

***DENTAL***

***MDS DEGREE COURSE***

***CURRICULUM & SYLLABUS***



**SRI SIDDHARTHA  
UNIVERSITY**

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**SECTION - I**  
**REGULATIONS**

**1. Title of the Course: It shall be called Master of Dental Surgery**

**2. Branches of Study: The following are the subjects of speciality for the MDS degree:**

- a. Prosthodontics and Crown & Bridge
- b. Periodontology
- c. Oral & Maxillofacial Surgery
- d. Conservative Dentistry and Endodontics
- e. Orthodontics & Dentofacial Orthopedics
- f. Oral Pathology & Microbiology
- g. Public Health Dentistry
- h. Paedodontics & Preventive Dentistry
- i. Oral Medicine & Radiology

**3. Eligibility**

A candidate for admission to the MDS course (Master of Dental Surgery) must have a recognized degree of BDS (Bachelor of Dental Surgery) awarded by an Indian University in respect of recognized Dental College under Section 10(2) of the Dentists Act, 1948 or an equivalent qualification recognized by the Dental Council of India and should have obtained permanent registration with the State Dental Council. Candidates not possessing a recognized Dental qualification for the above purpose should secure the prior approval of his qualifications by the Dental Council of India before he can be admitted to the MDS Course in the University.

Candidates who possess PG Diploma recognized by the DCI with the duration of 2 years (proposed) in particular specialty is eligible for admission in MDS in the same specialty and the duration will be 2 years. The syllabus of two years programme will be as per the university guidelines.

Provided that in the case of a foreign national, the Dental Council of India may, on payment of the prescribed fee for registration, grant temporary registration for the duration of the postgraduate training restricted to the dental college/institution to which he/she is admitted for the time being exclusively for postgraduate studies;

Provided that further temporary registration to such foreign national shall be subject to the condition that such person is duly registered as dental practitioner in his own country from which he/she has obtained his basic dental qualification and that his degree is recognized by the corresponding dental council or concerned authority

**4. Criteria For Selection For Admission**

Students for MDS Course shall be admitted based on performance at the competitive examinations held by Central government/State Government/Universities or Institutions.

### ***5. Eligibility Certificate from SSU***

No candidate shall be admitted to any postgraduate MDS course unless the candidate has obtained and produced eligibility certificate issued by University. The candidate has to make an application to the University with the following documents along with the prescribed fee:

1. BDS pass / degree certificate issued by the University.
2. Marks cards of all the university examinations passed (I to IV BDS year course).
3. Attempt Certificate issued by the Principal.
4. Certificate regarding the recognition of the Dental college by the Dental Council of India.
5. Completion of paid rotatory internship certificate from a recognized college.
6. Registration by any State Dental Council and
7. Proof of SC/ ST or Category I, as the case may be.

Candidates should obtain the Eligibility Certificate before the last date for admission as notified by the University. A candidate who has been admitted to postgraduate course should register his / her name in the University within a month of admission after paying the registration fee.

### ***6. Duration of the Course***

The Course shall be of three years duration.

All the candidates for the degree of MDS are required to pursue the recommended course for at least three academic years as full time candidates at Sri Siddhartha Dental College affiliated to Sri Siddhartha University & ***recognized by the Dental Council of India.***

### ***7. Method of training***

The training of postgraduate for degree shall be full time with graded responsibilities in the management and treatment of patients entrusted to his/her care. The participation of the students in all facets of educational process is essential. Every candidate should take part in seminars, group discussions, grand rounds, case demonstration, clinics, journal review meetings, CPC and clinical meetings. Every candidate should participate in the teaching and training programme of undergraduate students. Training should include involvement in laboratory and experimental work, and research studies

### ***8. Attendance, Progress and Conduct***

A candidate pursuing degree/diploma course should work in the concerned department of the institution for the full period as a full time student. No candidate is permitted to own a clinic/work in clinic/laboratory/nursing home while studying postgraduate course, no candidate shall join any other course of study or appear for any other examination conducted by this university or any other university in India or abroad during the period of registration.

Each year shall be taken as a unit for the purpose of calculating attendance.

Every candidate shall attend symposia, seminars, conferences, journal review meetings, grand rounds, CPC, case presentation, clinics and lectures during each year prescribed by the department and not absent himself / herself from work without reasons.

Every candidate shall have not less than 80 percent of attendance in each year of course. However, candidates should not be absent continuously as the course is a full time one.

### **9. Monitoring Progress of Studies**

**Work diary / Log Book:** Every candidate shall maintain a work diary and record of his/ her participation in the training programme conducted by the department such as journal reviews, seminars, etc. Please see Chapter IV for model checklists and logbook. Special mention may be made of the presentations by the candidate as well as details of clinical or laboratory procedures, if any conducted by the candidate. The work diary shall be scrutinized and certified by the Head of the Department and Head of the Institution, and presented in the university practical/clinical examination.

#### **Periodic tests:**

In case of degree courses of three years duration, the concerned departments may conduct three tests, two of them be annual tests, one at the end of first year and the other in the second year. The third test may be held three months before the final examination. The tests may include written papers, practical / clinical and viva voce. Records and marks obtained in such tests will be maintained by the Head of the Department and sent to the University at the end of every year and when called for.

#### **Records:**

Records and marks obtained in tests will be maintained by the Head of the Department and will be made available to the University when called for.

### **10. Dissertation**

Every candidate pursuing MDS degree course is required to carry out work on a selected research project under the guidance of a recognized post graduate teacher. The results of such a work shall be submitted in the form of a dissertation.

The dissertation is aimed to train a postgraduate student in research methods and techniques. It includes identification of a problem, formulation of a hypothesis, search and review of literature, getting acquainted with recent advances, designing of a research study, collection of data, critical analysis, comparison of results and drawing conclusions.

Every candidate shall submit to the Registrar of the University in the prescribed proforma, a synopsis of the proposed dissertation within **Six months** of commencement of the course on or before the dates notified by the University. The synopsis shall be sent through the proper channel.

Such synopsis will be reviewed and the dissertation topic will be registered by the University. No change in the dissertation topic or guide shall be made without prior approval of the University.

***The dissertation should be written under the following headings:***

- i. Introduction***
- ii. Aims or Objectives of study***
- iii. Material and Methods***
- iv. Review of literature***
- v. Results***
- vi. Discussions***
- vii. Conclusion***
- viii. Summary***
- ix. Reference***
- x. Tables***
- xi. Annexures***

The written text of dissertation shall be not less than 50 pages and shall not exceed 150 pages excluding references, tables, questionnaires and other annexure. It should be typed in double line spacing on one side of paper (A4 size, 8.27" x 11.69") and properly binded. Spiral binding should be avoided. The dissertation shall be certified by the guide, head of the department and head of the Institution.

Four copies of dissertation thus prepared shall be submitted to the Controller of Examinations, six months before final examination on or before the dates notified by the University

The dissertation shall be valued by examiners appointed by the University. Approval of dissertation work is an essential precondition for a candidate to appear in the University examination.

***Guide:*** The academic qualification and teaching experience required for recognition by this University as a guide for dissertation work is as laid down by [Dental Council of India / Sri Siddhartha University](#)

***Co-guide:*** A co-guide may be included provided the work requires substantial contribution from a sister department or from another institution recognised for teaching/training by [Sri Siddhartha University / Dental Council of India](#). The co-guide shall be a recognized postgraduate teacher of [Sri Siddhartha University](#)

***Change of guide:*** In the event of a registered guide leaving the college for any reason / in the event of death of guide, guide may be changed with prior permission from the university.

### ***11. Scheme of Examination***

***Eligibility:*** The following requirements shall be fulfilled by every candidate to be eligible to appear for the final examination.

- i) Attendance:*** Every candidate shall have fulfilled the attendance prescribed by the University during each academic year of the postgraduate course.
- ii) Progress and conduct:*** Every candidate shall have participated in seminars, review meetings, symposia, conferences, case presentations, clinics and didactic during each year as designed by the concerned department

- iii) **Work diary and Logbook:** Every candidate shall maintain a work diary and logbook for recording his/her participation in the training programmes conducted by the department. The work diary and logbook shall be verified and certified by the Head of the Department and Head of the institution. (Please see Section IV for Model Checklist and Logbook)

The certification of satisfactory progress by the head of the department and head of the institution shall be based on (i), (ii) and (iii) mentioned above.

Schedule of Examination: The examination for M.D.S. courses shall be held at the end of three academic years (six academic terms). The university shall conduct two examinations in a year at an interval of four to six months between the two examinations. Not more than two examinations shall be conducted in an academic year.

## **12. University Examination**

M.D.S. Degree examinations in any branch of study shall consist of dissertation, written paper (Theory), Practical/Clinical and Viva voce.

**(a) Dissertation:** Acceptance of dissertation shall be a precondition for the candidate to appear for the final examination.

**(b) Written Examination (Theory):** Written examination shall consist of four question papers each of three hours duration. Total marks for each paper will be 75. Paper I, II and III shall consist of two long questions carrying 20 marks each and 5 short essay questions carrying 7 marks each. The fourth paper will be to write an essay. Questions on recent advances may be asked in any or all the papers. Distribution of topics in each paper is shown in Section III along with course description of the concerned speciality, and as clause 14 in this section.

### **(c) Practical / Clinical Examination:**

In case of practical examination, it should be aimed at assessing competence and skills of techniques and procedures. It should also aim at testing student's ability to make relevant and valid observations, interpretation and inference of laboratory or experimental or clinical work relating to his/her subject for undertaking independent work as a specialist. The duration of Clinical and Viva Voce examination will be 2 days for a batch of four students. If the number of candidates exceeds 4, the programme can be extended to 3<sup>rd</sup> day.

The actual format of clinical examination in various specialities are given in Section III. The total marks for practical / clinical examination shall be 200.

**(d) Viva Voce:** Viva-Voce examination shall aim at assessing depth of knowledge, logical reasoning, confidence and oral communication skills. The total marks shall be 100 and the distribution of marks shall be as under:

- |      |   |          |
|------|---|----------|
| (i)  | For examination of all components of syllabus   | 80 Marks |
| (ii) | For (Pedagogy) demonstration of teaching skills | 20 Marks |

### **Examiners**

There shall be at least four examiners in each branch of study. Out of four, two shall be external examiners and two shall be internal examiners. The qualification and teaching experience for appointment as an examiner shall be as laid down by SSU and Dental Council of India from time to time

### **13. Criteria for Declaring as Pass**

To pass in the University examination, a candidate shall secure in both theory examination and the practical/clinical including viva voce independently an aggregate of 50% of total marks allotted (150 marks out of 300 allotted for theory and 150 out of 200 for clinical + 100 for viva voce together). A candidate securing less mark as described above shall be declared to have failed in the examination.

A candidate who is declared successful in the MDS Examination shall be granted a Degree of Master of Dental Surgery in the respective speciality. A candidate who fail either Theory or Practical has to appear for both theory and practical subsequently for a pass criteria.

### **14. Distribution of Topics in theory papers in various branches of study specialities:**

#### **SYLLABUS DISTRIBUTION AMONG 4 PAPERS IN VARIOUS SPECIALITIES:**

##### ***Prosthodontics and Crown & Bridge***

- Paper-I - Applied Anatomy, Physiology, Pathology & Research  
Methodology, Dental Materials  
Paper-II - Removable Prosthodontics and Oral Implantology  
Paper-III - Fixed Prosthodontics  
Paper-IV - Essay

##### ***Periodontology***

- Paper-I - Applied Anatomy, Physiology, Biochemistry, Pathology,  
Pharmacology & Research methodology  
Paper-II- Etiopathogenesis  
Paper-III- Clinical Periodontology and Oral Implantology  
Paper-IV - Essay

##### ***Oral & Maxillofacial Surgery***

- Paper-I - Applied Anatomy, Physiology, Biochemistry, Pharmacology,  
Pathology, Microbiology & Research Methodology  
Paper-II - Minor oral Surgery and Trauma  
Paper-III - Maxillofacial Surgery and Oral Implantology  
Paper-IV - Essay

##### ***Conservative Dentistry and Endodontics***

- Paper-I - Applied Anatomy, Physiology, Pathology, dental materials &  
Research Methodology  
Paper-II - Conservative dentistry & Aesthetic Dentistry  
Paper-III- Endodontics  
Paper IV - Essay

***Orthodontics & Dentofacial Orthopaedics***

- Paper-I- Applied anatomy, physiology, pathology, genetics physical anthropology, dental material & Research methodology  
Paper-II- Diagnosis and treatment planning.  
Paper-III- Clinical Orthodontics and Mechanotherapy  
Paper-IV - Essay

***Oral Pathology , Microbiology and Forensic Odontology***

- Paper- I- Applied Anatomy, Physiology, Pathology and Research Methodology  
Paper-II - Oral pathology, Microbiology and Oncology  
Paper-III - Laboratory Techniques and Diagnosis  
Paper-IV - Essay

***Public Health Dentistry***

- Paper-I- Applied anatomy, physiology, pathology & Research Methodology  
Paper-II - Public Health  
Paper III - Dental Public Health  
Paper-IV - Essay

***Pediatrics & Preventive Dentistry***

- Paper-I- Applied Anatomy, Physiology, Pathology, Microbiology, Nutrition and Dietics & Research methodology  
Paper-II - Clinical pediatric dentistry  
Paper-III - Preventive and community dentistry as applied to pediatric dentistry  
Paper-IV - Essay

***Oral Medicine and Radiology***

- Paper-I- Applied anatomy, physiology, pathology, pharmacology & Research methodology.  
Paper II - Diagnosis, diagnostic methods and imageology and Applied Oral Pathology  
Paper-III- Oral medicine, therapeutics & laboratory investigations  
Paper-IV- Essay

## **SECTION - II**

### **GOALS & OBJECTIVES OF MDS COURSE**

#### **Goals**

***The goals of postgraduate training in various specialities is to train B.D.S. graduate who will, after successful completion of the course:***

- I. Practice respective speciality efficiently and effectively, backed by scientific knowledge and skill.
- II. Exercise empathy and a caring attitude and maintain high ethical standards.
- III. Continue to evince keen interest in continuing professional education in the speciality and allied specialities irrespective of whether in teaching or practice.
- IV. Willing to share the knowledge and skills with any learner, junior or a colleague.
- V. Develop the faculty for critical analysis and evaluation of various concepts and views, to adopt the most rational approach.

#### **Objectives**

The objective is to train a candidate so as to ensure higher competence in both general and special area of interest and prepare him for a career in teaching, research and speciality practice. A candidate must achieve a high degree of clinical proficiency in the subject matter and develop competence in research and its methodology as related to the field concerned.

The above objectives are to be achieved by the time the candidate completes the course. The objectives may be considered as under -

- I. Knowledge (Cognitive domain)
- II. Skills (Psycho motor domain)
- III. Human values, ethical practice and communication abilities (affecter domain)

#### **Knowledge**

- I. Demonstrate understanding of basic sciences relevant to speciality.
- II. Describe etiology, pathophysiology, principles of diagnosis and management of common problems within the speciality in adults and children.
- III. Identify social, economic, environmental and emotional determinants in a given case and take them into account for planning treatment.
- IV. Recognise conditions that may be outside the area of speciality/competence and to refer them to an appropriate specialist.
- V. Update knowledge by self study and by attending courses, conferences, seminars relevant to speciality.
- VI. Undertake audit, use information technology and carryout both research and clinical work with the aim of publishing or presenting the work at various scientific gatherings.

### ***Skills***

- I. Take a proper clinical history, examine the patient, perform essential diagnostic procedures and order relevant tests and interpret them to come to a reasonable diagnosis about the condition.
- II. Acquire adequate skills and competence in performing various procedure required in the speciality.

### ***Human values, ethical practice and communication abilities:***

- I. Adopt ethical principles in all aspects of practice.
- II. Professional honesty and integrity are to be fostered.
- III. Patient care is to be delivered irrespective of social status, caste, creed or religion of the patient.
- IV. Develop communication skills, in particular and skill to explain various options available in management and to obtain a true informed consent from the patient
- V. Provide leadership and get the best out of his team in a congenial working atmosphere.
- VI. Apply high moral and ethical standards while carrying out human or animal research.
- VII. Be humble and accept the limitations in his knowledge and skill and to ask for help from colleagues when needed.
- VIII. Respect patient's rights and privileges including patient's right to information and right to seek a second opinion.

## **SECTION - III**

### **COURSE DESCRIPTION OF VARIOUS SPECIALTIES**

#### **1. DEFINITIONS OF VARIOUS SPECIALTIES:**

##### **1. *Prosthodontics and Crown & Bridge***

Prosthodontics and Crown & Bridge and Oral Implantology i.e. that branch of Dental art and science pertaining to the restoration and maintenance of oral function, health, comfort and appearance by the replacement of missing or lost natural teeth and associated tissues either by fixed or removable artificial substitutes.

##### **2. *Periodontology***

Periodontology and Oral Implantology is the science dealing with the health and diseases of the investing and supporting structures of the teeth and oral mucous membrane.

##### **3. *Oral & Maxillofacial Surgery***

Oral and Maxillofacial surgery and Implantology deals with the diagnosis and surgical and adjunctive treatment of diseases, injuries and defects of the human jaws and associated oral and facial structures.

##### **4. *Conservative Dentistry and Endodontics***

Conservative dentistry deals with prevention and treatment of the diseases and injuries of the hard tissues and the pulp of the tooth and associated periapical lesions.

##### **5. *Orthodontics and Dentofacial Orthopedics***

Deals with prevention and correction of oral anomalies and malocclusion and the harmonizing of the structures involved, so that the dental mechanisms will function in a normal way.

##### **6. *Oral Pathology & Microbiology***

Oral Pathology deals with the nature of oral diseases, their causes, processes and effects. It relates the clinical manifestation of oral diseases to the physiologic and anatomic changes associated with these diseases.

##### **7. *Public Health Dentistry***

Community Dentistry is the science and art of preventing and controlling Dental diseases and promoting Dental health through organized community efforts.

##### **8. *Paedodontics and Preventive Dentistry***

Deals with prevention and treatment of oral and Dental ailments that may occur during childhood.

### ***9. Oral Medicine and Radiology***

Oral Medicine is that specialty of dentistry concerned with the basic diagnostic procedures and techniques useful in recognizing the diseases of the oral tissues of local and constitutional origin and their medical management.

Radiology is a science dealing with x-rays and their uses in diagnosis and treatment of diseases in relation to orofacial diseases.

## ***2. Course contents***

# ***PROSTHODONTICS***

## ***Aim***

To train dental graduates so as to ensure higher competence in both general and special area of Prosthodontics and prepare a candidate for teaching, research and clinical abilities including prevention and after care in prosthodontics including crown and bridge and implantology.

## ***General Objectives of the Course:***

- I. Training programme in Prosthodontic dentistry including Crown & Bridge & Implantology is structured to achieve knowledge and skill in theoretical and clinical laboratory, attitude, communicative skills and ability to research with understanding of social, cultural, education and environmental background of the society
- II. To have acquired adequate knowledge and understanding of applied basic and systematic medical science knowledge in general and particular to head and neck.
- III. The postgraduates will be able to provide Prosthodontic therapy for patients with competence and working knowledge with understanding of applied medical behavioral and clinical science that are beyond the treatment skills of the general BDS graduate and MDS graduate of other specialities to demonstrate, evaluative and judgment skills in making appropriate decisions regarding prevention, treatment aftercare and referral to deliver comprehensive care to patients.

## ***Knowledge***

The candidate should possess knowledge applied basic and systematic medical sciences.

- On human anatomy, embryology, histology, applied in general and particular to head and neck, Physiology & Biochemistry, Pathology and microbiology, virology, Health and diseases of various systems of the body (systemic) principles in surgery and medicine, Pharmacology, Nutrition, behavioral Science, Age changes, genetics, Immunology, Congenital defects and syndrome and Anthropology, Bioengineering, Bio-medical and Biological Principle and application Dental material science.
- Ability to diagnose and planned treatment for patients requiring a Prosthodontic therapy
- Ability to read and interpret a radiograph and other investigations for the purpose of diagnoses treatment plan
- Tooth and tooth surface restorations, Complete denture prosthodontics, removable partial dentures Prosthodontics, fixed prosthodontics and maxillofacial and Craniofacial Prosthodontics, implants supported Prosthodontics, T.M.J, and occlusion, craniofacial esthetic, and biomaterials. Craniofacial disorders - problems of psychogenic origin.
- Age changes and Prosthodontic Therapy for aged.

- Ability to diagnose failed restoration and provide Prosthodontic therapy and after care.
- Should have essential knowledge on ethics, laws and Jurisprudence and forensic odontology in Prosthodontics
- General health conditions and emergency as related to prosthodontics treatment,
- Identify social, cultural, economic, environmental, educational and emotional determinants of the patient and consider them in planning the treatment.
- Identify cases, which are outside the area of his speciality/ competence and refer them to appropriate specialists.
- Advice regarding case management involving surgical, interim treatment etc.
- Competent specialization in team management of craniofacial design.
- Should attend continuing education programmes, seminars and conferences related to prosthodontics in thus updating himself.
- Teach and guide his / her team, colleague and other students.
- Should be able to use information technology tools and carry out research basic and clinical, with the aims of publishing his/ her work and presenting hi work at various scientific forum.
- Should have essential knowledge of personal hygiene, infection control, prevent of cross infection and safe disposal of waste, keeping in view the risks of transfer of Hepatitis & HIV
- Should have a sound knowledge for the application of pharmacology. Effects drugs on oral tissue and systems of a body and for medically compromised

### **Skills**

- The candidate should be able to examine the patients requiring Prosthodontic therapy, investigate the patient systemically, analyze the investigation results, radiography, diagnose the ailment, plan a treatment, communicate it with the patient and execute it.
- Understand the prevalence and prevention of diseases of craniomandibular system related to Prosthetic dentistry.
- The candidate should be able to restore the lost functions of the stomatognathic system namely speech, mastication etc to provide a quality health care for craniofacial region

- The candidate should be able to interact with other speciality including a medical speciality for a planned team management of patients for a craniofacial and oral acquired and congenital defects, Temporomandibular joint syndromes, esthetics, Implant supported Prosthetics and problems of Psychogenic origin,
- Should be able to demonstrate the clinical competence necessary to carry out appropriate treatment at higher level of knowledge, training and practice skills currently available in their specialty area.
- Identify target diseases and awareness amongst the population for Prosthodontic therapy.
- Perform clinical and Laboratory procedure with understanding of biomaterials, tissue conditions related to prosthesis and have competent dexterity and skill for performing clinical and laboratory procedures in fixed, removable, implant and maxillofacial TMJ, esthetics Prosthodontics.
- Laboratory technique management based on skills and knowledge of Dental Materials and dental equipment and instruments, management.
- To understand demographic distribution and target diseases of Cranio mandibular region related to Prosthodontic including crown & bridge and implantology.

### ***Attitudes***

- Adopt ethical principles in all Prosthodontic practice. Professional honesty and integrity are to be fostered. Treatment to be delivered irrespective of social status, caste, creed or religion of patient.
- Willing to share the knowledge and clinical experience with professional colleagues.
- Willing to adopt new methods and techniques in prosthodontics from time to time based on scientific research, which is in patient's best interest.
- Respect patient's rights and privileges including patients right to information and right to seek second opinion.

### ***Communication Abilities***

- Develop communication skills, in particular, to explain treatment option available in management.
- Provide leadership and get the best out of his group in a congenial working atmosphere.
- Should be able to communicate in simple understandable language with the patient and explain the principles of prosthodontics to the patient. He should be able to guide and counsel the patient with regard to various treatment modalities available.

- Develop the ability to communicate with professional colleagues through various media like Internet, e-mail, videoconference, and etc. to render the best possible treatment.

### ***Course Contents***

- The candidates shall undergo training for 3 academic years with satisfactory attendance of 80% for each year.
- The course includes epidemiology and demographic studies, research and teaching skills.
- Ability to prevent, diagnose and treat with after care for all patients for control of diseases and / or treatment related syndromes with patient satisfaction for restoring functions of Stomatognathic system by Prosthodontic therapy

The program outline addresses the knowledge, procedural and operative skills needed in Masters Degree in Prosthodontics. A minimum of 3 years of formal training through a graded system of education as specified will enable the trainee to achieve Masters Degree in Prosthodontics including Crown & Bridge and Implantology, competently and have the necessary skills/ knowledge to update themselves with advancements in the field. The course content has been identified and categorized as Essential knowledge as given below.

### ***Essential Knowledge***

The topics to be considered are: Basic Sciences, Biological and mechanical considerations in Prosthodontics including Crown and Bridge Implantology and Material Science.

### ***Applied Basic Sciences***

- Although knowledge on the applied aspects of Anatomy, Embryology, Histology and applied in general and particular to head and neck, Physiology, Biochemistry, Pathology and Microbiology, Virology.
- Pharmacology, Health and diseases of various systems of Body (systemic) principles in surgery medicine and Anesthesia, Nutrition, Behavioral sciences, age changes, genetics, Dental Material Science, congenital defects and Syndromes and Anthropology, Biomaterial Sciences Bio-engineering and Biomedical and Research Methodology as related to Masters degree prosthodontics including crown & bridge and implantology.

It is desirable to have adequate knowledge in Bio-statistics Research Methodology and use of computers. To develop necessary teaching skills in Prosthodontics including crown and bridge and implantology

## ***Applied anatomy of Head and Neck***

***General Human Anatomy*** - Gross Anatomy, anatomy of Head & Neck in detail. Cranial and facial bones, TMJ and function, muscles of mastication and facial expression, muscles of neck and chain of back muscles including muscles of deglutition and tongue, arterial supply and venous drainage of the head and neck, anatomy of the Para nasal sinuses with relation to the Vth cranial nerve. General consideration of the structure and function of the brain, ^considerations of V, VII, XI, XII, cranial nerves and autonomic nervous system of the dand neck. The salivary glands, Pharynx, Larynx Trachea, Esophagus, Functional Anatomy mastication, Deglutition, speech, respiration, and circulation, teeth eruption, morphology, elusion and function. Anatomy of TMJ, its movements and myofacial pain dysfunction syndrome.

***Embryology***- Development of the face, tongue, jaws, TMJ, Paranasal sinuses, pharynx, larynx, trachea, esophagus, Salivary glands, Development of oral and Para oral tissue including detailed aspects of tooth and dental hard tissue formation.

***Growth & Development*** - Facial form and Facial growth and development overview of Dentofacial growth process and physiology from fetal period to maturity and old age, comprehensive study of craniofacial biology. General physical growth, functional and anatomical aspects of the head, changes in craniofacial skeletal, relationship between development of the dentition and facial growth.

***Dental Anatomy*** - Anatomy of primary and secondary dentition, concept of occlusion, mechanism of articulation, and masticatory function. Detailed structural and functional study of the oral dental and Para oral tissues. Normal occlusion, development of occlusion in deciduous mixed and permanent dentitions, root length, root configuration, tooth-numbering system.

***Histology*** - histology of enamel, dentin, Cementum, periodontal ligament and alveolar bone, pulpal anatomy, histology and biological consideration. Salivary glands and Histology of epithelial tissues including glands.

Histology of general and specific connective tissue including bone, hematopoietic system, lymphoid etc.

Muscle and neural tissues Endocrinal system including thyroid Salivary glands Histology of skin, oral mucosa, respiratory mucosa, connective tissue, bone, cartilage, cellular elements of blood vessels, blood, lymphatic, nerves, muscles, tongue, tooth and its surrounding structures.

***Anthropology & Evolution*** - Comparative study of tooth, joints, jaws, muscles of mastication and facial expression, tongue, palate, facial profile and facial skeletal system. Comparative anatomy of skull, bone, brain, musculo - skeletal system, neuromuscular coordination, posture and gait - plantigrade and orthograde posture.

***Applied Genetics and Heredity*** - Principles of orofacial genetics, molecular basis of genetics, genetic risks, counseling, bioethics and relationship to

Orthodontic management. Dentofacial anomalies, Anatomical, psychological and pathological characteristic of major groups of developmental defects of the orofacial structures.

**Cell biology** - Detailed study of the structure and function of the mammalian cell with special emphasis on ultra structural features and molecular aspects. Detailed consideration of Intercellular junctions. Cell cycle and division, cell-to-cell and cell- extra cellular matrix interactions.

**Applied Physiology and Nutrition** - Introduction, Mastication, deglutition, digestion and assimilation, Homeostasis, fluid and electrolyte balance. Blood composition, volume, function, blood groups and hemorrhage, Blood transfusion, circulation, Heart, Pulse, Blood pressure, capillary and lymphatic circulation, shock, respiration, control, anoxia, hypoxia, asphyxia, artificial respiration. Endocrine glands in particular reference to pituitary, parathyroid and thyroid glands and sex hormones. Role of calcium and Vit D in growth and development of teeth, bone and jaws. Role of Vit. A, C and B complex in oral mucosal and periodontal health. Physiology and function of the masticatory system. Speech mechanism, mastication, swallowing and deglutition mechanism, salivary glands and Saliva.

**Endocrines**- General principles of endocrine activity and disorders relating to pituitary, thyroid, pancreas, parathyroid, adrenals, gonads, including pregnancy and lactation. Physiology of saliva, urine formation, normal and abnormal constituents, Physiology of pain, Sympathetic and parasympathetic nervous system. Neuromuscular co-ordination of the stomatognathic system.

**Applied Pharmacology and Therapeutics**- Definition of terminologies used - Dosage and mode of administration of drugs. Action and fate of drugs in the body, Drug addiction, tolerance and hypersensitive reactions, Drugs acting on the central nervous system, general anesthetics hypnotics. Analeptics and tranquilizers, Local anesthetics, Chemotherapeutics and antibiotics, Antitubercular and anti syphilitic drugs, Analgesics and antipyretics, Antiseptics, styptics, Sialogogues and antisialogogues, Haematinics, Cortisone, ACTH, insulin and other antidiabetics vitamins: A, D, B - complex group C and K etc. Chemotherapy and Radiotherapy

**Applied Pathology** - Inflammation, repair and degeneration, Necrosis and gangrene, Circulatory disturbances, Ischemia, hyperemia, chronic venous congestion, edema, thrombosis, embolism and infarction. Infection and infective granulomas, Allergy and hypersensitive reaction, Neoplasm; Classification of tumors, Carcinogenesis, characteristics of benign and malignant tumors, spread of tumors. Applied histo pathology and clinical pathology.

**Applied Microbiology**- Immunity, knowledge of organisms commonly associated with diseases of the oral cavity (morphology cultural characteristics etc) of strepto, staphylo, pneumo, gono and meningococci, Clostridia group of organisms, Spirochetes, organisms of tuberculosis, leprosy, diphtheria, actinomycosis and moniliasis etc. Virology, Cross infection control, sterilization and hospital waste management.

**a) Applied Oral Pathology** -Developmental disturbances of oral and Para oral structures, Regressive changes of teeth, Bacterial, viral and mycotic infections of oral cavity, Dental caries, diseases of pulp and periapical tissues, Physical and chemical injuries of the oral cavity, oral manifestations of metabolic and endocrine disturbances, Diseases of the blood and blood forming organism in relation to the oral cavity, Periodontal diseases, Diseases of the skin, nerves and muscles in relation to the Oral cavity.

**b) Laboratory determinations**- Blood groups, blood matching, R.B.C. and W.B.C. count, Bleeding and clotting time, Smears and cultures - urine analysis and culture

**Biostatistics**- Study of Biostatistics as applied to dentistry and research. Definition, aim characteristics and limitations of statistics, planning of statistical experiments, sampling, collection, classification and presentation of data (Tables, graphs, pictograms etc) Analysis of data.

**Introduction to Biostatistics**- Scope and need for statistical application to biological data. Definition of selected terms - scale of measurements related to statistics, Methods of collecting data, presentation of the statistical diagrams and graphs.

Frequency curves, mean, mode of median, Standard deviation and co-efficient of variation, Correlation - Co-efficient and its significance, Binominal distributions normal distribution and Poisson distribution, Tests of significance.

**Research Methodology** - Understanding and evaluating dental research, scientific method and the behavior of scientists, understanding to logic - inductive logic - analogy, models, authority, hypothesis and causation, Quacks, Cranks, Abuses of Logic, Measurement and Errors of measurement, presentation of results, Reliability, Sensitivity and specificity diagnosis test and measurement, Research Strategies, Observation, Correlation, Experimentation and Experimental design. Logic of statistical interference balance judgements, judgement under uncertainty, clinical vs., scientific judgement, problem with clinical judgement, forming scientific judgements, the problem of contradictory evidence, citation analysis as a Means of literature evaluation, influencing judgement: Lower forms of Rhetorical life, Denigration, Terminal, Inexactitude.

**Applied Radiology**- Introduction, radiation, background of radiation, sources, radiation biology, somatic damage, genetic damage, protection from primary and secondary radiation, Principles of X-ray production, Applied principles of radio therapy and after care.

**Roentgenographs Techniques**- Intra oral: Extra oral roentgenography, Methods of localization digital radiology and ultra sound, Normal anatomical landmarks of teeth and jaws in radiograms, temporomandibular joint radiograms, neck radiograms.

**Applied Medicine**-Systemic diseases and its influence on general and oral health. Medical emergencies in the dental offices - Prevention, preparation, medico legal consideration, unconsciousness, respiratory distress, altered consciousness, seizures, drug related emergencies, chest pain, cardiac arrest,

premedication, and management of ambulatory patients, resuscitation, applied psychiatry, child, adult and senior citizens. Assessment of case, premedication, inhibition, monitoring, extubation, complication assist in O.T. for anesthesia.

***Applied Surgery & Anesthesia***-General principles of surgery, wound healing, incision wound care, hospital care, control of hemorrhage, electrolyte balance. Common bandages, sutures, splints, shifting of critically ill patients, prophylactic therapy, bone surgeries, grafts, etc, surgical techniques, nursing assistance, anesthetic assistance.

Principles in speech therapy, surgical and radiological craniofacial oncology, applied surgical ENT and ophthalmology.

Plastic surgery - Applied understanding and assistance in programmes of plastic surgery for prosthodontics therapy.

### ***Applied Dental Material***

- All materials used for treatment of craniofacial disorders - Clinical, treatment, and laboratory materials, Associated materials, Technical consideration, shelf life, storage, manipulations, sterilization, and waste management.
- Students shall be trained and practiced for all clinical procedures with an advanced knowledge of theory of principles, concepts and techniques of various honorably accepted methods and materials for Prosthodontics, treatment modalities includes honorable accepted methods of diagnosis, treatment plan, records maintenance, and treatment and laboratory procedures and after care and preventive.
- Understanding all applied aspects for achieving physical, psychological well being of the patients for control of diseases and / or treatment related syndromes with the patient satisfaction and restoring function of Cranio mandibular system for a quality life of a patient
- The theoretical knowledge and clinical practice shall include principles involved for support, retention, stability, esthetics, phonation, mastication, occlusion, behavioral, psychological, preventive and social aspects of science of Prosthodontics including Crown & Bridge and Implantology
- Theoretical knowledge and clinical practice shall include knowledge for laboratory practice and material science. Students shall acquire knowledge and practice of history taking, systemic and oro and Craniofacial region and diagnosis and treatment plan and prognosis record maintaining. A comprehensive rehabilitation concept with pre prosthetic treatment plan including surgical Reevaluation and prosthodontic treatment plan, impressions, jaw relations, utility of face bow and articulators, selection and positioning of teeth for retention, stability, esthetics, phonation and psychological comfort. Fit and insertion and instruction for patients after care and preventive Prosthodontics, management of failed restorations.
- TMJ syndromes, occlusion rehabilitation and craniofacial esthetics. State of the art clinical methods and materials for implants supported extra oral and intra oral prosthesis.

- Student shall acquire knowledge of testing biological, mechanical and other physical property of all material used for the clinical and laboratory procedures in prosthodontic therapy.
- Students shall acquire full knowledge and practice Equipments, instruments, materials, and laboratory procedures at a higher competence with accepted methods.
- All clinical practice shall involve personal and social obligation of cross infection control, sterilization and waste management.

### ***I. Removable Prosthodontics and Implants***

- a. Prosthodontic treatment for completely edentulous patients - Complete denture, immediate complete denture, single complete denture, tooth supported complete denture, Implant supported Prosthesis for completely edentulous
- b. Prosthodontic treatment for partially edentulous patients: - Clasp-retained partial dentures, intra coronal and extra coronal precision attachments retained partial dentures, maxillofacial prosthesis.

***Prosthodontic treatment for edentulous patients:*** -Complete Dentures and Implant supported Prosthesis for Edentulous in both the arches

***Complete Denture Prosthesis*** - Definitions, terminology, G.P.T., Boucher's clinical dental terminology.

***Scope of Prosthodontics*** - the Cranio Mandibular system and its functions, the reasons for loss of teeth and methods of restorations, Infection control, cross infection barrier - clinical and laboratory and hospital and lab waste management

- a) Edentulous Predicament, Biomechanics of the edentulous state, Support mechanism for the natural dentition and complete dentures, Biological considerations, Functional and Para functional considerations, Esthetic, behavioral and adaptive responses, Temporomandibular joints changes.
- b) Effects of aging of edentulous patients - aging population, distribution and edentulism in old age, impact of age on edentulous mouth - Mucosa, Bone, saliva, jaw movements in old age, taste and smell, nutrition, aging, skin and teeth, concern for personal appearance in old age
- c) Sequelae caused by wearing complete denture - the denture in the oral environment - Mucosal reactions, altered taste perception, burning mouth syndrome, gagging, residual ridge reduction, denture stomatitis, flabby ridge, denture irritation hyperplasia, traumatic Ulcers, Oral cancer in denture wearers, nutritional deficiencies, masticatory ability and performance, nutritional status and masticatory functions.
- d) Temporomandibular disorders in edentulous patients - Epidemiology, etiology and management, Pharmacotherapy, Physical modalities, and Bio-behavioral modalities.

