SRI SIDDHARTHA INSTITUTE OF TECHNOLOGY- TUMAKURU
(A constituent College of Siddhartha Academy of Higher Education, Tumakuru)

Choice based Credit System (CBCS) (Effective from the academic year 2022-23)
Scheme of Teaching and Examination 2022 (As per NEP-2020)
First Semester B.E., Common to all Branches

Physics Group   **Effective from the Academic year 2022-23**

SI No	Course Code		Course Title	Teaching Dept.	L	T	P	Credits	CIE Marks	SEE Marks	Total Marks	Exam Hrs
1	BS	22MA101	Calculus and Linear Algebra	MA	3	1	-	4	50	50	100	3
2	ES	22EC102	Basic Electronics Engineering	EC	3	-	2	4	50	50	100	3
3	ES	22CV103	Basic Civil Engineering	CV	3	-	-	3	50	50	100	3
4	BS	22PH104	Engineering Physics	PH	3	-	2	4	50	50	100	3
5	ES	22ME105/ 22CS105	Computer Aided Engineering Drawing (ME/CV/EE/EC/ETC/ML) /PC Hardware and Network Administration (CSE/ISE/AI&ML/DS)	ME/CS	2	-	2	3	50	50	100	3
6	ES	22ES106	Innovation and Skill Development	Dept. Specific	1	-	2	2	50	-	50	-
	L: Lecture, T-Tutorial, P-Practical/Drawing, CIE: Continuous Internal Evaluation, SEE: Semester End Examination			Total	15	1	8	20	300	250	550	15

Note: a) **No SEE for the course 22HS106/22ES106**, but, Minimum Pass Marks is 20 (CIE).

b) **AICTE Activity Points**: It is compulsory every student earn 20 Points (40 hours) at the end of 1st year BE.

c) Credit Distribution: **BS**: Basic Science: 16 credits, **ES**: Engineering Science:23, **HS**: Humanity Science:1=**Total 40 Credits (at the end of 1st year BE)**

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Choice based Credit System (CBCS) (Effective from the academic year 2022-23)
Scheme of Teaching and Examination 2022 (As per NEP-2020)
First Semester B.E., Common to all Branches

Chemistry Group   **Effective from the Academic year 2022-23**

SI No	Course Code		Course Title	Teaching Dept.	L	T	P	Credits	CIE Marks	SEE Marks	Total Marks	Exam Hrs
1	BS	22MA101	**Calculus and Linear Algebra**	**MA**	3	1	-	**4**	50	50	100	3
2	ES	22EE102	**Basic Electrical Engineering**	**EE**	3	-	2	**4**	50	50	100	3
3	ES	22ME103	**Basic Mechanical Engineering**	**ME**	3	-	-	**3**	50	50	100	3
4	ES	22CS104	**Programming for Problem Solving**	**CS**	3	-	2	**4**	50	50	100	3
5	BS	22CH105	**Engineering Chemistry**	**CH**	3	-	2	**4**	50	50	100	3
6	HS	22HS106	**Communicative English**	**HS**	2	-	-	**1**	50	-	50	-
L: Lecture, T-Tutorial, P-Practical/Drawing, CIE: Continuous Internal Evaluation, SEE: Semester End Examination				**Total**	**17**	**1**	**6**	**20**	**300**	**250**	**550**	**15**

Note: a) **No SEE for the course 22HS106/22ES106**, but, Minimum Pass Marks is 20 (CIE).

   b) **AICTE Activity Points**: It is compulsory every student earn 20 Points (40 hours) at the end of 1st year BE.

   c) **Credit Distribution**: **BS**: Basic Science: 16 credits, **ES**: Engineering Science:23, **HS**: Humanity Science:1=**Total 40 Credits (at the end of 1st year BE)**
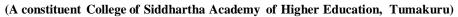
First year 2022-23

Choice based Credit System (CBCS) (Effective from the academic year 2022-23)
Scheme of Teaching and Examination 2022 (As per NEP-2020)
Second Semester B.E., Common to all Branches

Chemistry Group   **Effective from the Academic year 2022-23**

SI No	Course Code		Course Title	Teaching Dept.	L	T	P	Credits	CIE Marks	SEE Marks	Total Marks	Exam Hrs
1	BS	22MA201	**Advanced Calculus and Numerical Methods**	**MA**	3	1	-	**4**	50	50	100	3
2	ES	22EE202	**Basic Electrical Engineering**	**EE**	3	-	2	**4**	50	50	100	3
3	ES	22ME203	**Basic Mechanical Engineering**	**ME**	3	-	-	**3**	50	50	100	3
4	ES	22CS204	**Programming for Problem Solving**	**CS**	3	-	2	**4**	50	50	100	3
5	BS	22CH205	**Engineering Chemistry**	**CH**	3	-	2	**4**	50	50	100	3
6	HS	22HS206	**Communicative English**	**HS**	2	-	-	**1**	50	-	50	-
L: Lecture, T-Tutorial, P-Practical/Drawing, CIE: Continuous Internal Evaluation, SEE: Semester End Examination				**Total**	17	1	6	**20**	**300**	**250**	**550**	**15**

Note: a) **No SEE for the course 22HS106/22ES106**, but, Minimum Pass Marks is 20 (CIE).

b) **AICTE Activity Points**: It is compulsory every student earn 20 Points (40 hours) at the end of 1st year BE.

c) **Credit Distribution**: **BS**: Basic Science: 16 credits, **ES**: Engineering Science:23, **HS**: Humanity Science:1=**Total 40 Credits (at the end of 1st year BE)**

First year 2022-23

SRI SIDDHARTHA INSTITUTE OF TECHNOLOGY- TUMAKURU
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Choice based Credit System (CBCS) (Effective from the academic year 2022-23)
Scheme of Teaching and Examination 2022 (As per NEP-2020)
Second Semester B.E., Common to all Branches

Physics Group   **Effective from the Academic year 2022-23**

SI No	Course Code		Course Title	Teaching Dept.	L	T	P	Credits	CIE Marks	SEE Marks	Total Marks	Exam Hrs
1	BS	22MA201	**Advanced Calculus and Numerical Methods**	MA	3	1	-	**4**	50	50	100	3
2	ES	22EC202	**Basic Electronics Engineering**	EC	3	-	2	**4**	50	50	100	3
3	ES	22CV203	**Basic Civil Engineering**	CV	3	-	-	**3**	50	50	100	3
4	ES	22PH204	**Engineering Physics**	PH	3	-	2	**4**	50	50	100	3
5	ES	22ME205/ 22CS205	**Computer Aided Engineering Drawing (ME/CV/EE/EC/ETC/ML) /PC Hardware and Network Administration (CSE/ISE/AI&ML/DS)**	ME/CS	2	-	2	**3**	50	50	100	3
6	ES	22ES206	**Innovation and Skill Development**	Dept. Specific	1	-	2	**2**	50	-	50	-
L: Lecture, T-Tutorial, P-Practical/Drawing, CIE: Continuous Internal Evaluation, SEE: Semester End Examination				**Total**	**15**	**1**	**8**	**20**	**300**	**250**	**550**	**15**

Note: a) **No SEE for the course 22HS106/22ES106**, but, Minimum Pass Marks is 20 (CIE).

b) **AICTE Activity Points**: It is compulsory every student earn 20 Points (40 hours) at the end of 1st year BE.

c) **Credit Distribution**: **BS**: Basic Science: 16 credits, **ES**: Engineering Science:23, **HS**: Humanity Science:1=**Total 40 Credits (at the end of 1st year BE)**

SRI SIDDHARTHA INSTITUTE OF TECHNOLOGY- TUMAKURU

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First Year Syllabus for the Academic Year: 2022 - 2023

Department: Mathematics   **Semester: I**

Subject Name: Calculus and Linear Algebra

Subject Code: 22MA101   **L-T-P-C: 3-1-0-4**

Course Objectives:	The purpose of this course is to make students to
1	Master the basic tools of differential and integral calculus.
2	Study the elementary linear algebra and become skilled for solving problems arising in science and Engineering.
3	Study the differential equations and its applications.
4	Study the concept of partial differentiation and infinite series.

