

**F.E. / F.T.
SEM – I
(A.Y. 2023-24)**

**B.E. (COMP/ CIVIL / E&CS / CSE) /
B.Tech. (IoT/ AI&DS)**

F.E./F.T. Semester – I

Choice Based Credit Grading Scheme with Holistic and Multidisciplinary Education (CBCGS-HME-2023)

B.E. (COMP/ CIVIL / E&CS / CSE) / B.Tech. (IoT/ AI&DS)					F.E./F.T. (SEM: I)			
Course Name: Physics					Course Code: BSC1101			
Teaching Scheme (Program Specific)					Examination Scheme (Formative/ Summative)			
Modes of Teaching / Learning / Weightage					Modes of Continuous Assessment / Evaluation			
Hours Per Week					Theory (100)		Practical/ Oral (25)	Term Work (25)
Theory	Tutorial	Practical	Contact Hours	Credits	ISE	IE	ESE	PR
3	-	2	5	4	20	20	60	25
150								
ISE: In-Semester Examination - Paper Duration – 1 Hour								
IE: Innovative Examination								
ESE: End Semester Examination - Paper Duration - 2 Hours								
<p>The weightage of marks for continuous evaluation of Term work/ Report: Formative (40%), Timely completion of practical (40%) and Attendance/Learning Attitude (20%)</p> <p>Prerequisite: 10+2 level of Science knowledge related to crystalline solids, Semiconductors, Modern Physics, Wave theory of light, Magnetism</p>								

Course Objective: The course intends to impart fundamental concepts and principles of crystallography, semiconductor, quantum mechanics, lasers and smart materials which can solve the engineering problems.

Course Outcomes: Upon completion of the course students will be able to:

Sr. No.	Course Outcomes	Cognitive levels of attainment as per Bloom's Taxonomy
1	Analyze Fermi Dirac Distribution function to semiconductor and variation of Fermi level with temperature, impurity concentration,	L1, L2, L3
2	Apply the semiconductor physics behind the Electronic Materials, understand the use of various Photodetectors.	L1, L2, L3
3	Understand the principles of quantum mechanics and its key.	L1, L2, L3
4	Understand the Interference of light and its applications, diffraction of light and its types, diffraction grating.	L1, L2, L3

5	Understand different types of LASERS with their various applications and compare different types of superconductors, it's applications.	L1, L2, L3
6	Derive all 4 Maxwell's equations of electromagnetic waves in free space as well as in vacuum.	L1, L2, L3

Detailed Syllabus (Total No. of Hours: 45):

Module No.	Topics	Hrs.	Cognitive levels of attainment as per Bloom's Taxonomy
1.0	Semiconductors Intrinsic and extrinsic semiconductors, Fermi Dirac distribution function, Dependence of Fermi level on carrier-concentration, and temperature, Hall Effect and its applications, Semiconductor photodetectors and it's types -PN, PIN, and Avalanche Photodiodes--- and their structure, materials, working principle, and characteristics, Number systems and Logic Gates	7	L1, L2, L3.
2.0	Quantum Mechanics de-Broglie hypothesis, Heisenberg's uncertainty principle, Applications of uncertainty principle (Absence of electron inside Nucleus), wave packet, group velocity and phase velocity; Wave function, Physical interpretation of wave function; Time Dependent Schrodinger's Equation (TDSE), Time Independent Equation (TISE), Application of TISE - Particle in box and Potential well	7	L1, L2, L3.

3.0	Wave Optics and Optical Fibers Interference of light by amplitude splitting, Thin film, Wedge shaped film, Newton's rings, Interference applications. Fibre optics: Introduction, total internal reflection, basic construction, Types of optical fibre; Numerical Aperture and maximum angle of acceptance, Numerical Aperture for graded index fibre; V-number, Maximum number of possible orders; Losses in optical fibre Optical Fibre Communication system model	9	L1, L2, L3.
4.0	Introduction to nanoscience and nanotechnology Two main approaches in nanotechnology - Bottom-up technique and top down technique; Tools used in nanotechnology such as Scanning electron microscope, Scanning Tunneling Microscope, Atomic Force Microscope. Methods to produce nanomaterials; Applications of nanomaterials; Different forms of carbon nanoparticles, carbon nanotubes, properties and applications.	8	L1, L2,L3.
5.0	Lasers Interaction of Photons with matter- Absorption, Spontaneous Emission, Stimulated Emission, Pumping, Population Inversion, Active Medium, Einstein's theory of matter radiation interaction and A and B coefficients; amplification of light by population inversion, different types of lasers: gas lasers (He-Ne), Solid state lasers- Nd-YAG Semiconductor diode lasers; Properties of laser beams, applications of lasers -Holography, Industrial applications.	7	L1, L2, L3

6	Sensors Basic concept of Sensors and various parts of Sensors, types of Sensors, Temperature Sensor, Proximity Sensor, IR Sensor (Infrared Sensor), Pressure Sensor, Light Sensor, Ultrasonic Sensor, Smoke, Gas and Alcohol Sensor.	7	L1, L2, L3
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Suggested List of Practical/ Experiments:

Practical Number	Type of Experiment	Practical/ Experiment Topic	Hrs.	Cognitive levels of attainment as per Bloom's Taxonomy
1	Basic Experiments	Study of I-V Characteristics of Photodiode	2	L1, L2, L3, L4
2		Determination of Hall Coefficient of semiconductor material using Hall Effect phenomenon.	2	L1, L2, L3
3		Determination of energy band gap of a semiconductor using Four Probe Method	2	L1, L2, L3
4		Determination of Fringe width in Wedge shaped film	2	L1, L2, L3, L4
5	Advanced Experiments	Determination of radius of curvature of Plano Convex lens using Newton's Rings.	3	L1, L2, L3
6		Study of Laser diode characteristics	2	L1, L2, L3
7	Basic Experiments	Determination of unknown wavelength of laser using diffraction grating.	3	L1, L2, L3
8		Determination of Numerical Aperture of Optical Fibre	3	L1, L2, L3
9	Design Experiments	Design based experiment to calculate Plank's Constant	3	L1, L2, L3
10		Sensor Based Experiment	2	L1, L2, L3
11	Project Based Experiments- Group Activity (Students should	Based on semiconductor diode, Solar cell, LED, Photodiode. Based on Optical Fibres	6	L1, L2, L3

complete anyone Project Based Experiment from the list or any other project in discussion with Faculty in-Charge)				
Total		30		

Books and References:

SN	Title	Authors	Publisher	Edition	Year
1	Engineering Physics	Bhattacharya D K and Tandon	New Delhi, Oxford Press	1 st	2015
2	A textbook of Engineering Physics.	Kshirsagar M. N. and Avadhanulu P.G.	S.Chand	12 th	2018
3	Engineering Physics	Malik H K, Singh A K	Mac-Graw Hill	2 nd	2018
4	Lasers: Fundamentals and Applications	Ghatak and Thyagarajan	Springer	2 nd	2011
5	Quantum Physic of Atoms, Molecules and Solids	Robert Eisberg& Robert Resnick	Wiley Publications.	2 nd	2006
6	Semiconductor Optoelectronics: Physics and Technology	J. Singh	McGraw-Hill		1995
7	Semiconductor Devices: Physics and Technology.	S. M. Sze	Wiley	Student Edition.	2016
8	An Introduction to Sensors and Instrumentation	Shobhnath Singh	Alpha Science International	-	2020
9	Fibre Optic Communication by Govind Rai	Govind Rai	Wiley	3 rd Edition	2015

F.E./F.T Semester –I

Choice Based Credit Grading Scheme with Holistic and Multidisciplinary Education (CBCGS-HME 2023)

B.E. (COMP/ CIVIL / E&CS / CSE) / B.Tech. (IoT/ AI&DS)					F.E./F.T. (SEM: I)					
Course Name: Mathematics-I					Course Code: BSC1102					
Teaching Scheme (Program Specific)					Examination Scheme (Formative/ Summative)					
Modes of Teaching / Learning / Weightage					Modes of Continuous Assessment / Evaluation					
Hours Per Week					Theory (100)		Practical/Oral (00)	Term Work (25)	Total	
Theory	Tutorial	Practical	Contact Hours	Credits	ISE	IE	ESE	PR	TW	125
4	1	-	5	5	20	20	60	-	25	
ISE: In-Semester Examination - Paper Duration – 1 Hour IE: Innovative Examination ESE: End Semester Examination - Paper Duration - 2 Hours										
The weightage of marks for continuous evaluation of Term work/ Report: Formative (40%), Timely completion of practical (40%) and Attendance/Learning Attitude (20%)										
Prerequisite: 10+2 level Mathematics										

Course Objective: The Course intends to develop the basic Mathematical skills of engineering students that are imperative for effective understanding of engineering subjects. The topics introduced will serve as basic tools for specialized studies in many fields of engineering and technology.

Course Outcomes: Upon completion of the course students will be able to:

SN	Course Outcomes	Cognitive levels of attainment as per Bloom's Taxonomy
1	Apply the fundamentals of calculus and concepts of sequence-series.	L1, L2
2	Apply the concept of partial derivatives in its application part.	L1, L2, L3
3	Apply the concepts of complex numbers.	L1, L2, L3
4	Evaluate the rank of a matrix and its application to solve the system of equations.	L1
5	Apply the concept of Gamma and Beta function to evaluate the area and volume	L1, L2, L3
6	Inculcate the numerical integration technique by various methods	L1, L2, L3

Detailed Syllabus (Total No. of Hours: 60)

Module No.	Topics	Lectures	Cognitive levels of attainment as per Bloom's Taxonomy
1	<p align="center">Calculus-I</p> <p>Mean value theorems (Rolle's, Lagrange's and Cauchy's Theorem), Taylor's series, Maclaurin series for exponential, trigonometric and logarithm functions, Maclaurin theorems with remainders, Indeterminate forms, Convergence of sequence and series, D'Alembert's ratio test, Cauchy's nth root test</p>	10	L1, L2
2	<p align="center">Multivariable Calculus (Differentiation)</p> <p>Partial derivatives (first and higher order), composite function, Total derivative, Euler's Theorem on homogeneous functions in two and three variables, Maxima, minima and saddle points, Gradient, directional derivative (Self-Study: curl and divergence)</p>	11	L1, L2, L3
3	<p align="center">Complex Number</p> <p>(Pre-requisite: Basics of Complex Numbers, De' Moivre's theorem) Power of complex expressions, Root of an equation using De' Moivres theorem, Hyperbolic functions, Inverse Hyperbolic functions, Separation into real and imaginary parts, Logarithm of complex number</p>	7	L1, L2, L3
4	<p align="center">Matrices I</p> <p>Symmetric, Skew-symmetric, Hermitian, Skew-Hermitian and Orthogonal Matrices, Unitary Matrices, Rank, Row-Echelon form, Normal form, Rank-Nullity theorem (without proof), non-Homogeneous system of linear algebraic equations, Homogeneous system of linear algebraic equations, Linear dependence and independence of vectors</p>	12	L1
5	<p align="center">Calculus-II</p> <p>Gamma functions, Beta functions and their properties, Duplication formula on Beta function,</p> <p>Application of single integral in the evaluation of Surface area, Volumes of revolutions using single integral.</p>	11	L1, L2, L3

Numerical Integration		9	L1, L2, L3
6	Numerical integration — the numerical evaluation of an integral, Rectangle method —based on (piecewise) constant approximation, Trapezoidal rule —based on (piecewise) linear approximation, Simpson's rule — based on (piecewise) quadratic approximation, Newton–Cotes formulas — based on generalizes approximation.		