- e) Nutrition Care for the denture wearing patient - Impact of dental status of food intake, Gastrointestinal functions, nutritional needs and status of older adults, Calcium and bone health, vitamin and herbal supplementation, dietary counseling and risk factor for malnutrition in patients with dentures and when teeth are extracted.
- f) Preparing patient for complete denture patients - Diagnosis and treatment planning for edentulous and partially edentulous patients - familiarity with patients, principles of perception, health questionnaires and identification data, problem identification, prognosis and treatment planning - contributing history - patient's history, social information, medical status - systemic status with special reference to debilitating diseases, diseases of the joint, cardiovascular, disease of the skin, neurological disorders, oral malignancies, climacteric, use of drugs, mental health – mental attitude, psychological changes, adaptability, geriatric changes - physiologic, pathological, pathological and intra oral changes. Intra oral health – mucose membrane, alveolar ridges, palate and vestibular sulcus and dental health.

Data collection and recording, visual observation, radiography, palpation, measurement - sulci or fossae, extra oral measurement is the vertical dimension of occlusion, diagnostic casts.

**Specific observations** - existing dentures, soft tissue health, hard tissue health - teeth, bone.

**Biomechanical considerations** - jaw relations, border tissues, saliva, muscular development - muscle tones, neuromuscular co-ordination, tongue, cheek and lips.

Interpreting diagnostic findings and treatment planning

- g) Pre prosthetic surgery - Improving the patients denture bearing areas and " relations: - non surgical methods - rest for the denture supporting tissues, Om! correction of the old prosthesis, good nutrition, conditioning of the patients musculature, surgical methods - Correction of conditions, that preclude optimal prosthetic function - hyperplastic ridge - epulis fissuratum and papillomatosis, frenular attachments and pendulous maxillary tuberosities, ridge augmentation, maxillary and Mandibular oral implants, corrections of congenital deformities, discrepancies in jaw size, relief of pressure on the mental foramen, enlargement of denture bearing areas, vestibuloplasty, ridge augmentation, replacement of tooth roots with Osseo integrated denture implants.
- h) Immediate Denture - Advantages, disadvantages, contra indication, diagnosis treatment plan and prognosis, Explanation to the patient, Oral examinations, examination of existing prosthesis, tooth modification, prognosis, referrals / adjunctive care, oral prophylaxis and other treatment needs.

First extraction / surgical visit, preliminary impressions and diagnostic casts, management of loose teeth, custom trays, final impressions and final casts two tray or sectional custom impression tray, location of posterior limit and jaw relation records, setting the denture teeth / verifying jaw relations and the patient try in, laboratory phase, setting of anterior teeth, Wax contouring, flasking and boil out, processing and finishing, surgical templates, surgery and immediate denture insertion, post operative care and patient instructions, subsequent service for the patient on the immediate denture, over denture tooth attachments, implants or implant attachments.

- i) Over dentures (tooth supported complete dentures) - indications and treatment planning, advantages and disadvantages, selection of abutment teeth, loss of abutment teeth, tooth supported complete dentures. Non-coping abutments, abutment with copings, abutments with attachments, submerged vital roots, preparations of the retained teeth.
- j) Single Dentures: Single Mandibular denture to oppose natural maxillary teeth, single complete maxillary denture to oppose natural Mandibular teeth to oppose a partially edentulous Mandibular arch with fixed prosthesis, partially edentulous Mandibular arch with removable partial dentures. Opposing existing complete dentures, preservation of the residual alveolar ridge, necessity for retaining maxillary teeth and mental trauma.
- k) Art of communication in the management of the edentulous predicament - Communication - scope, a model of communication, why communication . important, what are the elements of effective communications, special significance of doctor / patient communication, doctor behavior, The iatrosedative (doctor & act of making calm) recognizing and acknowledging the problem, exploring and identifying the problem, interpreting and explaining the problem, offering a solution to the problem for mobilize their resources to operate most efficient way, recognizing and acknowledging the problem, interpreting and explaining the problem, offering a solution to the problem.
- l) Materials prescribed in the management of edentulous patients - Denture base materials, General requirements of biomaterials for edentulous patients, requirement of an ideal denture base, chemical composition of denture base resins, materials used in the fabrication of prosthetic denture teeth, requirement of prosthetic denture teeth, denture lining materials and tissue conditioners, cast metal alloys as denture, bases - base metal alloys.
- m) Articulators - Classification, selection, limitations, precision, accuracy and sensitivity, and Functional activities of the lower member of the articulator and uses,
- n) Fabrications of complete dentures - complete denture impressions - muscles of facial expressions and anatomical landmarks, support, retention, stability, aims and objectives - preservation, support, stability, aesthetics, and retention. Impression materials and techniques - need of 2 impressions the preliminary impression and final impression.

Developing an analogue / substitute for the maxillary denture bearing area -anatomy of supporting structures - mucous membrane, hard palate, residual ridge, shape of the supporting structure and factors that influence the form and size of the supporting bones, incisive foramen, maxillary tuberosity, sharp spiny process, torus palatinus, Anatomy of peripheral or limiting structures, labial vestibule, Buccal vestibule, vibrating line, preliminary and final impressions, impression making, custom tray and refining the custom tray, preparing the tray to secure the final impression, making the final impression, boxing impression and making the casts

Developing an analogue / substitute for the Mandibular denture bearing area-Mandible - anatomy of supporting structure, crest of the residual ridge, the Buccal shelf, shape of supporting structure, mylohyoid ridge, mental foramen, genial tubercles, torus mandibularis, Anatomy of peripheral or limiting structure - labial vestibule, Buccal vestibule, lingual border, mylohyoid muscle, retromylohyoid fossa, sublingual gland region, alveolingual sulcus, Mandibular impressions - preliminary impressions, custom tray, refining, preparing the tray\, final impressions.

- o) Mandibular movements, Maxillo mandibular relation and concepts of occlusion - Gnathology, identification of shape and location of arch form - Mandibular and maxillary, occlusion rim, level of occlusal plane and recording of trail denture base, tests to determine vertical dimension of occlusion, interocclusal, centric relation records, Biological and clinical considerations in making jaw relation records and transferring records from the patients to the articulator, Recording of Mandibular movements - influence of opposing tooth contacts, Temporomandibular joint, muscular involvements, neuromuscular regulation of Mandibular motion, the envelope of motion, rest position, Maxillo - Mandibular relations - the centric, eccentric, physiologic rest position, vertical dimension, occlusion, recording methods - mechanical, physiological, Determining the horizontal jaw relation - Functional graphics, tactile or interocclusal check record method, Orientation / sagittal relation records, Arbitrary / Hinge axis and face bow record, significance and requirement, principles and biological considerations and securing on articulators.
- p) Selecting and arranging artificial teeth and occlusion for the edentulous patient - anterior tooth selection, posterior tooth selection, and principles in arrangement of teeth, and factors governing position of teeth - horizontal, vertical. The inclinations and arrangement of teeth for aesthetics, phonetics and mechanics -to concept of occlusion.
- q) The Try in - verifying vertical dimension, centric relation, establishment of posterior palatal seal, creating a facial and functional harmony with anterior teeth, harmony of spaces of individual teeth position, harmony with sex, personality and age of the patient, co-relating aesthetics and incisal guidance.
- r) Speech considerations with complete dentures - speech production - structural and functional demands, neuropsychological background, speech production and the roll of teeth and other oral structures - bilabial sounds, labiodentals sounds, linguodental sounds, linguoalveolar sound, articulatoric characteristics, acoustic

characteristics, auditory characteristics, linguopalatal and linguoalveolar sounds, speech analysis and prosthetic considerations.

- s) Waxing contouring and processing the dentures their fit and insertion and after care - laboratory procedure - wax contouring, flasking and processing, laboratory remount procedures and selective, finishing and polishing. Critiquing the finished prosthesis - doctors evaluation, patients evaluation, friends evaluation, elimination of basal surface errors, errors in occlusion, interocclusal records for remounting procedures - verifying centric relation, eliminating occlusal errors, special instructions to the patient - appearance with new denture, mastication with new dentures, speaking with new dentures, speaking with new dentures, oral hygiene with dentures, preserving of residual ridges and educational material for patients, maintaining the comfort and health of the oral cavity in the rehabilitated edentulous patients. Twenty-four hours oral examination and treatment and preventive Prosthodontic - periodontic recall for oral examination 3 to 4 months intervals and yearly intervals.
- t) Implant supported Prosthesis for partially edentulous patients - Science of Osseo integration, clinical protocol for treatment with implant supported over dentures, managing problems and complications, implant Prosthodontics for edentulous patients: current and future directions.
- u) Implant supported prosthesis for partially edentulous patients - Clinical and laboratory protocol: Implant supported prosthesis, managing problems and implications.
  - Introduction and Historical Review
  - Biological, clinical and surgical aspects of oral implants
  - Diagnosis and treatment planning
  - Radiological interpretation for selection of fixtures
  - Splints for guidance for surgical placement of fixtures
  - Intra oral plastic surgery Guided bone and Tissue generation consideration for implants fixture. Implants supported prosthesis for complete edentulism and partial edentulism
  - Occlusion for implants support prosthesis.
  - Peri-implant tissue and Management
  - Peri-implant and management
  - Maintenance and after care
  - Management of failed restoration.
  - Work authorization for implant supported prosthesis - definitive instructions, legal aspects, delineation of responsibility.

***Prosthodontic treatment for partially edentulous patients - Removable partial Prosthodontics -***

- a. Scope, definition and terminology, Classification of partially edentulous arches - requirements of an acceptable methods of classification, Kennedy's classification, Applegate's rules for applying the Kennedy classification.
- b. Components of RPD - major connector - mandibular and maxillary, minor connectors, design, functions, form and location of major and minor connectors, tissue stops, finishing lines, reaction of tissue to metallic coverage.

**Rest and rest seats** - from of the Occlusal rest and rest seat, interproximal Occlusal rest seats, internal Occlusal rests, possible movements of partial dentures, support for rests, lingual rests on canines and incisor teeth, incisal rest and rest seat.

**Direct retainer-** Internal attachment, extracoronal direct retainer, relative uniformity of retention, flexibility of clasp arms, stabilizing - reciprocal clasp are, criteria for selecting a given clasp design, the basic principles of clasp design, circumferential clasp, bar clasp, combination clasp and other type of retainers.

**Indirect Retainer** - denture rotation about an axis, factors influencing effectiveness of indirect retainers, forms of indirect retainers, auxiliary Occlusal rest, canine extensions from Occlusal rests, canine rests, continuous bar retainers and linguoplates, modification areas, rugae support, direct - indirect retention.

Principles of removable partial Denture design - bio mechanic considerations, and the factors Influence after mouth preparations - Occlusal relationship of remaining teeth, orientation of Occlusal plane, available space for restoration, arch integrity, tooth morphology, response of oral structure to previous stress, periodontal conditions, abutment support, tooth supported and tooth and tissue supported, need for indirect retention, clasp design, need for rebasing, secondary impression, need for abutment tooth modification, type of major connector, type of teeth selection, patients past 'experience, method of replacing single teeth or missing anterior teeth.

Difference between tooth supported and tissue supported partial dentures, essential of partial denture design, components of partial denture design, tooth support, ridge support, stabilizing components, guiding planes, use of splint barfor denture support, internal clip attachments, overlay abutment as support for a denture base, use of a component partial to gain support.

- c. Education of patient
- d. Diagnosis and treatment planning
- e. Design, treatment sequencing and mouth preparation
- f. Surveying - Description of dental surveyor, purposes of surveyor procedure of survey, Aims and objectives in surveying of diagnostic cast and master cast, Final path of placement, factors that determine path of placement and removal, Recording relation of cast to surveyor, measuring retention, Blocking of master cast - paralleled blockout, shaped blockout, arbitrary blockout and relief.
- g. Diagnosis and treatment planning - Infection control and cross infection barriers -clinical and laboratory and hospital and lab waste management, Objectives of prosthodontic treatment, Records, systemic evaluation, Oral examination, preparation of diagnostic cast, interpretation of examination data, radiographic interpretation, periodontal considerations, caries

activity, prospective surgical preparation, endodontic treatment, analysis of occlusal factors, fixed restorations, orthodontic treatment, need for determining the design of components, impression procedures and occlusion, need for reshaping remaining teeth, reduction of unfavorable tooth contours, differential diagnosis: fixed or removable partial dentures, choice between complete denture and removable partial dentures, choice of materials.

- h. Preparation of Mouth for removable partial dentures - Oral surgical preparation, conditioning of abused and irritated tissues, periodontal preparation - objectives of periodontal therapy, periodontal diagnosis, control therapy, periodontal surgery.
- i. Preparation of Abutment teeth - Classification of abutment teeth, sequence of abutment preparations on sound enamel or existing restorations, conservative restoration using crowns, splinting abutment teeth, utilization, temporary crowns to be used as abutment.
- j. Impression Materials and Procedures for Removable Partial Dentures - Rigid materials, thermoplastic materials, Elastic materials, Impressions of the partially edentulous arch, Tooth supported, tooth tissue supported, Individual impression trays.
- k. Support for the Distal Extension Denture Base - Distal extension removable partial denture, Factors influencing the support of distal extension base, Methods for obtaining functional support for the distal extension base.
- l. Laboratory Procedures - Duplicating a stone case, Waxing the partial denture frame work, Anatomic replica patterns, Spruing, investing, burnout, casting and finishing of the partial denture framework, making record bases, occlusion rims, making a stone occlusal template from a functional occlusal record, arranging posterior teeth to an opposing cast or template, types of anterior teeth, waxing and investing tinW partial denture before processing acrylic resin bases, processing the denture, remounting and occlusal correction to an occlusal template, polishing the denture.
- m. Initial placement, adjustment and servicing of the removable partial denture - adjustments to bearing surfaces of denture framework, adjustment of occlusion in harmony with natural and artificial dentition, instructions to the patient, follow - up services
- n. Relining and Rebased the removable partial denture - Relining tooth supported dentures bases, relining distal extension denture bases, methods of reestablishing occlusion on a relined partial denture.
- o. Repairs and additions to removable partial dentures - Broken clasp arms, fractured occlusal rests, distortion or breakage of other components - major and minor connectors, loss of a tooth or teeth not involved in the support or retention of the restoration, loss of an abutment tooth

necessitating its replacement and making a new direct retainer, Other types of repairs, Repair by soldering.

- p. Removable partial denture considerations in maxillofacial prosthetics - Maxillofacial prosthetics, intra oral prosthesis, design considerations, maxillary prosthesis. Obturators, speech aids, palatal lifts, palatal augmentations, mandibular prosthesis, treatment planning, framework design, class I resection, Class II resection, mandibular flange prosthesis, jaw relation record
- q. Management of failed restorations, work authorization.

## ***II. Maxillofacial Rehabilitation:***

Scope, terminology, definitions, cross infection control and hospital waste management, work authorization.

Behavioral and psychological issues in Head and neck cancer, Psychodynamic interactions - clinician and patient - Cancer Chemotherapy: Oral Manifestations, Complications, and management, Radiation therapy of head and neck tumors: Oral effects, Dental manifestations and dental treatment: Etiology, treatment and rehabilitation (restoration)- Acquired defect of the mandible, acquired defects of hard palate, soft palate, clinical management of edentulous and partially edentulous maxillectomy patients, Facial defects, Restoration of speech, Velopharyngeal function, cleft lip and palate, cranial implants, maxillofacial trauma, Lip and cheek support prosthesis, Laryngectomy aids, Obstructive sleep apnoea, Tongue prosthesis, Esophageal prosthesis, Vaginal radiation carrier, Burn stents, Nasal stents, Auditory inserts, trismus appliances, mouth controlled devices for assisting the handicapped, custom prosthesis for lagophthalmos of the eye. Osseo integrated supported facial and maxillofacial prosthesis. Resin bonding for maxillofacial prosthesis, Implant rehabilitation of the mandible compromise by radiotherapy, Craniofacial Osseo integration, Prosthodontic treatment, Material and laboratory procedures for maxillofacial prosthesis.

## ***III. Occlusion***

### ***Evaluation, Diagnosis and Treatment of Occlusal Problems***

Scope, definition, terminology, optimum oral health, anatomic harmony, functional harmony, occlusal stability, causes of deterioration of dental and oral health, Anatomical, physiological, neuro - muscular, psychological, considerations of teeth, muscles of mastication, temporomandibular joint, intra oral and extra oral and facial musculatures, the functions of Cranio mandibular system.

Occlusal therapy, the stomatognathic system, centric relation, vertical dimension, the neutral zone, the occlusal plane, differential diagnosis of temporomandibular disorders, understanding and diagnosing intra articular problems, relating treatment to diagnosis of internal derangements of TMJ, Occlusal splints, Selecting instruments for occlusal diagnosis and treatment, mounting casts, Pankey-mann-schuyler philosophy of complete occlusal rehabilitation, long centric, anterior guidance, restoring lower anterior teeth, restoring upper anterior teeth, determining the type of posterior occlusal contours, methods for determining the plane of occlusion, restoring lower posterior teeth, restoring upper posterior teeth, functionally generated path techniques for recording border

movements intra orally, occlusal equilibration, Bruxism, Procedural steps in restoring occlusions, requirements for occlusal stability, solving occlusal problems through programmed treatment planning, splinting, solving - occlusal wear problems, deep overbite problems, anterior overjet problems, anterior open bite problems. Treating - end to end occlusion, splayed anterior teeth, cross bite patient, Crowded, irregular, or interlocking anterior bite, using Cephalometric for occlusal analysis, solving severe arch malrelationship problems, transcranial radiography, postoperative care of occlusal therapy.

#### ***IV. Fixed Prosthodontics***

Scope, definitions and terminology, classification and principles, design, mechanical and biological considerations of components - Retainers, connectors, pontics, work authorization.

- ***Diagnosis and treatment planning*** - patients history and interview, patients desires
- and expectations and needs, systemic and emotional health, clinical examinations -head and neck, oral - teeth, occlusal and periodontal, Preparation of diagnostic cast, radiographic interpretation, Aesthetics, endodontics considerations, abutment selection - bone support, root proximities and inclinations, selections of abutments, for cantilever, pier abutments, splinting, available tooth structures and crown morphology, TMJ and muscles mastication and comprehensive planning and prognosis.
- ***Management of carious teeth - caries*** in aged, caries control, removing infected carious materials, protection of pulp, reconstruction measure for compromising teeth - retentive pins, horizontal slots, retention grooves, prevention of caries, diet, prevention of root caries and vaccine for caries.
- ***Periodontal considerations*** - attachment units, ligaments, gingivitis, periodontal Microbiological aspect of periodontal diseases, marginal lesion, occlusal trauma, periodontal pockets attached gingiva, interdental papilla, gingival embrasures, radiographic interpretations of Periodontia, intraoral plastics, periodontal splinting -Fixed prosthodontics with periodontally compromised dentitions, placement of margin restorations.
- ***Biomechanical principle of tooth preparations*** - individual tooth preparations - Complete metal Crowns - P.F.C., All porcelain - Cerestore crowns, dicor crowns, incerem etc. porcelain jacket crowns partial 3/4, half and half, ridiculer, telescopic, telescopic, pin - hole, pin - ledge, laminates, inlays, onlays and preparations for restoration of teeth - amalgam, glass ionomer and composite resins, Resin Bond retainer, Gingival marginal preparations - Design, material selection, and biological and mechanical considerations - intracoronar retainer and precision attachments -custom made and ready made
- ***Isolation and fluid control*** - Rubber dam applications, tissue dilation - soft tissue management for cast restoration, impression materials and techniques, provisional restoration, interocclusal records, laboratory support for fixed Prosthodontics' Occlusion, Occlusal equilibration, articulators, recording and transferring of occlusal relations, cementing of restoration.

- *Resins, Gold and gold alloys, glass ionomer, restorations.*
- *Restorations of endodontically treated teeth, Stomatognathic Dysfunction and managements*
- *Management of failed restorations*
- *Osseo integrated supported fixed Prosthodontics* - Osseo integrated supported and tooth supported fixed Prosthodontics

#### ***V. TMJ - Temporomandibular joint dysfunction - Scope, definitions, and terminology***

Temporomandibular joint and its function, Orofacial pain, and pain from the temporomandibular joint region, temporomandibular joint dysfunction, temporomandibular joint sounds, temporomandibular joint disorders

Anatomy related, trauma, disc displacement, Osteoarthritis/Osteoarthritis, Hyper mobility and dislocation, infectious arthritis, inflammatory diseases, Eagle's syndrome (Styloid -stylohyoid syndrome), Synovial chondromatosis, Osteochondritis disease, Osteonecrosis, Nerve entrapment process, Growth changes, Tumors, Radiographic imaging.

- Etiology, diagnosis and cranio mandibular pain, differential diagnosis and management, orofacial pain - pain from teeth, pulp, dentin, muscle pain, TMJ pain -psycho logic, physiologic - endogenous control, acupuncture analgesia, Placebo effects on analgesia, Trigeminal neuralgia, Temporal arteritis
- Occlusal splint therapy - construction and fitting of occlusal splints, management of occlusal splints, therapeutic effects of occlusal splints, occlusal splints and general muscles performance, TMJ joint uploading and anterior repositioning appliances, use and care of occlusal splints.
- Occlusal adjustment procedures - Reversible - occlusal stabilization splints and physical therapies, jaw exercises, jaw manipulation and other physiotherapy or irreversible therapy - occlusal repositioning appliances, orthodontic treatment, Orthognathic surgery, fixed and removable prosthodontic treatment and occlusal adjustment, removable prosthodontic treatment and occlusal adjustment, Indication for occlusal adjustment, special nature of orofacial pain, Indication for occlusal adjustment, special nature of orofacial pain, Psychopathological considerations, occlusal adjustment philosophies, mandibular position, excursive guidance,, occlusal contact scheme, goals of occlusal adjustment, significance of a slide in centric, Preclinical procedures, clinical procedures for occlusal adjustment.

## **VI. Aesthetic**

**Scope, definitions** – Morpho psychology and esthetics, structural esthetic rules - facial components, dental components, gingival components physical components. Esthetics and its relationship to function - Crown morphology, physiology of occlusion, mastication, occlusal loading and clinical aspect in bio esthetic aspects, Physical and physiologic characteristic and muscular activities of facial muscle, perioral anatomy and muscle retaining exercises Smile - classification and smile components, smile design, esthetic restoration of smile, Esthetic management of the dentogingival unit, intraoral plastic for management of gingival contours, and ridge contours, Periodontal esthetics, Restorations - Tooth colored restorative materials, the clinical and laboratory aspects, marginal fit anatomy, inclinations, form, size, shape, color, embrasures, contact point.

### **Teaching and learning activities:**

All the candidates registered for MDS course shall pursue the course for a period of three years as full - time students. During this period each student shall take part actively in learning and teaching activities designed by the Institution/ University. The following teaching and learning activities in each speciality.

Prosthodontic treatment should be practiced by developing skills by teaching various and more number of patients to establish skill for diagnose and treatment and aftercare with bio-mechanical, biological, bio-esthetics, Bio-phonetics and all treatment should be carried out in more number for developing clinical skill

- 1) **Lectures:** There shall be didactic lectures both in the speciality and in the allied fields. The postgraduate departments should encourage the guest lectures in the required areas to strengthen the training programmes. It is also desirable to have certain integrated lectures by multidisciplinary teams on selected topics.
- 2) **Journal club:** The journal review meetings shall be held at least once a week. All trainees are expected to participate actively and enter relevant details in logbook. The trainee should make presentations from the allotted journal of selected articles at least 5 times in a year.
- 3) **Seminars:** The seminars shall be held at least twice a week in the department, all trainees associated with postgraduate teachers are expected to participate actively and enter relevant details in logbook. Each trainee shall make at least 5-seminar presentation in each year.
- 4) **Symposium:** It is recommended to hold symposium on topics covering multiple disciplines one in each academic year.
- 5) **Workshops:** It is recommended to hold workshops on topics covering multiple disciplines one in each academic year.

- 6) **Clinical Postings:** Each trainee shall work in the clinics on regular basis to acquire adequate professional skills and competency in managing various cases to be treated by a specialist
- 7) **Clinico Pathological Conference:** The Clinico pathological conferences should be held once in a month involving the faculties of oral biology, oral medicine and radiology, oral pathology, oral surgery, period ontology, endodontia and concerned clinical department. The trainees should be encouraged to present the clinical details, ft radiological and histo-pathological interpretations and participation in the discussions, j
- 8) **Interdepartmental Meetings:** To bring in more integration among various specialities there shall be interdepartmental meeting chaired by the dean with all heads of postgraduate departments at least once a month.
- 9) **Teaching skills:** All the trainees shall be encouraged to take part in undergraduate teaching programmes either in the form of lectures or group discussions
- 10) **Evaluation skills:** All the trainees shall be encouraged to take part evaluating the skills and knowledge in clinical laboratory practice including theory by formulating question banks and model answers.
- 11) **Continuing dental education programmes:** Each Postgraduate department shall organize these programmes on regular basis involving the/Other institutions. The trainees shall also be encouraged to attend such programmes conducted elsewhere.
- 12) **Conferences/Workshops/Advanced courses:** The trainees shall be encouraged not only to attend conference/workshops/advance courses but also to present at least two papers at state/national speciality meeting during their training period.
- 13) **Rotation and posting in other departments:** To bring in more integration between the speciality and allied fields each post graduate department shall workout a programme to rotate the trainees in related disciplines and Craniofacial and maxillofacial ward.
- 14) **Dissertation:** Trainees shall prepare a dissertation based on the clinical or laboratory experimental work or any other study conducted by them under the supervision of the post graduate guide.

## ***I YEAR M.D.S***

- Theoretical exposure of all applied sciences of study
- Clinical and non-clinical exercises involved in Prosthodontic therapy for assessment and acquiring higher competence.
- Commencement of Library Assignment within six months.
- Acquaintance with books, journals and referrals To acquire knowledge of list of published books, journal and website for the purpose of gaining knowledge and reference - in the fields of Prosthodontics including Crown & bridge and implantology
- Acquire knowledge of instruments, equipment, and research tools in Prosthodontics.
- To acquire knowledge of Dental Material Science - Biological and biomechanical, bio-esthetics knowledge of using in laboratory and clinics including testing methods.
- Participation and presentation in seminars, didactics lectures
- Evaluation - Internal Assessment examinations on Applied subjects

## ***II YEAR M.D.S.***

- Acquired confidence in obtaining various phases and techniques for provide Prosthodontic therapy.
- Acquiring confidence by clinical practice with sufficient numbers of patient requiring tooth and tooth surface restorations.
- Adequate number of complete denture prosthesis and techniques higher clinical approach by utilizing in semi-adjustable articulators, face bow and graphic tracing.
- Understanding the use of the dental surveyor and its application in diagnosis and treatment plan in R.P.D.
- Adequate numbers of R.P.D. covering all clinical partially edentulous situation
- Adequate number of Crowns, Inlays, laminates F.P.D. covering all clinically, partial edentulous situation.
- Selection of cases and principles in treatment of edentulous patients, partial or complete by implant supported prosthesis.
- Treating single edentulous situation by implant support.
- Diagnosis and treatment planning.
- 1st stage and II nd stage implant surgery
- Understanding the maxillofacial Prosthodontics
- Treating craniofacial defects
- Management of orofacial esthetics
- Prosthetic management of TMJ syndrome
- Occlusal rehabilitation
- Maintenance and management of filled restoration
- Prosthodontic Management of patient with psychogenic origin.
- Practice of child and geriatric prosthodontics
- Participation and presentation in seminars, didactics lectures
- Evaluation - Internal Assessment examinations

### **III YEAR M.D.S**

- Clinical and laboratory practice continued from II<sup>nd</sup> year
- Occlusal equilibration procedures - Fabrication of stabilizing splint for parafunctional disorders, occlusal disorders and TMJ functions.
- Practice of dental, oral and facial esthetics
- The clinical practice of all aspects of Prosthodontic therapy for elderly patients.
- Implants Prosthodontics - Rehabilitation of Partial Edentulous, Complete edentulism and for craniofacial rehabilitation
- Failures in all aspects of Prosthodontics and its management and after care
- Team management for esthetics, TMJ syndrome and Maxillofacial and Craniofacial Prosthodontics
- Management of Prosthodontics emergencies, resuscitation.
- Candidate should complete the course by attending by large number and variety of patients to master the prosthodontic therapy. This includes the practice management, examinations, treatment planning, communication with patients, clinical and laboratory techniques materials and instrumentation requiring different aspects of prosthodontic therapy, Tooth and Tooth surface restoration, Restoration of root treated teeth, splints for periodontal rehabilitations and fractured jaws, complete dentures, R.P.D. FPD. Immediate dentures over dentures implant supported prosthesis, maxillofacial and body prosthesis, occlusal rehabilitation.
- Prosthetic management of TMJ syndrome
- Management of failed restorations
- Complete and submit Library Assignment 6 months prior to examination.
- Candidates should acquire complete theoretical and clinical knowledge through seminars, symposium, workshops and reading.
- Participation and presentation in seminars, didactic lectures.
- Evaluation - Internal Assessment examinations three months before University examinations.

#### ***Prosthodontic Treatment Modalities***

1. Diagnosis and treatment plan in prosthodontics
2. Tooth and tooth surface restorations
  - Fillings
  - Veneers - composites and ceramics
  - Inlays- composite, ceramic and alloys
  - Onlay - composite, ceramic and alloys

#### ***Management of failed restoration***

- 3, Partial crowns - 3/4<sup>th</sup> , 4/5<sup>th</sup> & 7/8<sup>h</sup> crowns
  - Pin-ledge
  - Radicular crowns
  - Full crowns

#### ***Management of failed restorations***

## ***PARTIAL***

Tooth supported

Tissue Supported

Tooth and tissue supported

Implant supported

Tooth and implant supported

Root supported

## ***COMPLETE***

Fixed partial denture

Interim partial denture

Intermediate partial denture

Cast partial denture  
Precision attachment

Cement retained  
Screw retained  
Clip attachment

Screw retained  
Cement retained

Dowel and core  
Pin retained

Overdenture

Complete Denture  
Immediate denture  
Immediate complete Denture

Overdenture

Bar attachment  
Ball attachment

Overdenture

## ***Management of failed restorations***

- Distal extension prosthesis
  - Tooth borne prosthesis
  - Combination distal extension and tooth borne prosthesis
  - Retainers for partial dentures - intra coronal, extra coronal or Para coronal intraproximal with cantilevered pontics
- Attached to cantilevered pontics
  - Pontics between bridge retainers
  - Attached to root coping
  - Spring loaded bolts or plungers
  - Ring springs
  - Bolts
  - Rubber device
  - Slide cap attachments
  - Cones crown
  - Hybrid telescope
  - Ring telescope
  - Prefabricated cap-post system
- Precision attachments
  - Intra coronal attachments
  - Extra coronal attachments
  - Bar - slide attachments
  - Joints and hinge joint attachments

## ***Management of failed restorations***

### 3. Tooth and tissue defects (Maxillo- facial and Cranio-facial prosthesis)

#### **A. Congenital Defects**

##### a. Cleft lip and palate

#### **Obturator**

- Feeding
  - Surgical
    - Immediate
    - Delayed
  - Interim
  - Definitive
  - implant supported prosthesis
  - b. Pierre Robin Syndrome
  - c. Ectodermal dysplasia
  - d. Hemifacial microsomia
  - e. Anodontia
  - f. Oligodontia
  - g. Malformed teeth
- } ➤ cast partial denture  
implant supported  
dentures complete  
dentures

#### **B. Acquired defects**

- a. Head and neck cancer patients - prosthodontic splints and stents
- b. Restoration of facial defects
  - Auricular prosthesis
  - Nasal prosthesis
  - Orbital prosthesis
  - Craniofacial implants
- c. Midfacial defects
- d. Restoration of maxillofacial trauma
- e. Hemimandibulectomy
- f. Maxillectomy
- g. Lip and cheek support prosthesis
- h. Ocular prosthesis
- i. Speech and Velopharyngeal prosthesis
- j. Laryngectomy aids
- k. Esophageal prosthesis
- l. Nasal stents
- m. Tongue prosthesis
- n. Burn stents
- o. Auditory inserts
- p. Trismus appliances
- q. Prosthesis for lagophthalmos of the eye

#### **Management of failed restorations.**

#### **4. T.MJ and Occlusal disturbances**

- a. Occlusal equilibration
- b. Splints
  - a. Diagnostic
  - b. Repositioners / Deprogrammers
- c. Anterior bite plate
- d. Posterior bite plate
- e. Bite raising appliances
- f. Occlusal rehabilitation
- g. Behavioral and psychological care for the cancer patient

#### **Management of failed restorations**

#### **5. Esthetic/Smile designing**

- a. Laminates / Veneers
- b. Tooth contouring (peg laterals, malformed teeth)
- c. Tooth replacements
- d. Team management

#### **Management of failed restorations**

#### **6. Psychological therapy**

- a. Questionnaires
- b. Charts, papers, photographs
- c. Models
- d. Case reports
- e. Patient counseling
- f. Behavioral modifications
- g- Referrals

#### **7. Geriatric Prosthodontics**

- a. Prosthodontics for the elderly
- b. Behavioral and psychological counseling
- c. Removable Prosthodontics
- d. Fixed Prosthodontics
- e. Implant supported Prosthodontics
- f. Maxillofacial Prosthodontics
- g. Psychological and physiological considerations

#### **Management of failed restorations**

#### **8. Preventive measures**

- a. Diet and nutrition modulation and counseling
- b. Referrals

***The Bench Work Should Be Completed Before The Clinical Work Starts  
During The First Year Of The M.D.S Course***

***I. Complete dentures***

1. Arrangements in adjustable articulator for

- Class I
- Class II
- Class III
- Cross bite

***2. Processing of characterized anatomical denture***

***II. Removable partial denture***

1. Design for Kennedy's Classification (Survey, block out and design)

- a. Class I
- b. Class II
- c. Class III
- d. Class IV

2. Designing of various components of RPD

3. Wax pattern on refractory cast

- a. Class I
- b. Class II
- c. Class III
- d. Class IV

4- Casting and finishing of metal frameworks

- a. class I

5- Acrylisation on metal frameworks for  
Class I

***III. Fixed Partial Denture***

- Preparation of Typhodont teeth/natural teeth
  - FVC for metal
  - Metal crown with porcelain facing
  - *Porcelain jacket crown*
  - Acrylic jacket crown
  - PFM crown
  - 3/4th (canine, premolar and central)
  - 7/8th posterior
  - Proximal half crown
  - Inlay
  - Onlay
  - Laminates

2. Preparation of different die system

3. Fabrication of wax pattern by drop wax build up technique
  - Wax in increments to produce wax coping over dies of tooth preparations on substructures.
  - Wax additive technique
  - 3-unit wax pattern (maxillary and Mandibular)
  - Full mouth
4. Pontic design in wax pattern
  - Ridge lap Sanitary
  - Modified ridge lap
  - Modified sanitary
  - Spheroidal or conical
5. Fabrication of metal framework
  - Full metal bridge for posterior (3 units)
  - Coping for anterior (3 unit)
  - Full metal with acrylic facing
  - Full metal with ceramic facing
  - Adhesive bridge for anterior
  - Coping for metal margin ceramic crown
  - Pin ledge crown
6. Fabrication of crowns
  - Post and core
  - All ceramic crowns with characterized
  - Metal ceramic crowns with characterized
  - Full metal crown
  - Precious metal crown
7. Laminates
  - Composites with characterized
  - Ceramic with characterized
  - Acrylic

#### ***IV. Maxillofacial prosthesis***

1. Eye
2. Ear
3. Nose
4. Face
5. Obturator

#### ***V. Implant supported prosthesis***

1. Step by step procedures - laboratory phase

#### ***VI. Other exercises***

1. Anterior disclusion appliances
2. Occlusal splint

**Essential Skills**

\* Key

O -Washes up and observes.