UNIT	Description	Hours
I	**Differential Calculus :** Review of elementary calculus, polar curves- angle between the radius vector and tangent, angle between two curves, Length of the perpendicular from pole to the tangent. Curvature and radius of curvature-Cartesian and polar forms (without proof)-problems.	10
II	**Linear Algebra:** Rank of the matrix, Echelon form. Solution of system of linear equations-consistency. Gauss-Elimination method, Gauss-Jordan method and Gauss-Seidel method. Eigen values and Eigen vectors, Rayleigh's Power method. Diagonalization of a square matrix of order two.	12
III	**Partial differentiation:** Definition of Partial differentiation, Total derivatives - differentiation of composite functions. Jacobians, Maxima and Minima for a function of two variables.	10
IV	**Infinite Series**- Convergence and divergence of positive infinite series- P- series test, Comparison test, Cauchy's root test and D'Alembert's ratio test, Raabe's test(without proof)- problems. **Series:** Taylor's and Maclaurin's series expansions for one variable(Statement only)-problems.	10
V	**Ordinary Differential Equations (ODE):** Review of Differential equation, Bernoul i's differential equation. Exact differential equation and reducible to Exact differential equation of the Types: (i) $\frac{M_y - N_x}{N} = g(x)$ (ii) $\frac{N_x - M_y}{M} = h(y)$. Application of ODE's-Orthogonal trajectories, Newton's law of cooling, flow of electricity, law of decay and growth.	10

Course Outcomes:	On completion of this course, students are able to:
CO1	Solve the problems based on Polar Curves, Curvature, Ordinary Differential Equations, Infinite Series and Linear algebra.
CO2	Gain the knowledge of Polar Curves, Solutions of System of Equations, Eigen values and Eigen vectors, Total derivatives, Infinite Series and Ordinary Differential Equations
CO3	Compare and analyze the methods in Partial Derivatives, Infinite Series and Ordinary Differential Equations.
CO4	Apply the concepts of Calculus, Linear Algebra, Partial Derivatives and ordinaryDifferential Equations in Engineering Problems

Text Books:

1. Higher Engineering Mathematics, B.S. Grewal, Khanna Publishers,
43rdEditionKhanna   Publications, 2015.ISBN:9788174091956

2. Advanced Engineering Mathematics, E. Kreyszig, John Wiley & Sons,
10thEditionJonWiley &Sons, 2015. ISBN: 9780470913611

Reference Book:

1. "Advanced Engineering Mathematics", C. Ray Wylie, Louis C. Barrett, McGraw-Hill Book
Co., New York, 6th Edition. 1995, ISBN:9780071135436.

2. "A Text Book of Engineering Mathematics"**,** N.P.Bali and Manish Goyal, Laxmi Publishers,
7thEditionLakshmi Publishers,2010, ISBN:9788131808030.

3. "Higher Engineering Mathematics", B.V.Ramana, Tata McGraw-Hill, 1st Edition,
Tata   McGraw-Hill, 2006, ISBN:9780070634190

4. "Calculus and Analytical Geometry", Thomas G. B and Finney R. L**,** Pearson, 9th Ed.
2012.ISBN:0201400154.

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First Year Syllabus for the Academic Year: 2022 - 2023

Department: Physics   **Semester: I/II**

Subject Name: Engineering Physics

Subject Code: 22PH104/204   **L-T-P-C: 3-0-2-4**

Course Objectives:	
1	Impart the physical principals, laws and hypothesis of the universe.
2	To develop critical thinking and quantitative reasoning skill, scientific problems and experiments.
3	Emphasize the role of physics in life and other disciplines.
4	Understand the knowledge about the strength of materials.

UNIT	Description	Hours
I	**Elasticity**: Introduction- Stress and Strain, Hooke's law, Expression for Young's modulus (y), Bulk modulus (k) and Rigidity modulus (n), Poisson's ratio (σ) and relation between the Elastic constants (y, k, n&σ). Bending of beams– Expression for bending moment of a beam and Single cantilever (derivation).**Vibrations:** Introduction, Free vibrations, Damped vibrations (Theory): cases of under damping, over damping and critical damping, Forced vibrations (Theory), Resonance- amplitude and sharpness of resonance. Numerical problems.	8
II	**Nanomaterials:** Introduction, Principles, Nanocomposite materials, Nano scale systems. Physics of Smart materials, MEMS and Carbon nanotubes. **Dielectric properties of materials:** Introduction to dielectric materials, Determination of static dielectric constant, Polarization and its mechanisms, Clausius-Mossotti equation, Dielectric loss, Expression for dielectric loss. Numerical problems.	8
III	**Shock waves:** Introduction Mach number. Distinctions between acoustic, ultrasonic, subsonic, transonic, supersonic and hypersonic waves. Description of a shock wave & its applications. **Wave mechanics:** Introduction, wave-particle dualism, de-Broglie wavelength, phase and group velocity, Expression for de-Broglie wavelength by the concept of group velocity. **Quantum mechanics:** Heisenberg's Uncertainty principle (no derivation), Applications-Non-existence of electrons in the nucleus, Wave function, Physical significance of wave function, Schrodinger wave equation in one dimension (derivation), Eigen values, Eigen functions and Applications: For a free particle and particle in one dimensional potential well of infinite height. Numerical problems.	8
IV	**Fiber optics:** Introduction, Principle, Propagation mechanism in optical fibers, Numerical aperture (derivation). V-number, Types of optical fibers and modeof propagation. Attenuation and mechanism radiation loss (micro and macroscopic bends). Applications-Point to point communication system with block diagram. Advantages and disadvantages of optical communication systems. Numerical problems.	8

First year 2022-23

	Lasers: Introduction, Review of principles-three types of interaction with matter, Einstein's coefficients (Expression for energy density at thermal equilibrium). Semiconductor Laser (Construction, Working and Energy level diagram). Holography, applications of laser in Science, Engineering and Medicine. Numerical problems.	
V	Experimental determination of Young's modulus of the material by single cantilever, rigidity modulus of the wire by torsional pendulum, Frequency of AC source by sonometer, band gap of semiconductor, dielectric constant by charging and discharging of capacitor, wavelength of semiconductor LASER and LCR series and parallel resonance circuits. Fermi energy - experimental determination of Fermi energy of copper wire. Blackbody radiation, Laws of blackbody radiations - Stefan's law and Planck's law.	8

Course Outcomes:	
CO1	Analyze the behavior of elastic and vibrating bodies.
CO2	Understand the concepts of Nano and dielectric materials.
CO3	Able to understand the difference between shock waves, wave mechanics and Quantum mechanics.
CO4	Able to understand basic concepts of Fiber optics and Lasers.

Text Books:

1. Detailed text book of Engineering Physics,S. P. Basavaraju, , 2018.
2. Engineering Physics, R. K. Gaur & S. L. Gupta, , DanpathRai Publications, 2012.

Reference Book:

1. Nanosystems – Molecular machinery, manufacturing and computation,K. Eric Drexler, Wiley, ISBN-13: 978-0471575184, 1992.
2. Shock waves made simple,Chintoo S. Kumar, K Takayama and K.P.J. Reddy, Wiley, 2014
3. Lasers – Theory and applications,K. Thyagarajan and A. K. Ghatak, Plenum Press, New York, 1981.

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First Year Syllabus for the Academic Year: 2022 - 2023

Department: Chemistry   **Semester: I/II**

Subject Name: Engineering Chemistry

Subject Code: 22CH105/205   **L-T-P-C 3 – 0 – 2 - 4**

Course Objectives:	
1	Realize the social issues such as water contamination, use of chemical fuels and also the analysis of certain chemical constituents to find their composition by volumetry.
2	Identify the use of concepts of free energy in equilibria, rationalize bulk properties and processes using the thermodynamic considerations, electrochemical energy systems, energy storage devices, instruments and study the theory of corrosion.
3	Enable the students to understand the role of materials used for engineering applications and analysis of certain solutions to find their composition by instrumentation methods.
4	Facilitate the student for the importance of chemical reactions that are used in the synthesis of molecules such as polymers and lifesaving drugs.

