Date completed**	**Faculty signature**
1	2.3	Counseling a parent with failing to thrive child	**3**		

2	3.4	Counsel a parent of a child with developmental delay	**3**		
3	6.8	Respecting patient privacy and maintaining confidentiality while dealing with adolescence	**3**		
4	7.8	Educate mothers on antenatal breast care and prepare mothers for lactation	**3**		
5	7.9	Educate and counsel mothers for best practices in Breastfeeding	**3**		
6	7.10	Respect patient privacy	**3**		
7	8.5	Counsel and educate mothers on the best practices in complementary feeding	**3**		
8	10.5	Counsel parents of children with SAM and MAM	**3**		
9	19.7	Educate and counsel a patient for immunization	**3**		

10	19.8	Demonstrate willingness to participate in the national and subnational immunization days	**3**		
11	20.5	Counsel/educate mothers on the care of neonates	**3**		
12	21.16	Counsel / educate a patient for referral appropriately	**3**		
13	22.2	Counsel a patient with Chronic illness	**3**		
14	23.18	Demonstrate empathy while dealing with children with cardiac diseases in every patient encounter	**3**		
15	29.19	Counsel and educate patients about prevention and treatment of anemia.	**3**		
16	32.5	Counsel parents regarding 1. Present child 2. Risk in the next pregnancy (Down syndrome)	**2**		
17	32.10	Counsel parents regarding 1. Present child 2. Risk in the next pregnancy (Turner syndrome)	**2**		

SELF- DIRECTED LEARNING

List of Self-Directed Learning Topics

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.

11.

12.

13.

14.

15.

SELF- DIRECTED LEARNING:

1)
Topic:

Objectives:

Task:

Impressions:

2)
Topic:

Objectives:

Task:

Impressions:

INTEGRATED LEARNING

Summary of integrated learning sessions:

S.No	Competency No.	Topic	Departments involved	Date

REFLECTIONS:

Your thoughts about the procedures requiring certification (any 7 where you committed mistakes)

Competency no	Competency details	Why I went wrong	Was this exercise useful	Faculty remarks

ELECTIVE POSTINGS (If done in Paediatrics)

Name of block	Name of elective	Location of elective	Name of internal preceptor	Attendance	Daily rounds	Assignments	Case presentation	Remarks of the preceptor	
1									

2										
3										

LEARNING OBJECTIVES

9. Perform IV cannulation in a simulated environment
10. Perform intraosseous insertion in a simulated environment
11. Assess airway, breathing and circulation in a sick child, give appropriate and accurate treatment
12. Choose the type of fluid and calculate the fluid requirement in shock in children
13. Assess level of consciousness & provide emergency treatment to a child with convulsions/ coma
14. Assess for signs of severe dehydration
15. Provide BLS for children in a manikin
16. Write 4 Paediatric and 1 neonatal case sheet

PE24.16 / PE 27.20 Perform IV cannulation in a model Minimum number required to certify-2

Perform IV cannulation in a manikin by observing the following steps

S.no	Identify size of IV cannula as per age of child.	Demonstrate all steps of infection control policy like handwashing, wearing gloves, proper filling of fluid in syringe	Choose and prepare the site	Correctly insert the cannula and look for free flow of blood	Fix the cannula and properly dispose the biomedical waste
1					
2					
3					

Date Completed	Attempt at Competency (F/R/Re)	Rating (B/M/E)	Decision of Faculty (C/R/Re)	Initial of Faculty & Date	Feedback Received Initial of Learner with Date

PE24.17 Perform intraosseous insertion in a model

Minimum number required to certify-2

Perform intraosseous insertion in a model in these following steps

S.no	Identify site for intraosseous insertion in children based on landmarks.	Demonstrate all steps of infection control	Insert the Intraosseous cannula and demonstrate how to check its proper insertion in model	Fix Intraosseous cannula and correctly demonstrate disposal of biomedical waste
1				
2				
3				

Date Completed	Attempt at Competency (F/R/Re)	Rating (B/M/E)	Decision of Faculty (C/R/Re)	Initial of Faculty & Date	Feedback Received Initial of Learner with Date

PE27.15 Assess airway and breathing: recognize signs of severe respiratory distress. Check for cyanosis, severe chest indrawing, grunting

Minimum number required to certify- 3

Check for the following signs in a child with respiratory distress

S.no	Respiratory rate	Intercostal retractions	Alae nasi flaring	Drowsiness	Grunt or stridor	Cyanosis
1						
2						
3						

Date Completed	Attempt at Competency (F/R/Re)	Rating (B/M/E)	Decision of Faculty (C/R/Re)	Initial of Faculty & Date	Feedback Received Initial of Learner with Date