A- Assists a senior

PA- performs procedure under the direct supervision of a senior specialist

PI- Performs independently

PROCEDURE	CATEGORY			
	O	A	PA	PI
<b>CROWNS</b>				
FVC for metal	1	2	2	10
FVC for ceramic	1	2	2	10
Precious metal crown	1	-	1	1
3/4th crowns (premolars, canines and centrals)	1	-	-	1
7/8th posterior crown	1	-	-	1
Proximal half crown	1	-	-	1
Telescopic crowns	1	-	-	1
Intraradicular crowns (central, lateral, canine, premolar, and molar)	1	-	-	1
Crown for implant supported prosthesis	1		1	1

**FIXED PARTIAL DENTURES**

Cast porcelain(3 unit)	1	-	-	1
Cast metal-precious and non precious (3 unit posterior)	1	-	-	2
Porcelain fused metal (anterior and posterior)	1	1	1	10
Multiple abutment- maxillary and mandibular full arch	1	1	1	1
Adhesive bridge for anterior/ posterior	1	-	1	1
Metal fused to resin anterior FPD	-	-	1	5

Interim provisional restorations (crowns and FPDs)	1	1	1	10
Immediate fixed partial dentures (interim)	1	-	-	1
Implant supported prosthesis	1	-	1	1
Implant - tooth supported prosthesis	1	-	1	1

**REMOVABLE PARTIAL DENTURE**

Provisional partial denture prosthesis	1	1	1	10
Cast removable partial denture (for Kennedy's Applegate classification with modification)	1	1	1	1
Removable bridge with precision attachments and telescopic crowns for anterior and posterior	1	1	2	1
Immediate RPD	1	1	1	5
Partial denture for medically compromised and handicapped patients	1	1	1	1

**COMPLETE DENTURES**

Neurocentric occlusion & characterized prosthesis	-	-	1	5
Anatomic characterized prosthesis (by using semi adjustable articulator)	-	-	1	25

Single dentures	-	-	1	2
Overlay dentures	-	-	1	2
Interim complete dentures as a treatment prosthesis for abused denture supporting tissues	-	-	1	2
Complete denture prosthesis (for abnormal ridge relation, ridge form and ridge size)	-	-	1	2
<b>IMPLANT SUPPORTED COMPLETE PROSTHESIS</b>	-	-	-	-
Implant supported complete prosthesis (maxillary and Mandibular)	-	-	1	1

### **MAXILLOFACIAL PROSTHESIS**

Guiding flange and obturators	-	-	1	1
Speech and palatal lift prosthesis	-	-	1	1
Eye prosthesis	-	-	1	1
Ear prosthesis	-	-	1	1
Nose prosthesis	-	-	1	1
Face prosthesis	-	-	1	1
Hemimaxillectomy	-	-	1	1
Hemimandibulectomy	-	-	1	1
Finger/ hand, foot	-	-	1	1
<b>TMJ SYNDROME MANAGEMENT</b>				
Splints - periodontal, teeth, jaws	-	-	1	1
TMJ supportive and treatment prosthesis	-	-	1	1
Stabilization appliances for maxilla and mandible with freedom to move from IP to CRCP	-	-	-	1
Chrome cobalt and acrylic resin stabilization appliances for modification to accommodate for the irregularities in the dentition				1
Occlusal adjustment and occlusal equilibrium	-	-	1	1
<b>FULL MOUTH REHABILITATION</b>				
Full mouth rehabilitation - occlusion	-	-	1	4
Full mouth rehabilitation - restoration of esthetics and function of stomatognathic system	-		1	4
<b>INTER-DISCIPLINARY TREATMENT MODALITIES</b>				
Inter-disciplinary management - restoration of Oro craniofacial defects for esthetics, phonation, mastication and psychological comforts			1	1
<b>MANAGEMENT OF FAILED RESTORATION</b>				
Tooth and tooth surface restorations	-	-	-	1
Removable prosthesis	-	-	-	1
Crowns and fixed prosthesis				1
Maxillofacial prosthesis	-	-	-	1
Implant supported prosthesis	-	-	-	1
Occlusal rehabilitation and TMJ syndrome	-	-	-	1
Restoration failure of psychogenic origin	-	-	-	1
Restoration failure to age changes	-	-	-	1

## **Scheme of Examination**

### **A. Theory:**

**Total 300 Marks**

Written examination shall consist of four question papers each of three hours duration. Total marks for each paper will be 75. Paper I, II and III shall consist of two long questions carrying 20 marks each and 5 short essay questions carrying 7 marks each. Paper IV will be on Essay. Questions on recent advances may be asked in any or all the papers. Distribution of topics for each paper will be as follows:

Distribution of topics for each paper will be as follows:

**Paper I :** Applied Basic Sciences: Applied Anatomy, embryology, growth and development, Genetics, Immunology, anthropology, Physiology, nutrition & Biochemistry, Pathology & Microbiology, virology, Applied pharmacology, Research Methodology and bio statistics, . Applied Dental anatomy & histology, Oral pathology & oral Microbiology, Adult and geriatric psychology. Applied dental materials.

**Paper II:** Removable Prosthodontics and Implant supported prosthesis (Implantology), Geriatric dentistry and Cranio facial Prosthodontics

**Paper III:** Fixed Prosthodontics, occlusion, TMJ and esthetics.

**Paper IV:** Essay

\*The topics 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 topics is inevitable. Students should be prepared to answer overlapping topics.

### **B. Practical / Clinical Examination: 200 Marks**

Examination shall be for three days. If there are more than 6 candidates, it may be extended for one more day. Each candidate shall be examined for a minimum of three days, six hours per day including viva voce

#### **1. Presentation of treated patients and records during their three year training period. - 25 Marks**

Occlusal rehabilitation	- 8 marks
T.M.J.	- 8 marks
Maxillofacial Prosthesis	- 9 marks

#### **2. Present actual treated patients CD. Prosthesis and Insertion - 90 Marks**

1. Discussion on treatment plan and patient review	-10 marks
2. Tentative jaw relation records	- 5 marks
3. Face Bow - transfer	- 5 marks
4. Transferring it on articulators	- 5 marks
5. Extra oral tracing and securing centric and protrusive/lateral.	- 25 marks

- 6. Transfer in on articulator. - 5 marks
  - 7. Selection of teeth - 5 marks
  - 8. Arrangement of teeth -15 marks
  - 9. Waxedup denture trial -15 marks
- All steps will include chair side, lab and viva voce

**3. Fixed Partial Denture - 50 Marks**

- a. Case discussion and selection of patients for F.P.D. - 5 marks
- b. Abutment preparation isolation and fluid control - 20 marks
- c. Gingival retraction and impressions - 10 marks
- d. Cementation of provisional restoration - 05 marks
- e. Analysis of die preparation and wax pattern - 10 marks

**4. Removable Partial Denture - 35 Marks**

- a. Surveying and designing of partial denture cast. -20 marks
- b. Discussion on components and material selection including occlusal scheme. -15 marks

**C. Viva Voce : Total - 100 Marks**

**I. Viva-Voce examination: 80 marks**

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression, interpretation of data and communication skills. It includes all components of course contents. It includes presentation and discussion on dissertation also. Approximate duration 60 min per candidate.

**II. Pedagogy Exercise: 20 marks**

A topic be given to each candidate in the beginning of clinical examination. He/she is asked to make a presentation on the topic for 8-10 minutes.

# **PERIODONTOLOGY**

## **Objectives**

The following objectives are laid out to achieve the goal of the course

## **Knowledge**

- Discuss historical perspective to advancement in the subject proper and related topics.
- Describe etiology ,pathogenesis ,diagnosis and management of common periodontal diseases with emphasis on Indian population
- Familiarize with the biochemical, microbiologic and immunologic genetic aspects of periodontal pathology
- Describe various preventive periodontal measures
- Describe various treatment modalities of periodontal diseases from historical aspect to currently available ones
- Describe interrelationship between periodontal disease and various systemic conditions
- Describe periodontal hazards due to estrogenic causes and deleterious habits and prevention of it
- Identify rarities in periodontal disease and environmental/ emotional determinates in a given case
- Recognize conditions that may be outside area of his specialty/competence and refer them to an appropriate specialist.
- Decide regarding nonsurgical or surgical management of the case
- Update him by attending course, conferences and seminars relevant to periodontics or by self learning process
- Plan out /carry out research activity both basic and clinical aspects with the aim of publishing his work in scientific journals
- Reach to the public to motivate and educate regarding periodontal disease, its prevention and consequences if not treated
- Plan out epidemiological survey to assess prevalence and incidence of early onset periodontitis in Indian population {region wise}
- Shall develop knowledge ,skill in the science and practice of oral implantology
- Shall develop teaching skill in the field of periodontology and oral implantology
- 

## **Skills**

- Take a proper clinical history, thorough examination intra orally, extra orally, medical history evaluation, advice essential diagnostic procedures and interpret them to come to a reasonable diagnosis.
- Effective motivation and education regarding periodontal disease maintenance after the treatment.
- Perform both nonsurgical and education regarding periodontal disease, maintenance after the treatment.
- Perform both nonsurgical and surgical procedures independently.
- Provide basic life support service [BSL] recognizes the need for and advance life support and does the immediate need for that.

- Human value, ethical practice to communication abilities
- Adopt ethical principles in all aspects of treatment modalities, professional honesty and integrity are to be fostered, develop, adopt ethical principles in all aspects of treatment modalities, professional honesty are to be fostered. Develop communication skills to make awareness regarding periodontal disease. Apply high moral and ethical standards while carrying out human or animal research, be humble, accept the limitations in his knowledge and skill, and ask for help from colleagues when needed, respect patients rights and privileges, including patients right to information and right to seek a second opinion.

### **Attitude**

#### ***Inculcating the ability to diagnose and counsel patients on following aspects:***

- ✓ Basic causes of periodontal diseases
- ✓ Possible risk factors for periodontal diseases that can be prevented and controlled
- ✓ Importance of oral hygiene maintenance
- ✓ Different types of oral hygiene aids
- ✓ Frequency of visiting a periodontist
- ✓ Smoking aggressive periodontitis
- ✓ Systemic and periodontal disease relationship
- ✓ Modes of communication

### **Course contents:**

#### **Paper - I**

##### **Applied Anatomy:**

1. Development of the periodontium
2. Micro and macro structural anatomy and biology of the periodontal tissues.
3. Age changes in the periodontal tissues
4. Anatomy of the periodontium
  - Macroscopic and microscopic anatomy
  - Blood supply of the periodontium
  - Lymphatic system of the periodontium
  - Nerves of the periodontium
5. Temporomandibular joint, maxillae and mandible
6. Nerves of periodontics
7. Tongue, oropharynx
8. Muscles of mastication, facial spaces and regional lymph nodes.
9. Peri implant tissue and osseous integration

##### **Physiology:**

1. Blood
2. Respiratory system-knowledge of the respiratory diseases which are a cause of periodontal diseases [periodontal medicine]

3. Cardiovascular system
  - Blood pressure
  - Normal ecg
  - Shock
4. Endocrinology-hormonal influences on periodontium
5. Gastrointestinal system
  - Salivary secretion-composition, function and regulation
  - Reproductive physiology
  - Hormones-actions and regulations, role in periodontal disease
  - Family planning methods
6. Nervous system
  - Pain pathways
  - taste-taste buds, primary taste sensation and pathways of sensation

### ***Biochemistry:***

1. Basics of carbohydrates, lipids, proteins, vitamins, enzymes and minerals
2. Diet and nutrition and periodontium
3. Biochemical tests and their significance
4. Calcium and phosphorus

### ***Pathology:***

1. Cell structure and metabolism
2. Inflammation and repair, necrosis and degeneration
3. Immunity and hypersensitivity
4. Circulatory disturbances-oedema, hemorrhage, shock, thrombosis, embolism, infarction and hypertension
5. Disturbances of nutrition
6. Diabetes mellitus
7. Cellular growth,differentiation and regulation
8. Lab investigations
9. Blood

### ***Microbiology:***

1. General bacteriology
  - Identification of bacteria
  - Culture media and methods
  - Sterilization and disinfection
2. Immunology and infection
3. Systemic bacteriology with special emphasis on oral microbiology-staphylococci, actinomyces and other filamentous bacteria and actinobacillus actinomycetumcomitans
4. Virology
  - General properties of viruses
  - Herpes, hepatitis, virus, HIV virus
5. Mycology
  - Candidiasis

6. Applied microbiology
7. Diagnostic microbiology and immunology, hospital infections and management

**Pharmacology:**

1. General pharmacology
  - Definitions- pharmacokinetics with clinical applications, routes of administration including local drug delivery in periodontics
  - Adverse drug reactions and drug interactions
2. Detailed pharmacology of
  - Analgesic-opioid and nonopioid
  - Local anaesthetics
  - Hematinics and coagulants, anticoagulants
  - Vit D and calcium preparations
  - Antidiabetic drugs
  - Antihypertensives
  - Steroids
  - Antibiotics
  - Immunosuppressive drugs and their effects on oral tissues
  - Antiepileptic drugs
3. Brief pharmacology, dental use and adverse effects of
  - General anaesthetics
  - Antipsychotics
  - Antidepressants
  - Anxiolytic drugs
  - Sedatives
  - Sedatives antihypertensives
  - Antianginal drugs
  - Diuretics
  - Hormones
  - Pre-anaesthetic medications
4. Drugs used in bronchial asthma, cough
5. Drug therapy of
  - Emergencies
  - Seizures
  - Anaphylaxis
  - Bleeding
  - Shock
  - Diabetic ketoacidosis
  - Acute Addisonian crisis
6. Dental pharmacology
  - Antiseptics
  - Astringents
  - Sialogogues
  - Disclosing agents
  - Antiplaque agents
7. Fluoride pharmacology
8. Drug interactions

### ***Biostatistics:***

- Introduction, definition and branches of biostatistics
- Collection of data, sampling, types, bias and errors
- Compiling data-graphs and charts
- Measures of central tendency [mean, median and mode], standard deviation and variability
- Tests of significance [chi square test, 't' test and Z-test]
- Null hypothesis

### ***PAPER-II***

#### ***Etiopathogenesis:***

1. Classification of periodontal diseases and conditions
2. Epidemiology of gingival and gingival diseases
3. Defense mechanisms of gingiva
4. Periodontal microbiology- bioflim
5. Basic concepts of inflammation and immunity
6. Microbial interactions with the host in the periodontal diseases
7. Pathogenesis of plaque associated periodontal diseases
8. Dental calculus
9. Role of iatrogenic and other local factors
10. Genetic factors associated with periodontal diseases
11. Influence of systemic diseases and disorders of periodontium
12. Role of environmental factors in the etiology of periodontal diseases
13. Stress and periodontal diseases
14. Occlusion and periodontal diseases
15. Smoking and tobacco in the etiology of periodontal diseases
16. Aids and periodontium
17. Periodontal medicine
18. Dentinal hypersensitivity
19. Halitosis

### ***PAPER-III***

Clinical and therapeutics periodontology and oral implantology

*Please Note:*

Clinical periodontology includes gingival diseases, periodontal diseases, periodontal instrumentation, diagnosis, prognosis and treatment of periodontal diseases.

#### ***I] Gingival Diseases***

- Gingival inflammation
- Clinical features of gingivitis
- Gingival enlargement
- Acute gingival infections
- Desquamative gingivitis and oral mucous membrane diseases
- Gingival diseases in the childhood

## ***II] Periodontal Diseases***

- Periodontal pocket
- Bone loss and pattern of bone destruction
- Periodontal response to external forces
- Masticatory system disorders
- Chronic periodontitis
- Aggressive periodontitis
- Necrotizing ulcerative periodontitis
- Interdisciplinary approaches
  - Orthodontic
  - Endodontic
  - Prosthodontic

## ***III] Treatment Of Periodontal Diseases***

### A] History, examination, diagnosis, prognosis and treatment planning

1. Clinical diagnosis
2. Radiographic and other aids in the diagnosis of periodontal diseases
3. Advanced diagnostic techniques
4. Risk assessment
5. Determination of prognosis
6. Treatment plan
7. Rationale for periodontal treatment
8. General principles of anti-infective therapy with special emphasis on infection control in periodontal practice
9. Halitosis and its treatment
10. Bruxism and its treatment

### B] Periodontal Instrumentation

1. Instrumentation
2. Principles of periodontal instrumentation
3. Instruments used in different parts of mouth

### C] Periodontal therapy

1. Preparation of tooth surface
2. Plaque control
3. Anti microbial and other drugs used in periodontal therapy and wasting diseases of teeth
4. Periodontal management of HIV infected patients
5. Occlusal evaluation and therapy in the management of periodontal diseases
6. Role of orthodontics as an adjunct to periodontal therapy
7. Special emphasis on precautions and treatment for medically compromised patients
8. Periodontal splints
9. Management of dentinal hypersensitivity

D] Periodontal surgical phase-special emphasis on drug prescription

1. General principles of periodontal surgeries
2. Surgical anatomy of periodontium and related structures
3. Gingival curettage
4. Gingivectomy technique
5. Treatment of gingival enlargements
6. Periodontal flap
7. Osseous surgery [resective and regenerative]
8. Furcation; problem and its management
9. The periodontics-endodontic continuum
10. Periodontal plastic and esthetic surgery
11. Recent advances in surgical techniques

E] Future directions and controversial questions in periodontal therapy

1. Future directions for infection control
2. Research directions in regenerative therapy
3. Future directions in anti-inflammatory therapy
4. Future directions in measurement of periodontal disease

F] Periodontal maintenance therapy

1. Supportive periodontal treatment
2. results of periodontal treatment

***IV] Oral Implantology***

1. Introduction and historical review
2. Biological, ethical and surgical aspects of dental implants
3. Diagnosis and treatment planning
4. Implant surgery
5. Prosthetic aspects of dental implants
6. Diagnosis and treatment of peri-implant complications
7. Special emphasis on plaque control measures implant patients
8. Maintenance phase

***V] Management of Medical Emergencies In Periodontal Practice***

***PAPER-IV***

***Recent advances in periodontics***

## ***Postgraduate Curriculum For 3 Years***

### ***First Year Post Graduate Curriculum***

#### Academic Activities

Preparation of list of library books (college and department)

Three theory internals on Carranza text book in 1<sup>st</sup> three months

1<sup>st</sup> theory internal - End of 1<sup>st</sup> month

2<sup>nd</sup> theory internal - End of 2<sup>nd</sup> month

3<sup>rd</sup> theory internal - End of 3<sup>rd</sup> month

Synopsis of the main dissertation to be submitted with in first 6 months

Library Dissertation - To submit Introduction and Review of Literature at  
the end of first year

Number of Seminars to be presented - 8

Number of Journal clubs to be presented - 10

Number of Scientific Paper Presentation - 1

Number of Poster Presentation - 1

Interdepartmental Meeting Case Presentation – 1

Assessment of log books every 6 months

Conference and PG workshop – 1 each

Two theory classes to be taken for 3<sup>rd</sup> BDS

### ***Pre-Clinical work***

#### ***Dental***

Demonstration of principles of instrumentation on cast

Demonstration of oral hygiene aids on casts

Practice of incisions and suturing techniques on the typhodont models

Fabrication of bite guard and splints

Occlusal adjustments on the casts mounted on the articulator

X-ray technique and interpretation

Local anesthetic techniques

### **Medical**

Basic diagnostic microbiology and immunology , collection and handling of sample, culture techniques

Basic understanding of immunological diseases

Interpretation of various biochemical investigations

Practical training and handling medical emergencies and basic life support devices

Basic biostatistics – surveying and data analysis.

Expunge the term curettage and gingival polyp

### **Clinical Work**

<b><i>Sl no</i></b>	<b><i>Clinical work</i></b>	<b><i>Number of cases to be done</i></b>
1.	Case histories	5
2.	Applied periodontal indices	10
3.	Scaling and root planing	
	Hand scaling	50
	Ultrasonic scaling	50
4.	Root planing	50
5.	Curettage	50
6.	Gingivectomy	10
7.	Gingivoplasty	5
8.	Operculectomy	10
9.	Frenectomy	5
10.	Frenotomy	5
11.	Splinting	5
12.	Gingival polyp	5
13.	Periodontal abscess drainage	10

## ***Second Year Post Graduate Curriculum***

### ***Academic Activities***

Main Dissertation –to submit Introduction and Review of Literature at the end of second year

Library Dissertation - 3 Completed copies to be submitted at the end of second year

Number of Seminars to be presented - 5

Number of Journal Clubs to be presented - 10

Number of Scientific Paper Presentation - 1

Number of Poster Presentation - 1

Number of Interdepartmental Meeting Case Presentation – 1

Assessment of log book every 6 months

Introduction and review of literature to be submitted at the middle of second year

### ***Clinical Work***

<b><i>Sl no</i></b>	<b><i>Clinical diary</i></b>	<b><i>Number of cases to be done</i></b>
1	Case history and treatment planning	5
2	Gingivectomy	10
3	Gingivoplasty	10
4	Operculectomy	5
5	Frenectomy	5
6	Frenotomy	5
7	Splinting	5
8	Gingival polyp	5
9	Vestibuloplasty	5
10	Periodontal abscess drainage	10
11	Local drug delivery	20
12	Perio-endo lesion	15

13	Periodontal flap surgery Conventional flap Modified Widman flap Papilla Preservation flap	15 10 5
14	Root coverage procedures Laterally displaced flap Coronally displaced flap Connective tissue flap Double papilla flap Tarnows technique	1 1 1 1 1
15	Implants	2

### ***Third Year Post Graduate Curriculum***

#### ***Academic Activities***

Main Dissertation – 8 copies to be submitted 6 months prior to examination

Number of Seminars to be presented - 2

Number of Journals clubs to be presented - 5

Case Documentation Photo Album ( pre and post ) – 1 copy to be submitted 6 months prior to examination

Mock Exams –Theory } - 3 months prior to final exam  
Practical }

Assessment of log book every 6 months

#### ***Clinical Work***

Sl.no	Clinical work	Number of cases to be done
1	Periodontal flap surgery with GTR membrane	5
2	Periodontal flap surgery with bone graft	10
3	Free soft tissue graft to increase width of attached gingiva 0	2
4	Maintenance and follow up of all treated cases	

## ***Scheme of Examination***

### ***Theory: 300***

Written examination shall consist of four question papers each of three hours duration. Total marks for each paper will be 75. Paper I, II and III shall consist of two long questions carrying 20 marks each and 5 short essay questions each carrying 7 marks each. Paper IV will be an essay. Questions on recent advances will be asked in any or all the papers. Distribution of topics for each paper as follows:

***Paper I*** : Applied basic sciences: applied anatomy, physiology, biochemistry, Pathology, microbiology, pharmacology, research methodology and Biostatistics.

***PAPER II:*** Normal periodontal structure, etiology and pathogenesis of Periodontal Diseases, epidemiology as related to periodontics.

***Paper III:*** Periodontal diagnosis, therapy and oral implantology.

***Paper IV:*** Essay (with emphasis on recent advances in periodontics)

### ***Practical / clinical examination: 200 marks***

Clinical examination shall be of two days duration

#### ***1<sup>ST</sup> day***

Case discussion

Long case -- One

Short cases -- Two

Periodontal surgery – periodontal flap surgery on a previously prepared case in one quadrant of the mouth after getting approval from the examiners.

#### ***2<sup>nd</sup> day***

Post –surgical review and discussion of the case treated on the first day

Presentation of the dissertation and discussion

All the examiners shall participate in all the aspects of clinical examination or viva voce

### Distribution of marks for clinical examination

a) long case discussion	50
b) 2 short cases	50
c) periodontal surgery	75
Post operative review	25
Total	200

### ***C. Viva Voce: 100 marks***

#### ***1. Viva Voce Examination: 80 marks***

All examiners will conduct viva voce conjointly on candidate's comprehension, analytical approach, and expression, interpretation of data and communication skills. It includes all components of course contents. It includes presentation and discussion on dissertation also. Approximate duration 60 min per candidate.

#### ***2. Pedagogy: 20 marks***

A topic will be given to each candidate in the beginning of clinical examination . He or she is asked to make a presentation on the topic for 8 – 10 minutes.

# **ORAL AND MAXILLOFACIAL SURGERY**

## ***Objectives***

The training programme in oral and maxillofacial surgery is structured to achieve the following four objectives-

- Knowledge
- Skills
- Attitude

## ***Knowledge***

1. To have acquired adequate knowledge and understanding of the etiology, pathophysiology and diagnosis, treatment planning of various common oral & maxillofacial surgical problems both minor and major in nature.
2. To have understood the general surgical principles like pre and post surgical management, particularly evaluation, post surgical care, fluid and electrolyte management, blood transfusion and post surgical pain management.
3. Understanding of basic sciences relevant to practice of oral & maxillofacial surgery.
4. Able to identify social, cultural, economic, genetic and environmental factors and their relevance to disease process management in the oral & maxillofacial region.
5. Essential knowledge of personal hygiene and infection control, prevention of cross infection and safe disposal of hospital waste, keeping in view the high prevalence of hepatitis and HIV.

## ***Skill***

1. Take a proper clinical history, methodical examination of the patient, perform essential diagnostic procedures and order relevant tests and interpret them to come to a reasonable diagnosis about the surgical condition.
2. To perform with competence various minor oral surgical procedures and common oral and maxillofacial surgery.
3. To well equip with respect to basic life support.
4. To equip themselves for proper pre-operative, intraoperative, post operative, care of patients.
5. To handle medical emergencies in the unit.

### ***Attitudes***

1. Develop attitude to adopt ethical principles in all aspect of surgical practice, professional honesty and integrity are to be fostered. Surgical care is to be delivered irrespective of the social status, caste, creed or religion of the patient.
2. Willing to share the knowledge and clinical experience with professional colleagues.
3. Willing to adopt new techniques of surgical management developed from time to time based on scientific research which is in the best interest of the patient.
4. Respect patients right and privileges, including patients right to information and right to seek a second opinion.
5. Develop attitude to seek opinion from an allied medical and dental specialists as and when required.
6. Willingness to attend conferences/CME/ Workshops to update self knowledge regarding subject.

### ***Goals***

The goals of post graduate training in oral surgery specialties are structured to achieve the following objectives.

1. Practice respective specialty efficiently and effectively, backed by scientific knowledge and skill.
2. Exercise empathy and a caring attitude and maintain high ethical standards.
3. Continue to evince keen interest in continuing professional education in the specialty and allied specialties irrespective of whether in teaching or practice.
4. Willing to share the knowledge and skills with any learner, junior or a colleague.
5. Develop the faculty for critical analysis and evaluation of various concepts and views, to adopt the most rational approach.

### ***Communication Skills***

1. Develop adequate communication skills particularly with the patients giving them the various options available to manage a particular surgical problem and obtain a true informed consent from them for the most appropriate treatment available at that point of time
2. Develop the ability to communicate with professional colleagues
3. Develop the ability to teach under graduates

## ***Course Contents***

The programme outlines addresses both the knowledge needed in Oral and Maxillofacial surgery and allied medical specialities in its scope. A minimum of three years of formal training through a graded system of education as specified will equip the trainee with skill and knowledge at its completion to be able to practice basic oral and maxillofacial surgeon competently and have the ability to intelligently pursue further apprenticeship towards advanced Maxillofacial surgery .

### ***The topics are considered as under***

- ***Basic sciences***
- ***Oral and maxillofacial surgery***
- ***Allied specialities***

### ***Applied Basic Sciences:***

A thorough knowledge both on theory and principles in general and in particular the basic medical subjects as relevant to the practice of maxillofacial surgery. It is desirable to have adequate knowledge in Biostatistics ,Epidemiology,Research Methodology,Nutrition And Computers.

### ***Anatomy:***

Development of face ,paranasal sinuses and associated structures and their anomalies:surgical anatomy of scalp temple and face,anatomy and its applied aspects of triangles of neck,,deep structures of neck,,cranial facial bones and its surrounding soft tissues,cranial nerve, tongue,,temporal and infratemporal region ,orbits and its contents,muscles of face and neck,paranasal sinuses,eyelids and nasal septum, teeth, gums and palate,salivary glands,pharynx,thyroid and parathyroid glands, larynx,,trachea and esophagus,congenital abnormality of orofacial regions.

### ***Physiology:***

Nervous system –physiology of nerve conduction,pain pathway,sympathetic,and parasympathetic nervous system,hypothalamus and mechanism of controlling body temperature;Blood-its composition, hemostasis,blood dyscrasia and its management,hemorrhage and its control,blood grouping,cross matching,blood component therapy,complications of blood transfusion,blood substitutes,auto transfusion,cell savers;Digestive system- composition and functions of saliva mastication, deglutition, digestion,assimilation,urine formation, normal and abnormal constituents.; Respiration -control of ventilation anoxia, asphyxia,

artificial respiration, hypoxia-types and management; CVS- cardiac cycle, shock, heart sounds, blood pressure, hypertension. Endocrinology- metabolism of calcium endocrinal activity and disorder relating to thyroid gland, parathyroid gland, adrenal gland, pituitary gland, pancreas and gonads; Nutrition-general principles, balanced diet, protein energy, malnutrition, kwashiorkor, Marasmus, nutritional assessment, metabolic response to stress, need for nutritional support, enteral nutrition, routes of access to GI tract, parenteral nutrition, access to central veins, nutritional support; Fluid And Electrolyte Balance/Acid Base Metabolism-The body fluid of compartment metabolism of water and electrolytes, factors maintaining hemostasis, causes for treatment of acidosis and alkalosis.

### ***Biochemistry:***

General principles governing the various biological principles of the body, such as osmotic pressure, electrolytes, dissociation, oxidation, reduction etc., general composition of body intermediary metabolism, carbohydrate, proteins, lipids, enzymes, vitamins, minerals and antimetabolites.

### ***General Pathology:***

Inflammation-Acute and chronic inflammation, repair and regeneration, necrosis and gangrene, role of complement system in acute inflammation, role of arachidonic acid and its metabolites in acute inflammation, growth factors in acute inflammation, role of NSAIDs in inflammation, cellular changes in radiation injury and its manifestation; Wound management –wound healing factors influencing healing; properties of suture materials; appropriate uses of sutures; Hemostasis –role of endothelium in thrombogenesis; arterial and venous thrombi, disseminated intravascular coagulation; Hypersensitivity, Shock and pulmonary failure; types of shock, diagnosis, resuscitation, pharmacological support, ARDS and its causes and prevention, ventilation and support. Neoplasm of tumors, carcinogens, and carcinogenesis grading and staging of tumors, various laboratory investigations.

### ***General Microbiology:***

Immunity, Hepatitis B and its oral prophylaxis, Knowledge of organisms, commonly associated with diseases of oral cavity, culture and sensitivity tests, various staining techniques –Smears and cultures, urine analysis and culture.

### ***Oral Pathology and Microbiology:***

Developmental disturbances of oral and para oral structures, regressive changes of teeth, bacterial, viral, mycotic infection of oral cavity, dental caries, diseases of pulp and periapical tissues, physical and chemical injuries of oral cavity, wide range of pathological lesions of hard and soft tissues of the orofacial regions like the cysts, odontogenic infection, benign and malignant neoplasm, salivary gland

diseases ,maxillary sinus diseases ,mucosal diseases, oral aspects of various systemic diseases ,role of laboratory investigation in oral surgery.

### ***Pharmacology and Therapeutics:***

Definition of terminology used ,pharmacokinetics and pharmacodynamic dosage and mode of administration of drugs ,action` and fate in the body ,drug addiction,tolerance and hypersensitive reactions, drugs acting on CNS ,general and local anesthetics, antibiotics and analgesics ,antiseptics, antitubercular, sialogogues ,hematinics ,anti diabetic ,Vitamins A B-complex ,C,D,E,K.

### ***Computer Science:***

Use of computers in oral surgery, components of computer and its use in practice- principles of word processing, spread sheet function data base and presentations, the internet and its use .The value of computer based systems in biomedical equipment.

### ***Oral and Maxillofacial Surgery***

- Evolution of Maxillofacial Surgery.
- Diagnosis ,history taking,clinical examination and investigations.
- Informed consent/medico-legal issues.
- Concept of essential and rational use of drugs
- Communication skills with patients –understanding the clarity in communication,compassionate explanations,and giving emotional support at the time of suffering and bereavement.
- Principles of surgical audit –understanding the audit of process and outcome.Methods adopted for the same basic statistics.
- Principles of evidence based surgery –understanding journal based literature study,the value of text book,reference book articles,value of review articles,original articles and their critical assessment , understanding the value of retrospective ,prospective, randomized control and blinded studies, understanding the principles and the meaning of various biostatistical tests applied in these studies.
- Principles of surgery –developing a surgical diagnosis ,basic necessity for surgery, aseptic techniques, incisions and flap designs, tissue handling, homeostasis, dead space management, decontamination and debridement suturing, edema control, patient general health and nutrition.
- Medical emergencies- prevention and management to faltered consciousness, sensitivity reaction, chest discomfort, respiratory difficulty .

- Preoperative work up- -concept of fitness for surgery,basic medical work up in special situation like diabetes ,renal failure ,cardiac respiratory illness,,risk stratification.
- Surgical sutures and drains.
- Post operative care-concept of recovery room care, airway management, assessment of wakefulness,management of cardiovascular instability in this period. Criteria for shifting to the ward ,pain management.
- Wound management –wound healing ,factors influencing healing, basic surgical techniques, properties of suture materials ,appropriate use of sutures.
- Surgical Infections- Asepsis and antisepsis,microbiological principles, rational use of antibiotics ,special infections like synergistic gangrene and diabetic foot infection,hepatitis and HIV infection and cross infection.
- Airway obstruction / management-anatomy of the airway, principles of keeping the airway patent, mouth to mouth resuscitation, oropharyngeal airway, endotracheal intubation, cricothyroidectomy, trachestomy.
- Anesthesia-Stages of anesthesia, pharmacology of inhalation, intravenous and regional anesthetics, muscle relaxants.
- Facial pain;facial palsy and nerve injuries
- Pain control-acute and chronic pain, cancer and non cancer pain, patient controlled analgesia
- General patient management-competence in physical assessment of patients of surgery, competence in evaluation of patients presenting with acute injury, particularly to maxillofacial region.Competence in the evaluation of management of patients for anesthesia .
- Clinical oral surgery-all aspects of dentoalveolar surgery
- Pre-prosthetic surgery-a wide range of surgical reconstructive procedures in their hard and soft tissues of edentulous jaws
- Temporomandibular joint disorders-TMJ disorders and their sequelae need for evaluation, assessment and management .It is preferable to be familiar with diagrams and therapeutic arthroscopic surgery procedures.
- Tissue grafting-understanding of the biological mechanisms involved in auto and heterogeneous tissue grafting.
- Reconstructive oral and maxillofacial surgery –hard tissue and soft tissue reconstruction.
- Anesthesia –Stages of anesthesia, pharmacology of inhalation, intravenous and regional anesthesia, muscle relaxants.
- Cyst and tumors of head and neck region and their management including principles of tumor surgery, giant cell lesions of the jaw,fibro osseous lesions.

- Neurologic disorders of maxillofacial region-diagnosis and management of trigeminal neuralgia, MPDS, bells palsy, freys syndrome, nerve injuries.
- Maxillofacial trauma-basic principles of treatment, primary care, diagnosis and management of hard and soft tissues. Comprehensive management including polytrauma patients.
- Assessment of trauma-multiple injuries/closed abdominal and chest injuries/penetrating injuries, pelvic fractures, urological injuries, vascular injuries.
- Orthognathic surgery-the trainee must be familiar with the assessment and correction of jaw deformities.
- Laser surgery-the application of lasers technology in the surgical treatment of lesions amenable to such therapy.
- Distraction osteogenesis in maxillofacial region
- Cryosurgery-Principles, application of cryosurgery in the surgical management of lesions amenable to such surgeries
- Cleft lip and palate surgery-detailed knowledge of the development of the face, head and neck, diagnosis and treatment planning., Current concepts in the management of cleft lip and palate deformity, knowledge of nasal endoscopy and other diagnostic techniques in the evaluation of speech and hearing ,concept of multidisciplinary team .
- Aesthetic facial surgery-detailed knowledge of structures of facial neck including skin and underlying soft tissues, diagnosis and treatment planning of deformities and conditions , affecting facial skin, underlying facial muscles, bone, eyelids, external ear etc. Surgical management of post acne scarring, face lift, blepharoplasty, otoplasty, facial bone recontouring etc.
- Craniofacial surgery-basic knowledge of developmental anomalies of face, head and neck, basic concept in the diagnosis and planning of various head and neck anomalies including facial cleft, craniosynostosis, syndromes, etc, Current concepts in the management of craniofacial anomalies.
- Head and neck oncology-understanding of the principles of management of head and neck oncology including various pre cancerous lesions. Experience in the surgical techniques of reconstruction following ablative surgery.
- Microvascular surgery.
- Implantology –principles ,surgical procedures for insertion of various types of implants.
- Maxillofacial radiology /radiodiagnosis.
- Other diagnostic method and imaging techniques.

### ***Allied Specialties:***

General medicine-general assessment of the patient including children with special emphasis on cardiovascular diseases endocrinal and metabolic respiratory and renal diseases, blood dyscrasias.

General surgery-principles of general surgery, exposure to common general surgical procedures.

Neuro-surgery-evaluation of patient with head injury, examination of various neuro-surgical procedures.

ENT/Ophthalmology-examination of ear, nose, throat, exposure to ENT surgical procedures,ophthalmic examination and evaluation,exposure to ophthalmic surgical procedures.

Orthopedic-basic principles of orthopedic surgery,bone disease and trauma as relevant to maxillofacial surgery,interpretation of radiographs,CT,MRI and ultrasound.

Anesthesia-evaluation of patients for GA techniques and management of emergencies, various IV sedation techniques.

### ***Subjects of Study:***

- Academic Clinical Programme (applicable for all three years)
- Topic to be selected for thesis work
- Presentation of synopsis
- Seminars to be presented/attended once in a week.
- Case discussion and presentation
- Journal club to be conducted once in 15 days.
- Clinico pathological seminars – all the interesting cases to be discussed
- Attend regularly interdepartmental meetings and also to present on turn basis.
- 2 scientific papers to be presented in conference and posters to be presented
- Departmental and Interdepartmental discussions to be held once in a month
- To attend all the national conferences/ CDE/ Workshops
- Every candidate shall maintain a logbook to record his/her work or participate in all activities such as journal clubs,seminars,CDE programs etc.This work is scrutinized and certified by the head of the department and head of the institute and presented to the university every year.
- .To enter general surgical skills and operative procedure that are observed,assisted or performed.

***Year by year programme:***

***1<sup>st</sup> year first term:***

Dissection, basic sciences, basic computer sciences, Exodontia, seminars on basics, selection of dissertation topic, library assignment topic, attending O.T and ward rounds, preparation of synopsis and its submission within the six months after admission to the university as per calendar events

***Second term (Rotation and postings in other departments)***

- |                                 |   |          |
|---------------------------------|---|----------|
| 1. Oncology                     | - | 2 months |
| 2. Emergency                    | - | 1 month  |
| 3. General medicine             | - | 15 days  |
| 4. General surgery / anesthesia | - | 15 days  |
| 5. Ophthalmology                | - | 15 days  |
| 6. Neurology                    | - | 15 days  |
| 7. ENT                          | - | 15 days  |
| 8. Orthopedics                  | - | 15 days  |

Examination of basic sciences-one paper of three hour duration to be conducted by the college.

***II year:***

Minor oral surgery and higher surgical training, submission of library assignment by the end of the first term. Examination on minor oral surgical procedures – one paper of three hours duration to be conducted by the college.

***III year:***

Maxillofacial surgery, submission of dissertation in the first term, i.e. six months before the final examination to the university.

Final examination at the end of the third year.

Examination of three hours duration three months before the final examination to be conducted by the college.