UNIT	Description	Hours
I	**NATURAL RESOURCES** **Chemical Fuels -** Introduction, fuels - definition, classification with examples. Calorific value – definition, Gross & Net calorific value, units (SI).Experimental determination of calorific value of solid fuel by Bomb Calorimeter, numerical problems. Knocking - definition, mechanism, ill effects. Prevention of knocking - antiknocking agents, unleaded petrol, power alcohol. **Water Chemistry –** Introduction, sources and impurities in water - water analysis - determination of different constituents in water –hardness by EDTA method, definition of BOD and COD, determination of Chemical Oxygen Demand, numerical problems on COD. Purification of water - sewage treatment, reverse osmosis. **Estimation of Metal ion Concentration:** Estimation of Calcium oxide in cement, Copper in PCB boards and Iron in cast iron solution.	8
II	**USE OF FREE ENERGY IN CHEMICAL EQUILIBRIA** **Thermodynamic functions:** Definitions of energy, free energy, entropy. Cellpotential **-** derivation of Nernst equation for single electrode potential and Nernst equation for a cell. Concentration cell – definition and derivation of equation for concentration cell. Numerical problems on E, E^0, EMF & concentration cell. **Electrodes** - Types of electrodes. Reference electrode - Calomel electrode – construction, working and applications. Ion selective electrode - Glass electrode - construction and principle, determination of pH using Glass electrode.	8

III	**ENERGY SYSTEMS AND CORROSION STUDIES** **Energy Storage System** – Battery - definition, principal components of battery, Classification - primary, secondary and reserve batteries with examples. Characteristics of a battery. Ni-MH and Li-MnO$_2$, Zn- Air batteries - construction, working & applications. **Fuel Cells** – Introduction, definition, advantages of fuel cells, working of Methanol-Oxygen fuel cell, differences between battery and fuel cell **Metallic Corrosion -**Definition, electrochemical theory of corrosion. Factors affecting the rate of corrosion– Ratio of anodic to cathodic area, Nature of corrosion product, Reduction potential, pH, temperature.	**8**
IV	**INSTRUMENTAL METHODS OF ANALYSIS** **Instrumental methods of analysis -** Introduction, advantages of instrumental methods over conventional methods. Colorimetry-derivations of Beer-Lambert's law. Principle, instrumentations and applications of Colorimetry, Potientiometry and Conductometry. Determination of pKa value of the given soft drink using pH meter. Determination of Viscosity Coefficient of given lubricant oil using Ostwald's Viscometer.	**8**
V	**ORGANIC REACTIONS AND SYNTHESIS OF DRUG MOLECULES** Introduction to reactions involving Substitution - Nucleophilic (SN1 & SN2) and Electrophilic, Addition- Polar (Electrophilic & Nucleophilic) and Non Polar (Free radical & Cyclo addition), Elimination – E1 and E2, and Ring openings. Synthesis of a commonly used drug molecules**-** Paracetamol and Aspirin - using acetic anhydride - properties, applications and their side effects**.**	**8**

Course Outcomes:	
CO1	Find solutions for the social issues such as water contamination and use of chemical fuels and they can analyze some certain solution composition.
CO2	Acquire the knowledge on the concept of thermodynamics and appreciate the advantages of it in energy storage devices.
CO3	Account for the applications of instrumental techniques and they can analyze some certain solution composition.
CO4	List major chemical reactions that are used in the synthesis of molecules and drugs.

Text Books:
(i) Engineering Chemistry, Putti R. Vijayasarathy. New Edition, by Prentice Hall Of India.
(ii) Chemistry for Engineering Students, B.S. Jaiprakash, Venugopal, Shivakumaraiahan and PushpaIyengar.

Reference Book:
(i) Engineering Chemistry, Wiley India, 1st Edition 2011, by Wiley India Pvt Ltd
(ii) Organic Chemistry, Paula YurkanisBruice.7th edition, 2013 by Pearson
(iii) Vogel's Text Book of Quantitative Inorganic Analysis, revised by J.Basset, R.C.Denny, G.H.Jaffery, 4th Edition.

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First Year Syllabus for the Academic Year: 2022 - 2023

Department: Chemistry   **Semester: I/II**

Subject Name: Engineering Chemistry Laboratory

Description
Part-A
1. Determination of total hardness of a sample of water using disodium salt of EDTA
2. Determination of calcium oxide in the given sample of cement solution (Rapid EDTA method)
Determination of percentage of copper in PCB using standard Sodium Thiosulphate solution
4. Determination of Iron in the given sample of cast iron solution (External Indicator method) using $K_2Cr_2O_7$ solution
5. Determination of chemical oxygen demand of the given Industrial waste water sample
Part-B
1. Determination of pKa value of the given soft drink using pH meter
2. Potentiometric estimation of Iron present in stainless steel solution using standard $K_2Cr_2O_7$ solution
3. Colorimetric estimation of copper in a conducting wire solution.
4. Determination of viscosity coefficient of given lubricant oil using Ostwald's Viscometer.
5. Conductometric estimation of acid mixture against strong base.

Reference Book:

1. Vogel's Text Book of Quantitative Inorganic Analysis, revised by J.Basset, R.C.Denny, G.H.Jaffery, 4th Edition.

Note: As per the Institutional norms and to implement NEP, the Engineering chemistry is converted to integrated course. In this there is no Semester End Exam for lab component and considering only CIE component in lab.

First Year Syllabus for the Academic Year: 2022 - 2023

Department: Electronics and Communication Engineering   **Semester: I/II**

Subject Name: BASIC ELECTONICS ENGINEERING

Subject Code: 22EC102/202   **L-T-P-C: 3-0-2-4**

Course Objectives:	
1	Study the basic characteristics and operation of electronic devices.
2	Study the transistor configuration, biasing techniques.
3	Understand the working principle of amplifier, oscillators & applications of op-amp
4	Learn the importance and fundamental of digital electronics.

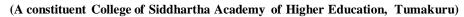| UNIT	Description	Hours
I	**UNIT – I: Semiconductor Diode and its applications:** Introduction to P-N junction diode, VI Characteristics, Parameters, Diode current equation, Applications: Half-Wave Rectifier, Full-Wave Rectifier: center tapped and Bridge Rectifier (no derivations), Capacitor filter circuit, Zener diode as a voltage regulator, Problems. *Experiment: To study the performance and waveforms of Half Wave Rectifier and Bridge Rectifier.*	8
II	**UNIT-II: Bipolar Junction Transistors :** Introduction to Bipolar junction transistor, Transistor voltages and currents, characteristics of common emitter configuration and Common base configuration, DC load line and operating point, Biasing techniques: Fixed bias, voltage divider bias, Problems. *Experiment: To study the input and output Characteristics of NPN transistor in CE Configuration.*	8
III	**UNIT-III: Operational Amplifier** : Introduction to Op-amp, Basic block diagram of an Operational amplifier, Ideal characteristics, Operational amplifier as a Voltage follower, Inverting and Non-inverting amplifier, Adder, Integrator and differentiator. *Experiment: To study Voltage follower, Inverting and Non-inverting amplifier and determine the gain.*	7
IV	**UNIT-IV: Amplifier and Oscillators:** Introduction, Single stage RC coupled amplifier and its frequency response Numerical Problems Introduction, Types of feedback, Barkhausen criteria for oscillations, Hartley, Colpitt's oscillator and Crystal Oscillator, Problems. *Experiment: T o determine the frequency of operation of Hartley oscillator*	8
V	**UNIT-V: Digital Electronics:** Introduction, Number system: Decimal, Binary, Octal and Hexadecimal, subtraction using 1's and 2's complement method, logic gates, NAND and NOR as universal gate (as OR, AND & NOT), Boolean Algebra, De-Morgan's theorem, Half adder, Full adder. *Experiment: Verification of truth table of logic gates, Half adder and Full adder*	8

Course Outcomes:	
CO1	Recall the characteristics and operation of the Electronic devices and circuits.(L1)
CO2	Explain the engineering fundamentals to analyze the electronic circuits. (L2)
CO3	Apply Boolean algebra to simplify logic circuit and compare the basic building blocks in digital electronics. (L3)
CO4	Analyze the basic analog electronics circuits and digital circuits experimentally. (L4)

Text Books:

1. Electronic Devices and Circuit Theory, Robert L Boylestad, Louis Nashelsky, Pearson Publication 11th Edition2017, ISBN: 978-0-13-262226-4
2. Digital Principles and Design, Donald D. Givone, Tata McGraw- Hill 2017, ISBN 0-07-052906

Reference Book:

1. D P Kothari, I J Nagrath ,Basic Electronics, McGraw Hill Education 2014, ISBN: 978-93-329-0158-2
2. Ramakant A. Gayakwad , Op-Amp and Linear Integrated Circuits, Prentice Hall India 2011, 4th Edition 978-81-203-2058-1
3. David A. Bell, Electronics Devices and Circuits, Prentice Hall India 2008, 5th Edition, ISBN: 978-0-19-569340-9

First Year Syllabus for the Academic Year: 2022 - 2023

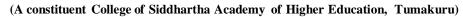**Department: Electrical and Electronics Engineering**   **Semester: I/II**

Subject Name: BASIC ELECTRICAL ENGINEERING

Subject Code: 22EE102/202   **L-T-P-C: 3-0-2-4**

	Course Objectives:
1	To understand the fundamental so f Electrical Engineering.
2	To analyze electrical circuits & operating principle of Electrical machines.
3	To apply the knowledge of electrical wiring, protective devices & Earthingg.
4	To evaluate Electrical quantities and performance of Electrical machines.