PE27.16 Assess airway and breathing. Demonstrate the method of positioning of an infant & child to open airway in a simulated environment

Minimum number required to certify- 3

Assess whether the student performs the steps in a correct manner

S.no	Head tilt manoeuvre performed	Chin lift manoeuvre performed	Jaw thrust manoeuvre performed	Remarks of the facilitator
1				
2				
3				

Date Completed	Attempt at Competency (F/R/Re)	Rating (B/M/E)	Decision of Faculty(C/R/Re)	Initial of Faculty & Date	Feedback Received Initial of Learner with Date

PE27.17 Assess airway and breathing: administer oxygen using correct technique and appropriate flow rate

Minimum number required to certify- 3

Demonstrate the various methods of administering oxygen and at specific rates

S. no	Head box	Nasal cannula	High flow nasal cannula	Face mask	Non rebreathing mask	Rate of delivery of oxygen
1						
2						
3						

Date Completed	Attempt at Competency (F/R/Re)	Rating (B/M/E)	Decision of Faculty(C/R/Re)	Initial of Faculty & Date	Feedback Received Initial of Learner with Date

PE27.18 Assess airway and breathing: perform assisted ventilation by Bag and mask in a simulated environment

Minimum number required to certify- 3

Demonstrate assisted ventilation using bag and mask in a simulated environment

S. no	Chosen the correct size mask	Chosen the correct bag	Head and neck in proper position	Used the correct pressure to inflate	Looked for chest rise	Used the correct rate of ventilation
1						
2						
3						

Date Completed	Attempt at Competency (F/R/Re)	Rating (B/M/E)	Decision of Faculty(C/R/Re)	Initial of Faculty & Date	Feedback Received Initial of Learner with Date

PE27.19 Check for signs of shock i.e., Pulse, Blood Pressure, Capillary Refill time

Minimum number required to certify- 3

Check for the signs of shock

S. no	Check for volume of pulse	Check BP	Check for saturation	Check for CRT	Check for skin colour and temperature	Check for sensorium
1						
2						
3						

Date Completed	Attempt at Competency (F/R/Re)	Rating (B/M/E)	Decision of Faculty(C/R/Re)	Initial of Faculty & Date	Feedback Received Initial of Learner with Date

PE27.21 Choose the type of fluid and calculate the fluid requirement in shock

Minimum number required to certify- 3

Choose appropriate fluid according to different types of shock. Calculate the fluid for managing different types of shock at different age/size of the child.

S.no	Type of shock	Assess weight of child	Choose the appropriate fluid for bolus administration	Calculate the amount of fluid to be administered for bolus and continuation	Remarks

1	Hypovolemic				
2	Septic				
3	Cardiogenic				
4	Obstructive				
5	Burns				

Date Completed	Attempt at Competency (F/R/Re)	Rating (B/M/E)	Decision of Faculty(C/R/Re)	Initial of Faculty & Date	Feedback Received Initial of Learner with Date

PE27.22 Assess level of consciousness & provide emergency treatment to a child with convulsions/ coma

Minimum number required to certify- 3

S. no	Assess level of consciousness (Glasgow or AVPU)	Position a child in coma correctly	Position a child with head/spine trauma correctly	Assess ABCD	Demonstrate how to give rectal diazepam	Calculate how much IV diazepam and give it correctly in a manikin	Administer nasal midazolam spray
1							
2							
3							

Date Completed	Attempt at Competency (F/R/Re)	Rating (B/M/E)	Decision of Faculty(C/R/Re)	Initial of Faculty & Date	Feedback Received Initial of Learner with Date

PE27.23 Assess for signs of severe dehydration

Minimum number required to certify- 3

S.no	Thirst	Urine output	Sensorium	Mucus membrane	Skin turgor	Pulse	Blood pressure	AF if open
1								
2								
3								

Date Completed	Attempt at Competency (F/R/Re)	Rating (B/M/E)	Decision of Faculty(C/R/Re)	Initial of Faculty & Date	Feedback Received Initial of Learner with Date

PE27.28 Provide BLS for children in manikin

Minimum number required to certify- 3

Either a certificate that they have attended a formal BLS course or a modified BLS session has to be attached

S.No	Check for response	Call for help	Check pulse and breathing simultaneously	Start chest compression	Make airway patent and give 2 rescue breaths	Repeat above CPR
1						
2						
3						

Date Completed	Attempt at Competency (F/R/Re)	Rating (B/M/E)	Decision of Faculty(C/R/Re)	Initial of Faculty & Date	Feedback Received Initial of Learner with Date

SUMMARY OF COMPETENCIES REQUIRING DOCUMENTATION

(to be done as part of seminar, demonstration, case presentation)