**Clinical Work**

<b>SL.NO</b>	<b>WORK</b>	<b>CATEGORY</b>	<b>YEAR</b>	<b>NUMBER</b>
01.	Injection IM & IV	PI	I, II,	50,20
02.	Minor suturing & removal of sutures	PI	I,	N.A
03.	Incision & drainage	PI	I,	10
04.	Surgical extraction	PI	I,	15
05.	Impacted teeth	PI, PA	I, II,	20, 10
06.	Pre-Prosthetic surgery	PI	I	15
	A. Corrective procedures	PA	I,II	03
	B. Ridge Extension	A	II,III	03
	C. Ridge reconstruction			
07.	Oro-antral fistula closure	PI, PA	I, II,	03, 02,
08.	Cyst enucleation	PA, PI	I, II,	05, 05,
09.	Mandibular fractures	PA, PI	I, II,	10, 10
10.	Periapical surgery	PI, PA	I,	05
11.	Biopsy procedures	PI	I, II, III	N.A
12.	Infection management	PA, PI	I, II, III	N.A
13.	Removal of salivary calculi	PA	I, II	3,5.
14.	Benign tumor	PA, A	II,III	03, 03
15.	Midface fractures	PA, A	II, III	03, 05
16.	Implants	PA	II,III	05, 05
17.	Tracheotomy	PA, A	II,III	02,02
18.	Skin graft	PA	III	02
19.	Orthognathic surgery	PA, A	III	02
20.	Harvesting bone and cartilage graft	PA	III	02
21.	TMJ surgery	PA	III	02
22.	Oncosurgery with Jaw resection	A, O	II, III	3, 3
23.	Access osteotomies and base of the skull surgeries	A, O	III	01

## 1. Applied Basic Sciences ( I paper)

- **Applied Anatomy**

1. Surgical anatomy of scalp, temple and face
2. Anatomy of the triangles of neck and deep structures of the neck
3. Cranial and facial bones and its surrounding soft tissues with its applied aspects in maxillofacial Injuries.
4. Muscles of head and neck
5. Arterial supply, Venous and Lymphatic Drainage of head and neck
6. Congenital abnormalities of head and neck
7. Surgical Anatomy of Cranial Nerves
8. Anatomy of Tongue and its applied aspects
9. Surgical anatomy of temporal and Infratemporal regions
10. Salivary Glands, Pharynx, Thyroid and Parathyroid Glands, Larynx, Trachea, Oesophagus
11. Tooth eruption, Morphology, and Occlusion
12. Surgical anatomy of nose
13. The structure and function of the brain and surgical anatomy of cranial venous sinuses.
14. Autonomous nervous system of head and neck
15. Functional anatomy of mastication, deglutition, speech, respiration, and circulation
16. Development of face, paranasal sinuses and their anomalies
17. TMJ: surgical anatomy and function
18. Orbit and its contents.

- **Physiology**

- i. Nervous System*

1. Nerve Conduction
2. Pain Pathway
3. Sympathetic and parasympathetic nervous system
4. Hypothalamus and mechanism Of controlling body temperature

- ii. Blood*

1. Composition
2. Haemostasis, various blood dyscrasias and management of patients with the same
3. Haemorrhage and its control
4. Capillary and Lymphatic circulation
5. Blood grouping, Transfusing procedures

- iii. Digestive System*

1. Saliva-composition and functions
2. Mastication, deglutition,digestion,assimilation
3. Urine Formation, normal and abnormal constituents

- iv. Respiration*

1. Control of ventilation, anoxia, asphyxia, artificial respiration
2. Hypoxia – Types and Management

#### **v. Cardiovascular System**

1. Cardiac Cycle
2. Shock
3. Heart Sounds
4. Blood Pressure
5. Hypertension

#### **vi. Endocrinology**

1. General endocrinal activity and disorder of thyroid gland
2. Parathyroid, adrenal, pituitary gland, pancreas and gonads
3. Metabolism of calcium

#### **vii. Nutrition**

1. General Principles of balanced diet
2. Fluid and electrolyte balance
3. Effect of dietary deficiency, protein malnutrition, Kwashiorkor, Marasmus

### **2. Biochemistry**

General principles governing the various biological activities such as Osmotic pressure, electrolyte, oxidation, reduction etc.,

General composition of body intermediary metabolism carbohydrates, proteins, lipids and their metabolism, nucleoproteins, nucleic acid, nucleotides and their metabolism enzymes, vitamins and minerals, Hormones, Body and other fluids, Metabolism of inorganic elements, Antimetabolites, Detoxification in the body.

### **3. Pathology**

#### **i. Inflammation**

1. Repair and regeneration, necrosis and gangrene
2. Role of component system in acute inflammation
3. Role of arachidonic acid and its metabolites in acute inflammation
4. Growth factors in acute inflammation
5. Role of NSAIDs in inflammation
6. Cellular changes in radiation injury and its manifestation

#### **ii. Haemostasis**

1. Role of endothelium in thrombogenesis
2. Arterial and venous thrombi
3. DIC

**iii. Shock**

1. Pathogenesis of haemorrhagic, neurogenic, septic, cardiogenic shock
2. Circulatory disturbances, ischemia hyperemia, venous congestion, edema, Infarction

**iv. Chromosomal abnormalities**

1. Marfan's, Ehler's danlos, FragileX syndromes

- v. **Hypersensitivity:** Anaphylaxis, type-2, type-3 hypersensitivity and cell mediated reaction and its clinical significance, systemic lupus erythematosis. Infection and infective granulomas.

**vi. Neoplasm**

1. Classification of tumors
2. Carcinogenesis & Carcinogens-viral, bacterial, chemical.
3. Grading and staging of cancers, tumor angiogenesis, paraneoplastic syndrome, spread of tumors.
4. Characteristics of benign and malignant tumors.

**vii. Others**

1. Sex Linked a Gamma Globulinemia
2. AIDS
3. Management of Immune deficiency patients requiring surgical procedures
4. De George syndrome, C Ghons complex, Post Primary Pulmonary Tuberculosis-pathology and pathogenesis.

**4. Oral Pathology**

1. Oral and para oral structures
2. Regressive changes of teeth
3. Bacterial, viral, and mycotic infections of oral cavity
4. Dental caries, diseases of pulp and periapical tissues
5. Oral manifestation of metabolic and endocrinal disturbances
6. Diseases of jawbones and TMJ
7. Diseases of blood and blood forming organs
8. Cysts of the oral cavity
9. Salivary gland diseases
10. Role of laboratory investigations in oral surgery.

## **5. Microbiology**

1. Immunity.
2. Knowledge of organisms commonly associated with diseases of oral cavity.
3. Hepatitis B and its prophylaxis.
4. Culture and sensitivity test.
5. Various staining techniques.
6. Urine analysis and cultures.
7. Morphology cultural characteristics of staphylo, strepto, pneumo, gono, meningo, clostridium, group of organism, spirochetes, organism of TB, leprosy, diphtheria, actinomycosis, and monilliasis.
8. Laboratory determinations.
9. Blood groups, cross matching, RBC & WBC count, BT & CT etc. Smears & cultures

## **6. Pharmacology**

1. Definition of terminologies used
2. Dosage and mode of administration of drugs
3. Action and fate of drugs in the body
4. Drug addiction, tolerance, hypersensitivity reactions
5. Drugs acting on CNS
6. General and local anesthetics
7. Chemo therapeutics and antibiotics, hypnotics, analeptics & tranquilizers.
8. Analgesics & antipyretics
9. Antitubercular and antisyphilitic drugs
10. Antiseptics, sialogogues and antisialogogues
11. Haematinics
12. Antidiabetics 13. Vitamins-A, B, C, D, E, K

## **7. Minor Oral Surgery & Trauma (II paper)**

### **Principles Of Surgery**

1. Developing surgical diagnosis
2. Basic necessities for surgery
3. Aseptic technique
4. Incisions
5. Flap design, tissue handling.
6. Haemostasis
7. Dead space management
8. Decontamination and debridement
9. Suturing
10. Edema control
11. Patient general health and nutrition.

## **8. Medical Emergencies**

1. Prevention and management of altered consciousness (Syncope, orthostatic hypotension, Seizures, Diabetes mellitus, Adrenal insufficiency)
2. Hypersensitivity reactions
3. Chest discomfort
4. Respiratory difficulty

## **9. Examination and Diagnosis**

1. Clinical history, physical, radiographic, clinical and laboratory diagnosis
2. Oral manifestation of systemic diseases
3. Implication of systemic diseases in surgical patients

## **10. Haemorrhage and Shock**

1. Applied physiology
2. Clinical abnormalities of coagulation
3. Extra vascular haemorrhage and haemorrhagic lesions
4. Management of secondary haemorrhage
5. Shock

## **11. Exodontia**

1. Principles of extraction
2. Indications and contraindications
3. Types of extraction
4. Complication sand their management
5. Elevators and their principles

## **12. Impaction**

1. Surgical anatomy
2. Classification
3. Indications and contraindications
4. Diagnosis, & procedures
5. Complications and their management

**13. Surgical Aids to Eruption Of Teeth :** surgical exposure of unerupted teeth, surgical repositioning of partially erupted teeth.

## **14. Transplantation of teeth**

**15. Surgical Endodontics:** indications and contraindication, diagnosis, procedures of periradicular surgery

**16. Pre-Prosthetic Surgery :** procedures to improve alveolar soft tissues: requirements, types (alveoloplasty, tuberosity reduction, mylohyoid ridge reduction, genial reduction, removal of exostosis, vestibuloplasty)

## **17. Infections of Head And Neck**

1. Odontogenic and non Odontogenic infections
2. Spread of infections, diagnosis, management of facial space infections.
3. Ludwig's angina
4. Cavernous sinus thrombosis

### **18. Chronic Infections of the Jaws**

- Osteomyelitis
- Osteoradionecrosis

**19. Diseases of Maxillary Sinus:** maxillary sinusitis – types, pathology, treatment, closure of Oro-antral fistula, Caldwell – Luc Operation.

**20. Cysts of Orofacial Region:** classification, diagnosis, management of OKC, Dentigerous, radicular non odontogenic, ranula. Etc

**21. Neurological Disorders of the Maxillofacial Region :** Diagnosis & management of trigeminal neuralgia, MPDS, Bells palsy, Frey's syndrome, Nerve injuries.

**22. Implantology:** definition, classification, indications, and contraindications, advantages, and disadvantages, surgical procedure.

### **23. Anaesthesia**

1. Local anaesthesia-Classification,modes of action,indications & contraindications,advantages and disadvantages,techniques,complications &their management.
2. General anaesthesia-classification,stages of GA, mechanism ofaction, indications & contraindications, advantages & disadvantages, post anaesthetic complications & emergencies, anaesthesia for children, premedication, conscious sedation, legal aspects for GA.

### **24. Trauma**

- a. Surgical anatomy of head and neck
- b. Etiology of injury
- c. Basic principles of treatment
- d. Primary care
  - i. Resuscitation
  - ii. Establishment of airway
  - iii. Management of haemorrhage
  - iv. Management of head injury & admission to hospital.
- e. Diagnosis
  - i. Clinical
  - ii. radiological
- f. soft tissue injury of the scalp and face
  - i. classification of soft tissue wounds and their management
- g. Dento alveolar fractures
- h. Mandibular fractures
- i. Fractures of zygomatic complex
- j. Orbital fractures
- k. Nasal fractures
- l. Fractures of middle third of the facial skeleton
  - i. Emergency care
  - ii. Treatment of Lefort I, II, III fractures and NOE fractures

- m. Ophthalmic injuries
  - i. Minor injuries
  - ii. Non-perforating injuries
  - iii. Perforating injuries
  - iv. Retrobulbar haemorrhage
  - v. Traumatic optic neuropathy
- n. Frontal sinus injury
- o. Maxillofacial injuries in geriatric and pediatric patients
- p. Gun shot wounds and war injuries
- q. Osseointegration in maxillofacial reconstruction
- r. Metabolic response to trauma
- s. Healing of traumatic injuries: soft tissues, bone, cartilage. response of peripheral nerve to injury
- t. Nutritional consideration following trauma
- u. Tracheostomy: indications & contraindications, procedure, complications & management.

### ***Paper - III: Maxillofacial Surgery***

#### ***1. Salivary Gland***

- 1. Sialography
- 2. Salivary fistula and management
- 3. Diseases of salivary glands: developmental disturbances, cysts, inflammation & sialolithiasis
- 4. Mucocele and Ranula
- 5. Tumours of salivary gland and their management
- 6. Staging of salivary gland tumours
- 7. Parotidectomy

#### ***2. Temporomandibular joint***

- 1. Etiology, history, signs & symptoms, examination & diagnosis of TMJ disorders
- 2. Ankylosis and its management
- 3. MPDS and its management
- 4. Condylectomy – different procedures
- 5. Various approaches to TMJ
- 6. Recurrent dislocations – etiology and management

#### ***3. Oncology***

- 1. Biopsy
- 2. Premalignant lesions of head and neck
- 3. Benign and malignant tumors of head and neck
- 4. Management of oral cancer
- 5. Staging of oral cancer and tumor cancers.
- 6. Radical neck dissection
- 7. Modes of spread of tumors
- 8. Management of tumors of nasal, paranasal, neck, tongue, cheek, maxilla, sinus and mandible
- 9. Radiation therapy in maxillofacial region

10. Lateral neck swelling

4. ***Orthognathic Surgery***

1. Diagnosis and treatment planning
2. Cephalometric analysis
3. Model surgery
4. Maxillary and mandibular repositioning procedures
5. Segmental osteotomies
6. Management of apertognathia
7. Genioplasty
8. Distraction Osteogenesis

5. ***Cysts and Tumors of Oro-Facial Region***

1. Odontogenic and non-odontogenic tumors
2. Giant cell lesions of jawbone
3. Fibro osseous lesions of jaw
4. Cysts of jaw

6. ***Laser surgery***

1. The application of laser technology in surgical treatment of lesions of cryosurgery
2. Principles ,applications of cryosurgery in surgical management of cleft lip and palate surgery

7. ***Cleft lip and Cleft palate surgery***

- a. Development of face, head, neck
- b. Diagnosis and treatment planning
- c. Current concepts in treating cleft lip and palate deformity
- d. Knowledge of Naso endoscopy& other diagnostic techniques in evaluation of speech and hearing
- e. Concept of multidisciplinary team management

8. ***Aesthetic Facial Surgery***

- a. Detailed knowledge of the structures of face and neck
- b. Diagnosis and treatment planning of deformities affecting facial skin, muscle, bone, eyelids, external ear
- c. Surgical management of post acne scarring, facelift, blepharoplasty, otoplasty, facial bone recontouring, etc,

9. ***Craniofacial Surgery***

- a. Developmental anomalies of the face, head and neck
- b. Diagnosis and treatment planning of various head and neck anomalies – clefts, craniosynostosis, syndromes, etc,
- c. Current concepts in management of craniofacial anomalies.

10. ***Micro Vascular Surgery***

11. ***Flaps, Grafts & Reconstruction.***

## ***Paper IV - Long Essay***

### ***Monitoring learning process :***

It is essential to monitor the learning progress to each candidate through continuous appraisal and regular assessment. It not only helps teachers to evaluate students, but also students to evaluate themselves. The monitoring to be done by the staff of the department based on participation of students in various teaching and learning activities. It may be structured and assessment be done using checklists that assess various aspects. Checklists are given in Section IV.

### ***Scheme of Examination***

#### ***Eligibility:***

The Following requirements shall be fulfilled by every candidate to appear for final examination,

***Attendance:*** as prescribed by the university

#### ***Progress and Conduct:***

Every candidate shall have participated in seminars, Journal clubs, case presentations, review meetings, symposia, conferences, clinical discussions as designed by the concerned department.

#### ***Work Dairy and Log Book:***

Every candidate shall maintain a monthly work dairy and a log book for three years, shall be verified and certified by the head of the department and head of the institution.

### ***1. Theory: (4 Papers X 75 = 300 marks)***

Written examination shall consist of four question papers each of three hours duration. Total marks for each paper will be 75. Paper I, II and III shall consist of two long questions carrying 20 marks each and 5 short essay questions each carrying 7 marks each. Paper IV will be an essay. Questions on recent advances will be asked in any or all the papers. Distribution of topics for each paper as follows:

Paper I:	Applied basic sciences: anatomy, physiology, biochemistry, general and oral pathology, microbiology and pharmacology and computer science.
Paper II:	Minor oral surgery and Trauma
Paper III:	Maxillofacial surgery
Paper IV:	Long Essay & recent advances

**2. Practical / Clinical examination: 200 Marks**

**a. Minor oral surgery: 100 Marks**

Each candidate is required to perform minor oral surgical procedure under local anesthesia which may include impacted lower third molar, Cyst enucleation, etc,

- b. i. One long case: **50 Marks**  
ii. Two short case: **25 Marks each**

**3. Grand final Viva – Voce: 100 marks**

**A. Viva Voce Examination 80 Marks**

All examiners will conduct viva- voce conjointly on candidates comprehension analytical approach, expression, interpretation of data and communication skills . It includes all components of course contents. It includes presentation and discussion on dissertation also.

**B. Pedagogy Exercise : 20 marks**

A topic will be given to each candidate in the beginning of clinical examination. He/she is asked to make a presentation on topic for 8-10 minutes

**Distribution of marks:**

<b>Ext.theory</b>	<b>Ext.clinicals</b>	<b>Ext. viva-voce</b>	<b>Total</b>
300	200	100	<b>600</b>
	<b><u>1.Impactions(100)</u></b> Incision & flap reflection – 20 Surgical exposure of tooth - 20 Elevation of tooth delivery – 20 Wound debridement & closure – 15 Chair side viva- 25.		
	<b><u>2.Long case (50)</u></b>		
	<b><u>3.Short 2 cases (25 x 2) 50</u></b>		

# ***CONSERVATIVE DENTISTRY***

## ***Objectives***

The following objectives are laid out to achieve the goals of the course.  
These are to be achieved by the time the candidate completes the course.  
These objectives may be considered under the following subtitles.

## ***Knowledge***

At the end of 36 months of training, the candidates should be able to:

- Describe aetiology, pathophysiology, periapical diagnosis and management of common restorative situations, endodontic situations that will include contemporary management of dental caries, management of trauma and pulpal pathoses including periodontal situations.
- Demonstrate understanding of basic sciences as relevant to conservative / restorative dentistry and Endodontics.
- Identify social, economic, environmental and emotional determinants in a given case or community and take them into account for planning and execution at individual and community level.
- Ability to master differential diagnosis and recognize conditions that may require multi disciplinary approach or a clinical situation outside the realm of the specialty, which he or she should be able to recognize and refer to appropriate specialist.
- Update himself by self-study and by attended basic and advanced courses, conferences, seminars, and workshops in the specialty of Conservative Dentistry- Endodontics-Dental Materials and Restorative Dentistry.
- Ability to teach, guide, colleagues and other students. Use information technology tools and carry out research both basic and clinical with the aim of his publishing his work and presenting the same at scientific platform

## ***Skills***

- Take proper chair side history, exam the patient and perform medical and dental diagnostic procedures and order as well as perform relevant tests and interpret to them to come to a reasonable diagnosis about the dental condition in general and Conservative Dentistry - Endodontics in particular. And undertake complete patient monitoring including preoperative as well as post operative care of the patient.
- Perform all levels of restorative work and surgical and non-surgical Endodontics including endodontic endosseous implants, as well as endodontic-periodontal surgical procedures as part of multidisciplinary approach to clinical condition.
- Provide basic life saving support in emergency situations.
- Manage acute pulpal and pulpo periodontal situations.
- Have a thorough knowledge of infection control measures in the dental clinical environment and laboratories.

### ***Human Values, Ethical Practice and Communication Abilities***

- Adopt ethical principles in all aspects of restorative and contemporary Endodontics" including non-surgical and surgical Endodontics. Professional honesty and integrity should be the top priority.
- Dental care has to be provided regardless of social status, caste, creed or religion of the patient.
- Develop communication skills- in particular to explain various options available management and to obtain a true informed consent from the patient.
- Apply high moral and ethical standards while carrying on human or animal research .He / She shall not carry out any heroic procedures and must know his limitations in performing all aspects of restorative dentistry including Endodontics. Ask for help from colleagues or seniors when required without hesitation O Respect patient's rights and privileges including patients right to information.

### ***Course Contents***

#### ***Paper 1:***

#### ***Applied Anatomy of Head and Neck***

- Development of face, paranasal sinuses and the associated structures and their anomalies, cranial and facial bones, TMJ anatomy and function, arterial and venous drainage of head and neck, muscles of face and neck including muscles of mastication and deglutition, brief consideration of structures and function of brain. Brief consideration of all cranial nerves and autonomic nervous system of head and neck. Salivary glands, Functional anatomy of mastication, deglutition and speech. Detailed anatomy of deciduous and permanent teeth, general consideration in physiology of permanent dentition, form, function, alignment, contact, occlusion.)
- Internal anatomy of permanent teeth and its significance
- Applied histology, histology of skin, oral mucosa, connective tissue, bone cartilage, blood vessels, lymphatics, nerves, muscles, tongue.

#### ***Development of Teeth***

- Enamel - development and composition, physical characteristics, chemical properties, structure
- Age changes - clinical structure
- Dentin - development, physical and chemical properties, structure type of dentin, innervations, age and functional changes.
- Pulp - development, histological structures, innervations, functions, regressive changes, clinical considerations.
- Cementum - composition, cementogenesis, structure, function, clinical consideration.
- Periodontal ligament - development, structure, function and clinical consideration.
- Salivary glands - structure, function, clinical considerations.

#### ***Applied Physiology***

- Mastication, deglutition, digestion and assimilation, fluid and electrolyte balance.
- Blood composition, volume, function, blood groups, haemostasis, coagulation, blood transfusion, circulation, heart, pulse, blood pressure, shock, respiration, control, anoxia, hypoxia, asphyxia, artificial respiration, and endocrinology - general principles of endocrine activity

and disorders relating to pituitary, thyroid, parathyroid, adrenals including pregnancy and lactation.

- Physiology of saliva - composition, function, clinical significance.
- Clinical significance of vitamins, diet and nutrition - balanced diet.
- Physiology of pain, sympathetic and Para sympathetic nervous system, pain pathways, physiology of pulpal pain, Odontogenic and non Odontogenic pain, pain disorders - typical and atypical, biochemistry such as osmotic pressure, electrolytic dissociation, oxidation, reduction etc., carbohydrates, proteins, lipids and their metabolism, nucleoproteins, nucleic acid and their metabolism. Enzymes, vitamin and minerals, metabolism of inorganic elements, detoxification in the body, anti metabolites, chemistry of blood lymph and urine.

### **Pathology**

- Inflammation, repair, degeneration, necrosis and gangrene.
- Circulatory disturbances - ischemia, hyperemia, edema, thrombosis, embolism, infarction, allergy and hypersensitivity reaction.
- Neoplasms - classifications of tumors, characteristics of benign and malignant tumors, spread tumors.
- Blood dyscrasias
- Developmental disturbances of oral and Para oral structures, dental caries, regressive changes of teeth, pulp, periapical pathology, pulp reaction to dental caries and dental procedures.
- Bacterial, viral, mycotic infections of the oral cavity.

### **Microbiology**

- Pathways of pulpal infection, oral flora and micro organisms associated with endodontic diseases, pathogenesis, host defense, bacterial virulence factors, healing, theory of focal infections, microbes or relevance to dentistry - strepto, staphylococci, lactobacilli, comyebacterium, actinomycetes, Clostridium, neisseria, vibrio, bacterioids, fusobacteria, spirochetes, mycobacterium, virus and fungi.
- Cross infection, infection control, infection control procedure, sterilization and disinfection.
- Immunology - antigen antibody reaction, allergy, hypersensitivity and anaphylaxis, auto immunity, grafts, viral hepatitis, HIV infections and aids. Identification and isolation of microorganisms from infected root canals. Culture medium and culturing technique (Aerobic and anaerobic interpretation and antibiotic sensitivity test).

### **Pharmacology**

- Dosage and route of administration of drugs, actions and fate of drug in body, drug addiction, tolerance of hypersensitivity reactions.
- Local anesthesia - agents and chemistry, pharmacological actions, fate and metabolism of anaesthetic, ideal properties, techniques and complications.
- General anesthesia - pre medications, neuro muscular blocking agents, induction agents, inhalation anesthesia, and agents used, assessment of anesthetic problems *in* medically compromised patients.
- Anaesthetic emergencies
- Antihistamines, corticosteroids, chemotherapeutic and antibiotics, drug resistance, haemostasis, and haemostatic agents, anticoagulants,

sympathomimetic drugs, vitamins and minerals (A, B, C, D, E, K IRON), anti sialogogue, immunosuppressants, drug interactions, antiseptics, disinfectants, anti viral agents, drugs acting on CNS.

### **Biostatistics**

- Introduction, Basic concepts, Sampling, Health information systems - collection, compilation, presentation of data. Elementary statistical methods - presentation of statistical data, Statistical averages - measures of central tendency, measures of dispersion, Normal distribution. Tests of significance - parametric and non - parametric tests (Fisher exact test, Sign test, Median test, Mann Whitney test, Kruskal Wallis one way analysis, Friedmann two way analysis, Regression analysis), Correlation and regression, Use of computers.

### **Research Methodology**

- Essential features of a protocol for research in humans
- Experimental and non-experimental study designs
- Ethical considerations of research

### **Applied Dental Materials**

- Physical and mechanical properties of dental materials, biocompatibility.
- Impression materials, detailed study of various restorative materials, restorative resin and recent advances in composite resins, bonding- recent developments- tarnish and corrosion, dental amalgam, direct filling gold, casting alloys, inlay wax, die materials, investments, casting procedures, defects, dental cements for restoration and pulp protection (luting, liners, bases) cavity varnishes.
- Dental ceramics-recent advances, finishing and polishing materials. © Dental burs - design and mechanics of cutting - other modalities of tooth preparation. © Methods of testing biocompatibility of materials used.

### **Paper II: Conservative Dentistry**

1. Examination, diagnosis and treatment plan
2. Occlusion as related to conservative dentistry, contact, contour, its significance. Separation of teeth, matrices, used in conservative dentistry.
3. Dental caries- epidemiology, recent concept of etiological factors, pathophysiology, Histopathology, diagnosis, caries activity tests, prevention of dental caries and management - recent methods.
4. Hand and rotary cutting instruments, development of rotary equipment, speed ranges hazards.
5. Dental burs and other modalities of tooth reparation- recent developments (air abrasions, lasers etc)
6. Infection control procedures in conservative dentistry, isolation equipments etc.
7. Direct concepts in tooth preparation for amalgam, composite, GIC and restorative techniques, failures and management.
8. Direct and indirect composite restorations.
9. Indirect tooth colored restorations- ceramic, inlays and onlays, veneers, crowns, recent advances in fabrication and materials.

#### **a. Tissue management**

10. Impression procedures used for direct restorations.

11. Cast metal restorations, indications, contraindications, tooth preparation for class I inlay, Onlay full crown restorations. Restorative techniques, direct and indirect methods of fabrication including materials used for fabrication like inlay wax, investment materials and
12. Direct gold restorations.
13. Recent advances in restorative materials and procedures.
14. Management of non-carious lesion.
15. Advance knowledge of minimal intervention dentistry.
16. Recent advances in restoration of endodontically treated teeth and grossly mutilated teeth
17. Hypersensitivity, theories, causes and management.
18. Lasers in Conservative Dentistry
19. CAD-CAM & CAD-CIM in restorative dentistry
20. Dental imaging and its applications in restorative dentistry (clinical photography)
21. Principles of esthetics
  - Facial analysis
  - Smile design
  - Principles of esthetic integration
  - Treatment planning in esthetic dentistry

***Paper III:  
Endodontics***

1. Rationale of endodontics.
2. Knowledge of internal anatomy of permanent teeth, anatomy of root apex and its implications in endodontic treatment.
3. Dentin and pulp complex.
4. Pulp and periapical pathology
5. Pathobiology of periapex.
6. Diagnostic procedure - recent advances and various aids used for diagnosis-
  - a. Orofacial dental pain emergencies: endodontic diagnosis and management
7. Case selection and treatment planning
8. Infection control procedures used in endodontics (aseptic techniques such as rubber dam, sterilization of instruments etc.)
9. Access cavity preparation - objectives and principles
10. Endodontic instruments and instrumentation - recent developments, detailed description of hand, rotary, sonic, ultra sonic etc..
11. Working length determination / cleaning and shaping of root canal system and recent development in techniques of canal preparation.
12. Root canal irrigants and intra canal medicaments used including non - surgical endodontics by calcium hydroxide.
13. Endodontic microbiology.
14. Obturating materials, various obturation techniques and recent advances in obturation of root canal.
15. Traumatic injuries and management - endodontic treatment for young permanent teeth. Pediatric endodontics - treatment of immature apex.
16. Endodontic surgeries, recent developments in technique and devices, endosseous endodontic implants - biology of bone and wound healing.
17. Endoperio interrelationship, endo + Perio lesion and management

18. Drugs and chemicals used in endodontics
19. Endo emergencies and management.
20. Restoration of endodontically treated teeth, recent advances.
21. Geriatric endodontics
22. Endo emergencies and management.
23. Biologic response of pulp to various restorative materials and operative procedures.
24. Lasers in endodontics.
25. Multidisciplinary approach to endodontic situations.
26. Endodontic radiology- digital technology in endodontic practice.
27. Local anesthesia in endodontics.
28. Procedural errors in endodontics and their management.
29. Endodontic failures and retreatment.
30. Resorptions and its management.
31. Microscopes in endodontics.  
Single visit endodontics, current concepts and controversies.

*Teaching / Learning Activities* The following is the minimum required to be completed before the candidate can be considered eligible to appear for final MDS exam.

### **First Year**

Pre Clinical Work - Operative and Endodontics

#### **Preclinical work on typhodont teeth**

- |   |    |
|---|----|
| 1. Class 2 amalgam cavities                                       |    |
| a. Conservative preparation                                       | 04 |
| b. Conventional preparation                                       | 02 |
| 2. Inlay cavity preparation on premolars and molars - MO, DO, MOD | 13 |
| a. Wax pattern  | 04 |
| b. Casing   | 04 |
| 3. Onlay preparation on molars Casting                            | 02 |
| 4. Full Crown   |    |
| a. Anterior   | 05 |
| b. Posterior  | 05 |
| (2 each to be processed)  |    |
| 5. 7/8 crown (1 to be processed)                                  | 02 |
| 6. 3/4 crown premolars (1 to be processed)                        | 02 |

#### **Pre Clinical work on natural teeth**

- |  |    |
|--|----|
| 1. Inlay on molars and premolars MO, DO, and MOD | 08 |
| a. Casting                                       | 02 |
| b. Wax pattern                                   | 02 |
| 2. Amalgam cavity preparation                    |    |
| a. Conventional                                  | 02 |
| b. Conservative                                  | 02 |
| 3. Pin retained amalgam on molar teeth           | 02 |
| 4. Post and core build up                        |    |

Anterior teeth	10
Posterior teeth	05
5. Casting	
Anterior	04
Posterior	02
6. Onlay on molars (1 to be processed)	03
7. Full crown premolars and molars	04
8. Full crown anterior (2 and 3 to be processed)	06
9. Veneers anterior teeth (indirect method)	02
10. Composite inlay (class 2), 1 to be processed	03
11. Full tooth wax carving - all permanent teeth	

### **Endodontics**

1. Sectioning of all maxillary and mandibular teeth.
2. Sectioning of teeth - in relation to deciduous molar, 2nd primary upper and lower molar 1 each
3. Access cavity opening and root canal therapy in relation to maxillary and mandibular permanent teeth
4. Access cavity preparation and BMP Anterior
  - a. Conventional prep
  - b. Step back
  - c. Crown down

Obturation 03

5. BMP Premolar 06 (2 upper and 2 lower) obturation 1 each
6. BMP Molar 06 (3 upper - 2 first molars and 1 second molar, 3 lower - 2 first molars and 1 second molar) obturation 1 each
7. Post and core preparation and fabrication in relation to anterior and posterior teeth
  - a. Anterior 10 (casting 4)
  - b. Posterior 05 (casting 2)
8. Removable dies 04

**Note: Technique work to be completed in the first four months**

### **Clinical work**

A	Composite restorations	30
B	GIC Restorations	30
C	Complex amalgam restorations	05
D	Composite inlay + veneers (direct and indirect)	05
E	Ceramic jacket crowns	05
F	Post and core for anterior teeth	05
G	Bleaching vital	05
	Non vital	05
H.	RCT Anterior	20
I.	Endo surgery - observation and assisting	05

### **Presentation of**

- Seminars - 5 seminars by each student - should include topics in dental materials, conservative dentistry and endodontics
- Journal clubs - by each student
- Submission of synopsis at the end of 6 months
- Library assignment work
- Internal assessment - theory and clinicals.

### **Second Year**

#### **Case discussion-5**

1	Ceramic jacket crowns	10
2	Post and core for anterior teeth	10
3	Post and core for posterior teeth	05
4	Composite restoration	05
5	Full crown for posterior teeth	15
6	Cast gold inlay	05
7	Other special types of work such as splinting- Reattachment of fractured teeth etc.	05
8	Anterior RCT	20
9	Posterior RCT	30
10	Endo surgery performed independently	05
11	Management of endo - Perio problems	05

- Under graduate teaching program as allotted by the HOD
- Seminars - 5 by each student
- Journal club - 5 by each student
- Dissertation work
- Prepare scientific paper and present in conference and clinical meeting
- Library assignment to be submitted 18 months after starting of the course
- Internal assessment - theory and clinical
- 

### **Third Year**

**Dissertation** work to be submitted 6 months before final examination.

#### **Clinical work**

- Cast gold inlay- Onlay, cuspal restoration 10
- Post and core 20
- Molar endodontics 50
- Endo surgery 05

All other types of surgeries including crown lengthening, perioesthetics, hemi sectioning, splinting, replantation, endodontic implants.

### **Presentation of**

- Seminars
- Journal club
- Teaching - lecture (under graduates)
- Internal assessment - theory and clinical

### **Monitoring Learning Progress**

It is essential to monitor the learning progress of each candidate through continuous appraisal and regular assessment. It not only helps teachers to evaluate students, but also students to evaluate themselves. The monitoring be done by the staff of the department based on participation of students in various

teaching / learning activities. It may be structured and assessment be done using checklists that assess various aspects. Checklists are given in Section IV.  
Scheme of Examination

***Scheme of Examination:***

***A. Theory :***

***300 Marks***

Written examination shall consist of four question papers each of three hours duration. Total marks for each paper will be 75. Paper I, II and III shall consist of two long questions carrying 20 marks each and 5 short essay questions carrying 7 marks each. Paper IV will be on Essay. Questions on recent advances may be asked in any or all the papers. Distribution of topics for each paper will be as follows: \*

***PAPER-I*** : Applied Basic Sciences: Applied Anatomy, Physiology, Pathology including Oral Microbiology, Pharmacology, Biostatistics and Research Methodology and Applied Dental Materials.

***PAPER-II*** : Conservative Dentistry

***PAPER-III*** : Endodontics

***PAPER-IV*** : Essay

***B. Clinical 200 Marks***

The duration of Clinical and Viva Voce examination will be 2 days for a batch of four students. If the number of candidates exceeds 4, the programme can be extended to 3<sup>rd</sup> day.

***Day 1***

***Clinical Exercise I*** - 50 Marks

Cast core preparation

- 1) Tooth Preparation - 10 marks
- 2) Direct Wax Pattern - 10 marks
- 3) Casting - 10 marks
- 4) Cementation - 10 marks
- 5) Elastomeric Impression - 10 marks

***Clinical Exercise II*** - 50 Marks

(Inlay Exercise )

1. Tooth preparation for Class II Gold Inlay-25 marks
2. Fabrication of Direct Wax Pattern- 25 marks

***Day 2***

***Clinical Exercise III*** - 100 Marks

(Molar Endodontics)

1. Local Anesthesia and Rubber Dam application - 20 marks
2. Access Cavity - 20 marks
3. Working length determination - 20 marks
4. Canal Preparation - 20 marks
5. Master cone selection - 20 marks

**C. Viva Voce : 100 Marks**

**I. Viva-Voce examination: 80 marks**

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression, interpretation of data and communication skills. It includes all components of course contents. It includes presentation and discussion on dissertation also. Approximate duration 60 min per candidate.

**II. Pedagogy Exercise: 20 marks**

A topic is given to each candidate in the beginning of clinical examination. He/she is asked to make a presentation on the topic for 8-10 minutes.

**Day 3:**

Viva-Voce (Continued if more than 4 students are taking examination or shortage of time on 2<sup>nd</sup> day)

# **ORTHODONTICS & DENTOFACIAL ORTHOPAEDICS**

## **Objectives**

The training programme in Orthodontics is to structure and achieve the following four objectives **Knowledge of**

1. The dynamic interaction of biologic processes and mechanical forces acting on the stomatognathic system during orthodontic treatment
2. The etiology, pathophysiology, diagnosis and treatment planning of various common Orthodontic problems
3. Various treatment modalities in Orthodontics preventive interceptive and corrective.
4. Basic sciences relevant to the practice of Orthodontics
5. Interaction of social, cultural, economic, genetic and environmental factors and their relevance to management of oro - facial deformities
6. Factors affecting the long-range stability of orthodontic correction and their management
7. Personal hygiene and infection control, prevention of cross infection and safe disposal of hospital waste, keeping in view the high prevalence of Hepatitis and HIV and other highly contagious diseases.

## **Skills**

1. To obtain proper clinical history, methodical examination of the patient, perform essential diagnostic procedures, and interpret them and arrive at a reasonable diagnosis about the Dentofacial deformities.
2. To be competent to fabricate and manage the most appropriate appliance - intra or extra oral, removable or fixed, mechanical or functional, and active or passive - for the treatment of any orthodontic problem to be treated singly or as a part of multidisciplinary treatment of orofacial deformities.