UNIT	Description	Hours
I	**A.C Fundamentals:** Generation of sinusoidal voltage, definition of instantaneous value, maximum value, frequency, time period, cycle, average value, RMS value, form factor, peak factor of sinusoidally varying quantity, difference and phase representation of alternating quantities. **A.C Circuits:** Analysis with phasor diagram of circuits with R, L, C, R-L, R-C, R-L-C combination in series, parallel & series-parallel circuits, real power, reactive power, apparent power and power factor, illustrative examples.	8
II	**Three Phase Balanced Circuits:** Introduction to three-phase generation,Voltage and current relations in star and delta connected system, Measurement of three phase power using two wattmeter method, Illustrative examples. **Domestic wiring:** Two way and three way control of lamp, elementary discussion on fuse and Miniature Circuit Breaker (MCB), Electric shock, precautions against shock, earthing, plate and pipe earthing.	8
III	**Single Phase Transformers:** Construction, types, concept of self and mutually induced emf, principle of operation, emf equation, losses, efficiency, condition for maximum efficiency, Illustrative examples.	8
IV	**D.C Machines:** Construction, basic parts of D.C machines, types of D.C machines **D.C Generator-** Principle of operation, emf equation, Illustrative examples. **D.C Motor-** Principle of operation, back emf, torque equation, Illustrative examples.	8
V	**Three Phase Induction Motors:** Construction, working, types, concept of rotating magnetic field, slip, Illustrative examples on slip calculation. **Alternators:** Principle of operation, types, emf equation, concept of pitch factor and distribution factor (derivation excluded), Illustrative examples on emf equation.	7

List of Experiments:

Expt. No.	Description	Hours
I	Verification of truth table for two way and three way control of lamp.	2
II	Determination of Power factor for different lighting systems.	2
III	Measurement of Power using Analog/Digital Energy meter	2
IV	Determine the relationship between line and phase quantities of voltage and current in a three phase system.	2
V	Determination of Back EMF of DC motor	2
VI	Speed control of DC motor	2
VII	Determine the Efficiency of transformer by direct loading method.	2
VIII	Battery charging using Solar Energy	2

Course Outcomes: At the end of the course the student will be able to:	
1	Able to understand the fundamentals of Electrical Engineering.
2	Analyze electrical circuits & operating principle of Electrical machines.
3	Apply the knowledge of electrical wiring, protective devices & earthling.
4	Evaluate Electrical quantities and performance of Electrical machines.

Text Book:
Basic Electrical Engineering, Kulshreshtha D. C, Revised first edition 2017, TMHPublications, NewDelhi.

Reference Books:
Basic Electrical Engineering, M.V.Rao, Subhash Publications, Bangalore.
Electrical Technology, E. Hughes,InternationalStudents,9th Edition,Pearson2005.
Fundamentals of Electrical Engineering, B.L.Theraja,volume I, S Chand Publications,New Delhi.
Electrical Technology, B.L.Theraja, VolumeII,SChandPublications,NewDelhi.

NPTEL: https://nptel.ac.in/courses/108/108/108108076/

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First Year Syllabus for the Academic Year: 2022 - 2023

Department: Mechanical Engineering   **Semester: I/II**

Subject Name: BASIC MECHANICAL ENGINEERING

Subject Code: 22ME103/203   **L-T-P-C: 3-0-0-3**

Course Objectives	
1	Identify different sources of energy and their conversion process.
2	Explain the working principle of IC engines, EV's, Hybrid electric vehicles and refrigeration.
3	Recognize various power transmission elements and Engineering materials.
4	Describe the various manufacturing techniques and Industrial automations.

UNIT	Description	Hours
I	Energy Sources and Power Plants: Review of energy sources; Construction and working of Hydro power plant, Solar power plant, Tidal power plant, Thermal power plant, Wind power plant. Refrigeration: Definitions - Refrigerating effect, Ton of refrigeration, COP, Refrigerant; Types and Properties. Principle and working of Vapour compression refrigeration and Vapor absorption refrigeration.	8
II	Internal combustion (IC) Engines: Classification, I.C. Engines parts and terminologies, 4 Stroke Petrol and 4-stroke diesel engines. Definitions of performance parameters like Mean Effective Pressure, indicated power, brake power, Friction Power, indicated thermal efficiency, Brake thermal efficiency, Mechanical efficiency and specific fuel consumption. Simple numericals on the same. Electric vehicles (EV) and Hybrid Electric vehicles (HEV): Basic principles of EV and HEV. Components of EV and HEV. Power transmission in EV and HEV.	8
III	Mechanical Power Transmission: Belt Drives: Open and Crossed belt drive, Idler pulley, stepped Cone pulley and Fast & loose pulley and their applications, concept of Slip & Creep. Simple problems on velocity ratio, Length of belts and power transmitted (No derivation). Gears: Types of gear drives (Spur, Bevel, Helical, worm and worm wheel, Rack & Pinion). Gear Trains: Simple and Compound gear Trains, Simple problems on velocity ratio.	8
IV	Metal Joining Process: Classification and method of welding, Soldering & Brazing with, applications, Brief description of Arc welding & Oxy-Acetylene gas welding. Conventional Machine Tools: Lathe; Principle of working of a center lathe. Parts of a lathe. Operations on lathe - Turning, Facing, Taper turning (Tailstock offset method). Drilling Machine; Principle of working of a drilling Machine, Operations on drilling machine -Drilling, Boring, Reaming and Tapping. Additive Manufacturing: Introduction, classification; working principle of Stereo lithography and Fused deposition modeling.	8

V	**Industrial Automation:** Types of automation: fixed, programmable and flexible automation; basic elements with block diagrams; Control systems: Closed loop and open loop. **Engineering Materials**: Introduction, Types of materials, Ferrous and non-ferrous materials and alloys, Composite: Definitions, Classification, Applications-Aircraft and automobiles.	**8**

Course Outcomes

Course Outcome	Descriptions
CO1	Define the terminologies associated with various mechanical engineering sciences. [BL1]
CO2	Understand and explain the principles associated with conversion of energy, Refrigeration, IC engine, Electric vehicles, and Power transmission. [BL2]
CO3	Understand and explain the various manufacturing techniques, Industrial automations and Engineering materials. [BL2]
CO4	Apply the concepts related to IC engines, and Power drives and determine the solutions required. [BL3]

Text Books

Sl No	Author	Text Book title	Publisher	Volume / Issue	Year of Edition
1	K.R. Gopalakrishna	Elements of Mechanical Engineering	Subash Publishers, Bangalore.	2018	38th edition
2	V K Manglik	Elements of Mechanical Engineering	PHI Learning PVT, LTD	2014	1st edition

Reference Book

Sl No	Author	Text Book title	Publisher	Volume / Issue	Year of Edition
1	Iqbal Husain	Electric and Hybrid Vehicles: Design Fundamentals	CRC Press, Tailor and Francis	2011	Second Edition
2	S. Trymbaka Murthy	Elements of Mechanical Engineering	I .K. International Publishing House Pvt. Ltd., New Delhi.	2006	3rd

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First Year Syllabus for the Academic Year: 2022 - 2023

Department: Civil Engineering   **Semester: I/II**

Subject Name: Basic Civil Engineering

Subject Code: 22CV103/203   **L-T-P-C: 3-0-0-3**

	Course Objectives
1	To understand the scope of various fields of Civil Engineering and various components of a building.
2	To gain the knowledge of basic materials used in the construction and masonry.
3	To develop the students ability to analyze the problems involving forces with their applications
4	To develop the students ability to find out the centroid and basic concepts of surveying