Books and References:

SN	Title	Authors	Publisher	Edition	Year
1	Calculus and Analytic geometry	G.B. Thomas and R.L. Finney	Pearson	9th Edition	2002
2	Advanced Engineering Mathematics	Erwin Kreyszig	John Wiley & Sons	9th Edition	2006
3	Engineering Mathematics for first year	Veerarajan T	Tata McGraw-Hill, New Delhi	3rd Edition	2008
4	Higher Engineering Mathematics	Ramana B.V	Tata McGraw Hill, New Delhi	11th Edition	2010
5	Higher Engineering Mathematics	B.S. Grewal	Khanna Publishers	36th Edition	2010
6	A text book of Engineering Mathematics	N.P. Bali and Manish Goyal	Laxmi Publications	9th Edition	2008

Online References:

Sr. No	Website Name	URL	Module Covered
1.	Openstax	https://openstax.org/	M1-M6
2	Lumanlearning .com	https://courses.lumanlearning.com	M1-M6
3	Engineering Mathematics Tutorial – Geeks for Geeks	https://www.geeksforgeeks.org/	M1-M6

F.E./F.T. Semester -I

Choice Based Credit Grading Scheme with Holistic Student Development (CBCGS-HME 2023)

B.E. (COMP/ CIVIL / E&CS / CSE) / B.Tech. (IoT/ AI&DS)				F.E./F.T. (SEM : I)						
Course Name : Basic Electrical Engineering				Course Code : ESC1101						
Teaching Scheme (Program Specific)				Examination Scheme (Formative/ Summative)						
Modes of Teaching / Learning / Weightage				Modes of Continuous Assessment / Evaluation						
Hours Per Week				Theory (100)		Practical/Ora l (25)	Term Work (25)	Total		
Theory	Practical	Contact Hours	Credits	ISE	IE	ESE	PR	TW	150	
3	2	5	4	20	20	60	25	25		
ISE: In-Semester Examination - Paper Duration – 1 Hours								IE: Innovative Examination		
ESE: End Semester Examination - Paper Duration – 2 Hours								The weightage of marks for continuous evaluation of Term work/ Report: Formative (40%), Timely completion of practical (40%) and Attendance/Learning Attitude (20%)		
Prerequisite: 10+2 level knowledge of basic physics and mathematics										

Course Objective: The Course intends to provide comprehensive idea about AC and DC circuit analysis, working principles & applications of basic machines and control devices in electrical engineering.

Course Outcomes: Upon completion of the course students will be able to:

Sr. No.	Course Outcome	Revised Bloom Taxonomy Level
CO1	To understand basic theorem and how to apply them for analysis any DC circuit.	L1, L2, L3
CO2	To understand the basic fundamentals of single-phase AC circuit.	L1, L2, L3
CO3	To evaluate and analyze single and three phase AC circuits	L1, L2, L3
CO4	To acquaint the knowledge of the working of single-phase transformer.	L1, L2, L3
CO5	To articulate various type of electrical machine and their working principles.	L1, L2
CO6	To illustrate the application of SCR in various power electronics circuits.	L1, L2, L3

Detailed Syllabus (Total No. of Hours: 45):

Module No.	Topics	Lectures	Cognitive levels of attainment as per Bloom's Taxonomy
1	DC CIRCUITS: DC Circuits (Only independent source) Kirchhoff's Laws, Ideal and practical, Voltage and current Sources, Source Transformation, Mesh and Nodal Analysis, Super Mesh and Super Node, Star-Delta / Delta-Star Transformations, Superposition, Thevenin's Theorem, Norton's Theorem and Maximum Power Transfer Theorem.	09	L1, L2, L3
2	FUNDAMENTAL OF AC CIRCUITS: Generation of alternating voltage, basic definitions, average and r.m.s values, phasor, Representation of sinusoidal waveforms, peak and rms values, phasor representation, sums on phasors.	04	L1, L2, L3
3	ANALYSIS OF AC CIRCUIT: Analysis of single-phase ac circuits consisting of R, L, C, RL, RC, RLC combinations (Series and Parallel), real power, reactive power, apparent power, power factor, Resonance, Q factor. Generation of Three-Phase Voltages, voltage and current relationships in Star and Delta Connections	09	L1, L2, L3
4	TRANSFORMERS: Principle & Construction of Transformer, Ideal and practical transformer, equivalent circuit, No-Load and ON load Phasor diagram, losses in transformers, OC & SC test, efficiency.	07	L1, L2, L3