## **Attitudes:**

1. Develop an attitude to adopt ethical principles in all aspects of Orthodontic practice.
2. Professional honesty and integrity are to be fostered
3. Treatment care is to be delivered irrespective of the social Status, cast, creed or colleagues
4. Willingness to share the knowledge and clinical experience with professional colleagues
5. Willingness to adopt, after a critical assessment, new methods and techniques of orthodontic management developed from time to time based on scientific research, which are in the best interest of the patient
6. Respect patients rights and privileges, including patients right to information and right to seek a second opinion
7. Develop attitude to seek opinion from allied medical and dental specialists as and when required

## **Communication skills**

1. Develop adequate communication skills particularly with the patients giving them various options available to manage a particular Dentofacial problem and to obtain a true informed consent from them for the most appropriate treatment available at that point of time.

2. Develop the ability to communicate with professional colleagues, in Orthodontics or other specialities through various media like correspondence, Internet, e-video, conference, etc. To render the best possible treatment.

### **Course Content**

The program outlined, addresses both the knowledge needed in Orthodontics and allied Medical specialities in its scope. A minimum of three years of formal training through a graded system of education as specifies, will equip the trainee with skill and knowledge at its completion to be able to practice basic Orthodontics and have the ability to intelligently pursue further apprenticeship towards advanced Orthodontics.

### **Spread of the Curriculum**

Six months teaching o basic subjects including completion of pre - clinical exercises 2 ft years of coverage of all the relevant topics in Orthodontics, clinical training invoMng treatment of patients and submission of dissertation. These may be divided into blocks of 6 to 8 months duration each, depending on the training policies of each institution.

#### **I. Applied Anatomy:**

- Prenatal growth of head:
- Stages of embryonic development, origin of head, origin of face, origin of teeth.
- Postnatal growth of head:  
Bones of skull, the oral cavity, development of chin, the hyoid bone, general growth of head, face growth.
- Bone growth:  
Origin of bone, composition of bone, units of bone structure, schedule of Ossification, mechanical properties of bone, roentgen graphic appearance of bone
- Assessment of growth and development:  
Growth prediction, growth spurts, the concept of normality and growth increments of growth, differential growth, gradient of growth, methods of gathering growth data. Theories of growth and recent advances, factors affecting physical growfo.
- Muscles of mastication:  
Development of muscles, muscle change during growth, muscle function facial development, muscle function and malocclusion
- Development of dentition and occlusion:  
Dental development periods, order of tooth eruption, chronology of permanent tooth formation, periods of occlusal development, pattern of occlusion.
- Assessment of skeletal age

The carpal bones, carpal x - rays, cervical vertebrae II

#### **II. Physiology**

- Endocrinology and its disorders  
(Growth hormone, thyroid hormone, parathyroid hormone, ACTH)  
pituitary gland hormones, thyroid gland hormones, parathyroid gland hormones
- Calcium and its metabolism
- Nutrition-metabolism and their disorders: proteins, carbohydrates, fats, vitamins and minerals.
- Muscle physiology
- Craniofacial Biology: ell adhesion molecules and mechanism of adhesion
- Bleeding disorders in orthodontics: Hemophilia

### **III Dental materials:**

- Gypsum products: dental plaster, dental stone and their properties, setting reaction etc.
- Impression materials: impression materials in general and particularly of alginate impression material.
- Acrylics: chemistry, composition physical properties
- Composites: composition types, properties setting reaction
- Banding and bonding cements: Zn (P04)2, zinc silicophosphate, Zinc polycarboxylate, resin cements and glass Ionomer cements
- Wrought metal alloys: deformation, strain hardening, annealing, recovery, recrystallization, grain growth, properties of metal alloys
- Orthodontic arch wires: stainless steel gold, wrought cobalt chromium nickel alloys, alpha&beta titanium alloys
- Elastics: Latex and non-latex elastics.
- Applied physics, Bioengineering and metallurgy.
- Specification and tests methods used for materials used in Orthodontics
- Survey of all contemporary literature and Recent advances in above - mentioned materials.

### **IV. Genetics:**

- Cell structure, DNA, RNA, protein synthesis, cell division
- Chromosomal abnormalities © Principles of orofacial genetics •
- Genetics in malocclusion
- 5 Molecular basis of genetics
- Studies related to malocclusion
- Recent advances in genetics related to malocclusion
- Genetic counseling
- Bioethics and relationship to Orthodontic management of patients.

### **V Physical Anthropology:**

- Evolutionary development of dentition
- Evolutionary development of jaws.

### **VI Pathology:**

- Inflammation
- Necrosis

### **VII Biostatistics:**

- Statistical principles
- Data Collection
- Method of presentation
- Method of Summarizing
- Methods of analysis - different tests/errors
- Sampling and Sampling technique
- Experimental models, design and interpretation
- Development of skills for preparing clear concise and cogent scientific abstracts and publication

### ***VIII. Applied research methodology in Orthodontics***

- Experimental design
- Animal experimental protocol
- Principles in the development, execution and interpretation of ***methodologies in Orthodontics***
- © Critical Scientific appraisal of literature.

### ***IX. Applied Pharmacology:***

#### ***X. Orthodontic history:***

- Relationship of TMJ anatomy and pathology and related neuromuscular physiology.

#### ***XII. Etiology and Classification of malocclusion:***

- A comprehensive review of the local and systemic factors in the causation of malocclusion
- Various classifications of malocclusion

#### ***XIII. Dentofacial Anomalies:***

- Anatomical, physiological and pathological characteristics of major groups of developmental defects of the orofacial structures.

#### ***XIV. Child and Adult Psychology:***

- Stages of child development.
- Theories of psychological development.
- Management of child in orthodontic treatment.
- Management of handicapped child.
- Motivation and Psychological problems related to malocclusion / orthodontics
- Adolescent psychology
- Behavioral psychology and communication

#### ***XV. Diagnostic procedures and treatment planning in orthodontics***

- Emphasis on the process of data gathering, synthesis and translating it into a treatment plan
- Problem cases - analysis of cases and its management
- Adult cases, handicapped and mentally retarded cases and their special problems
- Critique of treated cases. Cephalometrics
- Instrumentation
- Image processing
- Tracing and analysis of errors and applications
- Radiation hygiene
- Advanced Cephalometrics techniques
- Comprehensive review of literature
- Video imaging principles and application.

### ***XVII. Practice management in Orthodontics***

- Economics and dynamics of solo and group practices
- Personal management
- Materials management
- Public relations
- Professional relationship
- Dental ethics and jurisprudence
- Office sterilization procedures
- Community based Orthodontics.

### ***XVIII. Clinical Orthodontics***

#### ***Myofunctional Orthodontics:***

- Basic principles
- Contemporary appliances - their design and manipulation
- Case selection and evaluation of the treatment results
- Review of the current literature.

#### ***Dentofacial Orthopedics***

- Principles
- Biomechanics
- Appliance design and manipulation
- Review of contemporary literature

#### ***Cleft lip and palate rehabilitation:***

- Diagnosis and treatment planning
- Mechanotherapy
- Special growth problems of cleft cases
- Speech physiology, pathology and elements of therapy as applied to orthodontics
- Team rehabilitative procedures.

#### ***Biology of tooth movement:***

- Principles of tooth movement-review
- Review of contemporary literature
- Applied histophysiology of bone, periodontal ligament
- Molecular and ultra cellular consideration in tooth movement

#### ***Orthodontic / Orthognathic surgery:***

- Orthodontist' role in conjoint diagnosis and treatment planning
- Pre and post-surgical Orthodontics
- Participation in actual clinical cases, progress evaluation and post retention study
- Review of current literature

#### ***Ortho / Perio / Prosth inter relationship***

- Principles of interdisciplinary patient treatment © Common problems and their management Basic principles of Mechanotherapy Includes Removable appliances and fixed appliances
- Design
- Construction
- Fabrication
- Management
- Review of current literature on treatment methods and results

### ***Applied preventive aspects in Orthodontics***

- Caries and periodontal disease prevention
- Oral hygiene measures
- Clinical procedures

### ***Interceptive Orthodontics***

- Principles
- Growth guidance
- Diagnosis and treatment planning
- Therapy emphasis on:
  - a. Dento-facial problems
  - b. Tooth material discrepancies
  - c. Minor surgery for Orthodontics

### ***Retention and relapse***

- Mechanotherapy - special reference to stability of results with various procedures
- Post retention analysis
- Review of contemporary literature

### ***XIX. Recent advances like:***

- Use of implants
- Lasers
- Application of F.E.M.
- Distraction Osteogenesis

### ***Skills:***

#### ***II. Pre - Clinical Exercises***

A general outline of the type of exercises is given here. Every institution can decide the details of exercises under each category.

1. General Wire bending exercises to develop the manual dexterity.
2. Clasps, Bows and springs used in the removable appliances.
3. Soldering and welding exercises.
4. Fabrication of removable habit breaking, mechanical and functional appliances, also all types of space maintainors and space regainers.
5. Bonwill Hawley Ideal arch preparation.
6. Construction of orthodontic models trimmed and polished preferably as per specifications of Tweed or A.B.O.
7. Cephalometric tracing and various Analyses, also superimposition methods -
8. Fixed appliance typhodont exercises.
  - a. Training shall be imparted in one basic technique i.e. Standard Edgewise / Begg technique or its derivative / Straight wire etc., with adequate exposure to other techniques.
  - b. Typhodont exercise
    - i. Band making
    - ii. Bracket positioning and placement
    - iii. Different stages in treatment appropriate to technique taught

9. Clinical photography
10. Computerized imaging
11. Preparation of surgical splints, and splints for TMJ problems.
12. Handling of equipments like vacuum forming appliances and hydro solder etc

**First Year**

**I. Basic Pre-Clinical Exercise Work for the MDS Students:**

**First 6 Months**

**1. Non-appliance exercises**

**All the following exercises should be done with 0.7 or 0.8mm wire**

<b>Sl. No.</b>	<b>Exercise</b>	<b>No.</b>
1	Straightening of 6" long wire	3
2	Square bent from 8" straightened wire	1
3	Rectangle bent from 12" straightened wire	1
4	Triangle of 2" side	1
5	Circle of 2" side	1
6	Bending of 5U's	1
7	Bending of 5V's	1

**2. Clasps**

<b>Sl. No.</b>	<b>Exercise</b>	<b>No.</b>
1	¾ Clasps	2
2	Full clasps	2
3	Triangular Clasps	2
4	Adam's clasp - upper molar	2
5	Adam's Clasp - lower molar	2
6	Adam's Clasp - Pre-molar	2
7	Adam's Clasp - Incisor	2
8	Modification of Adam's - With Helix	2
9	Modification of Adam's - With distal extension	2
10	Modification of Adam's - With soldered tube	2
11	Duyzing Clasps on Molars	2
12	Southend Clasp	1

**3. LABIAL BOWS**

<b>Sl. No.</b>	<b>Exercise</b>	<b>No.</b>
1	Short labial bow (upper & lower)	1
2	Long labial bow (upper & lower)	1
3	Robert's retractor	1
4	High labial bow-with apron spring's	1
5	Reverse loop labial bow	1
6	Retention labial bow extending distal to second molar	1
7	Fitted labial bow	
8	Split labial bow	1

#### 4. SPRINGS

<i>Sl. No.</i>	<i>Exercise</i>	<i>No.</i>
1	Finger spring-mesial movement	2
2	Finger spring-distal movement	2
3	Double cantilever spring	2
4	Single cantilever spring	2
5	Coffin spring	2
6	T spring	2

#### 5. CANINE RETRACTORS

<i>Sl. No.</i>	<i>Exercise</i>	<i>No.</i>
1	u loop canine retractor	2PAIRS
2	Helical canine retractor	2PAIRS
3	Palatal canine retractor	2PAIRS
4	Self -supporting canine retractor	2PAIRS
5	Self -supporting canine retractor	2PAIRS

#### 6. Appliances

<i>Sl. No.</i>	<i>Exercise</i>
1	Hawley's retention appliance with anterior bite plane
2	Upper Hawley's appliance with posterior bite plane
3	Upper expansion appliance with expansion screw
4	Habit breaking appliance with tongue crib
5	Lip bumper
6	Splint for Bruxism
7	Catalans appliance
8	Activator
9	Bionator
10	Frankel-FR 2 appliance
11	Twin block
12	Lingual arch
13	TPA
14	Quad helix
15	Pendulum appliance
16	Oral screen
17	Utility arches

#### 7. Soldering exercises

<i>Sl. No.</i>	<i>Exercise</i>	<i>No.</i>
1	Star	1
2	Soldering to form '+'	1
3	Christmas tree .	1
4	Lamp Post	1

#### 8. Welding exercises

<i>Sl. No.</i>	<i>Exercise</i>
1	Pinching and welding of molar, premolar, canine and Incisor bands
2	Welding of buccal tubes and brackets on molar bands and incisor bands

9. *Impression of upper and lower arches in alginate*
10. *Study model preparation*
11. *Model analysis – All mixed and permanent dentition analyses to be done*
12. *Cephalometrics*

<b>Sl. No.</b>	<b>Exercise</b>
1	Lateral cephalogram to be traced in five different colors and super imposed to see the accuracy of tracing
2	Steiner's analysis
3	Down's analysis
4	Tweed analysis
5	Rickett's analysis
6	Burrstone analysis
7	Rakosi's analysis
8	Mc Namara analysis
9	Soft tissue analysis - Holdaway and Burstone

13. *Basics of Clinical Photography including Digital Photography*
14. *Light wire bending exercises for the Begg technique*

<b>Sl. No.</b>	<b>Exercise</b>
1	Wire bending technique on 0.016' wire circle "Z" Omega
2	Bonwill-Hawley diagram
3	Making a standard arch wire
4	Inter maxillary hooks- Boot leg and Inter Maxillary type
5	Upper and Lower arch wire
6	Bending a double back arch wire
7	Bayonet bends (vertical and horizontal offsets)
8	Stage-III arch wire
9	Torquing auxiliary (upper)
10	Reverse Torquing (lower)
11	Up righting spring

**15. Typhodont exercises**

1. Teeth setting in Class-II division I malocclusion with maxillary anterior proclination and mandibular anterior crowding
2. Band pinching, welding brackets and buccal tubes to the bands
3. Stage-I
4. Stage-II
5. Pre Stage-III
6. Stage-III

**CLINICAL WORK:**

Once the basic pre-clinical work is completed the students can take up clinical cases and W clinical training is for the two and half years.

Each postgraduate student should start with a minimum of 50 cases of his/her own. Additionally he / she should handle a minimum of 20 transferred cases.

***The type of cases can be as follows:***

- i. Removable active appliances-5cases
- ii. Class-I malocclusion with Crowding
- iii. Class-I malocclusion with bi-maxillary protrusion
- iv. Class-II division-1
- v. Class-II division-2
- vi. Class-III (Orthopedic, Surgical, Orthodontic cases)
- vii. Inter disciplinary cases
- viii. Removable functional appliance cases like activator, Bionator, functional regulator, twin block and new developments
- ix. Fixed functional appliances - Herbst appliance, jasper jumper etc - 5 cases
- x. Dento-facial orthopedic appliances like head gears, rapid maxillary expansion niti expander etc., - 5 cases
- xi. Appliance for arch development such as molar distalization -m 5 cases
- xii. Fixed mechano therapy cases (Begg, PEA, Tip edge, Edgewise) Retention procedures of above treated cases.

***Other work to be done during FIRST YEAR***

1. ***Seminars:*** One Seminar per week to be conducted in the department. A minimum of five seminars should be presented by each student each year
2. ***Journal club:*** One Journal club per week to be conducted in the department. A minimum of five Journals should be presented by each student each year
3. Protocol for dissertation to be submitted on or before the end of six months from the date of admission.
4. ***Under graduate classes:*** Around 4 - 5 classes should be handled by each post-graduate student
5. ***Field survey:*** To be conducted and submit the report
6. ***Inter-departmental meetings:*** should be held once in a month.
7. ***Case discussions***
8. ***Field visits:*** To attend dental camps and to educate the masses
9. ***Basic subjects classes***
10. ***Internal assessment or Term paper***

***Second Year:***

The clinical cases taken up should be followed under the guidance. More case discussions and cases to be taken up. Other routine work as follows.

1. Seminars: One Seminar per week to be conducted in the department. Each student should present a minimum of five seminars each year.
2. Journal club: One Journal club per week to be conducted in the department. Each student should present a minimum of five Journals each year.
3. Library assignment to be submitted on or before the end of six months.
4. Undergraduate classes: each post-graduate student should handle Around 4-5 classes.

5. Inter-departmental meetings: Should be held once in a month
6. Case discussions
7. Field visits: To attend dental camps and to educate the masses.
8. Internal assessment or term paper.
9. Dissertation work: On getting the approval from the university work for the dissertation to be started.

### **Third Year:**

The clinical cases taken up should be followed under the guidance. More cases discussions and cases to be taken up. Other routine work as follows:

1. **Seminars:** One Seminar per week to be conducted in the department. E student should present a minimum of five seminars each year.
2. **Journal Club:** One Journal club per week to be conducted in the departments minimum of five Journals should be presented by each student each year
3. **Under graduate classes:** each post - graduate student, should handle Around 4-5 classes.
4. **Inter-departmental meetings:** Should be held once in a month.
5. **The completed dissertation should be submitted six months before the final examination**
6. **Case discussions**
7. **Field visits:** To attend dental camps and to educate the masses.
8. **Finishing and presenting the cases taken up.**
9. **Preparation of finished cases and presenting the cases (to be presented for the examination)**
10. **Mock examination**

### **Dissertation:**

- a. The protocol for dissertation should be submitted on or before the end of six months from the date of admission as per calendar of events to the Registrar, Sri Siddhartha University, Tumkur through proper channel.
- b. The completed dissertation should be submitted 6 months before the final examination as per calendar of events to the Controller of Examinations SSU, Tumkur, through proper channel.
- c. The dissertation should not be just a repetition of a previously undertaken study should try to explore some new aspects.
- d. Approval of dissertation is essential before a candidate appears for the Univ examination.

### **Monitoring Learning Progress**

It is essential to monitor the learning progress of each candidate through continuous app and regular assessment. It not only helps teachers to evaluate students, but also students to evaluate themselves. The monitoring be done by the staff of the department^ participation of students in various teaching / learning activities. It may be structured assessment be done using checklists that assess various aspects. Checklists are given in Section IV.

**Scheme of Examination: Theory : 300 Marks**

Written examination shall consist of four question papers each of three hours duration. Total marks for each paper will be 75. Paper I, II and III shall consist of two long questions carrying 20 marks each and 5 short essay questions carrying 7 marks each. Paper IV will be on Essay. Questions on recent advances may be asked in any or all the papers. Distribution of topics for each paper will be as follows: \*

**Paper-I :** Applied Basic Sciences: Applied anatomy, Physiology, Dental Materials, Genetics, Pathology, Physical Anthropology, Applied Research methodology, Bio-Statistics and Applied Pharmacology.

**Paper II:** Orthodontic history, Concepts of occlusion and esthetics, Child and Adult Psychology, Etiology and classification of malocclusion, Dentofacial Anomalies, Diagnostic procedures and treatment planning in Orthodontics, Practice management in Orthodontics

**Paper III:** Clinical Orthodontics

**Paper IV:** Essay

\* The topics 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 topics is inevitable. Students should be prepared to answer overlapping topics.

**B. Practical / Clinical Examination: 200 Marks**

Exercise No: 1 Functional Case : 50 Marks

Selection of case for functional appliance and recording of construction bite. Fabrication and delivery of the appliance the next day.

Exercise No: 2 Multiband exercise 50 Marks

1. III stage with auxiliary springs

**OR**

2. Bonding of SWA brackets and construction of suitable arch wire.

Exercise No. 3 Display of records of the treated cases (minimum of 5 cases)

5 cases \* 15 marks = 75 Marks

Exercise No:4 long case discussions:25 Marks

No	Exercise	Marks allotted	Approximate time
1	Functional appliance	50	1 hour 1 hour
2	III stage mechanics/ Bonding an arch wire fabrication	50	1 hour 30 min
3	Display of case records (a minimum of 5 cases to be presented with all the cases)	75	1 hour
4	Long cases	25	2 hours

***C. Viva Voce : 100 Marks***

***i. Viva-Voce examination: 80 marks***

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach expression, interpretation of data and communication skills. It includes all components of course contents. It includes presentation and discussion on dissertation also. Approximate duration 60 minutes per candidate.

***ii. Pedagogy Exercise: 20 marks***

A topic is given to each candidate in the beginning of clinical examination. He/she is asked to make a presentation on the topic for 8-10 minutes.

# **ORAL PATHOLOGY AND MICROBIOLOGY**

## **Objectives**

- To train a post graduate dental surgeon so as to ensure higher competence in both general and special pathology dealing with the nature of oral diseases, their causes, processes and effects.
- An oral pathologist is expected to perform routine histopathological evaluation of specimens relating to oral and perioral tissues, to carry out routine diagnostic procedures including hematological, cytological, microbiological, Immunological and ultra structural investigations.
- He/she is expected to have an understanding of current research methodology, collection and interpretation of data, ability to carry out research projects on clinical and or epidemiological aspects, a working knowledge on current databases, automated data retrieval systems, referencing and skill in writing scientific papers.
- He/she is expected to present scientific data pertaining to the field, in conferences both as poster and verbal presentations and to take part in group discussions.

## **Broad outline of theoretical, clinical and practical courses.**

1. Study of principles of routine and special techniques used for histopathology including principles of histochemistry, Immunochemistry, applied and theoretical biochemical basis of histochemistry as related to oral pathology.
2. Advanced histological and histopathological study of dental and oral tissues including embryonic considerations, clinical considerations, biology, histology, Pathology, prognosis and management of oral oncology, Concepts of oral premalignancy
3. Study of special and applied pathology of oral tissues as well as relation of local pathologic and clinical findings to systemic conditions.
4. Oral microbiology and their relationship to various branches of dentistry.
5. Oral microbiology affecting hard and soft tissues. Study of clinical changes and their significance to dental and oral diseases as related to oral pathology
6. Forensic odontology
7. Inter institutional postings such as cancer hospital, dermatology clinics, regional HIV detection centers, 'sophisticated instrumentation centers for electron microscopy and other techniques.
8. Maintenance of records of all postgraduates activities.
9. Library assignment.
- 10.** University Dissertation.

## **A. Course contents**

### **First year**

#### **1) Biostatistics and Research Methodology**

- Basic principles of biostatistics and study as applied to dentistry and research
- Collection/organization of data/measurement scales presentation of data analysis.
- Measures of central tendency.
- Measures of variability.
- Sampling and planning of health survey.

- Probability, normal distribution and indicative statistics.
- Estimating population values.
- Tests of significance (parametric/non-parametric qualitative methods.)
- Analysis of variance
- Association, correlation and regression.

**Approach:**

- Didactic lectures on biostatistics and discussion on research methodology by eminent researchers.
- Two - day P.G. orientation course including general approach PG course, library and main dissertation, journal club topic selection and presentation, seminars, clinico-pathological meets, teaching methodology and use of audiovisual aids.

**2) Applied Gross Anatomy of Head and Neck including Histology:**

- Temporomandibular joint
- Trigeminal nerve and facial nerve
- Muscles of mastication
- Tongue
- Salivary glands
- Nerve supply; blood supply, lymphatic drainage and venous drainage of Oro-dental tissues.
- Embryology
  - Development of face, palate, mandible, maxilla, tongue and applied aspects of the same
  - Development of teeth and dental tissues and developmental defects of oral and maxillofacial region and abnormalities of teeth
- Maxillary sinus
- Jaw muscles and facial muscles

**Genetics**

Introduction modes of inheritance, chromosomal anomalies of oral tissues and single genetic disorders.

**Approach**

To be covered as didactic lectures.

- Posting in department of anatomy for dissection of head, face and neck

**3) Physiology (General and oral)**

- Saliva
- Pain
- Mastication
- Taste
- Deglutition
- Wound healing
- Vitamins (Influence on growth, development and structure of oral soft and hard tissues and paraoral tissues.)
- Calcium metabolism.
- Theories of mineralization.
- Tooth eruption and shedding.
- Hormones. (Influence on growth, development and structure of oral soft and hard tissues and para oral tissues.)
- Blood and its constituents.

### **Approach**

To be covered as didactic lectures.

#### **4) Cell Biology:**

- Cell-structure and function (ultrastructural and molecular aspects), intercellular junctions, cell cycle and division, cell cycle regulators, cell - cell and cell - extra cellular matrix interactions.
- Detailed molecular aspects of DNA, RNA, and intracellular organelles, transcription and translation and molecular biology techniques.

### **Approach:**

To be covered as seminars and didactic lecture.

#### **5) General Histology:**

Light and electron microscopy considerations of Epithelial tissues and glands, bone, hematopoietic system, lymphatic system, muscle, neural tissue, endocrinal system (thyroid, pituitary, parathyroid)

### **Approach:**

- Topics to be covered as didactic lectures.
- Postings in the department of anatomy and histology for slide discussion
- Record book to be maintained.

#### **6) Biochemistry:**

- Chemistry of carbohydrates, lipids and proteins.
- Methods of identification and purification.
- Metabolism of carbohydrates, lipids and proteins.
- Biological oxidation.
- Various techniques - cell fractionation and ultra filtration, centrifugation, Electrophor Spectrophotometry, and radioactive techniques.

### **Approach:**

- Topics to be covered as didactic lectures.
- Postings to the department of biochemistry to familiarize with various techniques
- Record book to be maintained.

#### **7) General Pathology:**

- Inflammation and chemical mediators, thrombosis, embolism, necrosis, repair, degeneration, shock, hemorrhage pathogenic mechanisms at molecular level and blood dyscrasias, Carcinogenesis and Neoplasia.

### **Approach:**

To be covered as seminars and didactic lectures.

### **8) General Microbiology:**

- Definitions of various types of infections.
- Routes of infection and spread
- Sterilization, disinfection and antiseptics.
- Bacterial genetics.
- Physiology and growth of microorganisms.

#### **Approach:**

- To be covered as seminars and didactic lectures.
- Record book to be maintained.

### **9) Basic Immunology**

- Basic principles of immunity, antigen and antibody reactions.
- Cell mediated immunity and Humoral immunity.
- Immunology of hypersensitivity.
- Immunological basis of the autoimmune phenomena.
- Immunodeficiency with relevance to opportunistic infections.
- Basic principles of transplantation and tumor immunity.

#### **Approach:**

To be covered as didactic lectures.

### **10) Systemic microbiology/applied microbiology**

Morphology, classification, pathogenicity, mode of transmission, methods of pre collection and transport of specimen, for laboratory diagnosis, staining methods, comi culture media, interpretation of laboratory reports and antibiotic sensitivity tests.

- Staphylococci
- Streptococci
- Corynebacterium diphtheria
- Mycobacteria
- Clostridia, bacteroides and fusobacteria © Actinomycetales
- Spirochetes

#### **Virology:**

**General properties:** structure, broad classification of viruses, pathogenesis, pathology of viral infections.

**Herpes virus:** list of viruses included, lesions produced, pathogenesis, latency principles and laboratory diagnosis.

**Hepatitis virus:** list of viruses, pathogenesis, and mode of infection, list of diagnostic tests, and their interpretations, methods of prevention and control.

**Human Immunodeficiency virus:** structure with relevance to laboratory diagnosis, type of infection, laboratory tests and their interpretation, universal precautions, specific precautions and recent trends in diagnosis and prophylaxis.

### ***Mycology:***

- General properties of fungi, classification bases on disease, superficial, subcutaneous, deep opportunistic infections.
- General principles of fungal infections, diagnosis rapid diagnosis method of collection of sample and examination for fungi especially candida and mucormycosis.

### ***Approach:***

- To be covered as seminars and didactic lectures
- Postings to the dept. of microbiology to familiarize with relevant diagnostic methods
- Record book to be maintained

### ***11) Oral Biology (oral and dental histology)***

- Structure and function of oral, dental and paraoral tissues including their ultra structure, molecular and biochemical aspects.
- Study of morphology of permanent and deciduous teeth (Lectures and practical demonstrations to be given by PG students)

### ***Approach:***

- To be covered as seminars and didactic lectures.
- Slide discussion on histological appearance of normal oral tissues.
- Record book to be maintained.

### ***12) Basic molecular biology and techniques:***

experimental aspects - DNA extraction, PCR, western blotting.

### ***Approach:***

- To be covered as didactic lectures
- Postings in centers where facilities are available for demonstration of routine molecular biology techniques.
- Record book to be maintained.

### ***13) Basic histologic techniques, microscopy and Rotine haematology:***

- Routine hematological tests and clinical significance of the same.
- Biopsy procedures for oral lesions.
- Processing of tissues for Paraffin lesions.
- Microtome and principles of microtomy.
- Routine stains, principles and theories of staining techniques
- Microscope, principles and theories of microscopy.
- Light microscopy and various other types including electron microscopy.
- Methods of tissue preparation for ground sections, decalcified sections.

### ***Approach:***

- Topics to be covered as seminars.
- Preparation of ground and decalcified sections, tissue processing, sectioning and staining.
- Record book to be maintained

**Academic activities:**

- Submission of synopsis of dissertation at the end of six months.
- Journal clubs and seminars to be presented by every post graduate student twice a month.
- To attend interdepartmental meetings.
- To attend dental camps based on the survey to be done.
- Part -1 year ending examination to be conducted by the college.
- Lecture classes & Practical demonstrations in Dental Anatomy /Oral Histology for I year BDS students
- Poster presentation in conferences.

**SECOND YEAR****Oral pathology**

- Developmental defects of oral and maxillofacial region and abnormalities of teeth
- Dental caries (Introduction, Epidemiology, microbiology, cariogenic bacterial including properties, acid production in plaque, development of lesion, response of dentine - pulp unit, histopathology, root caries, sequelae and immunology).
- Pulpal and Periapical diseases
- Infections of oral and Para oral regions (bacterial, viral and fungal infection)
- Neoplastic diseases of salivary glands
- Bone pathology
- Hematological disorders
- Physical and chemical injuries, allergic and Immunological diseases.
- Cysts and tumors of odontogenic origin
- Dermatologic diseases.
- Periodontal diseases
- Oral manifestations of systemic diseases
- Facial pain and neuromuscular disorders including TMJ disorders
- Regressive alterations of teeth
- Benign and malignant lesions of non-odontogenics origin

**Clinical Pathology:**

- Laboratory investigations - Hematology, Microbiology and Urine analysis
- Postings to Clinical Pathology for relevant training
- Record book to be maintained.

**Specialized histotechniques and special stains:**

Special staining techniques for different tissues.

Immunohistochemistry

Preparation of frozen sections and cytological smears

**Approach:**

Training to be imparted in the department or in other institutions having the facility.

Record book to be maintained

**Recording of Case history and Clinico-pathological discussions:**

**Approach**

Posting to the department of Oral medicine, Diagnosis and Radiology and Oral and Maxillofacial surgery

Record of case histories to be maintained  
Dermatology

Study of selected mucocutaneous lesions-etiopathogenesis, pathology, clinical presentation and diagnosis.

**Approach**

- Posting to the dept of Dermatology of a Medical college
- Topics to be covered as Seminars
- Record of cases seen to be maintained.

**Oral oncology**

Detailed study including Pathogenesis, molecular and biochemical changes of tumors, tumor like lesions and Premalignant lesions affecting the hard and soft tissues of oral and paraoral tissues, Tumour markers

**Approach**

To be covered as seminars  
Posting to a Cancer center to familiarise with the pathological appearances, diagnosis, radio-diagnosis and treatment modalities.

**Oral Microbiology and immunology**

- Normal Oral microbial flora
- Defense mechanism of the oral cavity
- Microbiology and immunology of Dental caries and Periodontal diseases Dental caries (Introduction, epidemiology, microbiology, cariogenic bacteria including properties, acid production in plaque, development of lesion, response of dentin-pulp unit, histopathology, root caries, sequelae and immunology)
- Tumor immunology
- Infections of Pulp and Periapical and periodontal tissues
- Oral sepsis and Bacterimia
- Microbial genetics
- Infections of oral and Para oral regions (bacterial, viral and fungal infections)

**Approach**

To be covered as seminars

**Forensic Odontology:**

Legal procedures like inquest, medico-legal evidences post mortem examination of violence around mouth and neck, identification of deceased individual-dental importance.

Bite marks rugae patterns and lip prints.

**Approach**

To be covered as seminars

### ***Histopathology - slide discussion***

Record book to be maintained

### ***Laboratory techniques and Diagnosis***

- Routine hematological tests and clinical significance of the same
- Microtome and principles of microtomy
- Routine stains, principles and theories of staining techniques
- Microscope, principles and theories of microscopy
- Light microscopy and various other types including electron microscopy
- Methods of tissue preparation for ground sections, decalcified sections.
- Special stains and staining techniques for different tissues
- Immunohistochemistry
- Preparation of frozen sections and cytological smears

### ***Other Topics in Oral Pathology.***

- Detailed description of diseases affecting oral mucosa, teeth, supporting tissues & jaws
- Cysts of the oral & Para-oral regions
- Systemic diseases affecting oral cavity.

### ***Approach***

Seminars & Slide discussions. Record notebook to be maintained.  
Training in histo-pathology slide reporting.

Experimental aspects of Oral diseases

### ***Approach***

Posting is desirable in Centers where animal experimentation is carried out to familiarize with laboratory technique's, upkeep & care of experimental animals.

Recent advances in Oral Pathology.

### ***Approach***

Update of knowledge in Oral Pathology through study of recent journals & Internet browsing. Journal Clubs & Group discussions

### ***Academic activities :***

- Lecture & Practical demonstration for III BDS students in Oral Pathology
- Library assignment to be submitted at the end of 6 months
- Commencement of dissertation work
- Journal clubs and seminars to be presented by every PG student © Clinico - pathological discussions once in a month by every PG student © To attend interdepartmental meetings.
- Lecture and practical classes and slide discussions to be taken for II BDS students in oral and dental anatomy, dental histology and oral physiology. Year ending examination (theory and practical) to be conducted by the college.
- Paper presentation in conferences, case presentation in intercollegiate meets and interdepartmental meets.

### **IIIIRD YEAR**

- Non-neoplastic disorders of salivary glands.
- Bone pathology
- Physical and chemical injuries, allergic and Immunological diseases.
- Cysts and tumors of odontogenic origin
- Oral manifestations of systemic diseases

### **Approach**

To be covered as seminars Slide discussions of the same Record book to be maintained **Academic activities**

- Visit to center out Animal experimentation to familiarize with Laboratory techniques, upkeep and care of animals
- Completion of Dissertation work and submission of the same, six months before the Final Examination
- Study of Journals, Internet Browsing, and group discussions, to update knowledge in the recent advances in Oral Pathology
- Reporting of histopathology slides
- Journal clubs and Seminars to be presented by every post graduate student twice a month
- Clinico-pathological discussions by every student once in a month
- To attend Interdepartmental meetings.

### **Monitoring learning Progress**

It is essential to monitor the learning progress of each candidate through continuous appraisal and regular assessment. It not only helps teachers to evaluate students, but also students to evaluate themselves. The monitoring be done by the staff of the department based on participation of students in various teaching / learning activities. It may be structured and assessment is done using checklists that assess various aspects. Checklists are given in Section

## **IV. Scheme of Examination**

### **Theory - 300 Marks**

Written examination shall consist of four question papers each of three hours duration. Total marks for each paper will be 75. Paper I, II and III shall consist of two long questions carrying 20 marks each and 5 short essay questions carrying 7 marks each. Paper IV will be on Essay. Questions on recent advances may be asked in any or all the papers. Distribution of topics for each paper will be as follows \*:

**PAPER-I :** Applied Basic Sciences: Applied anatomy, Physiology (General and oral), Cell Biology, General Histology, Biochemistry, General Pathology, General and systemic Microbiology, Virology, Mycology, Basic Immunology, Oral Biology (oral and dental histology), Biostatistics and Research Methodology

**PAPER-II:** Oral pathology, Oral Microbiology & Immunology and Forensic Odontology

**PAPER-III:** Laboratory techniques and Diagnosis and Oncology

**PAPER-IV:** Essay

\* The topics 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 topics is inevitable. Students should be prepared to answer overlapping topics.

**B. Practical/Clinical - 200 Marks**

1. Case Presentation
  - a) Long case - 20 marks
  - b) Short case - 10 marks
2. Clinical Hematology (any two investigations) - 20 Marks  
Hb%, bleeding time, clotting time, Total WBC count, Differential WBC count and ESR
3. Smear Presentation OR - 20 marks  
Cytology or microbial smear and staining
4. Paraffin sectioning and H & E Staining - 30 Marks
5. Histopathology slide discussion - 100 Marks

**C. Viva Voce 100 Marks**

**i. Viva-Voce examination: 80 marks**

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression, interpretation of data and communication skills. It includes rill components of course contents. It includes presentation and discussion on dissertation also. Approximate duration 60 min per candidate.

**ii. Pedagogy Exercise: 20 marks**

A topic is given to each candidate in the beginning of clinical examination. He/she is asked to make a presentation on the topic for 8-10 minutes

# ***PUBLIC HEALTH DENTISTRY***

## ***Objectives***

At the end of 3 years of training the candidate should be able to:

## ***Knowledge***

- Apply basic sciences knowledge regarding etiology, diagnosis and management of the prevention, promotion and treatment of all the oral conditions at the individual and community level.
- Identify social, economic, environmental and emotional determinants in a given individual patient or a community for the purpose of planning and execution of Community Oral Health Program.
- Ability to conduct Oral Health Surveys in order to identify all the oral health problems affecting the community and find solutions using multi - disciplinary approach. Ability to act as a consultant in community Oral Health, teach, guide and take part in research (both basic and clinical), present and publish the outcome at various scientific conferences and journals, both national and international level.