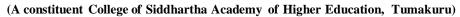| UNIT	Description	Hours
I	**Introduction to Civil Engineering:** Scope of major fields of civil Engineering- Surveying, Geotechnical Engineering, Structural Engineering, Hydraulics & Water Resources, Transportation Engineering, Environmental Engineering. **Components of building:** Introduction to different components of building, Plinth, wall, lintel, column, beam, chejja, slab, balcony, Roofs and flooring (Definition and functions only). Stairs- requirements of ideal stairs and their types. Foundations-Definition and Functions.	8
II	**Basic building materials:** Introduction to Bricks- classification and properties of good bricks, different types of blocks and their uses - solid blocks, hollow blocks and light weight blocks. Common building stones- classification, properties and uses. Cementanduses. Steel-types and properties. Timber- properties and uses. **Masonryanditsproperties:**Introduction,classification,definitionandtermsusedin masonry. Brick masonry. Bonds in brick work- English bond, Flemish bond. Stonemasonry classification.	8
III	**Force and Force system:** Basic idealizations-Particle, Continuum and Rigid body. Force and couple- Definition and characteristics, classification of force systems, composition and resolution of forces. Simple Numerical problems on above.	8
IV	**Centroid:** Definition of centroid and center of gravity, location of centroid of rectangle, triangle, semicircle and Quadrant by method of integration. Simple Numerical Problems.	8
V	**Introduction to chain surveying:** Definition of Surveying, Classification of Surveying, Basic Principles of Surveying, Revenue surveying and calculation of revenue areas by graphical methods (acres, guntas and cents). **Introduction to transport system:** Modes of transportation-Roadways, Railways and Waterways	7

First year 2022-23

Course outcome	
CO1	To understand the various fields of Civil Engineering and building components
CO2	To assess the properties of different building materials for various purposes of construction.
CO3	To analyze the system of forces and to compute their resultant for different direction of forces.
CO4	To understand concept of computing the centroid of plane figures and to know the basics surveying

Text Books:
1. Building Materials, S K Duggal, 5th edition, Jan 2019
2. Elements of civil Engineering and mechanics, B K Kolhapure, 3rd edition, Jan 2018

Reference Book:
1. Building Construction, Sushil Kumar, 1st edition 2020
2. Fundamental Surveying, B C Punmia, 7th Edition, 2017

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First Year Syllabus for the Academic Year: 2022 - 2023

Department: Computer Science and Engineering   Semester: I/II

Subject Name: Programming for Problem Solving

Subject Code: 22CS104/204   L-T-P-C: 3-0-2-4

	Course Objectives
1	To impart adequate knowledge on the need of programming languages andProblem solving techniques.
2	To develop programming skills using the fundamentals and basics of CLanguage.
3	To understand the effective usage of data types, operators, decision makingand looping statements.
4	To enable effective usage of arrays, strings, functions, pointers, structures,Unions and files.

UNIT	Description	Hours
I	**Algorithms and Flowchart:** Algorithms, Flowcharts, Writing algorithm and flowcharts for simple exercises. **Overview of C:** Basic structure of C program, Variables and Data Types, Constants, Operators and expressions. **Managing Input and Output Operations:**formatted and unformatted Input and Output statements. Example programs.	8
II	**Decision Making and Branching:**Decision Making with Simple if Statement, if...else Statement, Nesting of if…else statements, else…if Ladder, switch Statement, goto statement. Example programs. **Decision Making and Looping:** While statement, do statement and for statement, unconditional branching: break, goto, continue, return. Example programs.	8
III	**Arrays:** 1D- declaration and initialization of 1D arrays, 2D- declaration and initialization of 2D arrays, Example programs. **Strings:**Declaring and Initializing String Variables, String-Handling Functions. Example programs	8
IV	**Functions:**Need for User-Defined Functions, Elements of User Defined Functions, Category of Functions, Recursion. Example programs	8
V	**Pointers:**Declaring Pointer Variables, Initialization of pointer Variables, Accessing a variable through its pointer. **Structures and Unions:** Structure: Defining a structure, declaring structure variable, structure initialization. Unions: Defining union, declaring union variable, union initialization.	8

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List of Experiments:

Expt. No.	Description	Hours
I	Simple mathematical computations.	2
II	Different types of operators.	2
III	Different Input/output operations.	2
IV	Decision making and branching.	2
V	Decision making and looping.	2
VI	Arrays and Strings.	2
VII	Functions and Pointers.	2
VIII	Structures and Unions.	2

Course outcome	
CO1	Illustrate and explain the basic computer programming principles of C language.
CO2	Develop C programs to solve simple mathematical and decision making problems.
CO3	Develop C programs to solve simple engineering problems using looping constructs.
CO4	Develop C programs to demonstrate the applications of derived data types such as arrays, strings, functions, pointers, structures and unions.

Text Books:
1. Programming in ANSI C, E. Balagurusamy, 7th Edition, Tata McGraw-Hill Publication, 2017, ISBN-10: 933921966X, ISBN-13: 978-9339219666

Reference Book:
1. Schaum's outlines, Programming with C, Byron Gottfried, 3rdEdition,Tata McGraw-Hill Publication, 2017., ISBN-10: 0070145903, ISBN-13: 978-0070145900
2. C : How to Program, Paul Deffel and Harvey Deitel, 8 edition, Pearson,2015., ISBN-10: 9780133976892, ISBN-13: 978-0133976892
3. Let us C, YashwantKanetkar, 15th Edition, BPB Publication, 2016, ISBN-10: 8183331637, ISBN-13: 978-8183331630.

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First Year Syllabus for the Academic Year: 2022 - 2023

Department: Mechanical Engineering   **Semester: I/II**

SUBJECT NAME: COMPUTER AIDED ENGINEERING DRAWING
(common to ME/CV/EE/EC/ETC/ML)

Subject Code: 22ME105/22ME205   **L-T-P-C: 2-0-2-3**

Course Objectives:	
1	Familiarize with the free hand sketching of basic geometrical constructions in Engineering Drawing for visualization of three dimensional objects.
2	Apply the principles of scales, orthographic projections to draw elevation, plan and profile views of lines, planes and solids.
3	Apply the principles of projection of lines to find solutions to practical problems involving distances and inclinations.
4	Apply the fundamentals of solid geometry and develop lateral surfaces of solids.

UNIT	Description	Hours
I	**Computer Aided Sketching** Introduction, Drawing Instruments and their uses, BIS conventions, Dimensioning and free hand practicing. Computer screen, layout of the software, standard tool bar/menus and description of most commonly used tool bars, navigational tools, Co-ordinate system and reference planes. Definitions of HP, VP, RPP & LPP, Selection of drawing size and scale. Commands and creation of Lines, Co-ordinate points, axes, square, rectangle, polygons, circles, ellipse, text, move, copy, off-set, mirror, rotate, trim, extend, break, chamfer, fillet, curves, constraints viz. tangency, parallelism, inclination and perpendicularity. Introduction to Scales, Types of scales and problems on scales.	2L+4P
II	**Projection of points, lines and planes** Orthographic Projections of points, straight lines and planes. Introduction, Definitions - Planes of projection, reference line and conventions employed, introduction to four quadrants. Projections of points (problems are only from First quadrant), Including Front View, Top View, Left View, Right view. Projections of straight lines (located in First quadrant/first angle projection only), True and apparent lengths, True and apparent inclinations to reference planes. Introduction, Projections of plane surfaces triangle, square, rectangle, pentagon, hexagon and circle planes in different positions by change of position method only (First Angle Projection Only).	8L+10P
III	**Projection of solids** Introduction to projection of Solids, projection of right regular tetrahedron, hexahedron (cube), Prisms, Pyramids of square, pentagon and Hexagon, cylinders and cones in different positions (First angle Projection only).	6L+12P
IV	**Isometric Projection** Introduction to Isometric Projection, Isometric scale, Isometric projection of plane surfaces, Isometric projection of hexahedron (cube), right regular prisms,	5L

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	pyramids, cylinders, cones, spheres, cut spheres and combination of solids.		
V	**Development of Lateral Surfaces** Development of Lateral Surfaces of Solids, Introduction to Section planes and Sectional views, Development of lateral surfaces of right regular prisms, cylinders, pyramids and cones resting with base on HP only.		5L

Question paper Pattern

1. Unit 1 is only for practice and Internal Assessment and not for examination.
2. A maximum of six questions must be set as per the following pattern (No mixing of questions from different Units).