5	ELECTRICAL MACHINES: Induction Motor: Generation of rotating magnetic fields, Construction and working of a three-phase induction motor, Significance of torque-slip characteristic, starting and speed control of induction motor. Stepper Motors: Principle of operation, Constructional features, Types of stepper Motors and working.	09	L1, L2
6	POWER CONVERTERS: SCR, V-I characteristic of SCR, Single phase Phase-controlled Rectifier with R Load. Step-up and step-down Chopper. Duty ratio control. Single-phase inverters.	07	L1, L2, L3

Suggested List of experiments/demonstrations:

Practical Number	Type of Experiment	Practical/ Experiment Topic	Hrs.	Cognitive levels of attainment as per Bloom's Taxonomy
1.	Basic Experiments	Basic safety precautions. Introduction and use of measuring instruments – voltmeter, ammeter, multi-meter, oscilloscope, resistors, capacitors and inductors	2	L1, L2
2.		Study of resonance in series R-L-C circuits.	2	L1, L2, L3
3.		Three-phase supply: Voltage and current relationships in star and delta connections.	2	L1, L2, L3
4.		Verification of Mesh Analysis	2	
5.		Verification of Nodal Analysis	2	
6.	Design based Experiments	Verification of Thevenin's theorem	2	L1, L2, L3
7.		Verification of Super Position Theorem.	2	
8.		Verification for Maximum Power Transfer Theorem.	2	

9.		Demonstration of cut-out sections of machines: DC machine (commutator-brush arrangement)	2	L1, L2
10.		Demonstration of cut-out sections of machines: Induction machine (squirrel cage rotor)	2	L1, L2
11.		Demonstration of cut-out sections of machines: Synchronous machine (field winding - slip ring arrangement)	2	L1, L2
12.		Study V-I Characteristic of SCR	2	L1, L2, L3
13.		Demonstration of Speed control of AC Motor.	2	L1, L2, L3
14.		Analysis of Basic electric circuits by Multisim Software	4	L1, L2
Total		30		

Suggested Text/Reference Books:

SN	Title	Authors	Publisher	Edition	Year
1	Basic Electrical Engineering	D.P. Kothari and I.J. Nagrath	Tata McGraw Hill	Third edition	2010
2	Basic Electrical Engineering	D.C. Kulshreshtha	Tata McGraw Hill	-	2009
3	Fundamentals of Electrical Engineering	L.S. Bobrow	Oxford University Press	-	2011
4	Electrical and Electronics Technology	E. Hughes	Pearson	Tenth Edition	2010
5	Electrical Engineering Fundamentals	Vincent Deltoro	Prentice Hall India	Second Edition	1989
6	Reluctance Motor and their Controls,	T.J.E. Miller,	USA, Oxford University Press,		1995
7	Power Electronics: Circuits, Devices & Application	Muhammad H.Rashid	Pearson	Fourth Edition	

Online References:

Sr. No	Website Name	Online links	Modules
1.	NPTEL	https://nptel.ac.in/courses/108/105/108105053/	M1, M2, M4, M5
2.	NPTEL	https://nptel.ac.in/courses/108/105/108105066/	M6
3.	NPTEL	https://nptel.ac.in/noc/courses/noc20/SEM2/noc20-ee68/	M1, M2, M4, M5

F.E./F.T. Semester -I
Choice Based Credit Grading Scheme with Holistic and Multidisciplinary Education (CBCGS-HME 2023)

B.E. (COMP/ CIVIL / E&CS / CSE) / B.Tech. (IoT/ AI&DS)								F.E./ F.T (SEM: I)		
Course Name: Engineering Graphics &Design								Course Code: ESC1102		
Teaching Scheme (Program Specific)								Examination Scheme (Formative/Summative)		
Modes of Teaching/Learning/Weightage								Modes of Continuous Assessment/Evaluation		
Hours Per Week				Theory (100)			Practical/ Oral(25)	Term Work (25)	Total	
Theory	Tutorial	Practical	Contact Hours	Credits	ISE	IE	ESE	PR	TW	
2	-	4	6	4	20	20	60	25	25	150
ISE: In-Semester Examination - Paper Duration – 1.5 Hours										
IE: Innovative Examination										
ESE: End Semester Examination - Paper Duration - 3 Hours										
The weightage of marks for continuous evaluation of Term work/ Report: Formative (40%), Timely completion of practical (40%) and Attendance/Learning Attitude (20%)										
Prerequisite: Basic geometrical terminology and simple constructional procedures of plane, solids and engineering curves										

Course Objective: The Course intends to introduce the universal language of engineers for effective communication through drafting exercises of geometrical solids along with the use of computer aided drafting software.

Course Outcomes: Upon completion of the course students will be able to:

SN	Course Outcomes	Cognitive levels of attainment as per Bloom's Taxonomy
1	Use drawing instruments and apply standard dimensioning system to construct engineering curves like Ellipse, parabola, hyperbola Cycloid, Involutes by different methods. Learners will also be able to use the basics software toolbars such as Draw, Modify, Dimension etc.	L1, L2, L3
2	Visualize and draw/construct the different types of lines and planes inclined to both reference planes.	L1, L2, L3
3	Represent 3D solid object on 2D plane with different angle of view. They will also be able to read the hidden parts as per different types of cutting plane. Learners will also be able to create computer-aided geometric design in 2D form with CAD software	L1, L2, L3
4	Know different types of standard solids and visualize projection of solid inclined to both the reference planes.	L1, L2, L3

5	Visualize sectional view of solids cut by different types of cutting planes and also learn the method to develop the lateral surfaces of sectioned solids	L1, L2, L3
6	Read and interpret the given 2-D views and convert it into the 3D Isometric view. Learners will also be able to create computer-aided geometric design in 3D form with CAD Software	L1, L2, L3