## ***Skills***

The candidate should be able to

- Take history, conduct clinical examination including all diagnostic procedures to arrive at diagnosis at the individual level and conduct survey of the community at state and national level of all conditions related to oral health to arrive at community diagnosis. Plan and perform all necessary treatment, prevention and promotion of Oral Health at the individual and community level.
- Plan appropriate Community Oral Health Program, conduct the program and evaluate, at the community level.
- Ability to make use of knowledge of epidemiology to identify causes and appropriate preventive and control measures.
- Develop appropriate person, power at various levels and their effective utilization.
- Conduct survey and use appropriate methods to impart Oral Health Education.
- Develop ways of helping the community towards easy payment plan, and followed by evaluation for their oral health care needs.
- Develop the planning, implementation, evaluation and administrative skills to carry out successful community Oral Health Programs.

## ***Values:***

- Adopt ethical principles in all aspects of Community Oral Health Activities.
- To apply ethical and moral standards while carrying out epidemiological researches.
- Develop communication skills, in particular to explain the causes and prevention of oral diseases to the patient.
- Be humble and accept the limitations in his knowledge and skill and to ask for help from colleagues when needed and promote teamwork approach.
- Respect patient's rights and privileges including patients right to information and right to seek a second opinion.

***Course Contents:***

***Paper I: Applied Basic Sciences***

***I. Applied Anatomy and Histology***

***A. Applied Anatomy in relation to:***

- Development of face
- Bronchial arches
- Muscles of facial expression
- Muscles of mastication
- TMJ
- Salivary gland
- Tongue
- Hard and soft palate
- Infratemporal fossa
- Paranasal air sinuses
- Pharynx and larynx
- Cranial and spinal nerves- with emphasis on trigeminal, facial, glossopharyngeal and hypoglossal nerve
- Osteology of maxilla and mandible
- Blood supply, venous and lymphatic drainage of head and neck
- Lymph nodes of head and neck
- Structure and relations of alveolar process and edentulous mouth
- Genetics-fundamentals

***B. Oral Histology***

- Development of dentition, Innervations of dentin and pulp
- Periodontium-development, histology, blood supply, nerve supply and lymphatic drainage
- Oral mucous membrane
- Pulp-periodontal complex

***II. Applied Physiology and Biochemistry:***

- Cell
- Mastication and deglutation
- Food and nutrition
- Metabolism of carbohydrates, proteins and fats
- Vitamins and minerals
- Fluid and electrolyte balance
- Pain pathway and mechanism-types, properties
- Blood composition and functions, clotting mechanism and erythropoiesis, Blood groups and transfusions, Pulse and blood pressure,
- Dynamics of blood flow
- Cardiovascular homeostasis-heart sounds
- Respiratory system: Normal physiology and variations in health and diseases, Asphyxia and artificial respiration
- Endocrinology: thyroid, parathyroid, adrenals, pituitary, sex hormones and pregnancy, Endocrine regulation of blood sugar.

### **III. A. Applied Pathology:**

- Pathogenic mechanism at molecular level
- Cellular changes following injury
- Inflammation and chemical mediators
- Oedema, thrombosis and embolism
- Hemorrhage and shock
- Neoplasia and metastasis
- Blood disorders
- Histopathology and pathogenesis of dental caries, periodontal disease, oral mucosal lesions, and malignancies, HIV
- Propagation of dental infection

### **B. Microbiology**

- Microbial flora of oral cavity
- Bacteriology of dental caries and periodontal disease
- Methods of sterilization
- Virology of HIV, herpes, hepatitis
- Parasitology
- Basic immunology - basic concepts of immune system in human body  
Cellular and humoral immunity Antigen and antibody system Hypersensitivity and Autoimmune diseases

### **C. Oral Pathology**

- Detailed description of diseases affecting the oral mucosa, teeth, supporting tissues and jaws.

### **IV. Physical and Social Anthropology**

- Introduction and definition
- Appreciation of the biological basis of health and disease
- Evolution of human race, various studies of different races by anthropological methods

### **V. Applied Pharmacology:**

- Definition, scope and relations to other branches of medicine, mode of action, bioassay, standardization, pharmacodynamics, pharmacokinetics.
- Chemotherapy of bacterial infections and viral infections - sulphonamides and antibiotics.
- Local anesthesia
- Analgesics and anti-inflammatory drugs
- Hypnotics, tranquilizers and antipyretics
- Important hormones-ACTH, cortisone, insulin and oral antidiabetics.
- Drug addiction and tolerance
- Important pharmacological agents in connection with autonomic nervous system- adrenaline, noradrenaline, atropine
- Brief mention of antihypertensive drugs
- Emergency drugs in dental practice
- Vitamins and haemopoietic drugs

## **VI. *Research Methodology and Biostatistics:***

**Health informatics.** Basic understanding of computers and its components, operating software (Windows), Microsoft office, preparation of teaching materials like slides, project, multimedia knowledge.

**Research methodology** definitions, types of research, designing written protocol for research, objectivity in methodology, quantification, records and analysis.

Biostatistics-introduction, applications, uses and limitations of bio - statistics in Public Health dentistry, collection of data, presentation of data, measures of central tendency, measures of dispersion, methods of summarizing, parametric and non parametric tests of significance, correlation and regression, multivariate analysis, sampling and sampling techniques - types, errors, bias, training and calibration.

**COMPUTERS** Basic operative skills in analysis of data and knowledge of multimedia.

### ***Paper II - Public Health***

#### ***1. Public Health***

- Definition, concepts and philosophy of dental health
- History of public health in India and at international level
- Terminologies used in public health

#### ***2. Health***

- Definition, concepts and philosophy of health
- Health indicators
- Community and its characteristics and relation to health

#### ***3. Disease***

- Definition, concepts.
- Multifactorial causation, natural history, risk factors
- Disease control and eradication, evaluation and causation, infection of specific diseases
- Vaccines and immunization

#### ***4. General Epidemiology***

- Definition and aims, general principles
- Multifactorial causation, natural history, risk factors
- Methods in epidemiology, descriptive, analytical, experimental and classic epidemiology of specific diseases, uses of epidemiology
- Duties of epidemiologist
- General idea of method of investigating chronic diseases, mostly non-infectious nature, epidemic, endemic, and pandemic.
- Ethical conversation in any study requirement
- New knowledge regarding ethical subjects
- Screening of diseases and standard procedures used

### **5. Environmental Health:**

- Impact of important components of the environment of health
- Principles and methods of identification, evaluation and control of such health hazards
- Pollution of air, water, soil, noise, food
- Water purification, international standards of water
- Domestic and industrial toxins, ionizing radiation
- Occupational hazards
- Waste disposal- various methods and sanitation

### **6. Public Health Education:**

- Definition, aims, principles of health education
- Health education, methods, models, contents, planning health education Programs

### **7. Public Health Practice and Administration System In India**

### **8. Ethics And Jurisprudence**

- Basic principles of law
- Contract laws- dentist - patient relationships & Legal forms of practice
- Dental malpractice
- Person identification through dentistry
- Legal protection for practicing dentist.
- Consumer protection act

### **9. Nutrition In Public Health:**

- Study of science of nutrition and its application to human problems. Nutritional surveys and their evaluations
- Influence of nutrition and diet on general health and oral health, dental caries, periodontal disease and oral cancers
- Dietary constituents, cariogenicity and Guidelines for nutrition

### **10. Behavioral Sciences:**

- Definition and introduction
- Sociology: social class, social group, family types, communities and social relationships, culture, its effect on oral health.
- Psychology: definition, development of child psychology, anxiety, fear and phobia, intelligence, learning, motivation, personalities, fear, dentist-patient relationship, modeling and experience

### **11 Hospital Administration:**

- Departmental maintenance, organizational structures
- Types of practices
- Biomedical waste management
- 

### **12, Health Care Delivery System:**

- International oral health care delivery systems - Review
- Central and state system in general and oral health care delivery system.
- National Oral health policy

- National health programmes
- Primary health care - concepts, oral health in PHC and its implications
- National and international health organizations
- Dentists Act 1948, Dental council of India, Ethics, Indian Dental Association
- Role of W.H.O. and Voluntary organizations in Health Care for the Community

### ***13. Oral Biology And Genetics:***

- A detailed study of cell structure
- Introduction to Genetics, Gene structure, DNA, RNA
- Genetic counseling, gene typing
- Genetic approaches in the study of oral disorders
- Genetic Engineering - Answer to current health problems

## ***Paper III: Dental Public Health***

### ***1. Dental Public Health:***

- History
- Definition and concepts of dental public health
- Differences between clinical and community dentistry
- Critical review of current practice
- Dental problems of specific population groups such as chronically ill, handicapped and institutionalized group

### ***2. Epidemiology of Oral Diseases and Conditions***

- Dental caries, gingival, periodontal disease malocclusion, dental Fluorosis, oral cancer, TMJ disorders and other oral health related problems.

### ***3. Oral Survey Procedures:***

- Planning
- Implementation
- WHO basic oral health methods 1997
- Indices for dental diseases and conditions
- Evaluation

### ***4. Delivery of Dental Care***

- Dental personnel - dental auxiliaries
- Dentist - population ratios,
- Public dental care programs
- School dental health programs- Incremental and comprehensive care
- Private practice and group practice
- Oral health policy - National and international policy

### ***5. Payment for Dental care***

- Prepayment
- Post-payment
- Reimbursement plans
- Voluntary agencies
- Health insurance

## **6. Evaluation of Quality of Dental care**

- Problems in public and private oral health care system program
- Evaluation of quality of services, governmental control

## **7. Preventive Dentistry**

- Levels of prevention
- Preventive oral health programs screening, health education and motivation
- Prevention of all dental diseases-dental caries, periodontal diseases, oral cancer, malocclusion and Dentofacial anomalies
- Role of dentist in prevention of oral diseases at individual and community level.
- Fluoride
  - History
  - Mechanism of action
  - Metabolism
  - Fluoride toxicity
  - Fluorosis
  - Systemic and topical preparations
  - Advantages and disadvantages of different types of fluoride
  - Update regarding Fluorosis
  - Epidemiological studies
  - Methods of fluoride supplements
  - Defluoridation techniques
- Plaque control measures-
  - Health Education
  - Personal oral hygiene
  - Tooth brushing technique
  - Dentifrices, mouth rinses
- Pit and fissure sealant, ART
- Preventive oral health care for medically compromised individual
- Update on recent preventive modalities
- Caries vaccines
- Dietary counseling

## **8. Practice Management**

- Definition
- Principles of management of dental practice and types
- Organization and administration of dental practice
- Ethical and legal issues in dental practice
- Current trends

## **Structured Training Schedule**

### **First Year Seminars**

- 5 seminars in basic sciences subject
- To conduct 10 journal clubs, Library assignment on assigned topics - 2
- Submission of synopsis for dissertation-within 6 months
- Periodic review of dissertation at two monthly intervals

### ***Clinical Training***

1. Clinical assessment of patient
2. Learning different criteria and instruments used in various oral indices of five cases each
  - Oral Hygiene Index - Greene and Vermillion
  - Oral Hygiene Index - Simplified
  - DMF - DMF (T), DMF (S)
  - def
  - Fluorosis Indices - Dean's Fluorosis Index, Tooth Surface Index for Fluorosis, Thylstrup and Fejerskov Index
  - Community Periodontal Index (CPI) Plaque Index-Silness and Loe / WHO Oral Health Assessment Form -1997
  - Carrying out treatment (under comprehensive oral health care) of 10 patients - maintaining complete records.

### ***Field Programme:***

1. Carrying out preventive programs and health education for school children of the adopted school.
2. School based preventive programs-
  - Topical Fluoride application-Sodium Fluoride, Stannous Fluoride, Acidulated Phosphate Fluoride preparations and Fluoride varnishes, Fluoride mouth rinses
  - Pit and Fissure Sealant - chemically cured (GIC), light cured
  - Minimal Invasive Treatment-Preventive Resin Restorations (PRR), Atraumatic Restorative Treatment (ART)
  - Organizing and carrying out dental camps in both urban and rural areas.
3. Visit to slum, water treatment plant, sewage treatment plant, and Milk dairy, Public Health Institute, Anti-Tobacco Cell, Primary Health Center and submitting reports.
4. In additions the postgraduate shall assist and guide the under graduate students in their clinical and field programs.

### ***Second Year Seminars***

- Seminars in Public Health and Dental Public Health topics
- Conducting journal clubs
- Short term research project on assigned topics - 2
- Periodic review of dissertation at monthly reviews
- Library Assignment to be completed

### ***Clinical Training-Continuation of the clinical training***

1. Clinical assessment of patient
2. Learning different criteria and instruments used in various oral indices
  - Oral Hygiene Index – Greene and Vermillion
  - DMF - DMF (T), DMF (S)
  - def t/s
  - Fluorosis Indices - Dean's Fluorosis Index, Tooth Surface Index for Fluorosis, Thylstrup and Fejerskov Index
  - Community Periodontal Index (CPI)
  - Plaque Index-Silness and Loe
  - WHO Oral Health Assessment Form -1997

- Carrying out treatment (under comprehensive oral health care) of 10 patients - maintaining complete records

### ***Field Program - Continuation of field program***

1. Carrying out school dental health education
2. School based preventive programs-
  - Topical Fluoride application-Sodium Fluoride, Stannous Fluoride, Acidulated Phosphate Fluoride preparations and Fluoride varnishes, Fluoride mouth rinses
  - Pit and Fissure Sealant - chemically cured (GIC); light cured
  - Minimal Invasive Treatment-Preventive Resin Restorations (PRR), Atraumatic Restorative Treatment (ART)
  - Organizing and carrying out dental camps in both urban and rural areas.
3. Assessing oral health status of various target groups like School children, Expectant mothers / Handicapped, Underprivileged, and geriatric populations. Plan dental manpower and financing dental health care for the above group.
4. Application of the following preventive measures in clinic-10 Cases each.
  - Topical Fluoride application - Sodium Fluoride, Stannous Fluoride, Acidulated Phosphate Fluoride preparations and Fluoride varnishes.
  - Pit and Fissure Sealant
5. Planning total health care for school children in an adopted school:
  - Periodic surveying of school children
  - Incremental dental care
  - Comprehensive dental care
6. Organizing and conducting community oral health surveys for all oral condition- 3 surveys
7. In addition the postgraduate shall assist and guide the under graduates in their clinical and field programs
8. To take lecture classes (2) for Undergraduate students in order to learn teaching methods (pedagogy) on assigned topic.

### ***Third Year:***

#### ***Seminars***

- Seminars on recent advances in Preventive Dentistry and Dental Public Health
- Critical evaluation of scientific articles -10 articles
- Completion and submission of dissertation

#### ***Clinical Training***

1. Clinical assessment of patient
2. Learning different criteria and instruments used in various oral indices - 5 each of
  - Oral Hygiene Index - Greene and Vermillion
  - Oral Hygiene Index – Simplified
  - DMF - DMF (T), DMF (S)
  - def t/s
  - Fluorosis Indices - Dean's Fluorosis Index, Tooth Surface Index for fluorosis
  - Thylstrup and Fejerskov Index
  - Community Periodontal Index (CPI)

- Plaque Index-Silness and Loe
  - WHO Oral Health Assessment Form -1997
  - Carrying out treatment (under comprehensive oral health care) of 10 patients - maintaining complete records
3. Carrying out school dental health education
  4. School based preventive programs-
    - Topical Fluoride application - Sodium Fluoride, Stannous Fluoride, Acidulated Phosphate Fluoride preparations and Fluoride varnishes.
    - Pit and Fissure Sealant
    - Minimal Invasive Techniques - Preventive Resin Restorations (PRR), Atraumatic Restorative Treatment (ART)
  5. To take lecture classes (2) for Undergraduate students in order to learn teaching methods (pedagogy) on assigned topic
  6. Exercise on solving community health problems -10 problems
  7. Application of the following preventive measures in clinic -10 cases each.
    - Topical Fluoride application - Sodium Fluoride, Stannous Fluoride, Acidulated Phosphate Fluoride preparations
    - Pit and Fissure sealants
  8. Dental - health education training of school teachers, social workers, health workers,
  9. Posting at dental satellite centers/ nodal centers
  9. In addition the post graduate shall assist and guide the under graduate students in their clinical and field programs Before completing the third year M.D.S., a student must have attended two national conferences. Attempts should be made to present two scientific papers, publication of a scientific article in a journal.

### ***Monitoring Learning Process:***

It is essential to monitor the learning progress of each candidate through continuous appraisal and regular assessment. It not only helps teachers to evaluate students, but also students to evaluate themselves. The monitoring be done by the staff of the department based on participation of students in various teaching / learning activities. It may be structured and assessment be done using checklists that assess various aspects. Checklists are given in Section IV.

### ***Scheme of Examination***

#### ***A. Theory: 300 Marks***

Written examination shall consist of four question papers each of three hours duration. Total marks for each paper will be 75. Paper I, II and III shall consist of two long questions carrying 20 marks each and 5 short essay questions each carrying 7 marks each. Paper IV will be an essay. Questions on recent advances will be asked in any or all the papers. Distribution of topics for each paper as follows:

***PAPER-I*** : Applied Basic Sciences: Applied Anatomy and Histology, Applied Physiology and Biochemistry, Applied Pathology, Microbiology, Oral Pathology, Physical and Social Anthropology, Applied Pharmacology and Research Methodology and statistics.

**PAPER II:** Public Health

**PAPER-III:** Dental Public Health

**PAPER-IV:** Essay (Topics of current interest in community oral health)

\* The topics 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 topics is inevitable. Students should be prepared to answer overlapping topics.

***B. Practical / Clinical Examination : 200 Marks***

- 1) Clinical examination of at least 2 patients representing the community- includes history, chief complaints, examination and recording of the findings, using indices for the assessment of oral health and presentation of the observation including diagnosis, comprehensive treatment planning. (50 Marks -1 Hrs)
- 2) ***Performing***
  - a. One of the treatment procedures as per treatment plan. (Restorative, surgical, rehabilitation)
  - b. Preventive oral health care procedure. (50 Marks -1 Hrs)
  - c. One of the procedures specified in the curriculum
- 3) Critical evaluation of a given research article published in an international journal (50 Marks -1 Hour)
- 4) Problem solving - a hypothetical oral health situation existing in a community is given with sufficient data. The student as a specialist in community dentistry is expected to suggest practical solutions to the existing oral health situation of the given community. (50 Marks -1 Hour)

***C. Viva Voce 100 Marks***

***i. Viva-Voce examination: 80 marks***

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression, interpretation of data and communication skills. It includes all components of course contents. It includes presentation and discussion on dissertation also. Approximate duration 60 min per candidate.

***ii. Pedagogy Exercise: 20 marks***

A topic be given to each candidate in the beginning of clinical examination. He/she is asked to make a presentation on the topic for 8-10 minute

# ***PAEDODONTICS & PREVENTIVE DENTISTRY***

## ***Objectives***

At the end of 3 years of training the candidate should be able to

1. Create not only a good oral health in the child but also a good citizen of tomorrow.
2. Instill a positive attitude and behavior in children
3. Understand the principles of prevention and preventive dentistry right from birth to adolescence
4. Guide and counsel the parents in regards to various treatment modalities including different facets of preventive dentistry
5. Prevent and intercept developing malocclusion

## ***Skills***

1. Obtain proper clinical history, methodological examination of the child patient, perform essential diagnostic procedures and interpret them, and arrive at a reasonable diagnosis and treat appropriately
2. Be competent to treat dental diseases which are occurring in child patient.
3. Manage to repair and restore the lost / tooth structure to maintain harmony between both hard and soft tissues of the oral cavity.
4. Manage the disabled children effectively and efficiently, tailored to the needs of individual requirement and conditions.

## ***Attitudes***

1. Develop an attitude to adopt ethical principles in all aspects of Pedodontic practice.
2. Professional honesty and integrity are to be fostered
3. Treatment care is to be delivered irrespective of the social status, cast, creed, and religion of the patients.
4. Willingness to share the knowledge and clinical experience with professional colleagues.
5. Willingness to adopt, after a critical assessment, new methods and techniques of Pedodontic management developed from time to time, based on scientific research, which are in the best interest of the child patient.
6. Respect child patient's rights and privileges, including child patients right to information and right to seek a second opinion.
7. Develop an attitude to seek opinion from allied medical and dental specialities, as and when required

## ***Course contents***

1. Applied Anatomy & genetics
2. Applied Physiology
3. Applied Pathology
4. Nutrition and Dietics
5. Growth & Development: Prenatal and postnatal development of cranium, face, jaws, teeth and supporting structures. Chronology of dental development and development of occlusion. Dimensional changes in dental arches. Cephalometric evaluation of growth.

6. Child Psychology: Development & Classification of behavior, personality, intelligence in children, theories of child psychology, stages of psychological child development, fear, anxiety, apprehension and its management
7. Behavior Management: Non- pharmacological & Pharmacological methods.
8. Child Abuse & Dental Neglect
9. Conscious Sedation, Deep Sedation & General Anesthesia in Pediatric Dentistry: (Including Other Drugs, Synergic & Antagonistic Actions of Various Drugs Used in Children)
10. Preventive Pedodontics: Concepts, chair side preventive measures for dental diseases, high-risk caries including rampant & extensive caries - Recognition, Features & Preventive Management, Pit and Fissure Sealants, Oral Hygiene measures, Correlation of brushing with dental caries and periodontal diseases. Diet & Nutrition as related to dental caries. Diet Counseling
11. Dental Plaque: Definition, Initiation, Pathogenesis, Biochemistry, and Morphology' & Metabolism.
12. Microbiology & Immunology as related to Oral Diseases in Children. Basic concepts, immune system in human body, Auto Immune diseases, Histopathology, Pathogenesis, Immunology of dental caries, Periodontal diseases. Tumors, Oral Mucosal lesions etc.
13. Gingival & Periodontal diseases in Children:
  - a. Normal Gingiva & Periodontium in children.
  - b. Gingival & Periodontal diseases - Etiology, Pathogenesis, Prevention & Management
14. Pediatric Operative Dentistry
  - a. Principles of Operative Dentistry along with modifications of materials/past, current & latest including tooth colored materials.
  - b. Modifications required for cavity preparation in primary and young permanent teeth.
  - c. Various Isolation Techniques
  - d. Restorations of decayed primary, young permanent and permanent teeth in children using various restorative material like Glass Ionomer, Composites, Silver, Amalgam & latest material (gallium)
  - e. Stainless steel, Polycarbonate & Resin Crowns / Veneers & fibre pvit systems.
15. Pediatric Endodontics:
  - a. **Primary Dentition:** - Diagnosis of pulpal diseases and their management - Pulp capping, Pulpotomy, Pulpectomy (Materials & Methods), Controversies & recent concepts.
  - b. Young permanent teeth and permanent teeth, Pulp capping, Pulpotomy, Apexogenesis, Apexification, Concepts, Techniques and Materials used for different procedures.
  - c. Recent advances in Pediatric diagnosis and Endodontics.
16. Prosthetic consideration in-Paediatric Dentistry.
17. Traumatic Injuries in Children:
  - a. Classifications & Importance.
  - b. Sequelae & reaction of teeth to trauma.
  - c. Management of Traumatized teeth with latest concepts.
  - d. Management of jaw fracture in children.

18. Interceptive Orthodontics:
  - a. Concepts of occlusion and esthetics: Structure and function of all anatomic components of occlusion, mechanics of articulations, recording of masticatory function, diagnosis of Occlusal dysfunction, relationship of TMJ anatomy and pathology and related neuromuscular physiology.
  - b. A comprehensive review of the local and systemic factors in the causation of malocclusion.
  - c. Recognition and management of normal and abnormal developmental occlusions in primary, mixed and permanent dentitions in children (Occlusal Guidance).
  - d. Biology of tooth movement: A comprehensive review of the principles of teeth movement  
Review of contemporary literature. Histopathology of bone and Periodontal ligament,  
Molecular and ultra cellular consideration in tooth movement.
  - e. Myofunctional appliances: Basic principles, contemporary appliances: Design & Fabrication
  - f. Removable appliances: Basic principles, contemporary' appliances: Design & Fabrication
  - g. Case selection & diagnosis in interceptive Orthodontics (Cephalometric, Image processing, Tracing, Radiation hygiene, Video imaging 8s advance Cephalometric techniques).
  - h. Space Management: Etiology, Diagnosis of space problems, analysis, Biomechanics, Planned extraction in interception orthodontics.
19. Oral Habits in Children:
  - a. Definition, Etiology & Classification
  - b. Clinical features of digit sucking, tongue thrusting, mouth breathing & various other secondary habits.
  - c. Management of oral habits in children
20. Dental care of Children with special needs:
  - a. Definition Etiology, Classification, Behavioral, Clinical features & Management of children with:
  - b. Physically handicapping conditions
  - c. Mentally compromising conditions
  - d. Medically compromising conditions
  - e. Genetic disorders
21. Oral manifestations of Systemic Conditions in Children & their Management
22. Management of Minor Oral Surgical Procedures in Children
23. Dental Radiology as related to Pediatric Dentistry
24. Cariology
  - a. Historical background
  - b. Definition, Etiology & Pathogenesis
  - c. Caries pattern in primary, young permanent and permanent teeth in children.
  - d. Rampant caries, early childhood caries and extensive caries.  
Definition, etiology, Pathogenesis, Clinical features, Complications & Management.
  - e. Role of diet and nutrition in Dental Caries

- f. Dietary modifications & Diet counseling.
  - g. Subjective & objective methods of Caries detection with emphasis on Caries Activity tests, Caries prediction, Caries susceptibility & their clinical Applications
25. Pediatric Oral Medicine & Clinical Pathology: Recognition & Management of developmental dental anomalies, teething disorders, stomatological conditions, mucosal lesions, viral infections etc.
  26. Congenital Abnormalities in Children: Definition, Classification, Clinical features of Management.
  27. Dental Emergencies in Children and their Management.
  28. Dental Materials used in Pediatric Dentistry.
  29. Preventive Dentistry:
    - a. Definition
    - b. Principles & Scope
    - c. Types of prevention
    - d. Different preventive measures used in Pediatric Dentistry including fissure sealants and caries vaccine.
  30. Dental Health Education & School Dental Health Programmes
  31. Dental health concepts, Effects of civilization and environment, Dental Health delivery system, Public Health measures related to children along with principles of Paediatric Preventive Dentistry
  32. Fluorides:
    - a. Historical background
    - b. Systemic & Topical fluorides
    - c. Mechanism of action
    - d. Toxicity & Management.
    - e. Defluoridation techniques.
  33. Medicological aspects in Paediatric Dentistry with emphasis on informed concept.
  34. Counseling in Paediatric Dentistry
  35. Case History Recording, Outline of principles of examination, diagnosis & treatment planning.
  36. Epidemiology: Concepts, Methods of recording & evaluation of various oral diseases. Various national & global trends of epidemiology of oral diseases.
  37. Comprehensive Infant Oral Health Care.
  38. Principles of Bio-Statistics & Research Methodology & Understanding of Computers and Photography
  39. Comprehensive cleft care management with emphasis on counseling, feeding, nasoalveolar bone remodeling, speech rehabilitation.
  40. Setting up of Paedodontics & Preventive Dentistry Clinic.
  41. Emerging concept in Paediatric Dentistry of scope of laser/minimum invasive procedures :

## **1<sup>ST</sup> YEAR**

### **Preclinical Work**

(Duration - first 6 Months of First Year MDS)

(One On Each Exercise)

1. Carving of all deciduous teeth
2. Basic wire bending exercises
3. Fabrication of
  - a. Maxillary bite plate / Hawley's'

- b. Maxillary expansion screw appliance
- c. Canine retractor appliance
- d. All habit breaking appliances
  - i. Removable type
  - ii. Fixed type
  - iii. Partially fixed and removable
- e. Two Myofunctional appliance
- f. Making of inclined plane appliance
- g. Feeding appliances
- 4. Basic soldering exercise I - making of a lamppost of stainless steel wire pieces of different gauges soldered on either side of heavy gauge main post.
- 5. Fabrication of space maintainers
  - a. Removable type-
    - Unilateral Non - functional space maintainer
    - Bilateral Non-Functional space maintainer
    - Unilateral functional space maintainer
    - Bilateral functional space maintainer
  - b. Space Regainers -
    - Hawley's appliances with Helical space regainer
    - Removable appliance with Slingshot space regainer
    - Removable appliance with Dumbbell space regainer
  - c. Fixed Space maintainers
    - Band & long loop space maintainer
    - Band & short loop space maintainer
    - Mayne's space maintainer
    - Transpalatal arch space maintainer
    - Nance Palatal holding arch
    - Nance Palatal holding arch with canine stoppers
    - Gerber space regainer
    - Distal shoe appliance
      - a. Active space maintainers
      - b. For guiding the eruption of first permanent molar
      - c. Arch holding device
      - d. Functional space maintainer
- 6. Basics for spot welding exercise
- 7. Collection of extracted deciduous and permanent teeth
  - a. Sectioning of the teeth at various levels and planes
  - b. Drawing of section and shapes of pulp
  - c. Phantom Head Exercises : Performing ideal cavity preparation for various restorative materials for both Deciduous and permanent teeth
  - d. Performing pulpotomy, root canal treatment and Apexification procedure
    - I. Tooth preparation and fabrication of various temporary and permanent restorations on fractured anterior teeth.
    - II. Preparation of teeth for various types of crowns
    - III. Laminates/veneers
    - IV. Bonding & banding exercise
- 8. Performing of behavioral rating and IQ tests for children.
- 9. Computation of: -
  - Caries index and performing various caries activity test.

Oral Hygiene Index  
 Periodontal Index  
 Fluorosis Index

10. Surgical Exercises : a. Fabrication of splints b. Type of Wiring c. Suturing.  
 a. Taking of periapical, occlusal, bitewing radiographs of children  
 b. Developing and processing of films, thus obtained  
 c. Tracing of soft tissue, dental and skeletal landmarks as observed on Cephalometric radiographs and drawing of various planes and angles, further interpretation of Cephalometric radiographs analysis.  
 d. Mixed dentition cast analysis
11. Library assignment  
 12. Synopsis

**Clinical work Requirements from 7 to 36 months**

The following is the minimum requirement to be completed before the candidate can be considered eligible to appear in the final M.D.S Examinations: -

<b>No,</b>	<b>Clinical Work</b>	<b>Total</b>	<b>7 To 12 Months</b>	<b>13 To 24 Months</b>	<b>25 To 36 Months</b>
1	Behavior Management of different age groups children with complete records.	17	2	10	5
2	Detailed Case evaluation with complete records, treatment planning and presentation of cases with chair side and discussion	17	2	10	5
3	Step-by-step chair side preventive dentistry scheduled for high risk children with gingival and periodontal diseases & Dental Caries	11	1	5	5
4	Practical application of Preventive dentistry concepts in a class of 35-50 children & Dental Health Education & Motivation.	7	1	4	2
5	Pediatric Operative Dentistry with application of recent concepts. (a). Management of Dental Caries (I) Class I	50	30	10	10
	(II) Class II	100	40	50	10
	(III) Other Restorations 100	20	50	30	
	(b). Management of traumatized anterior teeth	15	04	06	05
	(c) Aesthetic Restorations	25	05	10	10

	(d). Pediatric Endodontic				
	Procedures-				
	Deciduous teeth				
	Pulpotomy /Pulpectomy	150	30	50	70
	Permanent Molars-	20	3	7	10
	Permanent Incisor-	15	2	3	10
	Apexification &	20	02	08	10
	Apexogenesis				
6	Stainless Steel Crowns	50	10	20	20
7	Other Crowns	05	01	02	02
8	Fixed Space Maintainers	30	08	12	10
9	Removable Space Maintainers	20	05	07	08
10	Functional Maintainers	05	01	02	02
11	Preventive measures like fluoride applications , Pit & Fissure Sealants applications with complete follow-up and diet counseling	20	08	08	04
12	Special Assignments(i) School Dental Health Programmes	03	01	01	01
	(ii) Camps etc.,	02	01	01	

13 Library usage

14.Laboratory usage

15.Continuing Dental Health Programme

(The figures given against SI. No. 4 to 12 are the minimum number of recommended procedures to be performed)

### **PROCEDURAL AND OPERATIVE SKILLS SHOULD BE AS ON**

#### **1<sup>st</sup> year**

Examination of patients	case history recording	- 100
FNAC		- 50
Biopsy		- 50
Observe assist and perform under supervision		
Intra oral radiographs perform under interpretation		- 500

#### **2<sup>nd</sup> year**

1. Dental treatment to medically compromised patients  
-Observe, assist, and perform under supervision
2. Extra - oral radiographs, digital radiography 20  
-Observe, assist and perform under supervision

#### **Operative skills:**

1. Giving intra — muscular and intravenous injections
2. Administration of oxygen and life saving drugs to the patients
  3. Performing basic CPR and certification by Red Cross

### **3<sup>rd</sup> Year**

All the above	
Performed independently - Case history: Routine cases	- 100
Interesting Cases	- 25
Intra - oral Radiographs	- 100
Periapical view	- 100
Bitewing view	- 50
Occlusal view	- 50
Extra — oral radiographs of different views	- 100

### **Monitoring Learning Progress**

It is essential to monitor the learning progress of each candidate through continuous appraisal and regular assessment. It not only helps teachers to evaluate students, but also students to evaluate themselves. The monitoring to be done by the staff of the department based on participation of students in various teaching / learning activities. It may be structured and assessment be done using checklists that assess various aspects. Checklists are given Section IV.

### **Scheme of Examination**

#### **A. Theory 300 Marks**

Written examination shall consist of four question papers each of three hours duration. Total marks for each paper will be 75. Paper I, II and III shall consist of two long questions carrying 20 marks each and 5 short essay questions carrying 7 marks each. Paper IV will be on Essay. Questions on recent advances may be asked in any or all the papers. Distribution of topics for each paper will be as follows: \*

**PAPER-I :** Applied Basic Sciences : Applied Anatomy, Physiology, Pathology, Microbiology, Nutrition & Dietetics, Growth & Development and Dental plaque, Genetics.

**PAPER-II :** Clinical Paedodontics

1. Conscious sedation, Deep Sedation & General Anesthesia in Pediatric Dentistry
2. Gingival & Periodontal Diseases in Children
3. Pediatric Operative Dentistry
4. Pediatric Endodontics
5. Traumatic Injuries in Children Interceptive Orthodontics
6. Oral Habits in children
7. Dental Care of Children with special needs
8. Oral Manifestations of Systemic Conditions in Children & their Management
9. Management of Minor Oral Surgical Procedures in Children
10. Dental Radiology as Related to Pediatric Dentistry
11. Pediatric Oral Medicine & Clinical Pathology
12. Congenital Abnormalities in Children
13. Dental Emergencies in Children & Their Management
14. Dental Materials Used in Pediatric Dentistry
15. Case History Recording

## 16. Setting up of Pedodontic & Preventive Dentistry Clinic

### **PAPER III:** Preventive and Community Dentistry as applied to Pediatric Dentistry

1. Child Psychology
2. Behavior Management
3. Child Abuse & Dental Neglect
4. Preventive Pedodontics
5. Cariology
6. Preventive Dentistry
7. Dental Health Education 8s School Dental Health Programmes
8. Fluorides
9. Epidemiology
10. Comprehensive Infant Oral Health Care/Comprehensive cleft care
11. Principles of Bio-Statistics & Research Methodology & Understanding of Computers and Photography

### **PAPER-IV: Essay**

\* The topics 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 topics is inevitable. Students should be prepared to answer overlapping topics.

### **B. Practical Examination 200 Marks**

The Clinical / Practical and Viva-Voce Examinations are conducted for a minimum of two days.

#### **First Day:**

- |  |          |
|--|----------|
| 1. Case Discussion, Pulp Therapy i.e. Pulpectomy on a Primary Molar. |          |
| Case Discussion  | 20 marks |
| Rubber Dam application   | 10 marks |
| Working length X-ray   | 20 marks |
| Obturation   | 20 marks |
| Total  | 70 marks |

Case Discussion, Crown preparation on a Primary Molar for Stainless steel crown and cementation of the same.

Case discussion	10 marks
Crown Preparation	20 marks
Crown selection and Cementation	20 marks
Total	50 marks

Case discussion, band adaptation for fixed type of space maintainer and-  
impression making.

Case discussion	20 marks
Band adaptation	20 marks
Impression	20 marks
Total	60 marks

***Second Day:***

1. Evaluation of Fixed Space Maintainer and Cementation : 20 marks

***C. Viva Voce : 100 Marks***

***i. Viva-Voce examination: 80 marks***

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression, interpretation of data and communication skills. It includes all components of course contents. It includes presentation and discussion on dissertation also. Approximate duration 60 min per candidate.

***ii. Pedagogy Exercise: 20 marks***

A topic is given to each candidate in the beginning of clinical examination. He/she is asked to make a presentation on the topic for 8-10 minutes

# ORAL MEDICINE AND RADIOLOGY

## Objectives

At the end of 3 years of training the candidate should be able to

## Knowledge

Theoretical, Clinical and practical knowledge of all mucosal lesions, diagnostic procedures pertaining to them and latest information of imaging modules.

## Skills and Attitude: Three important skills need to be imparted

1. Diagnostic skill in recognition of oral lesions and their management
2. Research skill in handling scientific problems pertaining to oral treatment
3. Clinical and Didactic skill in encouraging younger doctors to attain learning objectives

## Attitudes

The positive mental attitude and the persistence of continued learning need to be inculcated

## Course Contents

### Paper I: Applied Basic Sciences

#### Applied Anatomy

1. Gross anatomy of the face:
  - a. Muscles of Facial Expression And Muscles Of Mastication
  - b. Facial nerve
  - c. Facial artery
  - d. Facial vein
  - e. Parotid gland and its relations
2. Neck region:
  - a. Triangles of the neck with special reference to Carotid, Digastric triangles and midline structures
  - b. Facial spaces
  - c. Carotid system of arteries, Vertebral Artery, and Subclavian arteries
  - d. Jugular system
    - i. Internal jugular
    - ii. External jugular
  - e. Lymphatic drainage
  - f. Cervical plane
  - g. Muscles derived from Pharyngeal arches
  - h. Infratemporal fossa in detail and temporomandibular joint
  - i. Endocrine glands
    1. Pituitary
    2. Thyroid
    3. Parathyroid
  - j. Sympathetic chain
  - k. Cranial nerves-V, VII, IX, XI, & XII
  - l. Exocrine glands
    - Parotid
    - Sublingual
    - Submandibular

3. Oral Cavity:
  - a. Vestibule and oral cavity proper
  - b. Tongue and teeth
  - c. Palate - soft and hard

4. Nasal Cavity
  - a. Nasal septum
  - b. Lateral wall of nasal cavity
  - c. Paranasal air sinuses

5. Pharynx:

Gross salient features of brain and spinal cord with references to attachment of cranial nerves to the brainstem.