S.no	Competency no	Competency detail	Minimum No. to be done	T/L method	Date completed	Faculty signature
1	21.9	Identify external markers for Kidney disease, like Failing to thrive, hypertension, pallor, Icthyosis, anasarca	**3**			
2	21.10	Analyze symptom and interpret the physical findings and arrive at an appropriate	**3**			

		provisional differential diagnosis				
3	21.14	Recognize common surgical conditions of the abdomen and genitourinary system and enumerate the indications for referral including acute and subacute intestinal obstruction, appendicitis, pancreatitis, perforation intussusceptio n, Phimosis, undescended testis, Chordee, hypospadias, Torsion testis, hernia Hydrocele, Vulval Synechiae	**3**			
4	21.16	Counsel / educate a patient for referral appropriately	**3**			

5	23.11	Develop a treatment plan and prescribe appropriate drugs including fluids in cardiac diseases, anti - failure drugs, and inotropic agents	**3**			

Competencies requiring documentation

(To be done as part of IMNCI assessment)

S. no	**Competency no**	**Competency detail**	**Minimum No.to be done**	**Date completed**	**Faculty signature**
1	10.4	Identify children with under nutrition as per IMNCI criteria and plan referral	**3**		
2	16.2	Assess children <2 months using IMNCI guidelines	**3**		
3	16.3	Assess children >2 months to 5 years using IMNCI guidelines and stratify risk	**3**		

4	20.18	Identify and stratify risk in a sick neonate using IMNCI guidelines	**3**		
5	24.11	Apply the IMNCI guidelines in risk stratification of children with diarrhoeal dehydration and refer	**3**		
6	28.15	Stratify risk in children with stridor using IMNCI guidelines	**3**		

Competencies requiring documentation

(to be done in a simulated environment)

S. no	**Competency no**	**Competency detail**	**Minimum No. to be done**	**Date completed**	**Faculty signature**
1	18.4	Provide intra-natal care and conduct a normal delivery in a simulated environment	**3**		
2	19.13	Demonstrate the correct administration of different vaccines in a mannequin	**3**		

3	20.3	Perform Neonatal resuscitation in a manikin	**3**		
4	26.10	Demonstrate the technique of liver biopsy in a manikin Perform Liver Biopsy in a simulated environment	**2**		
5	29.17	Demonstrate performance of bone marrow aspiration in mannequin.	**2**		

Competencies requiring documentation

(to be done by giving actual blood reports/case scenarios/x-rays/CT/MRI/ EEG/ECG reports)

S. no	**Competency no**	**Competency detail**	**Minimum No. to be done**	**T/L method**	**Date completed**	**Faculty signature**
1	21.12	Interpret report of Plain X Ray of KUB	**3**			
2	21.13	Enumerate the indications for and Interpret the written report of Ultra	**3**			

		sonogram of KUB				
3	23.12	Interpret a chest X ray and recognize Cardiomegaly	**3**			
4	23.13	Choose and Interpret blood reports in Cardiac illness	**3**			
5	23.14	Interpret Pediatric ECG	**3**			
6	23.15	Use the ECHO reports in management of cases	**3**			
7	24.13	Interpret RFT and electrolyte report	**3**			
8	30.20	Interpret and explain the findings in a CSF analysis	**3**			
9	30.21	Enumerate the indication and discuss the limitations of EEG, CT, MRI	**3**			
10	30.22	Interpret the reports of EEG, CT, MRI	**3**			
11	34.9	Interpret blood tests in the context of laboratory	**3**			

		evidence for tuberculosis				

AFFECTIVE COMPETENCIES REQUIRING DOCUMENTATION

(To be done as part of AETCOM)

S. no	Competency no	Competency detail	Minimum No. to be done	Date completed	Faculty signature
1	23.18	Demonstrate empathy while dealing with children with cardiac diseases in every patient encounter	**3**		
2	26.13	Counsel and educate patients and their family appropriately on liver diseases	**3**		
3	27.32	Counsel parents of dangerously ill/ terminally ill child to break a bad news	**2**		

4	27.33	Obtain Informed Consent	**2**		
5	27.34	Willing to be a part of the ER team	**3**		
6	27.35	Attends to emergency calls promptly	**3**		

SELF-DIRECTED LEARNING

List of Self-Directed Learning Topics

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.

11.

12.

13.

14.

15.