Q. No	From Units	Question paper pattern	Marks Allotted
1	UNIT 2	Q1 (Projection of points and lines) Or Q2 (Projection of Planes)	15
2	UNIT 3	Q3 or Q4 (both questions are from projection of Solids only)	25
3	UNIT 4 and UNIT 5	Q5 (Isometric projection) Or Q6 (Development of Lateral surfaces)	10
Total			**50**

Evaluation for Continuous Internal Evaluation (50 Marks)

1. 30 Marks for Class work (Sketching & Computer Aided Engineering drawing printouts in A4 size sheets).
2. Two tests of 10 Marks each. (Test 1: 10Marks & Test 2: 10Marks)

Semester End Examination

Q. No.	Solutions and sketching in the sketch book	Computer display and print out	Total Marks
1	6	9	15
2	10	15	25
3	10	-	10
Total Marks	**26**	**24**	**50**

Students have to submit the computer printouts and the sketches drawn on the graph sheets at the end of the examination. Both Internal and External examiners have to jointly evaluate the solutions (Sketches), Computer display and Printouts of each student for 50 Marks.

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Course Outcome	Descriptions
CO1	Demonstrate competence in the basics of Scales, Orthographic Projections of points, lines, planes and Solids for their presentation in the three Principal Views (L1, L2).
CO2	Apply the principles of orthographic projections to find solutions to real life problems involving distances and inclinations of geometrical objects (L3).
CO3	Analyze Orthographic projections of solids for drawing Isometric Projections (L4).
CO4	Develop lateral surfaces of solids and create isometric projections of solids of combination (L4).

Text Books
1. Engineering Graphics, K.R. Gopalakrishna, , Subhash Publication, Bangalore, 32nd, 2005
2. Engineering Drawing, N.D. Bhatt & V.M. Panchal, , Charotar Publishing House, Gujarat, 48th, 2005

Reference Book
1. Fundamentals of Engineering Drawing with an Introduction to Interactive Computer Graphics for Design and Production , Luzadder Warren J., Duff John M, Prentice-Hall of India Pvt. Ltd., New Delhi. Eastern Economy, 2005
2. Engineering Drawing and Graphics + Autocad, K.VenuGopal&V.Prabu Raja, New Age International Publishers, New Delhi, 4th, 2005
3. Computer Aided Engineering Drawing, Dr. M. H Annaiah, Dr. C. N Chandrappa & Dr. B. Sudheer Premkumar, New Age International Publishers, New Delhi, 5th 2015
4. Computer Aided Engineering Drawing, S. Trymbaka Murthy, I.K. International Publishing House Pvt. Ltd., New Delhi.3rd, 2006

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First Year Syllabus for the Academic Year: 2022 - 2023

Department: Computer Science and Engineering   **Semester: I/II**

SUBJECT NAME: PC Hardware and Networking Lab
(common to CS/IS/DS/AI)

Subject Code: 22CS105/205   **L-T-P-C: 2-0-2-3**

Course Objectives:	
1	Identify the hardware component of a computer.
2	Identify the peripheral devices of the system.
3	To expose the students in software applications.
4	To Understand the basic networking concepts.

SL. No.	Experiments
1)	Computer Front panel indicators ,Switches and Rear side Connectors a. Hard Drive Activity LED e. Reset Switch b. Power Switch f. USB Port c. Audio Jack g. PS/2 Port d. Parallel Port h. Serial Port
2)	Computer System Layout a. Identification and Position of d. MOTHERBOARD SMPS/Power supply b. CPU e. RAM c. FDD, HDD, CD, DVD
3)	Monitors , Keyboards and add on cards ADD ON CARDS (Ethernet,VGA,Soundetc) CRT, LCD and LED Monitors Mouse, Keyboard Printers : Dotmartix,Lineprinter,Inkjet,Laserjet
4)	Configure BIOS Setup Programme a. BIOS Setup Utility: ✓ Main Screen : BIOS Type, Processor, memory and date /time ✓ Advanced Screen: Information about CPU, memory, IDE, USB,PCI, SMPS ✓ Boot Screen: Boot device Priority ✓ Security: Change User/Supervisor Password ✓ Exit: Save configuration and exit. b. BIOS Power-On Self-Test (POST) Events
5)	Assembling/Dis-assembling a PC and configure c. Desktop computer d. Laptop e. Install Hard Disk f. Identify Master /Slave / IDE Drives

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	g. Partition and Format Hard Disk

6)	Operating System Installation
	
	    h. Minimum Hardware requirement to install OS
	    i. Install Windows OS
	    j. Partition and Format Hard Disk
	    k. Install Ubuntu OS

7)	Installation of Application Softwares
	
	    l. MSOFFICE
	    m. Adobe reader
	    n. WinRAR
	    o. Burning Software
	    p. Scandisk utility and Defragmentor
	    q. Disk cleanup
	    r. Virus Detection and Rectifying software(Norton,AVG,Quickheal)

8)	Networking
	
	    s. Identification and uses of Basic Networking Devices
	    t. Switches
	    u. Ethernet cable, types etc
	    v. Type of Networking topology: BUS, STAR, RING
	    w. Internet and Intranet concepts
	    x. Connect to a Internet and browse

9)	Install and configure DVD/Blue-ray DISKS
	
	    y. To install an external DVD & Blu-ray drive
	    z. To install an internal DVD & Blu-ray drive
	    aa. To write informationto a blank DVD & Blu-ray DISK

10)	Install Scanner, Webcam, Printer Device drivers
	
	    bb. To install Scanner driver
	    cc. To install Webcam driver
	    dd. To install Printer (Dot Matrix,Laser,Inkjet) Driver

Course outcome

Course Outcome	Descriptions
CO1	Identify the hardware components and peripheral devices of a computer
CO2	Install operating system and application softwares
CO3	Recognize the basic networking devices

First Year Syllabus for the Academic Year: 2022 - 2023

Department: Mechanical Engineering   **Semester: I/II**

SUBJECT NAME: INNOVATION AND SKILL DEVELOPMENT

Subject Code: 22ME106/206   **L-T-P-C: 1-0-2-2**

	Course Objectives
1	To expose the beginner (student) of engineering to the methodology of problem solving used by the engineer in the innovative design of products
2	To understand basic optimization techniques
3	To formulate the conceptual design of a product for satisfying human needs
4	To provide basic skills to a beginner in elementary fabrication processes like fitting, welding, sheet metal working etc used in product design.

UNIT	Description	Hours
	THEORY SESSION SYLLABUS	
I	Definition of Engineering Design with illustrations, Place of Design in Human Activity	1
II	Recognition of design problems, Needs, analysis, requirements. Formulation of design problem.	1
III	Introduction to Engineering Materials Metals, Non- metals, Plastics, Ceramics, Composites.	5
IV	Analysis of design problems, Description of inputs & out puts, Weightings & Trade-Offs among requirements, Criteria for comparison & evaluation of solution, Identification of constraints, Synthesis of alternative solutions, Design Optimization, Creativity & Techniques for creative idea generation & Evaluation of solutions. Quality Function Deployment Matrix - House of Quality diagram	6
	PRACTICE SESSION SYLLABUS	

V	**Fitting**
	i. Demonstration on fitting tools, fitting operations and joints.
	ii. Preparation of models involving rectangular, triangular, semi–circular and dovetail joints (Minimum 3 models)
	  Welding
	i. Demonstration of electric arc – welding, tools and equipment's.
	ii. Preparation models using electric arc welding – butt joint, lap joint, T joint or L – joint (Minimum 3 models)
	  Sheet metal and Soldering
	i. Demonstration on Sheet metal, Sheet metal tools, Soldering, Soldering tools.
	ii. Development of cone, Cylinder and combination of Solids (Minimum 2 models)
		26

NOTE: NO SEE FOR THE COURSE, BUT MINIMUM PASS MARKS IS 20 (CIE)

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Course Outcome	
CO1	Able to understand and apply the methodology of problem solving in the innovative design of products
CO2	Able to understand & apply simple optimization techniques for innovative product design
CO3	Able to carry out an initial conceptual design of a product for human needs.
CO4	Able to acquire basic skills in elementary fabrication processes like fitting, welding, drilling, grinding, sheet metal operations etc necessary to develop an engineering product.