Detailed study of the cranial nerve nuclei of V, VII, IX, X, XI, XII

Osteology: Comparative study of fetal and adult skull Mandible:

Development, ossification, age changes and evaluation of mandible in detail

***Embryology***

1. Development of face, palate, nasal septum and nasal cavity, paranasal air sinuses
2. Pharyngeal apparatus in detail including the floor of the primitive pharynx
3. Development of tooth in detail and the age changes
4. Development of salivary glands
5. Congenital anomalies of face must be dealt in detail.

***Histology:***

1. Study of epithelium of oral cavity and the respiratory tract
2. Connective tissue
3. Muscular tissue
4. Nervous tissue
5. Blood vessels
6. Cartilage
7. Bone and tooth
8. Tongue
9. Salivary glands
10. Tonsil, thymus, lymph nodes

***Physiology:***

1. General Physiology:
  - Cell
  - Body Fluid Compartments
  - Classification
  - Composition
  - Cellular transport
  - RMP and action potential Muscle Nerve Physiology
2. Structure of a neuron and properties of nerve fibers
3. Structure of muscle fibers and properties of muscle fibers
4. Neuromuscular transmission
5. Mechanism of muscle contraction

**Blood:**

2. RBC and Hb
3. WBC - Structure and functions
4. Platelets - functions and applied aspects
5. Plasma proteins
6. Blood Coagulation with applied aspects
7. Blood groups
8. Lymph and applied aspects

**Respiratory System & Cardiovascular System :**

- Air passages, composition of air, dead space, mechanics of respiration with pressure and volume changes
- Lung volumes and capacities and applied aspects
- Oxygen and carbon dioxide transport
- Neural regulation of respiration
- Chemical regulation of respiration
- Hypoxia, effects of increased barometric pressure and decreased barometric pressure
- Cardio-Vascular System:
- Cardiac Cycle
- Regulation of heart rate/ Stroke volume / cardiac output / blood flow
- Regulation of blood pressure
- Shock, hypertension, cardiac failure

**Excretory system**

- Renal function tests

**Gastro - intestinal tract:**

- Composition, functions and regulation of:
  - Saliva
  - Gastric juice
  - Pancreatic juice
  - Bile and intestinal juice
  - Mastication and deglutition

**Endocrine system:**

- Hormones - classification and mechanism of action
- Hypothalamic and pituitary hormones
- Thyroid hormones
- Parathyroid hormones and calcium homeostasis
- Pancreatic hormones
- Adrenal hormones

**Central Nervous System:**

- Ascending tract with special references to pain pathway

**Special Senses:**

- Gustation and Olfaction

## **Biochemistry**

### **3. Carbohydrates - Disaccharides specifically maltose, lactose, sucrose**

- Digestion of starch/absorption of glucose
- Metabolism of glucose, specifically glycolysis, TCA cycle, gluconeogenesis
- Blood sugar regulation
- Glycogen storage regulation
- Glycogen storage diseases
- Galactosemia and fructosemia

### **2. Lipids**

- Fatty acids- Essential/non essential
- Metabolism of fatty acids- oxidation, ketone body formation, utilization ketosis
- Outline of cholesterol metabolism- synthesis and products formed from cholesterol

### **3. Protein**

- Amino acids- essential/non essential, complete/ incomplete proteins
- Transamination/ Deamination (Definition with examples)
- Urea cycle
- Tyrosine- Hormones synthesized from tyrosine
- In born errors of amino acid metabolism
- Methionine and transmethylation

### **4. Nucleic Acids**

- Purines/Pyrimidines Purine analogs in medicine
- DNA/RNA-Outline of structure
- Transcription/translation Steps of protein synthesis Inhibitors of protein synthesis Regulation of gene function

### **5. Minerals**

- Calcium/Phosphorus metabolism specifically regulation of serum calcium levels
- Iron metabolism
- Iodine metabolism
- Trace elements in nutrition

### **6. Energy Metabolism**

- Basal metabolic rate
- Specific dynamic action (SDA) of foods

### **7. Vitamins**

- Mainly these vitamins and their metabolic role- specifically vitamin A, Vitamin C, Vitamin D, Thiamin, Riboflavin, Niacin, Pyridoxine

## **Pathology:**

### **1. Inflammation:**

- Repair and regeneration, necrosis and gangrene
- Role of complement system in acute inflammation
- Role of arachidonic acid and its metabolites in acute inflammation
- Growth factors in acute inflammation

- Role of molecular events in cell growth and intercellular signaling cell surface receptors
- Role of NSAIDS in inflammation
- Cellular changes in radiation injury and its manifestations

### **Homeostasis**

- Role of Endothelium in thrombo - genesis
- Arterial and venous thrombi
- Disseminated Intravascular Coagulation

### **Shock**

- Pathogenesis of hemorrhagic, neurogenic, septic, cardiogenic shock, circulatory
- disturbances, ischemic hyperemia, venous congestion, edema, infarction
- Chromosomal Abnormalities:
- Marfan's syndrome
- Ehler's Danlos Syndrome
- Fragile X Syndrome

### **Hypersensitivity:**

- Anaphylaxis
- Type II Hypersensitivity
- Type III Hypersensitivity
- Cell mediated Reaction and its clinical importance
- Systemic Lupus Erythmatosus
- Infection and infective granulomas

### **Neoplasia:**

- Classification of Tumors
- Carcinogenesis & Carcinogens - Chemical, Viral and Microbial
- Grading and Staging of Cancer, tumor Angiogenesis, Paraneoplastic Syndrome
- Spread of tumors
- Characteristics of benign and malignant tumors

### **Others:**

- Sex linked agamaglobulinemia
- AIDS
- Management of Immune deficiency patients requiring surgical procedures
- De George's Syndrome
- Ghons complex, post primary pulmonary tuberculosis - pathology and pathogenesis

### **Pharmacology:**

1. Definition of terminologies used
2. Dosage and mode of administration of drugs
3. Action and fate of drugs in the body
4. Drugs acting on the CNS
5. Drug addiction, tolerance and hypersensitive reactions
6. General and local anesthetics, hypnotics, analeptics, and & tranquilizers
7. Chemotherapeutics and antibiotics
8. Analgesics and anti - pyretics

9. Anti - tubercular and anti - syphilitic drugs
10. Antiseptics, sialogogues, and anti - sialogogues
11. Haematinics
12. Anti - diabetics
13. Vitamins - A B Complex, C, D, E, K
14. Steroids

**Genetics:**

1. Chromosome structure, nomenclature and behaviour
2. Molecular basis of inherited disease and oral cancer
3. Pedigree analysis
4. Ethics in clinical genetics

**Biostatistics :**

1. Types of data and data display
2. Probability
3. Confidence intervals
4. Hypothesis testing
5. ANOVA
6. Non-Parametrics
7. Analysis of Proportions
8. Linear regression
9. Study design
10. Power and sample size

**Paper II: Oral And Maxillofacial Radiology**

**Study includes Seminars / lectures / Demonstrations**

1. History of radiology, structure of x - ray tube, production of x - ray, properties of x rays
2. Biological effects of radiation
3. Filtration and collimation, grids and units of radiation
4. Films and recording media
5. Processing of image in radiology
6. Design of x -ray department, dark room and use of automatic processing units
7. Localization by radiographic techniques
8. Faults of dental radiographs and concept of ideal radiograph
9. Quality assurance and audit in dental radiology
10. Extra - oral-imaging techniques
11. OPG and other radiologic techniques
12. Advanced imaging technique like CT Scan, MRI, Ultrasound & thermography
13. Radio nucleotide techniques
14. Contrast radiography in salivary gland, TMJ, and other radiolucent pathologies
15. Radiation protection and ICRP guidelines
16. Art of radiographic report, writing and descriptors preferred in reports
17. Radiograph differential diagnosis of radiolucent, radio opaque and mixed lesions
18. Digital radiology and its various types of advantages

### ***Paper III: Oral Medicine, therapeutics and laboratory investigations***

1. Study includes seminars / lectures / discussion
2. Methods of clinical diagnosis of oral and systemic diseases as applicable to oral tissue including modern diagnostic techniques
3. Laboratory investigations including special investigations of oral and oro - facial diseases
4. Teeth in local and systemic diseases, congenital, and hereditary disorders
5. Oral manifestations of systemic diseases
6. Oro - facial pain
7. Psychosomatic aspects of oral diseases
8. Management of medically compromised patients including medical emergencies in the dental practice.
9. Congenital and Hereditary disorders involving tissues of oro facial region
10. Systemic diseases due to oral foci of infection
11. Hematological, Dermatological, Metabolic, Nutritional, & Endocrinal conditions with oral manifestations
12. Neuromuscular diseases affecting oro -facial region
13. Salivary gland disorders
14. Tongue in oral and systemic diseases
15. TMJ dysfunction and diseases
16. Concept of immunity as related to oro - facial lesions, including AIDS
17. Cysts, Neoplasms, Odontomes, and fibro - osseous lesions
18. Oral changes in Osteo - dystrophies and chondro - dystrophies
19. Pre malignant and malignant lesions of oro facial region
20. Allergy and other miscellaneous conditions
21. Therapeutics in oral medicine -clinical pharmacology
22. Forensic odontology
23. Computers in oral diagnosis and imaging
24. Evidence based oral care in treatment planning
25. Infection Control in Dentistry
26. Geriatric Dentistry

### ***Essential Knowledge***

Basic medical subjects, Oral Medicine, Clinical Dentistry, Management of Medical Emergencies, Oral Radiology, Techniques and Inter - Operation, Diagnosis of Oro-facial Disorders

Procedural and Operative Skills:

(The numbers mentioned are minimum to be performed by each candidate)

### ***1st Year***

1. Observe, Assist, & Perform under supervision  
Examination of Patient - Case history recordings -50  
- FNAC & Biopsy - 5 each  
Observe, Assist, & Perform under supervision
2. Intra - oral radiograph  
Perform an interpret -100

### ***2nd year***

1. Dental treatment to medically compromised patients  
- Observe, assist, and perform under supervision

2. Extra - oral radiographs, digital radiography - 25  
- Observe, assist and perform under supervision

**Operative skills:**

1. Giving intra - muscular and intravenous injections
2. Administration of oxygen and life saving drugs to the patients
3. Performing basic CPR and certification by Red Cross

**3rd year**

**All the above**

Performed independently-Case history: Routine cases	-25
Interesting Cases	-25
Intra - oral Radiographs	-100
Periapical view	-50
Bitewing view	-25
- Occlusal view	-25
Extra-oral radiographs of different views	-50

**Monitoring Learning Progress**

It is essential to monitor the learning progress to each candidate through continuous appraisal and regular assessment. It not only helps teachers to evaluate students, but also students to evaluate themselves. The monitoring to be done by the staff of the department based on participation of students in various teaching / learning activities. It may be structured and assessment be done using checklists that assess various aspects. Checklists are given in Section IV

**Scheme of Examination**

**Theory**

Written examination shall consist of four question papers each of three hours duration. Total marks for each paper will be 75. Paper I, II and III shall consist of two long questions carrying 20 marks each and 5 short essay questions carrying 7 marks each. Paper IV will be on Essay. Questions on recent advances may be asked in any or all the papers. Distribution of topics for each paper will be as follows: \*

**PAPER-I** : Applied Basic Sciences : Applied Anatomy, Physiology, Biochemistry, Pathology, and Pharmacology.

**PAPER-II** Oral and Maxillofacial Radiology & Radiation Therapy

**PAPER-III**- Oral Medicine, therapeutics and laboratory investigations

**PAPER-IV**- Essay

\* The topics 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 topics is inevitable. Students should be prepared to answer overlapping topics.

**B. Practical / Clinical Examination**                      **200 Marks**

**1<sup>st</sup> Day**

Clinical Case Presentation

4 Spotters	4 x 5 = 20 Marks
2 Short Cases	2 x 15 = 30 Marks
1 Long Case	1 x 50 = 50 Marks
Total = 100 Marks	

**Radiology Exercise**

- I.     A) One Intra Oral Radiograph    10 Marks  
       B) One Occlusal Radiograph    30 Marks
  
- II.    A) Two Extra Oral Radiograph    2 x 30 = 60 Marks  
       Including technique and interpretation

**2<sup>nd</sup> Day**

**C. Viva Voce:            100 Marks**

**i. Viva-Voce examination: 80 marks**

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression, interpretation of data and communication skills. It includes all components of course contents. It includes presentation and discussion on dissertation also. Approximate duration 60 min per candidate.

**ii. Pedagogy Exercise: 20 marks**

A topic is given to each candidate in the beginning of clinical examination. He/she is asked to make a presentation on the topic for 8-10 minutes

## **SECTION IV**

### **Teaching / learning activities and Monitoring learning progress**

All the candidates registered for MDS course in various specialities shall pursue the course for a period of 3 years as full time students. During this period, each student shall take part actively in learning activities designed by the institution / university. A list is given below. Institutions may include additional activities, if so, desired.

It is essential to monitor the learning progress of each candidate through continuous appraisal and regular assessment. It not only helps teachers to evaluate students, but also helps students to evaluate themselves. The monitoring be done by the staff of the department based on participation of students in various teaching / learning activities using checklists. Model Checklists are given in this section. They may be copied and used. The number of activities attended and the topics presented are to be recorded in log book. The log book should periodically be validated by the supervisors.

#### ***i) Acquisition of Knowledge***

***Journal Review Meeting (Journal Club):*** The trainees should make presentation from the allotted journals of selected article at least five times in a year. The ability to do literature search, in depth study, presentation skills, and use of audio- visual aids are to be assessed during presentation. The assessment be made by faculty members and peers attending the meeting using Model Checklist 1 in Section IV.

***Seminars:*** The seminars may be held at least twice a week in each postgraduate department. All candidates are expected to participate actively and enter relevant detail in the logbook. Each candidate shall make at least five seminars presentations in each year. The topics should be assigned to the student well in advance to facilitate in depth study. The ability to do literature search, in depth study, presentation skills and use of audio- visual aids are to be assessed using the Model Checklist 2, in Section IV.

***Symposium:*** It is recommended to hold symposiums on topics covering multiple disciplines Clinico-Pathological Conferences (CPC): The CPCs should be held once in a month involving the faculties in Oral Medicine and Radiology, Oral Pathology and concerned clinical departments. The PG student should be encouraged to present the clinical details, radiological, and histo-pathological interpretations, and participation in the discussion. All departments should attend CPCs.

***Interdepartmental meetings:*** To bring in more integration among various specialities, interdepartmental meetings are recommended, chaired by the dean, with all heads of post graduate departments, at least once a month.

## **ii) Clinical skills**

**Day to Day work:** Skills in outpatient and ward work should be assessed periodically. This should include the candidate's sincerity and punctuality, analytical ability and communication skills (see Model Checklist 3, Section IV).

**Clinical meetings :** Candidates should periodically present cases to his peers and faculty members. This should be assessed using a check list (see Model checklist 4, Section IV).

**Clinical and Procedural skills :** The candidate should be given graded responsibility to enable learning by apprenticeship. The performance is assessed by the guide by direct observation. Particulars are recorded by the student in the log book. (Table No.3, Section IV)

## **iii) Teaching skills:**

All the candidates shall be encouraged to take part in undergraduate teaching programs, either in the form of lectures or group discussions. This performance should be based on assessment by the faculty members of the department and from feedback from the undergraduate students (See Model checklist 5, Section IV)

## **iv) Periodic tests:**

The concerned departments may conduct three tests, two of them be annual tests, one at the end of first year and the other in the second year. The third test may be held three months before the final examination. The tests may include written papers, practicals / clinicals and viva voce.

## **vii) Work Diary / Log Book:**

Every candidate shall maintain a work diary and record his/her participation in the training programmes conducted by the department such as journal reviews, seminars, etc. Special mention may be made of the presentations by the candidate as well as details of clinical or laboratory procedures, if any conducted by the candidate.

### **Records:**

Records, log books and marks obtained in tests will be maintained by the Head of the Department and will be made available to the University or DCI.

**Continuing dental education programmes:** Each postgraduate department is recommended to organize these programs on regular basis involving other institutions. The trainees shall also be encouraged to attend such programs conducted elsewhere

**Conferences / workshops / advance courses:** The trainee shall be encouraged not only to attend conferences/workshops/advanced courses, but also to present at least 2 papers at state, national specialty meetings during their training period.

Post Graduate Students must be encouraged to submit their Research findings for publication

***Dissertation:***

Every candidate shall prepare a dissertation based on the clinical or experimental work or any other study conducted by them under the supervision of the post graduate guide.  
(See Model checklist 6 & 7, Section IV)

***Log book:***

The log book is a record of the important activities of the candidates during the training, Internal assessment should be based on the evaluation of the log book. Collectively, log books are a tool for the evaluation of the training programme of the institution by external agencies. The record includes academic activities as well as the presentations carried out by the candidate.

Format for the log book for the different activities is given in Tables 1,2 and 3 of Section IV Copies may be made and used by the institutions.

***Procedure for defaulters:***

Every department should have a committee to review such situations. The defaulting candidate is counseled by the guide and head of the department. In extreme cases of default the departmental committee may recommend that defaulting candidate be withheld from appearing the examination, if she/he fails to fulfill the requirements in spite of being given adequate chances to set himself or herself right.

**CHECKLISTS AND LOGBOOKS**  
**CHECKLIST-1**  
**MODEL CHECK LIST FOR EVALUATION OF JOURNAL REVIEW**  
**PRESENTATIONS.**

Name of the Trainee:

Date:

Name of the Faculty / Observer:

Title of the Article :

Sl. No	Items for observation during presentation	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Article chosen was					
2.	Extent of understanding of scope & objectives of the paper by the candidate					
3.	Whether cross-references have been consulted					
4.	Whether other relevant publications consulted					
5.	Ability to respond to questions on the paper/ subject					
6.	Audio - Visual aids used					
7.	Ability to defend the paper					
8.	Clarity of presentation					
9.	Any other observation					
	Total Score					

Please use a separate sheet for each faculty member

## ***CHECKLIST-2***

### ***MODEL CHECK LIST FOR EVALUATION OF SEMINAR PRESENTATIONS.***

Name of the Trainee:

Date :

Name of the Faculty / Observer:

Title of the Seminar :

Sl no	Items for observation during presentation	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1	Whether other relevant publications consulted					
2	Whether cross - references have been consulted					
3	Completeness of Preparation					
4	Clarity of Presentation					
5	Understanding of subject					
6	Ability to answer the questions					
7	Time scheduling					
8	Appropriate use of Audio -Visual aids					
9	Overall performance					
10	Any other observation					
	Total score					

Please use a separate sheet for each faculty member

**CHECKLIST-3**

**MODEL CHECK LIST FOR EVALUATION OF CLINICAL WORK IN OPD**

Name of the Trainee:

Date:

Name of the Unit Head:

Sl no	Items for observation during presentation	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Regularity of attendance					
2.	Punctuality					
3.	Interaction with colleagues and supportive staff					
4.	Maintenance of case records					
5.	Presentation of cases					
6.	Investigations work -up					
7.	Chair - side manners					
8.	Rapport with patients					
9.	Overall quality of clinical work					
	Total score					

Please use a separate sheet for each faculty member

***CHECKLIST - 4***  
***EVALUATION FORM FOR CLINICAL CASE PRESENTATION***

Name of the Trainee:

Date:

Name of the faculty / Observer:

Sl. No	Items for observation during presentation	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Completeness of history					
2.	Whether all relevant points elicited					
3.	Clarity of presentation					
4.	Logical order					
5.	Mentioned all positive and negative findings					
6.	Accuracy of general physical examination					
7.	Investigations required					
	Complete list					
8.	Relevant order					
	Interpretation of Investigations					
	Ability to discuss differential diagnosis.					
9.	Ability to discuss diagnosis.					
10.	Others					
	Grand Total					

Please use a separate sheet for each faculty member

***CHECKLIST-5***  
***MODEL CHECK LIST FOR EVALUATION OF TEACHING SKILL***

Name of the Trainee:

Date:

Name of the faculty Observer:

Sl. No.		Strong Point	Weak Point
1.	Communication of the purpose of the talk		
2.	Evokes audience interest in the subject		
3.	The introduction		
4.	The sequence of ideas		
5.	The use of practical examples and / or illustrations		
6.	Speaking style (enjoyable, monotonous, etc. Specify)		
7.	Attempts audience participation		
8.	Summary of the main points at the end		
9.	Ask questions		
10.	Answer questions asked by the audience		
11.	Rapport of speaker with his audience		
12.	Effectiveness of the talk		
13.	Uses AV aids appropriately		

Please use a separate sheet for each faculty member

***CHECKLIST-6***  
***MODEL CHECKLIST FOR DISSERTATION PRESENTATION***

Name of the Trainee:

Date:

Name of the faculty / Observer:

Sl.No	Items for observation during presentation	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Interest shown in selecting topic					
2.	Appropriate review					
3.	Discussion with guide and other faculty					
4.	Quality of protocol					
5.	Preparation of Proforma					
	Total Score					

***CHECKLIST-7***  
***CONTINUOUS EVALUATION OF DISSERTATION  
WORK BY GUIDE /CO-GUIDE***

Name of the Trainee:

Date

Name of the Faculty/Observer:

Sl.No	Items for observation during presentation	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Periodic consultation with guide / co- guide					
2.	Regular collection of case material					
3.	Depth of Analysis / Discussion					
4.	Department presentation of findings					
5.	Quality of final output					
6.	Others					
	Total score					

**CHECKLIST - 8**  
**OVERALL ASSESSMENT SHEET**

Name of the College:

Date:

Check List No	PARTICULARS									
		A	B	C	D	E	F	G	H	I
1.	Journal Review Presentation									
2.	Seminars									
3.	Clinical work in wards									
4.	Clinical presentation									
5.	Teaching skill practice									
6.	Others									
	TOTAL									

**Signature of HOD**

**Signature of Principal**

The above overall assessment sheet used along with the logbook should form the basis for certifying satisfactory completion of course of study, in addition to the attendance requirement.

**Key:**

**Mean score:** Is the sum of all the scores of checklists 1 to 7

**A, B,.....:** Name of trainees







## **SECTION - V**

### **Ethics in Dentistry**

#### **Introduction:**

There is a definite shift known from the traditional patient and doctor relation and delivery of dental care. With the advances in science and technology and the increased needs of the patient, their families and community, there is a concern for the health of community as a whole. There is a shift to greater accountability to the society. Specialists like the other health professionals are confronted with many ethical problems. It is therefore absolutely necessary for each and every one in the health care delivery to prepare themselves to deal with these problems. To accomplish this and develop human values, it is desired that all the trainees undergo ethical sensitization by lectures or discussion on ethical issues, discussion of cases with an important ethical component.

#### **Course Content:**

##### **Introduction to ethics -**

- What is ethics?
- What are values and norms?
- How to form a value system in one's personal and professional life? Hippocratic oath.
- Declaration of Helsinki, WHO declaration of Geneva, International code of ethics,
- D.C.I. Code of ethics.

##### **Ethics of the individual -**

- The patient as a person.
- Right to be respected
- Truth and confidentiality
- Autonomy of decision
- Doctor Patient relationship

##### **Professional Ethics-**

- Code of conduct
- Contract and confidentiality
- Charging of fees, fee splitting
- Prescription of drugs
- Over-investigating the patient
- Malpractice and negligence

##### **Research Ethics -**

- Animal and experimental research
- Human experimentation
- Human volunteer research-informed consent for trials
- Drug trials
- Ethical workshop of cases
- Gathering all scientific factors
- Gathering all value factors
- Fortifying areas of value - conflict, setting of priorities
- Working out criteria towards decisions

***Recommended Reading:***

1. Francis CM., Medical Ethics, 2nd Edn, 2004, Jaypee Brothers, New Delhi, Rs 150/.
2. Ethical Guidelines for Biomedical Research on Human Subjects, Indian Council of Medi, Research, New Delhi, 2000.

## **SECTION VI**

### **Library & Equipment Requirements**

#### **Infrastructure & Functional Requirements:**

1. **Space:** In addition to the BDS functional programme the following physical facilities shall be made available to start postgraduate training programmes leading to MDS degree.
  - a. A separate clinical area for postgraduate students. Minimum Area-600 sq feet
  - b. A seminar room furnished with proper seating arrangement and audio-visual equipments - Minimum area -300 sq. ft.
  - c. A separate room for the use of postgraduate students - Minimum area - 200 sq.ft.
  
2. **Equipment:** Each postgraduate department shall be provided with the required equipments as recommended by Dental Council of India.
  
3. **Library:** A departmental library shall be provided with copies of relevant books. In addition a central library should provide all the recent editions of books pertaining to the speciality and allied subjects as per the recommendations of Dental Council of India.

All the journals of relevant specialty and allied subjects shall be made available..

#### **2. Recommended Books And Journals**

##### **1. Prosthodontics**

##### **Implantology**

	<i>Title</i>	<i>Author</i>
1.	Osseo integration in skeletal reconstruction and joint replacement	Branemark
2.	Advanced osseointegration surgery	Philip
3.	Surgical atlas of dental implant technique	Bubbush
4.	Contemporary implant dentistry	Carl Misch
5.	Dental implant are they for me?	Thomas d Taylor
6-	A color atlas of dental implant surgery	Block
7.	A color atlas of dental and maxillofacial implantology	John Hobkrick
8.	The Branemark novum protocol for same day	Branemark
9.	Osseo integration and esthetics	Branemark
10.	Color atlas of Branemark system of oral reconstruction	Richard A/ Rasmuser
11.	Color atlas of dental medicine (implantology)	Spekerman
12	Osseo integration in craniofacial reconstruction	Branemark
13	Endosteal implant	McKinney
14	Implant Prosthodontics	M. Fagan
15.	Dental Implant	Wolfe

16.	Dental Implant: Implant support prosthesis	Vincente Jimenz
17.	Periodontal and Prosthodontic management of Advanced case.	Marvian
18.	Oral implantology: Basic ITV cylinder	Schroeder
19.	Dental Implant	McKinney
20.	Tissue Integrated prosthesis	Branemark/ Zarb/ Alberketson
21.	Dental implants (The art and science)	Charles Bubbush
22.	Implant and restorative dentistry Carl Misch /Klaus U. Benner	Gerald M. Scortecchi/
23.	Tissue integration in orthopedic and maxillofacial Reconstruction	William R. Laney
24.	Oral Implantology	Andre
25.	Implant therapy	Myron
26.	Guided bone regeneration: InImplant dentistry	Daniel Buser
27.	Laboratory techniques for Branemark system	Taylor & Bergman
28.	Implant Prosthodontics: Surgical and prosthetic techniques For dental implants	Fagan
29.	A color atlas of the Branemark system on oral reconstruction	George A. Zarb
30.	Dental implant color atlas fundamentals and advance Laboratory technology	Robert

### **Dental Materials**

	<b><i>Title</i></b>	<b><i>Author</i></b>
1.	Dental ceramics; proceedings of the First international symposium on ceramics	John W. McLean
2.	The science and art of dental ceramics	John W. McLean
3.	Science of dental materials (9th and 10th edition)	Phillips
4.	Biocompatibility of dental materials (Vol 1 - 4)	Dennis G Smith / David Williams
5.	Dental materials, properties and manifestations	William O. Brien
6.	Porcelain and composite inlays and onlays	Graber and Goldstein
7.	Applied dental materials	Anderson
8.	Dental material science	Basu
9.	Notes on dental materials	Combe
10.	Dental materials a problem oriented approach	Craig
11.	Restorative dental materials	Craig
12.	Dental materials: Properties and manipulation	Craig
13.	Clinical restorative materials and techniques	Leineelder and Lemons
14.	Restorative dental materials - A preview	Reese and Valega
15.	Dental materials in clinical dentistry	Reisbick
16.	Science of dental materials	Skinner
17.	Clinical handling of dental materials	Smith
18.	Science of Dental Materials 11 <sup>th</sup> Edition	Anusavice

### **TMJ and Occlusion**

<b>Sl. No</b>	<b>Title</b>	<b>Author</b>
1	Introduction to Gnathology	Dr.E.GR. Solomon
2	Clinical management of head, neck and TMJ pain and dysfunction	Harold Gelb
3	The TMJ : A biological basis for clinical practice	Sarnat Laskin
4	Clinical management of TMJ Disorder and orofacial pain	Richard Pertes / Sheldon G. Gross Gerber
5	Dental occlusion and the TMJ	
6	Imaging atlas of TMJ	Leslie B. Heffez/ Mehmood
7	A color atlas of occlusion and malocclusion	A.P. Howard/N.J. Capp
8	Occlusion (3rd edition)	Ramfjord/Ash
9	Current controversies in TM disorders	Charles McNeill
10	Anthroscopic atlas of TMJ	David I. Blaustein/Leslie B. Heffez
11	Craniomandibular disorders and oro facial pain	Iven Klineberg
12	A text and color atlas of TMJ Oral rehabilitation; Clinical	John Norman/Paul
13	determination of occlusion	BramelySumiya Hobo
14	Modern gnathological concepts (updated)	Victor Lucian
15	Principles and practice of TMJ anthroscopy	Joseph P McCain
16	Evaluation, Diagnosis and treatment of occlusal problems	Dawson
17	Management of TMJ and occlusion	Okeson
18	TMJ Classification, diagnosis and management	Welden E. Bell
19	TMJ and craniofacial pain diagnosis and management	James R. Friction
20	TMJ dysfunction: A practice guide	Annika Isberg
21	Occlusion principles and concepts	Jose Dos Santos Jr.
22	Oral rehabilitation problem cases: treatment and evaluation	Schweizer
23	Occlusion collection of monographs	Guichet
24	Conjoint in occlusion	Marquette. University
25	Occlusion in clinical practice	Thomson

### **Maxillofacial Surgical Considerations And Reconstruction**

<b>Sl. No</b>	<b>Title</b>	<b>Author</b>
1	Color atlas of dental medicine. Oral surgery for the general dentist	Hermann F. Seiler
2	Maxillofacial rehabilitation; Prosthodontic and surgical consideration	John Berumer III / Thomas A. Curtis
3	Management of facial head and neck pain	Barry C. Cooper / Frank E. Zucente
4	Prosthetic rehabilitation	Keith F. Thomas
5	Maxillofacial rehabilitation; Prosthodontic and Surgical consideration	John Beumer III / Thomas A. Curtis
6	Complex cleft palate and cranio-maxillofacial defects	Branemark

### *Fixed Partial Prosthodontics*

Sl. No	Title	Author
1	Fixed bridge prosthesis	D.H. Roberts
2	Fundamentals of Fixed Prosthodontics	Shillinburg
3	Planning and making crowns and bridges	Bernard G.N. Smith
4	Johnston's modern practice in fixed prosthodontics	Dykema
5	Failures in restored dentition; management and treatment	Michael D. Wise
6	Precision fixed prosthodontics; Clinical and lab aspects	M.Martigone ;
7	Contemporary fixed Prosthodontics	StephenS. Rosenstie
8	Theory and practice of Fixed Prosthodontics	Tyllman
9	Fundamentals of esthetics	Rufelacht
10	Esthetics of anterior fixed prosthodontics	Gerald J. Chiche
11	Precision attachment	Gareth
12	Color atlas of ceramo metal technology	Kuwata
13	Inlays, crown and bridges	Krantirowich
14	Advanced restorative dentistry	Bacom
15	Fixed and removable prosthodontics	Bardy
16	Metal ceramic crown and fixed partial denture	Calomn
17	_laboratory manual for fixed partial denture	Douglas
18	Adhesive metal free restorations	Dietschi & Spreafico
19	Ceramo metal fixed partial denture	George
20	Essentials of dental ceramics - an artistic approach	Chuiche&Alspnault
21	Direct bonded retainers	McLaughlin
22	Crown and Bridge Prosthodontics	Allan and Foreman
23	Inlays crowns and Bridges	Cowell
24	Clinical procedures for partial crowns, inlays and pontics	Ravasini
25	Fixed Prosthodontics manual of procedures	Riis
26	Fixed Prosthodontics manual of procedures	Schorr
27	Multiple cantilevers in fixed prosthetics	Schweikert
28	Laboratory procedures for inlays. Crowns and bridges	Stananought
29	Precision fixed prosthodontics	Martignoni Schonenberger

### *Complete Dentures*

Sl. No	Title	Author
1	Treatment of edentulous patient	Victor O. Lucia
2	A color of Complete Dentures	JA. Hobkirk
3	Esthetics in Complete Dentures	Dr. E.G.R. Solomon
4	Syllabus of Complete Denture	Heartwell
5	Prosthodontic treatment for edentulous patients	Zarb/Boucher
6	Dental lab procedure - Complete Denture	Morrow and Rudd
7	Color atlas of complete denture fabrication	Hirosh Muraoka
8	Complete Denture Prosthodontics (3rd edition)	Sharry
9	Principles and practice of Complete Dentures	Iwao Hayakawa
10	Handbook of immediate over dentures	Robert
11	Over denture	Allen
12	Occlusal correction: Principles and Practice	John
13	Immediate and replacement dentures	Albert
14	Sectional dentures: A clinical and treatment manual	Pullen
15	Mastering the art of complete dentures	Alexander
16	Dental laboratory procedures in complete dentures	Robert
17	Overdenture made easily	Harold
18	Full dentures	Mack
19	Sectional dentures	Pullen-Wamer & Lestrance
20	Atlas of over dentures and attachments	Kumber
21	Immediate and Replacement dentures	Anderson and Storer
22	Complete dentures	Hobkirk
23	Impressions for Complete Dentures	Levin
24	Complete denture prosthetics, clinical and laboratory manual	Nell and Niern
25	Complete denture prosthetics	Nell and Niern
26	Designing Complete Dentures	Watt and Maggregor
27	Atlas of complete denture	Passamonti
28	Fundamental of complete denture prosthodontics	Shillingburg
29	Essentials of complete denture Prosthodontics	Coinkler

### *Removable Partial Prosthodontics*

<i>Sl. No</i>	<i>Title</i>	<i>Author</i>
1	Removable Partial Prosthodontics	Mc Cracken's
2	Clinical Removable Partial Prosthodontics	Sterward
3	Removable Partial Prosthodontics	George Graber
4	Attachments for Prosthetic Dentistry	Michael Sherring
5	Laboratory procedures for full and partial dentures	Derek Stannought
6	Fundamentals of removable partial dentures	Owen
7	Designing partial dentures	David
8	Advanced removable partial dentures	James Brudvik
9	Restoration of partially dentate mouth	Bates
10	Removable partial denture construction	Bates

13	Treatment of partially edentulous patients	Boucher and Renner
14	Introduction to removable denture prosthetics	Grant and Johnson
15	Partial removable prosthodontics	Kratochvil
16	Partial denture prosthetics	Neill and Walter
17	Removable partial denture laboratory manual	Reitz and Yokoyama
18	Removable partial dentures	Renner and Boucher
19	Removable partial dentures	Taylor
20	Prosthodontic treatment of partially edentulous patients	Zarb
21	Atlas of removable partial denture design	Starrttmp
22	Removable partial denture	Grassoand Miller
23	Precision attachments in prosthodontics	Preiskel
24	Essentials of removable partial dentures	Applegate
25	Planned partials	Applegate
26	Color atlas of Removable Partial Denture	I.C. Devenport

### **General Prosthodontics**

S N	Title	Author
1	DENTISTRY: An illustrated history	Malvin E. Ring
2	Text book of Geriatric dentistry	Paul Holm/Pedersor
3	Prosthodontics: Principle and management strategies	Bengt <i>OwaW</i>
4	Prosthodontics for the elderly: Diagnosis and Treatment	Ejvind Budtz
5	Dental secrets	Stephen
6	Essentials of Clinical dental assisting	Joseph
7	Clinical Dental Prosthesis	Fenn
8	Essentials of dental Technology	Fowler
9	Management of Geriatric dental patients	Freedman
10	Diagnosis and treatment plan of maxillofacial prosthodontics	Laney and Gibilisco
11	Facial growth and Facial Orthopedics	Wander Linden
12	Lasers in Dentistry	Leo
13	Pharmacology and therapeutics for dentistry	John A. Yagiela
14	Dental drug reference	Delmars
15	Modern concepts in diagnosis and treatment of fissure caries	Paterson / Watts
16	Biomechanics in clinical dentistry	Caputo and Standlee
17	Color atlas of preprosthetic surgery	Hopkins
18	Clinical epidemiology and biostatistics	Rebecca Knapp
19	Legal procedure in medical cases	Apurva Nandy
20	Law and medicine	Jogaroa
21	Modern dental assisting	Torres
22	Preservation and restoration of tooth structure, esthetics	Graham J. Mount
23	Fundamentals of esthetics	Claud R. Rufenacht
24	Esthetic dentistry and ceramic restorations	Bernard Tauti
25	Esthetic dentistry - Ceramic restorations	IoraWc
26	Esthetics in dentistry	Goldstein
27	Esthetics	Lauller

28	Esthetic guidelines for restorative dentistry	Schareer
29	Suggested chair side procedures for natural esthetics in complete denture	Branemark
30	Esthetic approach in metal ceramic restoration for the mandibular anterior region	Muthethies
31	Natural ceramics	Korson
32	The polychromatic layering techniques	Rinn
33	Creative ceramic color - a practical system	Hegenbarth
34	Basic techniques for metal ceramics	Yamamoto
35	Porcelain laminate	Garber
36	Fundamentals of esthetics	Rufenacht
37	Color atlas of porcelain laminate veneers	Freedman
38	Perspective in dental ceramics	Preston
39	Techniques for porcelain laminate veneers	Haga and Nakazawa