Detailed Syllabus (Total No. of Hours: 30):

Module No.	Topics	Lectures	Cognitive levels of attainment as per Bloom's Taxonomy
01	Introduction to Engineering Graphics & Design Principles of Engineering Graphics and their significance, usage of Drawing instruments, Lettering, Dimensioning, Ellipse (Focus-Directrix, Rectangular, Concentric Circle method), Parabola & Hyperbola (Focus- Directrix method), Cycloid and Involute; Scales–Plain, Diagonal and Vernier Scales *Computer Graphics Engineering Graphics Software; Listing the computer technologies that impact on graphical communication, Demonstrating knowledge of the theory of CAD software [such as: The Menu System, Tool bars (Standard, Object Properties, Draw, Modify and Dimension), Drawing Area (Background, Crosshairs, Coordinate System), Dialog boxes and windows, Shortcut menus (Button Bars), The Command Line (where applicable), The Status Bar, Different methods of zoom as used in CAD, Select and erase objects].	05	L1, L2, L3
02	Projection of Points, Lines and Planes Projections of Points and lines inclined to any one or both the reference planes; Projections of planes inclined to both the reference planes- Auxiliary Planes. Location of horizontal and vertical traces. (Only for problems of line lying in first quadrant) (Note: No side view of line)	05	L1, L2, L3

03	<p>Orthographic Projections</p> <p>Principles of Orthographic Projections- Conventions- Draw the orthographic views of geometrical solids, objects from industry and dwellings. (1st angle method of projection)</p> <p>Sectional Orthographic Projections</p> <p>Draw the sectional orthographic views of geometrical solids, objects from industry and dwellings (Only Full Section)</p> <p>*Annotations, layering & other functions</p> <p>Applying dimensions to objects, applying annotations to drawings; Setting up and use of Layers, layers to create drawings, Create, edit and use customized layers; Changing line lengths through modifying existing lines (extend/ lengthen); Printing documents to paper using the print command; orthographic projection techniques; Drawing annotation, Computer-aided design (CAD) software modeling of parts and assemblies</p>	04	L1, L2, L3
04	<p>Projections of Regular Solids</p> <p>Solid (Prism, Cylinder, Pyramid, Cone) inclined to both the Planes @ Floor plans that include: windows, doors, and fixtures such as WC, bath, sink, shower, etc. Floor plan of college building.</p>	06	L1, L2, L3
05	<p>Sections and Sectional Views of Right Angular Solids</p> <p>Section views of Prism, Cylinder, Pyramid, Cone-Use change of position or Auxiliary plane method for True Shape of Section; Development of surfaces of Right Regular Solids- Prism, Pyramid, Cylinder and Cone; (Note: only cutting plane AIP and AVP will be considered)</p>	05	L1, L2, L3

06	Isometric Projections Principles of Isometric projection. Isometric Scale, Isometric Views, Conventions; Isometric Views of lines, Planes, Simple and compound Solids; Conversion of Isometric Views to Orthographic Views and Vice-versa Conventions. *Customization & CAD Drawing Consisting of set up of the drawing page and the printer, including scale settings, setting up of units and drawing limits; ISO and ANSI standards for coordinate dimensioning; Orthographic constraints, Snap to objects manually and automatically; Producing drawings by using various coordinate input entry methods to draw straight lines, Applying various ways of drawing circles *Introduction to 3D drawing in Graphics software *Demonstration of a simple team design project Creation of engineering models and their presentation in standard 2D blue print form	05	L1, L2, L3
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@ - to be covered only as a part of Term-Work

* - to be covered during Practical

Suggested List of Practical/ Experiments:

Practical Number	Type of Experiment	Practical/ Experiment Topic	Hrs.	Cognitive levels of attainment as per Bloom's Taxonomy
1	Basic Experiments	Engineering Curves	02	L1, L2, L3
2		Projection of Lines	02	L1, L2, L3
3		Projection of Solids	04	L1, L2, L3
4		Section of Solids	04	L1, L2, L3
5		Development of Lateral Surfaces	04	L1, L2, L3
6		Orthographic Projections	04	L1, L2, L3
7		Sectional Orthographic Projections	04	L1, L2, L3
8		Isometric Views (Flat Surface)	02	L1, L2, L3
9		Isometric Views (Curved Surface)	04	L1, L2, L3
10		Basics of CAD Software	04	L1, L2
11		Orthographic Projections on CAD Software	06	L1, L2, L3

12	Design Experiments	Sectional Orthographic Projections on CAD Software	06	L1, L2, L3
13		Reading Orthographic Projections on CAD Software	04	L1, L2, L3
14		Isometric Views on CAD Software	06	L1, L2, L3
15	Group Activities	Floor plan of college building.	04	L1, L2, L3
Total		60		

Books and References:

SN	Title	Authors	Publisher	Year
1	Engineering Drawing	Bhatt N.D., Panchal V.M. & Ingle P.R	Charotar Publishing House	2014
2	Engineering Drawing and Computer Graphics	Shah, M.B. & Rana B.C	Pearson education.	2008
3	Engineering Graphics	Agrawal B. & Agrawal C. M	TMH Publication	2012
4	Text book on Engineering Drawing	Narayana, K.L. & P Kannaiah	Sci-tech Publishers	2008

Online References:

Sr. No.	Website Name	URL	Module covered
1	Bharatskills.Gov	https://www.google.com/url?sa=t&source=web&rct=j&url=https://bharatskills.gov.in/pdf/E_books/Engineering_Drawing_1st_Sem_Final.pdf&ved=2ahUKEwiDu7bWyIPsAhXHyzgGHcszBSsQFjAAegQIAhAB&usg=AOvVaw2O9fIhYnp73593X8_Q8mW2	M1-M6
2	IIT-D	https://www.google.com/url?sa=t&source=web&rct=j&url=http://web.iitd.ac.in/~achawla/public_html/201/lectures/sp46.pdf&ved=2ahUKEwiA1vzfyYPsAhX5H7cAHeclDxUQFjAMegQIBBAB&usg=AOvVaw2wKQuj2zCOK9jNoREpOoAl	M1-M6

F.E./F.T. Semester -I

Choice Based Credit Grading Scheme with Holistic and Multidisciplinary Education (CBCGS-HME 2023)

B.E. (COMP/ CIVIL / E&CS / CSE) / B.Tech. (IoT/ AI&DS)					F.E./ F.T (SEM: I)					
Course Name: Workshop & Manufacturing Practices - I					Course Code: ESC1103					
Teaching Scheme (Program Specific)					Examination Scheme (Formative/ Summative)					
Modes of Teaching / Learning / Weightage					Modes of Continuous Assessment / Evaluation					
Hours Per Week					Theory (00)		Practical/Oral (25)	Term Work (00)	Total	
Theory	Tutorial	Practical	Contact Hours	Credits	IS E	IE	ES E	PR	TW	25
-	-	2	2	1	-	-	-	25	-	
The weightage of marks for continuous evaluation of Term work/ Report: Formative (40%), Timely completion of practical (40%) and Attendance/Learning Attitude (20%)										
Prerequisite: Basic knowledge of Manufacturing Techniques										

Course Objective: The course intends to give exposure to different Manufacturing Practices Techniques and thereby understand how to fabricate components using different materials. Also, it is important to have basic knowledge of Assembling and dismantling of different components.

Course Outcomes: Upon completion of the course students will be able to:

Sr. No	Course Outcomes	Cognitive levels of attainment as per Bloom's Taxonomy
CO1	Identify tools, equipment and safety rules of workshop & manufacturing practice.	L1, L2
CO2	Understand tools and process of fitting.	L1, L2
CO3	Understand tools and process of carpentry.	L1, L2
CO4	Identify different plumbing processes and its different connections.	L1, L2
CO5	Identify the types of welding and its different joints.	L1, L2
CO6	Understand the various procedure involved in domestic pipeline	L1, L2

Suggested List of Practical/ Experiments:

Practical Number	Practical/ Experiment Topic	Hrs.	Cognitive levels of attainment as per Bloom's Taxonomy
1	To make a Square Job	10	L1, L2
2	To make a Square Paper Weight	10	L1, L2, L3
3	External Threading on Pipe	4	L1, L2, L3
4	Internal Threading on Pipe	2	L2, L3
5	Assembly of Plumbing Component and Pipe	2	L1, L2, L3
6	Preparation of Domestic Pipe Line	2	L1, L3
Total		30	

Books and References:

Sr. No.	Title	Authors	Publisher	Edition	Year
1	Elements of Workshop Technology	Hajra Choudhury S.K., Hajra Choudhury A.K. and Nirjhar Roy S.K	Media promoters and publishers private limited, Mumbai	1/2	2008 & 2010
2	Manufacturing Engineering and Technology	Kalpakjian S. And Steven S. Schmid	Pearson education.	4	2002
3	Manufacturing Technology	Gowri P. Hariharan and A. Suresh Babu	Pearson Education	-	2008
4	Processes and Materials of Manufacture	Roy A. Lindberg	Prentice Hall India	4	1998
5	Manufacturing Technology	Rao P.N	Tata McGraw Hill House	-	2017

Online References:

Sr. No.	Website Name	URL
1	Internal Threading	https://youtube.com/playlist?list=PLa9Oz2H1ezH8whSLFVuFytdcyH8cpKVvt
2	Plumbing	https://youtu.be/oMnZvSptiSw
3	Welding & Brazing	https://www.lucasmilhaupt.com/EN/Brazing-Academy/Brazing-vs-Welding.htm

F.E./F.T Semester –I
Choice Based Credit Grading Scheme with Holistic and Multidisciplinary Education (CBCGS-HME 2023)

B.E. (COMP/ CIVIL / E&CS / CSE) / B.Tech. (IoT/ AI&DS)					F.E. (SEM: I)				
Course Name: English for General and Professional Communication					Course Code: HSMC1101				
Teaching Scheme (Program Specific)					Examination Scheme (Formative/ Summative)				
Modes of Teaching / Learning / Weightage					Modes of Continuous Assessment/ Evaluation				
Hours Per Week					Theory (100)		Practical/ Oral (25)	Term Work (00)	Total
Theory	Tutorial	Practical	Contact Hours	Credits	ISE	IE	ESE	OR	TW
2	-	2	4	3	20	20	60	25	-
ISA: In-Semester Examination- Paper Duration – 1 Hours									
ESE: End Semester Examination - Paper Duration - 2 Hours									
The weightage of marks for continuous evaluation of Term work/ Report: Formative (40%), Timely completion of practical (40%) and Attendance/Learning Attitude (20%)									
Prerequisite- Basic knowledge of English language, Grammar and Vocabulary									

Course Objective: The course will be able to develop communication skills with professional and technical writing skills.