SELF-DIRECTED LEARNING:

1)
Topic:

Objectives:

Task:

Impressions:

2)
Topic:

Objectives:

Task:

Impressions:

INTEGRATED LEARNING

Summary of integrated learning sessions

S.No	Competency No	Topic	Departments involved	Date

REFLECTIONS:

Your thoughts about the procedures requiring certification (any 7 where you committed mistakes)

Competency no	Competency details	Why I went wrong	Was this exercise useful	Faculty remarks

Other activities :

5. **Participation in departmental activities- children's day, breast feeding week, ORS week, disease specific days (if being celebrated)**
6. **STS/ college grant project submitted**
7. **Participation in IAP quiz competition**
8. **Participation in any research projects/student conference**

CLINIC/FIELD VISITS

S. no	Visit to	Competency no	Competency	Year/Phase	Date completed	Report submitted	Faculty signature
1	Child development unit	3.7	Visit a Child Developmental Unit and Observe its functioning **Topic:** Developmental delay and cerebral palsy				
2	Child guidance clinic	4.6	Visit to the Child guidance clinic **Topic:** Scholastic backwardness, learning disabilities, Autism, ADHD				
		5.11	Visit to Child guidance clinic				

			and observe functioning **Topic:** Common problems related to behaviour				
3	Adolescent clinic	6.11	Visit to the Adolescent clinic				
4	Rural health centre	18.8	Observe the implementation of the program by visiting the Rural Health Center				
5	Immunization clinic	19.10	Observe the handling and storing of vaccines				
		19.11	Document Immunization in an immunization record				
		19.12	Observe the administration of UIP vaccines				
		19.14	Practice Infection control measures and appropriate				

			handling of the sharps				

NOTES

NOTES

Acknowledging the Contributors to the development of Curriculum of 3rd MBBS Part 2

Subject	Contributors
Internal Medicine with respiratory medicine	Dr Smitha Bhat, Dr Soumya Umesh, Dr Savitha Sebastian, Dr Mary George, Dr Thennmozhi Nagarajan and Dr John Paul - St John's Medical College, Bangalore Dr Uma Devraj – Pulmonary Medicine , St John's Medical College, Bangalore
Psychiatry	This curriculum was adapted from the draft document prepared by the Indian Psychiatry Society UG education subcommittee 2021-2022: Chairperson: Dr Ravi Gupta, Co-chairperson: Dr Vinay H R, Convenor: Dr Priya Sreedaran, Advisor: Dr Anil Nischal and EC Co-ordinator: Dr Adarsh Tripathi Dr Priya Sreedharan, Dr Luke Salazar and Dr Bhuvaneshvari Sethumaran, St John's Medical College, Bangalore
Dermatology	Dr Shashi Kumar BM and Dr Deepadarshan K, - Mandya Institute of Medical Sciences.
General Surgery	Dr Mallikarjuna, Bangalore Medical College and Research institute, Bangalore Dr Mario Victor Newton, St John's Medical College, Bangalore Dr Prathvi Shetty, Fr Muller's Medical College, Mangalore Dr Sunil Kumar V, Bangalore Medical College and Research institute, Bangalore Dr Suneetha Nithyanandam, Medical Education, St John's Medical College, Bangalore
Anaesthesiology	Dr Shailaja S- Fr Muller's Medical College, Mangalore
Radiology	Dr Rajesh Iyer, Mandya Institute of Medical Sciences,

Orthopaedics	Dr. Hiranya Kumar S- Vydehi Institute of Medical sciences Bengaluru Dr. Purushotham Shastry – JSS Medical College, Mysuru Dr. Mallikarjun Swamy B – St John's Medical College, Bangalore Dr. Ramesh R – JJM Medical College Dr. Arun H.S- Devaraj Urs Medical College, Kolar Dr. Ashok Kumar P – Ms Ramaiah Medical College, Bangalore Dr. Ravish V N – Bangalore Medical College and Research Institute Dr. Vanamali B.S- Vijaynagar Institute of Medical Sciences, Bellary Dr. E Venkateshulu – S Nijalingappa Medical College, Bagalkot Dr. Siddanna M Patted - Vydehi Institute of Medical Sciences Bengaluru Dr. Vamshikrishna Chand N - S Nijalingappa Medical College, Bagalkot
Obstetrics and Gynaecology	Dr Jayshree. V. Kanavi, St John's Medical College, Bangalore Dr Girija Prasanna, Hassan Institute of Medical Sciences, Hassan Dr Rekha Gurumurthy, Shridevi Institute of Medical Sciences & Research Hospital, Tumkuru Dr Madhava Prasad Sarvothaman, Vydehi Institute of Medical Sciences and Research Centre, Bangalore Dr Narayani, Koppal Institute of Medical Sciences, Koppal Dr Suneetha Nithyanandam, Medical Education, St John's Medical College, Bangalore
Paediatrics	IAP task force CBME curriculum for Paediatrics SSAH CBME curriculum for RS 4 Batch NMC Document - Regulations on Graduate Medical Education Dr. K. Shreedhara Avabratha, Dr K Varadaraj Shenoy, Dr Riya Tharakan, Dr Sujonitha John and Dr Sweta Shanbhag. Father Muller Medical College Hospital, Mangalore