Text Books
1. Engineering Design, Methods & Strategies for Product Design, N. Cross, John, Wiley, Publications
2. Product Design &Manufacturing, A.K.Chitale & R.C.Gupiha, Eastern Economy Edition
3. Work shop technology, Hajra Chaudhary, Media Promoters, January 2008

Reference Books
1. Design Methods in Engineering and Product Design, Ian Wright, McGraw-Hill Publication
2. An Introduction to Design Engineering, M.A. Parameswaran, Narosa Publications
3. Elements of Mechanical Engineering, Hajra Chaudhary , Media Publishing. & Promoters.

First Year Syllabus for the Academic Year: 2022 - 2023

Department: Civil Engineering   **Semester: I/II**

Subject Name: Innovation and Skill Development   **L-T-P-C: 1-0-2-2**

Subject Code: 22CV106/206

Course Objectives	
1	Students will able to learn Basic major building materials used in construction
2	Students will able to learn In-situ and laboratory tests on construction materials
3	Students will able to learn Methodology to establish formwork
4	Students will able to learn Building marking and building bylaws

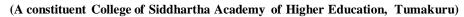| UNIT	Description	Hours
I	**Building planning**: Introduction, Classification of buildings, orientation of buildings, Building bylaws, site marking, Reading of plan, section and elevation **Building marking for 2 BHK house plan**	
II	**Areas and volumes**: Introduction, computation of areas and volumes by mid – ordinate rule, average ordinate rule, trapezoidal and prismoidal rule, numerical problems on areas and volume. Calculation of earth work for an embankment for a length of about 200m	
III	**Roofs & Floors**: Types of roofs, roofing materials, Floors-types, flooring materials **Stairs**- Requirements of ideal stair and types, **Form work**- Introduction to form work, types of form work- Steel, Timber, plastic, Aluminum, Fiber, plywood, poly-carbon sheet etc. scaffolding, centering, shuttering **Tests on bricks.**	
IV	**Plastering and Paints**: Mortar and its types, purpose, materials, methods of plastering and painting. **Paints**-Types, technical terms, ingredients and details, preparation and application of different types of paints, methods of painting to old and new surfaces. **Testing of mortar cubes.** **Calculation of quantity of paints required for particular area or house.** **Technical visit to construction sites.**	
V	**Quality Aspects:** Quality tests of major building materials, major highway materials and drinking quality, per-capita demand, population forecast by arithmetic increase method for water supply to a city. **Preparation of concrete of different grades** (M20 &M30) as per mix design **Testing of concrete in green state and harden state** **Steel test**- Bend and Re-bend **Cement test**- field methods. **Technical visit to construction sites.**	

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Course outcome	
CO1	Students will be able to utilize the different types of formworks.
CO2	Students will be able to decide suitable paint for different wall surfaces.
CO3	Students will be able to do the building marking with respect to building bylaws.
CO4	Students will be able to quantifying and qualifying the construction materials.

Text Books:
1. Building Materials, S K Duggal, , 5th edition, Jan 2019
2. Engineering Materials, Rangawala, 43rd edition, Jan 2019

Reference Book:
1. Building Construction, Sushil Kumar, 1st edition 2020
    2. Department of town planning, .Tumkur Local Planning Area- Zonal Regulations

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First Year Syllabus for the Academic Year: 2022 - 2023

Department: Computer Science & Engineering   **Semester: I/II**

Subject Name: Innovation and skill Development

Subject Code: 22CS106/206   **L-T-P-C: 1-0-2-2**

Course Objectives:	The purpose of this course is to make students to
1	To understand the basics of computer applications.
2	Study and practice basic UNIX commands.
3	Familiarize with the basic elements of HTML.

UNIT	Description
1	Create a document using a suitable word processing package like Libre Office Writer with at least three paragraphs and perform the following operations. • Assign suitable left, right, top and bottom margins for the document • Insert page number in every page. • Centre the heading and make it bold, increase the font size. • Underline specified words in the document and changes them to italics. • Conduct the spell check and correct them suitably. • Exchange paragraphs 2 and 3 using cut and paste facility. • Put suitable headers and footers. • Find and replace the text. • Make your documents protected by a password. • To demonstrate Watermarking technique. • Count the number of words and lines in word document
2	Using word processor application create the following • resume for a job application. • Business letter. • Personal letter.
3	Using a suitable spreadsheet application like Libre Office Calc create a table of five students for their marks scored in five subjects (max. marks 100). Perform the following operations for the following data. • Calculate the percentage of each student. • Assign the grade for each student based on their average marks:

GRADE	Average Marks
S	>90
A	>=80 and <=90
B	>=70 and < 80
C	>=60 and < 70
D	>=50 and <60

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E	>= 40 and <50
F	< 40

- Highlight the data cell with green colour if a student scores above 20 and highlight with red colour, if a student scores less than 10 using formatting toolbar.
- Draw a Bar/Pie/ line graph for the given data.
- Draw the line graph for the marks scored by each student in different subjects
- At least with an example clearly demonstrate relative reference and absolute reference formulation.
- Perform filter option for the below data (At least 2-3 different filter operations must be done in exam).

4	Using a suitable spreadsheet application like LibreOfficeCalc create a worksheet containing the pay details(Baic pay, DA,HRA, other allowance,deductions-PF,PT,Insurance,Gross and Net salary)of the employees using formulas.
5	Create a presentation on any topic of your interest using LibreOffice Impress Create Master Slide with suitable slide design, slide layout, background color, slide number & date. Use this Master slide to demonstrate the following operations. [NOTE: The presentation must consist of at least 10 slides and also the presentation must be organized].
6	Create a Library database using LibreOffice Base Access having the fields like member_id, member_name, account_open_date, max_books_allowed, penalty_amount. Demonstrate the following: - Creating the table. - Inserting suitable values into the table. - Creating the forms. - Querying the database - Generating suitable reports.
7	Create a Employee database using LibreOffice Base Access having the fields like eid,ename,egender,salary,DOJ, Demonstrate the following: - Creating the table. - Inserting suitable values into the table. - Creating the forms. - Querying the database - Generating suitable reports.

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8	Execution of basic UNIX Commands which includes • Introduction to vi editor • Creating files , listing file attributes, changing file permissions • Creating hard link and symbolic link • grep command for pattern matching • Environment variables • expr command • Creating directories and subdirectories
9	Design the webpage to describe an ordered list of atleast 4 states and unordered list of atleast 4cities.
10	Design the webpage for student registration with the following fields • Student USN. • Student name. • Student branch.

Course Outcome:	
1	Create documents on word processor, Spreadsheet and presentation application.
2	Create a database application using Access.
3	Implement basic commands in Unix
4	Design simple webpage using HTML.

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First Year Syllabus for the Academic Year: 2022 - 2023

Department: Electrical & Electronics Engineering   **Semester: I/II**

Subject Name: Innovation and   skill Development   L-T-P-C: 1-0-2-2

Subject Code: 22EE106/206

Course Objectives:	The purpose of this course is to make students to
1	Introduce the Concept of Electrical Engineering.
2	Impart Skill of Controlling equipment.
3	Impart Skill of preparing Electrical Circuit/Equipment.

List of Experiments:

Expt. No.	Description	Hours
I	Demonstration of meters and components used.	2
II	Direct on Line starter	2
III	Star- Delta (Y/Δ) Starter	2
IV	Induction motor forward/reverse control	2
V	Construction of Extension Board	2

Course Outcome:	At the end of the course, the student will be able to:
1	Able to understand the Concept of Electrical Engineering.
2	Analyze Skill of Controlling equipment.
3	Apply the Skill of preparing Electrical Circuit/Equipment.

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First Year Syllabus for the Academic Year: 2022 - 2023

Department: Electronics and Communication Engineering.   **Semester: I/II**

Subject Name: Innovation and skill Development

Subject Code: 22EC106/206   **L-T-P-C: 1-0-2-2**

Course Objectives:	The objective of this course is to
1	Impart knowledge on innovations and their application in real world.
2	Inculcate skill required in the students to analyse, design and demonstrate.

Syllabus

Innovation: Discovery – Invention – Innovation, Historical innovations, Types of innovations, Electronics Inventions: MOSFETs & CMOS, Integrated Circuit, Microprocessor, Internet, Global Positioning System, Digital camera, Electric vehicles.