Course Outcomes: Upon completion of the course students will be able to:

Sr. No.	Course Outcomes	Cognitive Levels of Attainment as per Bloom's Taxonomy
1	To understand communication fundamentals, identify and overcome barriers to effective communication	L1, L2, L3
2	To gain knowledge and skills in analyzing and creating word usage for different morphological processes	L1, L2, L3
3	To develop effective language skills	L1, L2
4	To enhance and master professional writing	L1, L2, L3
5	To gain proficiency in technical writing	L1, L2
6	To Enhance Presentation Skills and competency public speaking	L1, L2, L3

Detailed Syllabus (Total No. of Hours: Enhance Presentation Skills 30):

Module No.	Topics	Hrs.	Cognitive Levels of Attainment as per Revised Bloom's Taxonomy
1	Communication Foundation <ul style="list-style-type: none"> 1.1 Concept and Meaning: Etymology, Definition and Process of Communication 1.2 Barriers: Linguistic, Semantic, Personal, Socio- Psychological, Physical, Environmental, Mechanical, Cross-Cultural 1.3 Networks of communications: Understanding Organizational Communication 1.4 Methods of communication-Verbal and Non-Verbal Communication 1.5 Digital Citizenship and Online Communication- Understanding Digital Citizenship, Importance of Digital Citizenship, Rights and Responsibilities of Digital Citizens, Online Communication Etiquette and Netiquette 	05	L1, L2, L3
2	Word Formation <ul style="list-style-type: none"> 2.1 Morphological Processes- Introduction to Morphology: Defining Morphemes and Morphology-Compounding Conversion, Reduplication Back-formation Blending and Abbreviations 2.2 Neologisms- Definition and Characteristics, Types of Neologism 2.3 Coinage-Meaning of Coinage, Sociolinguistic Factors, Coinage in Popular Culture and Digital Communication 2.4 Eponyms- Meaning of Eponym, Cultural Eponyms, Eponyms in Science and Technology, Eponyms in Everyday Language, Comparative Analysis and Sociolinguistic Perspectives, Case Studies and Contemporary examples 2.5 Industry-Specific Jargons- Importance and Purpose of Industry, Common Industry-Specific Jargon, Technical Industries , Manufacturing and Engineering Industries, Information Technology 	05	L1, L2, L3
3	Basic Language Skills <ul style="list-style-type: none"> 3.1 Listening- Listening as basic skills, Types of Listening, Barriers to Effective Listening, Active Listening Techniques, Assessing and Developing Listening Skills 3.2 Speaking Skills - Introduction to Speaking as a Skill, Speaking Strategies, Speaking in Everyday Situations, Assessing and Developing Speaking Skills 3.3 Reading Skills - Concept of Reading-Types of reading –skimming scanning intensive extensive, Reading Authentic Materials and Real-World Texts, Reading for Academic Purposes, Developing Reading Strategies for Language Learners 	06	L1, L2

	3.4 Writing Skills - Importance of writing skills, Principles of writing, Types of writing 3.5 Comprehension and summarization- Introduction to Summarization, Summarization Techniques, Comprehension Strategies, Summarization and Comprehension topics 3.6 Editing and Proof reading- Concept of editing and proof reading, difference between editing and proof reading, Types of Editing		
4	Professional Writing Skills 4.1 Professional Correspondence- Importance of effective communication in professional settings, Business Correspondence 4.2 Email Correspondence- Purpose and importance of professional email communication, Writing Professional Emails 4.3 Content creation for Digital media- Understanding Digital Content Creation, Writing for Digital Platforms, Content Creation for Blogs and Websites 4.4 Professional Reports- Report writing, Structure and Types of report	04	L1, L2, L3
5	Technical Writing 5.1 Introduction to Technical Writing-Definition, Importance of Technical writing, Writing Technical proposal 5.2 Writing Technical Research Paper 5.3 Ethical and Professional Writing Considerations- Integrity and Plagiarism, Accuracy and Fact-checking, Confidentiality and Data Protection, Professional Tone and Language, Cultural Sensitivity and Diversity 5.4 Engineering Documentation: Writing illustrations, manuals	04	L1, L2
6	Presentation Skills 6.1 Mastering the Basics: The 5 W's and 1 H of Presentation Skills 6.2 Techniques for effective presentation 6.3 Audience Analysis and Adaptation 6.4 Body Language and Vocal Delivery 6.5 3 P's of Presentation -Planning, Preparing and practicing Presentation skills 6.6 Handling Q&A Sessions	06	L1, L2, L3

Suggested List of Practical/ Experiments:

Practical Number	Type of Experiment	Practical/ Experiment Topic	Hrs.	RBT Levels
1	Application based experiments	Conversation Starters	2	L1, L2, L3
2	Application based experiments	Situational Conversations (Practice 1)	2	L1, L2, L3
3	Application based experiments	Situational Conversations (Practice 2)	2	L1, L2, L3
4	Basic Experiments	Conducting meetings	2	L1, L2, L3
5	Basic Experiments	Panel Discussion	2	L1, L2, L3

6	Application based experiments	Compeering	2	L1, L2, L3
7	Basic Experiments	Activities based on Basic Language Skills Writing	2	L1, L2, L3
8	Application based experiments	Writing	2	L1, L2, L3
9	Basic Experiments	Reading	2	L1, L2, L3
10	Application based experiments	Speaking	2	L1, L2, L3
11	Basic Experiments	Listening	2	L1, L2, L3
12	Basic Experiments	Practice Sessions in Language Lab (Consonants, Vowels, Diphthongs)	2	L1, L2, L3
13	Basic Experiments	Practice Tests on Pronunciation	2	L1, L2, L3
14	Basic Experiments	Editing	2	L1, L2, L3
15	Basic Experiments	Proofreading	2	L1, L2, L3