## ***II. Periodontics***

S N	Title	Author
1	Text books of clinical periodontology and implant dentistry-1 <sup>st</sup> edition 1997	Jan Lindhe, Nicklans Lang, Thorklid K
2	The periodontium	Schroeder
3	Periodontal ligament	Berkovitz
4	Contemporary periodontics	Genco R.J Cohen.S
5	Periodontics	Grant , Stern, Listgarten
6	Periodontal regeneration-current concepts-future directions	Aban Poison
7	Periodontal instrumentation	Jill And Ginger
8	Periodontics in man and other animals	Page and Schroeder
9	Crevicular fluid	Cimasoni
10	Colour atlas of periodontal surgery	Cohen E
11	Advances in periodontics	Wilson and karman

## ***III. Oral & Maxillofacial Surgery***

S N	Title	Author
1	Principles of oral and maxillofacial surgery ; Vol 1&2	Peterson L.J
2	Rowe and Williams: Maxillofacial Trauma; Vol 1&2	J.Li. Williams
3	Hand book of Medical emergencies in Dental office	Malamed. S. F
4	Plastic surgery; Vol 1-5	McCarthy J G
5	Cancer of the face and mouth	McGregor I.A
6	Oral and Maxillofacial surgery ; Vol 1&2	Danial M Laskin
7	Oral and Maxillofacial Trauma ; Vol 1&2	Fonseca RJ
8	Oral and Maxillofacial Infections	Topazian RG
9	Surgical correction of Dentofacial deformities; Vol 1,2&3	Bell WH

10	Surgery of mouth and jaws	Moore JR
11	Dentofacial deformities ; Integrated orthodontic and surgical correction: Vol 1-4:	Epker BN & Fish LC
12	Maxillofacial Surgery; Vol 1&2	Peter Wardbooth ;
13	Hand book of Local anesthesia	Malamed SF
14	Local anesthesia & Pain control	Monheim's
15	Sedation	Malamed SF
16	Oral and Maxillofacial surgery ; Vol 1,2&3	Fonseca; Marcianni

#### ***IV. CONSERVATIVE DENTISTRY***

S N	Title	Edition	Author
1	Fractures of teeth, prevention and treatment of the vital and non-vital pulp		Basrani
2	Text book of operative dentistry	3 <sup>rd</sup>	Baum
3	Dentin and pulp in restorative dentistry		Brannstorm
4	Principles and practice of operative dentistry	3 <sup>rd</sup>	Charbeneau
5	Operative dentistry	4 <sup>th</sup>	Gilmore
6	Esthetic composite bonding	2 <sup>nd</sup>	Jordan
7	Operative dentistry: modern theory and practice	1 <sup>st</sup>	Marzook
8	Art, science and practice of operative dentistry	5 <sup>th</sup>	Sturdevant
9	Atlas of operative dentistry- pre-clinical and clinical procedure		Evans and Wetz
10	New concepts in operative dentistry		Fusiyama
11	Hand book of clinical endodontics		Bence
12	Pathways of the pulp	9 <sup>th</sup>	Cohen & Burns
13	Bleaching teeth		Feinman
14	Endodontic practice	11 <sup>th</sup>	Grossman
15	Problem solving in endodontics, prevention, identification and management	4 <sup>th</sup>	Gutmann
16	Endodontics in clinical practice	4 <sup>th</sup>	Harty
17	Endodontics	6 <sup>th</sup>	Ingle & Taintor
18	Endodontics-science and practice		Schroeder
19	Endodontology-biologic considerations in endodontic procedures	1 <sup>st</sup>	Seltzer
20	Restoration of the Endodontically treated tooth		Schillingberg and Kessler
21	Principles and practice of endodontics	3 <sup>rd</sup>	Walton and Torabinejad
22	Endodontic therapy	6 <sup>th</sup>	Weine
23	Color atlas of endodontics		Messing and Stock
24	The dental pulp		Seltzer and Bender
25	Experimental endodontics		Spangberg
26	Cariology	3 <sup>rd</sup>	Newbrun
27	Silver amalgam in clinical practice		Gainsford
28	Glass Ionomer cement		Wilson and McClean
29	Pediatric operative dentistry	4 <sup>th</sup>	Kenedy

30	Fluorides in caries prevention		Murray and Rugg-Green
31	Color atlas and text of endodontics	2 <sup>nd</sup>	Stock
32	Why root canal therapy?	2 <sup>nd</sup>	Berns 1986
33	Contemporary esthetic dentistry-practice fundamentals		Crispin 1994
34	Enamel micro abrasion		Croll 1991
35	Advances in glass ionomers		Davidson 1991
36	Complete dental bleaching	2 <sup>nd</sup>	Goldstein 1995
37	Fiber reinforced composite in clinical dentistry	1 <sup>st</sup>	Freilich 2000
38	Dental ceramics	5 <sup>th</sup>	McLean 1983
39	Lasers in dentistry	1 <sup>st</sup>	Miserendind1995
40	Esthetic approach to metal ceramic restorations	3 <sup>rd</sup>	Muterthies 1990
41	Life and times of GV Black		Pappas 1983
42	Bonded ceramic inlays		Roulat 1991
43	Fundamentals of tooth preparations	1 <sup>st</sup>	Schillingburg 1996
44	Esthetics with indirect restorations		Stein 1992
45	Surgical endodontics	1 <sup>st</sup>	Barnes 1991
46	Operative dentistry	1 <sup>st</sup>	Marzook 1996
47	Inlays , crowns and bridges	5 <sup>th</sup>	Kantorowicz 1993

#### ***V. ORTHODONTICS Recommended:***

Sl. No	Title	Author
1	The Design construction and use of Removable appliance	Adams
2	Straight wire - The concept and Appliances	Andrews
3	Orthodontic cephalometry	Athenasiou
4	Begg Orthodontic theory and Practice	Begg & Kesling
5	Orthodontic Management of the Dentition with the Pre adjusted Appliance	Bennet & Mc Laughlin
6	The Biology of Tooth Movement	Burstone
7	Modern Edgewise mechanics And Segmental Arch Technique	Burstone
8	Twin Block Functional Therapy	Clark
9	Facial Growth	Enlow
10	Essential of Facial Growth	Enlow
11	Dentofacial Deformities Vol. 1	Epker & Fish
12	Orthodontics principles and practice.	Graber
13	Orthodontics - Current Principles & Techniques	Graber & Vanarsdall
14	Orthodontic Treatment with Removable Appliances	Houston & Issacson
15	Radiographic Cephalometry	Jacobson
16	Biomechanics of Orthodontics	Marcotte
17	Text book of Orthodontics	Moyers
18	Biomechanics in Clinical Orthodontics	Nanda
19	Retention and Stability in Orthodontics	Nanda & Burstone
20	Management of T.M.J Disorders And Occlusion	Okensonber
21	Dentofacial Orthopedics with Functional Appliances	Graber, Petrovic &

		Rakosi
22	Contemporary Orthodontics	Proffit
23	Surgical Orthodontic Treatment	Proffit & White
24	An Atlas And Manual of Cephalometric Radiography	Rakosi
25	Biology of tooth movement	Lou Norton & Davidowiteh
26	Craniofacial abnormalities and clefts of lip alveolus and palate	Gerhard Pefiefer

**References:**

Sl.no.	Title of the book	Author
1.	Alexander discipline	Alexander
2.	The Begg Appliance and Technique	Fletcher
3.	Orofacial Orthopedics with F.R.	Frankel
4.	Removable Orthodontic Appliances	Graber & Neuman
5.	Current Orthodontic Concept & Technique	Graber & Swain
6.	Text book of Orthodontics	Houston & Tully
7.	New Vistas in Orthodontics	Johnston
8.	Walter's and Houston's Orthodontics Notes	Jones & Oliver
9.	Orthodontics - State of the Art-The Essence of Science	Lee Graber
10.	Mixed Dentition	Mcnamara & Brudon
11.	Current Controversies in Orthodontics	Melson
12.	The Developmental Basics of Occlusion and Malocclusion	Nanda
13.	Bio Engineering Analysis of Orthodontic Mechanics	Nikolai
14.	An Atlas And Manual of Cephalometric Radiography	Rakosi
15.	A Color Atlas of Dental Medicine	Rakosi & Graber
16.	The Jasper Jumper	Schwindling
17.	Minor Tooth Movement in Children	Sim
18.	Edgewise in Orthodontics	Thurrow
19.	An Atlas of Orthodontic Principles	Thurrow
20.	Rapid Maxillary Expansion	Timms
21.	Clinical Orthodontics Vol. I and Vol. II	Tweed
22.	Fixed Orthodontic Appliances	Williams & Cooks
23.	Tip-Edge	Kesling
24.	Bioprogressive Therapy	Ricketts
25.	Craniofacial Growth Series FOR HUMAN GROWTH AND DEVELOPMENT	Michigan Center
26.	Practice of Orthodontics Vol. I and Vol. II	Salzman
27.	Quintessence Series	Vander Linden

## **VI. ORAL PATHOLOGY**

### **1. Oral Anatomy, Histology & Physiology & Biochemistry**

Sl. No	Title	Author
1	Oral Histology, development, structure & function	A.R.Tencate
2	- A Color atlas & text book of Oral Anatomy, histology & embryology	B.K.B.Berkovitz, GR.Holland & B.J.Moxham
3	Ham's Histology	David.H.Cormaek
4	Applied Oral Physiology	Lavelle
5	Basic & Applied Dental Biochemistry	R.A.D.Williams & J.C.Elliot

### **2. Microbiology, Immunology & Basic Molecular Biology & Genetics**

Sl. No	Title	Author
1	Text book of Microbiology	R.Ananthnarayan & C.K.J.Paniker
2	Essential Immunology	Ivan.M.Roitt
3	Immunology of OraL diseases	Thomas lehner
4	OraL Microbiology & Immunology	Newman & Nisengard
5	PCR - a practical approach	Me Pherson, Quirke P & TayLor
6	MoLecuLar Cloning - a Laboratory manual	Sambrook J, FriLsch E.F & Maniafjs

### **3. Physiology**

Sl. No	Title	Author
	Review of Medical Physiology	Ganong

### **4. General Pathology & Haematology**

Sl. No	Title	Author
1	Cell, tissue & Disease	Wolf
2	Robbin's pathologic basis of disease	Cotran, Kumar & Robbins
3	Clinical Haematology	R.D.Eastham

### 5. Oral Medicine & Radiology

Sl. No	Title	Author
1	Burket's Oral Medicine	Lynch, Brightman & Greenberg
2	Oral Radiology - principles & Interpretation	S.C.White, Pharoah M.J

### 6. Oral Pathology & Forensic Odontology & Histopathology Techniques.

Sl. No	Title	Author
1	A Text Book of Oral Pathology	Shafer W.G, M.K.Hine & B.M.Levy
2	Oral Pathology - Clinical Pathologic correlations	J.A.Regezi & James Sciubba
3	Oral Diseases in the Tropics	S.R.Prabhu, D.F.Wilson, D.K.Daftary & N.W.Johnson
4	Soft tissue tumours	S.M. Weiss, J.S.Brooks
5	Color atlas of Oral disease, Clinical & Pathologic Correlations	Cawson R.A, Binnie W.H, J.H.Eveson
6	Atlas & text of pathology of tumours of the oral tissue s	R.B.Lucas
7	Evan's histological appearances of tumours	David B.Ashley
8	Histopathology of Skin	Lever
9	Cysts of the Oral regions	Mervyn Shear
10	Cellular Pathology Technique	F.A.Culling,R.T.Allison & W.T.Barr
11	Surgical Pathology of Salivary Glands	Ellis, Auclair, Gnepp
12	Syndromes of Head & Neck	Smith.D.W
13	Forensic Dentistry	Cameroone J.M, Sims

### VII. COMMUNITY DENTISTRY

Sl. No	Title	Edition / Volume	Author
1	Dentistry, dental practice & community		Stiffler D F
2	Primary preventive dentistry		Norman O Haris & Christen AG
3	Community Dental Health		Jong A W
4	Principles of Dental Public Health	Vol 1,Part 1 & Vol 2	Dunning JM
5	Dental Public Health – An introduction to community dentistry		Slack G L

6	Fluorides in dentistry		Frejeskov
7	Fluorides and dental caries		A Tiwari
8	Text book of preventive & social medicine		Mahajan B K & Gupta M C
9	Dental health education		WHO expert committee
10	Metabolism and toxicity of fluoride	Vol 1	Whitford G M
11	Epidemiology, biostatistics & preventive medicine		Jekel J F & et al.
12	Introduction to oral preventive medicine – a programme for the first clinical experience.		Muhlemann H R
13	Text book of preventive medicine.		Stallard C E
14	Hand book of dental jurisprudence and risk management.		Pollack B R
15	Fluorides and human health		WHO
16	Appropriate use of fluorides for human health.		J J Murray
17	Color atlas of forensic dentistry.		Whittaker D K & DAC Donald D G.
18	Health research design and methodology		Okolo EN
19	Oxford text book of public health	Vol 3	Holland W W & et al
20	Guidelines for drinking water qualities	Vol 1	WHO
21	Introduction to biostatistics		Mahajan B K
22	Guidelines for drinking water qualities, health criteria & other supporting information.	Vol 2	WHO
23	Dentistry, dental practice & community.		Burt B A & et al.
24	Occupational hazards to dental staff.		Scully C
25	Forensic dentistry		Cameron J M
26	Research methodology, methods and techniques.		Kothari R
27	Law & ethics in dentistry		Shear J & Walters L
28	Health research methodology – a guide for training in research methods. (western pacific education in action		WHO

	series, no 5)		
29	Community oral health		Pine CM
30	Parks text book of preventive & social medicine.		K.Park
31	Epidemiology and biostatistics & preventive medicine.		
32	Oral health survey, basic methods.		WHO
33	Essentials of preventive and community dentistry.		Soben Peter
34	Fluorides in caries prevention.		Murray
35	Preventive dentistry		Forrest John
36	Fluorine & fluorides – a report		WHO
37	Planning & evaluation of public dental health services – a technical report.		WHO
38	Prevention methods & programmes for oral diseases – a technical report.		WHO
39	Community periodontal index of treatment needs development, field testing & statistical evaluation.		WHO
40	Planning oral health services.		WHO
41	Guide to epidemiology & diagnosis of oral mucosal diseases and conditions.		WHO
42	Community dentistry (pgd handbook series)	Vol. 8	Silberman and Tryon AF

### ***VIII. PEDODONTICS & PREVENTIVE DENTISTRY***

Sl. No	Title	Author
1	Pediatric dentistry(infancy through adolescence)	Pinkham
2	Kennedy's Pediatric Operative Dentistry	Kennedy & Curzon
3	Occlusal guidance in Pediatric Dentistry	Stephan H.Wei
4	Clinical use of Fluorides	Stephan H.Wei
5	Pediatric oral & maxillofacial Surgery	Kaban
6	Pediatric medical emergencies	P.S.Whatt
7	Understanding of dental caries	Niki Foruk
8	An Atlas of Glass Ionomer Cement	G.J.Mount
9	Clinical Pedodontics	Finn
10	Textbook of Pediatric Dentistry	Braham Morris
11	Primary preventive dentistry	Norman O.Harris
12	Handbook of Clinical Pedodontics	Kenneth D.
13	Preventive Dentistry	Forrester
14	The Metabolism & Toxicity of Fluoride	Garry M.Whitford
15	Dentistry for the child & adolescent	Mc. Donald
16	Pediatric Dentistry	Damle

17	Behaviour management	Wright
18	Pediatric Dentistry	Mathewson
19	Traumatic Injuries	Andreason
20	Occlusal guidance in Pediatric Dentistry	Nakata
21	Pediatric Drug Therapy	Tomare
22	Contemporary Orthodontics	Profitt
23	Endodontic Practice	Grossman
24	Endodontics	Ingle
25	Pathways Of Pulp	Cohen
26	Management Of Traumatized Tooth	Hargreaves
27	Essentials of Community & Preventive Dentistry	Soben Peters
28	Post graduate handbook	Barber
29	Scientific foundation of Pediatric Dentistry	Stewart & Barber
30	Preventive Dentistry	Murray

### ***IX. ORAL MEDICINE AND RADIOLOGY***

#### ***a) Oral Diagnosis, Oral Medicine & Oral Pathology***

Sl. No	Title	Author
1	Oral medicine	Martin S. Greenberg
2	Principles of oral diagnosis	Coleman
3	Oral manifestations of systemic diseases	Jones
4	Differential diagnosis of oral lesions	Wood & Goaz
5	Oral diagnosis & treatment planning	Langalais
6	Oral diagnosis and oral medicine	Mitchell
7	Syndromes of head and neck	Pindbyrg
8	Oral diseases	Stones
9	Oral medicine	Irwin Walter Scopp
10	Oral diagnosis	Kerr
11	Oral diagnosis and treatment	Miller
12	Differential diagnosis and oral lesions	Bennier
13	Orofacial pain	Munford
14	Orofacial pain	Bell
15	Systemic diseases in dental treatment	Tullmen
16	Diseases of the mouth	Mean
17	Clinical methods	Hutchinson
18	Clinical examination	Mc Cleods
19	Symptoms and signs of clinical medicine	Chamberlin
20	Principles and practice of medicine	Davidson
21	Principles of interns medicine	Harrison
22	Oral rehabilitation problem cases	Schweitner
23	Oral cancer	Burkhardt
24	Oral mucosa in health and diseases	Dolby
25	Principles and practice of oral medicine	Sonis.S.T, Fazio.R.C, and Fang.L
26	A manual of oral medicine	Nally.F.F and Eggleston.D.J
27	Oral diseases in the tropics	Prabhu.S.R
28	Oral candidiasis	Samaranayake.L.R

**b) Oral Radiology**

Sl. No	Title	Author
1	Oral radiology	White & Goaz
2	Dental radiology	Weahrman
3	Oral roentgenographic diagnosis	Stafne
4	Langlairs diagnostic imaging of the jaws	Williams And Wilkins
5	Dental radiography	Smith
6	Essentials of dental radiography	Churchill Livingstone
7	Principles and practice of oral medicine	Sonis.S.T,Fazio.R.C,and Fang.L
8	Book of medical emergencies in the dental malamed s.f	
9	Medical problems in dentistry	Cawson.R.A Scully Cm
10	Atlas of diseases of oral mucosa	Pindborg J.J
11	Et's oral medicine,diagnosis and treatment linch m.a	
12	Text book of oral medicine	Dayal P.K

**c) Forensic Odontology**

Sl. No	Title	Author
1	Practical forensic odontology	Derek H.Clark,Wright
2	Outline of forensic dentistry	Cottone Standish
3	A colour atlas of forensic dentistry	Whittaker

**JOURNALS:**

The journals are best source of information for professionals to keep abreast with the recent developments and trends in their respective specialties. Considering the array of journals that are available today the council xjesires that !he institutions provide as a minimum requirement the list of journals mentioned below:

***Pertaining to Dental education and practice.***

1. Journal of Indian Dental Association
2. British Dental Journal
3. Journal of American Dental Association
4. Journal of Dentistry
5. Dental Clinics of North America
6. Journal of Dental Education
7. Dental Abstracts
8. Journal of Dental Research
9. Dental Index
10. Quintessence International
11. International Dental Journal
12. Australian Dental Journal
13. Journal of Dental materials
14. Journal of Aesthetic dentistry
15. Journal of Cleft palate

### ***PROSTHODONTICS***

1. International Journal Of Oral & Maxillofacial Implants
2. International Journal Of Prosthodontics
3. Journal Of Dental Materials
4. Journal Of Esthetic Dentistry
5. Journal Of Geriatric Dentistry
6. Journal Of Prosthetic Dentistry
7. Journal Of Prosthodontics
8. International Journal Of Oral & Maxillofacial Surgery
9. Journal Of Clinical Periodontology.
10. Journal Of Periodontology.
11. Dental Technician.
12. Journal Of Endodontics.
13. European Journal Of Prosthetics & Restorative Dentistry.
14. The Journal Of Adhesive Dentistry.
15. International Journal Of Endodontics.
16. Journal Of Oral & Maxillofacial Surgery

### ***PERIODONTICS***

1. Journal of periodontology
2. Journal of clinical periodontology
3. Journal of periodontal Research
4. International journal of periodontics & restorative dentistry
5. Journal of Indian Society of periodontics
6. Journal of oral and maxillofacial implants
7. Periodontology **2000**
8. Annals of periodontology

### ***ORAL & MAXILLOFACIAL SURGERY***

1. Journal of Oral & Maxillofacial Surgery
2. International Journal of Oral & Maxillofacial Surgery
3. Journal of Cranio Maxillofacial Surgery
4. British Journal of Oral & Maxillofacial Surgery
5. Oral, Surgery, Oral Medicine, Oral Pathology
6. Oral & Maxillofacial clinics of North America
7. Journal of oro-facial pain
8. Int. Journal of Oral & Maxillofacial Implants
9. Indian Journal of Oral & Maxillofacial Surgery
10. Plastic & Reconstructive Surgery
11. Cancer

### ***CONSERVATIVE DENTISTRY***

1. Endodontics & Dental Traumatology
2. International Endodontic Journal
3. Operative Dentistry
4. Esthetic Dentistry
5. Endontology
6. Dental Materials
7. Oral Surgery, Oral Medicine, Oral Pathology
8. Oral Radiology & Endodontics

9. Journal of Prosthetic Dentistry
10. International Journal of Prosthetic Dentistry
11. Periodontics & Restorative Dentistry
12. Index to Dental Literature

### ***ORTHODONTICS***

1. American Journal of Orthodontics and Dentofacial Orthopedics
2. Journal of Orthodontics (formerly British Journal of Orthodontics)
3. Angle Orthodontics
4. Journal of Clinical Orthodontics
5. Journal of Indian Orthodontic Society
6. Seminars in Orthodontics
7. Journal of Orthodontics and Dentofacial Orthopedics
8. European Journal of Orthodontics
9. Australian Journal of Orthodontics
10. International Journal of Adult Orthodontics and Orthognathic surgery
11. The Functional Orthodontist.

### ***ORAL PATHOLOGY***

1. Journal of Oral Pathology
2. Journal of Oral Medicine, Oral Surgery, Oral Pathology
3. Journal of Oral and Maxillofacial Surgery
4. British journal of Oral and Maxillofacial Surgery
5. International journal of Oral and Maxillofacial Surgery
6. Journal of Craniofacial surgery
7. Cancer

### ***COMMUNITY DENTISTRY***

1. Journal of Community Dentistry and Oral Epidemiology
2. Journal of Public Health Dentistry
3. Fluoride Journal of International Society
4. Journal of Community Dental Health
5. Journal of Fluoride research
6. Journal of clinical preventive dentistry

### ***PEDODONTICS & PREVENTIVE DENTISTRY .***

1. ASDC Journal of Dentistry for children.
2. International Journal of Pediatric Dentistry
3. Pediatric Dentistry
4. Journal of Indian Society of Pedodontics & Preventive Dentistry

### ***ORAL MEDICINE AND RADIOLOGY***

1. Journal of Oral Pathology/Oral Medicine and Radiology/Oral Surgery
2. Journal of Oral Diseases
3. Journal of Oral Pathology / Medicine
4. Journal of Community Dentistry & Oral Epidemiology
5. Journal of Indian Academy of Oral Medicine and Radiology
6. Journal of Indian association of Oral Pathology

## ***Equipment Requirements***

### ***Speciality wise***

All postgraduate departments in Dental Institutions should possess standard equipment preferably approved by competent agencies like Bureau of standards.

The equipment requirements given are for minimum of two admissions in all specialities except for Prosthodontics. The requirements for Prosthodontics is for minimum of three admissions. The requirements shall increase corresponding to the number of increase in admissions

#### ***Department: Prosthodontics for three admissions***

Equipment for unit of 3 Admissions -1- 2-1  
Professor- Reader- Lecturer  
With MDS qualification

<b><i>NAME</i></b>	<b><i>SPECIFICATION</i></b>	<b><i>REQUIRED</i></b>
Programmable dental chairs And units	With shadowless lamp, spittoon 3-way syringe, instrument tray and suction Micromotor, airtor	9
Articulators- semi adjustable	With face bow	9
Airtor and airtor handpieces		9
Micromotor- Clinical		9
Ultrasonic scaler		9
Light cure		3
Sterilization- hot air oven		3
Autoclave		3
Surveyor- micro		3
Refrigerator		1
X-ray viewer (Lobby)		9
Pneumatic crown remover	With varying intensity	3
Needle destroyer		3
Rubber dam kit and instruments		9

## **CLINICAL LAB PROSTHODONTICS**

<b>NAME</b>	<b>SPECIFICATION</b>	<b>REQUIRED</b>
Plaster dispenser		3
Model trimmer with carborundum disc		2
Model trimmer with diamond disc		1
Model trimmer with double disc	1 carborundum and 1 diamond disc	1
Lathe for polishing		3
High speed lathe	With suction unit	2
Vibrator		3
Acryliser- small for 3 flasks		3
Dewaxing unit		1
Hydraulic press		2
Vacuum mixing machine	Timer and meter reading vacuum	2
Micromotor- laboratory (clinical)+3 (lab)		3
Curing pressure pot		1
Pressure molding machine		1

## **CHROME COBALT LAB EQUIPMENT**

<b>NAME</b>	<b>SPECIFICATION</b>	<b>REQUIRED</b>
Duplicating unit		1
Pindex system		2
Burnout furnace	Programmable	3
Welder		1
Sand blaster ( micro and macro) each		1
Electro polisher		1
Furnace main	Programmable	2
Casting machine- centrifugal with Accessories		1
Induction casting	Machine with vacuum pump, capable of casting nickel- chrome, chrome cobalt, precious metal	1
Bunsen burner		3
Steam cleaner		1
Spindle grinder	50,000rpm with vacuum suction	1
Wax heater		3
Wax carver- electrical	Temperature control with different tips	3
Curing pressure pots		1
Pressure molding machines		1
Milling machine	With kits and surveyor	1
Stereo microphone		3
Magnifying working glass		3
Heavy duty lathe	With suction and various speeds	3
Dry model trimmer		1
Die cutting machine		2
Ultrasonic cleaner		3
Soldering torch		2
Surveyor		3
Picking unit		2

## **CERAMIC LAB EQUIPMENTS**

<b>NAME</b>	<b>SPECIFICATION</b>	<b>REQUIRED</b>
Ceramic furnace	Programmable	2
Ceramic kit (instruments)		9

## **IMPLANT**

<b>NAME</b>	<b>SPECIFICATION</b>	<b>REQUIRED</b>
Implant kit ( for surgical fixtures, Sinus lift, zygomatic fixture- abutm-Entss and prosthetic supra structure)		2
Implant torque control- 2 each		( 1 for prosthetics and 1 for surgical)
Physio dispenser		2
Surgical instruments		2 sets
Screw driver and other		Required for different type of Fixtures instruments and abutments and prosthesis
Fixtures, prosthetic components and other laboratory material required for implant supported prosthesis		As per requirement of each post graduate student.
Unit mount light		1
Pneumatic/ electrical crown remover		2
Extra oral implant		As per clinical requirements
Needle destroyer		2
Ultrasonic cleaner		2 ( 1 big + 1 small)
Autoclave		2
Short cycle autoclave (Kavo)		1
Camera	Digital	1
Electrical dental chairs and units		2 ( 1 Surgical + 1 Prosthetic)
Educating models		3 sets

## Department Periodontics

NAME	SPECIFICATION	QTY.
Dental Chairs and Units	Electrically operated with shadowless Lamp, spittoon, 3 way syringe, instrument tray and suction micromotor, ultrasonic scaler	6
Sterilization Instruments		
Kavo Klave		1
Auto Clave		1
Steel bin		4
Diagnostic instruments		
W.H.O Probe		1
Nabers Probe		1
Williams Probe		1
Newman's Probe		1 "
Gold Man Fox Probe		1
Marquis color coded Probe		1
Oral prophylaxis Instruments		
Supra gingival scalars	set	2
Sub gingival scalars	set	2
Surgical Instruments		
Routine Surgical Instrument kit	set	2
Surgery Trolleys		6
Electro surgery unit		1
Special surgical Instruments		
Kirkland's Knife	set	1
Bucks Knife	set	1
Orban Knife	set	1
Paquette Blade Handle		1
Pocket Marker	set	1
Mc calls universal curettes	set	1
Graceys curettes	set	1
Krane Kaplan	set	1
Cumine Scalar	set	1
Osseous Surgical Instruments		
Mallet		1
Oschenbain Chiel		1
Schluger Bone File		1
Bone file		1
Bone regenerative materials	Bone graft and GTR membranes Depending on need	
Microsurgical Instruments		
Micro Needle Holder I		1
Micro Scissors		1
Magnifying Glass		1
Miscellaneous Instruments 1		
Composite Gun		

**Department: Oral & Maxillofacial Surgery**

NAME	SPECIFICATION	QTY.
Dental Chairs and Units	Electrically operated with shadowless lamp, spittoon, 3 way syringe, instrument tray and high vacuum suction, micro motor / Air motor	6
Autoclave	Front loading	2
Fumigator		1
Oscillating saw	With all hand pieces	1
<i>Surgical instruments</i> a. General surgery kit including Tracheotomy kit b. Minor oral surgery kit c. Osteotomy kit d. Cleft surgery kit e. Bone grafting kit f. Emergency kit g. Trauma set including bone plating kit h. Implant logy kit		
Distraction osteogenesis kit (desirable)		1
Operating microscope and Microsurgery		1
Dermatomes		1
Formalin chamber		1
Pulse oxymeter		
Ventilator		1
Major operation theatre with all facilities		1
Recovery & I.C.U. with all necessary Life support equipments		2 beds
Fibrooptic light		1
Inpatient beds		20

**Department: Conservative Dentistry**

NAME	SPECIFICATION	QTY.
Dental Chairs and Units	Electrically operated with shadowless lamp, spittoon, 3 way syringe, instrument tray and suction, micro motor / Air oter lightcure	6
ENDOSONIC HANDPIECES - Physiosaline equipments		2
Mechanized rotary instruments including hand pieces and hand instruments		3
Glass bead sterilizers		3
Autoclaves for bulk instrument sterilization Vacuum preferably		2
Autoclaves for hand piece		2

sterilization		
Apex locators		2
Equipments for injectable thermoplasticized gutta percha - 2 OBTURA II 2 Kits		2
MIDAJET pressurized local anaesthesia		2
Operating microscopes - CARL ZEISS	Desirable	1
Pickling kits		2
Surgical endo kits		2
Low speed high torque motors		2
ANTHOGRYR Torque control hand pieces		2
Kavo torque control hand pieces		2
Hu Freidy set of hand instruments		2
Hu Freidy sterilizer trays		4
j Variable Intensity Polymerization equipments VLC units		2
Conventional VLC units		1
LCD projector with computer-basic system With printer and scanner		1
Over head projector		1
Slide projector		2
Clinical micro motors		2
High speed hand pieces		3
Composite kits with different shades And polishing kits		2
Ceramic finishing kits		
Amalgam finishing kits		2

### **Laboratory Equipment**

<b>NAME</b>	<b>SPECIFICATION</b>	<b>QTY.</b>
Equipments for casting procedures		1
Equipments for ceramics including induction casting machines / burnout preheat furnaces / wax elimination furnaces		1
Lab micro motor / metal grinders / sand blasters / polishing lathers /duplicator equipment / vacuum investment equipments		1 Set

**Department: Orthodontics**

<b>NAME</b>	<b>SPECIFICATION</b>	<b>QTY.</b>
Dental Chairs and Unit	Electrically operated with shadowless lamp, spittoon, 3 way syringe, instrument tray and suction	6
Vacuum Moulding Unit		1
Hydrosolder'		1
Lab Micromotor		4
Spot Welders		4
Model Trimmer (Double Disc)		2
Light Curing unit		2
Polishing Lathers		2
Tracing Tables		3
Digital Camera		1
Computers with all accessories		1
Scanner with transparency adapter		1
X-ray Viewer		5
O.H.P.		1
Slide Projector (35 mm) / LCD Projector		1
Autoclave - microprocess based, Wet & Dry		1
High & Low Cycle		
<i>Dry Heat Sterilizer</i>		1
<i>Ultrasonic Scaler</i>		1
<i>Sets of Orthodontic Pliers</i>		3 Sets
<i>Orthodontic impression trays</i>		4 Sets
<i>Ultrasonic tray cleaner</i>		1
<i>Typodonts with full teeth set</i>		6
<i>Anatomical Articulator with face bow attachments</i>		1
Three Place Articulators		1
Hinge Articulators		5

**Department: Oral Pathology**

<b>NAME</b>	<b>SPECIFICATION</b>	<b>QTY.</b>
<b><i>Essential Equipment</i></b>		
Dental Chairs and Units	Electrically operated with shadowless Lamp, spittoon, 3 way syringe, instrument tray and suction	1
Adequate laboratory glassware's as required for processing of biopsy specimens & staining.		
Tissue capsules / Tissue embedding cassettes		
Paraffin wax bath (thermostatically controlled		

Leuchart pieces		
Block holders		
Semi automatic micro tome		1
Automatic Microtome knife Sharper		1
Tissue floatation water bath (thermostatically controlled		1
Slide warming table		1+1
Steel slide racks for staining		1+2
Diamond glass marker		2
Research microscope with phase contrast, dark field, polarization, CCTV & photomicrography attachments		1
Binocular Compound Microscope		4
Electronic dispensing machine		1
Aluminum slide trays		4
Wooden / Plastic slide boxes		4
Wax block storing cabinet		1+2
Slide storing cabinet		1+2
Refrigerator		1
Micropipettes		

### **DESIRABLE EQUIPMENT**

<b>NAME</b>	<b>SPECIFICATION</b>	<b>QTY.</b>
Cryostat		1
Fluorescent Microscope		1
Computer with printer		1
Image analysis software		1
Automatic processing equipment		1
Hard tissue microtome		1
Stereo microscope		1
Tissue storing cabinet (Frozen state)		1
Microwave	;	1

### **Department: Community Dentistry.**

<b>NAME</b>	<b>SPECIFICATION</b>	<b>QTY.</b>
Instruments in the department for comprehensive oral health care programme		
Dental chairs	Electrically operated with shadowless lamp, spittoon, 3 way syringe, Micro motor, Aerator, scaler, light cure unit instrument tray and suction	6
Extraction forceps		6 Sets
Filling instruments		6 sets
Scaling instruments	Super gingival scaling	6sets
Prosthetic instruments		6 sets

Amalgamator		2
Pulp tester		2
Autoclave		2
Sterilizer		2
X-ray viewer		1
instrument cabinet		1
Overhead Project		1
Slide projector		2
LCD or DLP multimedia projector		1
Computer, printer and UPS instruments.		2

**For peripheral Dental care or Field programme**

<b>NAME</b>	<b>SPECIFICATION</b>	<b>QTY.</b>
Staff bus		1
Mobile dental clinic fitted with at least 2 dental chairs with complete dental unit Ultrasonic scalar, compressor		1
Generator		1
Public address system, audio - visual aids,		1
TV		1
VCR		1
Instrument cabinet, emergency medicine kits, BP Apparatus,		1
Portable oxygen cylinder portable chair		1

**Department: Pedodontics and Preventive Dentistry**

<b>NAME</b>	<b>SPECIFICATION</b>	<b>QTY.</b>
Dental Chairs and Units	With shadowless lamp, spittoon, 3 way syringe, instrument tray and suction, micro motor, airtor, lightcure	6
Pedo extraction forceps sets		4
Autoclave	Front loading	1
Intra Oral X-ray		1
Automatic developer		1
Pulp Tester		2
Apex Locator		1
Rubber Dam Kit		6
Glass bead sterilizer		3
Orthodontic Welder		1
Ultrasonic Scalars		2
Needle Destroyer		3

Ultrasonic Cleaner		2
X-ray Viewer		2
Amalgamator		2
Plaster Dispenser		2
Dental Lathe		1
Vibrator		1
Frassico Typodonts		6

### **Minor oral Surgery Instruments**

<b>NAME</b>	<b>SPECIFICATION</b>	<b>QTY.</b>
Soldering Unit		1
Band benching peek pliers		2 sets
Countering pliers		2
Crown crimping pliers		2
Double beak pliers Anterior and Posterior on		2

### **Department: Oral Medicine and Radiology**

Dental Chairs and Units	Electrically operated with shadowless lamp, spittoon, 3 way syringe, instrument tray and suction	6
Intra Oral Radiography Machine	55- 70 kVp with Digital Compatibility	1
Extra Oral Radiography machine	100 kVp	1
Panoramic Radiography (OPG) Machine with TMJ, MAX.S.I.N.U.S, Implants view	Digital Compatibility	1
Intra -Oral Camera		1
Pulp Tester		2
Autoclave		2
Punch Biopsy tool		2
Biopsy Equipment		2
Surgical Trolley		2
Emergency Medicines kit		1
Extra Oral Cassettes with Intensifying Screens (Conventional & Rare Earth)		4
Lead Screens		2
Lead Aprons		2
Lead Gloves		2
Radiographic Filters (Conventional & Rare Earth)		1
Dark Room with safe light facility		1
Automatic Radiographic Film Processors		2
Radiographic Film storage Lead Containers		1
Radio Viosograph, RVG System, Sensor-all sizes (0,1,2)		
Thyroid Collars		
Digital Sphygmamo meter		

Digital Printer (X-Ray)		
Digital Blood Glucose tester		
Digital Camera		
X- ray Viewer boxes		2
Lacrimal Probes		2sets
Sialography Cannula		2 sets
Computer with printer		1
Illuminated Mouth Mirror & Probe		2