Skill development: Skill and its types, Skills required for electronics engineers, Soft skills, Analytical skill, Critical thinking skill, Design skill, skill to use modern tool usage, documentation skill and examples.

Laboratory part:
- Soldering and de-soldering,
- Demonstration of power supply and signal generators,
- Demonstration of voltmeter, ammeter, multi meter and CRO usage,
- Demonstrate hardware components of a power supply, CPU and mouse,
- "Automatic Street Light Control System" to demonstrate the skills: Project Management,Hardware Knowledge, Troubleshooting,Programming Languages, Test Engineering,
- Develop an electronic module through the skills and submit a report,
- Visit to Network server room and UPS room

Course Outcome:	At the end of the course, the student will be able to:
1	Infer and classify scientific and technological innovations and relate their influence on our daily life.
2	Articulate skills required for an electronics engineer and apply the basic engineering knowledge to solve engineering problems.

Reference:

1. National Skills Qualifications Framework of UGC
2. https://www.nationalskillsnetwork.in/aicte-skill-development/
3. https://www.toolshero.com/innovation/
4. Kogabayev, Timur&Maziliauskas, Antanas. (2017) "The definition and classification of innovation"Holistica. 8. 10.1515/hjbpa-2017-0005.
5. Behera, Biswabhusan& Gaur, Mamta. (2022) "Skil Development in India -A Literature Review" GIS-ZeitschriftfüGeoinformatik. 9. 1721.

SRI SIDDHARTHA INSTITUTE OF TECHNOLOGY- TUMAKURU
(A constituent College of Siddhartha Academy of Higher Education, Tumakuru)

First Year Syllabus for the Academic Year: 2022 - 2023

Department: Mathematics   **Semester: II**

Subject Name: Advanced Calculus and Numerical Methods   **L-T-P-C: 3-1-0-4**

Subject Code: 22MA201   **Total Hours : 52**

Course Objectives: The purpose of this course is to make students to	
1	Study the differential equations of higher order and its applications.
2	Study the numerical methods enabling them to acquire the knowledge of these mathematical tools.
3	Concrete foundation of Integral calculus, vector calculus.
4	Study the partial differential equations and its applications.

UNIT	Description	Hours
I	**Differential Equations of higher order:** Linear Differential Equations with constant coefficients-Inverse differential operators, Particular Integrals of e^{ax}, $\sin ax$, $\cos ax$, x^m, $e^{ax}\sin ax$ and $e^{ax}\cos ax$, method of variation of parameters, Cauchy's and Legendre's differential equations. Applications to oscillation of simple pendulum, oscillation of spring and L-C-R circuits.	12
II	**Numerical Methods:** Finite differences. Interpolation and extrapolation using Newton's forward and backward difference formulae, Newton's divided difference and Lagrange's formulae (all formulae without proof)- problems. Solution of polynomial and transcendental equations-Newton-Raphson and Regula-Falsi method (only formulae)- problems.	10
III	**Partial Differential Equations:** Formation of PDE's by elimination of arbitrary constants and functions. Solution of non-homogeneous PDE by direct integration. Solution of Lagrange's linear PDE, Method of separation of variables. Solution of one dimensional heat and wave equations by the method of separation of variables.	10
IV	**Integral Calculus:** Multiple Integrals- Evaluation of double and triple integrals. Evaluation of double integrals by changing the order of integration and changing into polar co-ordinates. Applications: Area (polar curves) and volume. **Beta and Gamma functions:** Definitions, Relation between beta and gamma functions – problems on Relation between beta and gamma functions.	10
V	**Vector Calculus:** **Vector Differentiation**: Scalar and vector fields. Gradient, directional derivative, curl and divergence-physical interpretation, solenoidal and irrotational vector fields-problems. **Vector Integration**: Statement and problems on Green's theorem, Stokes theorem. Applications to work done by a force and flux.	10

First year 2022-23

Course Outcomes:	On completion of this course, students are able to:
CO1	**S**olve the problems based on higher order differential equations, numerical methods, vector calculus, partial differential equations and integral calculus.
CO2	Gain the knowledge of differential equations, partial differential equations, improper integrals, Beta and Gamma functions and vector calculus
CO3	Compare and analyze the methods in differential equations, numerical methods, integral calculus and vector calculus.
CO4	**A**pply the concepts of differential equations, partial differential equations, numerical methods and calculus in engineering problems

Text Books:

1. Higher Engineering Mathematics, B.S. Grewal, Khanna Publishers, 43rd EditionKhanna Publications,2015.ISBN:9788174091956

2. Advanced Engineering Mathematics, E. Kreyszig, John Wiley & Sons, 10th Edition JonWiley&Sons,2015. ISBN:9780470913611

Reference Book:

1. "Advanced Engineering Mathematics", C. Ray Wylie, Louis C. Barrett, McGraw-Hill Book Co., New York, 6th Edition. 1995, ISBN:9780071135436.

2. "A Text Book of Engineering Mathematics", N.P.Bali and ManishGoyal, Laxmi Publishers, 7th EditionLakshmi Publishers,2010, ISBN:9788131808030.

3. "Higher Engineering Mathematics", B.V.Ramana, Tata McGraw-Hill, 1st Edition, TataMcGraw-Hill, 2006, ISBN:9780070634190

First year 2022-23

First Year Syllabus for the Academic Year: 2022 - 2023

Department: Humanity   **Semester: I/II**

Subject Name: Communicative English   **L-T-P-C: 2-0-0-1**

Subject Code: BS- 22HS106/205   **Total Hours : 26**

Course Objectives: The purpose of this course is to make students to	
1	To understand the vocabulary and structure of the English language as it is used in academic writing.
2	To practice rhetorical methods of writing development that are common in business writing and correspondence.
3	To improve the listening, reading, writing, and critical thinking skills needed for academic success.
4	To basic information on professionalism and to systemize life.
5	To develop critical skills of self-evaluation.
6	To provide skills to deal with large quantities of academic reading and writing.

UNIT	Description	Hours
I	**Introduction to communication :** Communication as sharing; context of communication; the speaker/writer and the listener/reader; medium of communication; barriers to communication; accuracy, brevity, clarity and appropriateness in communication, Written communication, Letter writing-informal and formal-letters of enquiry, letters of complaint, response to complaint and enquiries, Self exploration through description	10
II	**Technical English :** Punctuation Modules-parts of speech, articles, active-passive voices, subject verb agreement, speech, degree of comparison, Sentences: simple, complex, declarative, assertive, negative, interrogative, exclamatory	12
III	**Vocabulary Building :** One word substitution, synonym, antonym, homophones, idioms and phrases, often confusable words.	10
IV	**Reading Compression :** Based on short stories, newspaper and essays, Reading at various speeds (slow, fast, very fast); reading different kinds of texts for different purpose (e.g. for relaxation, for information, for discussion at a later stage, etc.); reading between the lines. Comprehension of Unseen Passages.	10

Sr.N	Communicative situations	category

First year 2022-23

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1	Reading newspaper	
2	Reading written instructions/advice	
3	Navigating speed breakers	
4	Understanding author	READING
5	Reading business documents	
6	Skimming ,scanning, searching	
7	Communicating through E-mails	WRITING
8	Writing minutes of the meetings	
9	Writing business letters	
10	Writing cover letter	
11	Listening v/s Hearing	
12	Process of listening	LISTENING
13	Obstacles to effective listening	
14	Introducing oneself	
15	Asking and answering rational question	SPEAKING
16	Talking about daily life situations	
17	Telephonic conversation	

Course Outcomes: On completion of this course, students are able to:	
CO1	A demonstrable ability to use the terms, categories, and concepts of critical or "close reading".
CO2	The ability to write well- critically, creatively, or both, mature in its voice and cogency.
CO3	To strengthen their ability to write academic papers, essays and summaries using the process approach.
CO4	To improve their reading fluency skills through extensive reading and writing.

Text Books:

1. K .Floyd ," interpersonal communication: The whole story (2009)"McGraw hi**l**"

2. Greenbaum Sydney and nelson Gerald ," An introduction to English grammar" Pearson wan Michael "practical English usage" OUP 2005

3. Raymond Murphy, "intermediate English grammar "(2007) Cambridge university press

First year 2022-23