Books and References:

Sr. No	Name of the Book	Name of the Author	Publisher	Edition	Year of Publication
1	Practical English Usage	Michael Swan	OUP	4th Edition	1995
2	Remedial English Grammar	F.T. Wood	Macmillan	2014 Edition	2007
3	On Writing Well	William Zinsser	Harper Resource Book	25 th Anniversary Edition	2001
4	Study Writing	Liz Hamp- Lyons and Ben Heasly	Cambridge University Press	2nd Edition	2006
5	Communication Skills	Sanjay Kumar and Pushp Lata	OUP	1st Edition	2011
6	Exercises in Spoken English Parts. I-III	CIEFL	University Press	1997 Edition	1997

Online References:

Sr. No.	Website Name	URL	Modules Covered
1	Coursera	https://www.coursera.org/learn/speak-english-professionally	M 1-M 6
2	NPTEL	https://nptel.ac.in/courses/109/106/109106129/	M 1-M 6
3	NPTEL	https://nptel.ac.in/courses/109/106/109106094/	M 1-M 6

F.E./F.T Semester -I
Choice Based Credit Grading Scheme with Holistic and Multidisciplinary Education (CBCGS-HME 2023)

B.E. (COMP/ CIVIL / E&CS / CSE) / B.Tech. (IoT/ AI&DS)					F.E. (SEM: I)				
Course Name: Attitude and Aptitude Development- I					Course Code: MC1101				
Teaching Scheme (Program Specific)					Examination Scheme (Formative/ Summative)				
Modes of Teaching / Learning / Weightage					Modes of Continuous Assessment/ Evaluation				
Hours Per Week					Theory (100)		Practical/ Oral (25)	Term Work (00)	Total
Theory	Tutorial	Practical	Contact Hours	Credits	ISE	IE	ESE	OR	TW
1	-	-	1	Non-Credit					25
The weightage of marks for continuous evaluation of Term work/ Report: Formative (40%), Timely completion of practical (40%) and Attendance/Learning Attitude (20%)									
Prerequisite- Basic knowledge of English language, Grammar and Vocabulary									

Course Objective: The course will be able to Enhance the Attitude, Aptitude, and Logical Level of the Students up to their Potentials.

Course Outcomes: Upon completion of the course students will be able to:

Sr. No.	Course Outcomes	Cognitive Levels of Attainment as per Bloom's Taxonomy
1	Learn More about Life Skills.	L1, L2, L3
2	Motivate to improve the Confidence Level of Himself and Others	L1, L2, L3
3	Evaluate Himself Through the Proper Point of View	L1, L2
4	Prepare For Recruitment Process from Aptitude Skills Perspective	L1, L2, L3
5	Attempt Various Sections of Aptitude Like Quantitative Abilities, Verbal Aptitude and Logical Reasoning in Various Competitive Examinations	L1, L2
6	Enhance The Computational Skills for The Recruitment Process.	L1, L2, L3

Detailed Syllabus (Total No. of Hours: 15):

Module No.	Topics	Hrs.	Cognitive Levels of Attainment as per Revised Bloom's Taxonomy
1	Introduction to Personality Development 1.1 Concept and Meaning of Personality. 1.2 Significance of Personality Development. 1.3 Dimensions of theories of Freud & Erickson. 1.4 The concept of success and SWOT analysis.	02	L1, L2, L3
2	Attitude & Motivation 2.1 Attitudes: Concept, Significance, and Types of Attitudes. 2.2 Factors affecting attitude, Ways to develop a positive attitude. 2.3 Motivation: Concept, Internal and external motives, 2.4 Importance of self-motivation, and Factors impacting motivation.	02	L1, L2, L3
3	Self-Esteem 3.1 Self-esteem: Symptoms, and Advantages. 3.2 Dos and Don'ts to develop self-esteem. 3.3 High Self-Esteem 3.4 Low Self-Esteem	02	L1, L2
4	Quantitative Aptitude-I 4.1 Number System, Numbers, & Ages. 4.2 Averages, Ratios, & Proportions. 4.3 Percentages. 4.4 Mixtures & Allegations.	04	L1, L2, L3
5	Logical Reasoning Ability-I 5.1 Directions, and Blood Relations. 5.2 Coding & Decoding. 5.3 Letter Series, and Number Series. 5.4 Analogies, and Cubes. 5.5 Logical Deductions, and Venn Diagrams. 5.6 Assumption, Inferences, and Arguments.	03	L1, L2
6	Verbal Reasoning -I 6.1 Para Jumbles. 6.2 Reading Comprehension. 6.3 Vocabulary, Synonym, Antonyms, Analogies. 6.4 Grammar: Nouns, Articles, Pronouns, etc.	02	L1, L2, L3

Books and References:

Sr. No	Name of the Book	Name of the Author	Publisher	Edition	Year of Publication
1	Quantitative Aptitude for Competitive Examinations	R.S. Aggarwal	S. Chand	-----	-----
2	A Modern Approach to Verbal & Non-Verbal Reasoning	R.S. Aggarwal	S. Chand	-----	-----
3	A Modern Approach to Logical Reasoning	R.S. Aggarwal	S. Chand	-----	-----
4	Puzzles to Puzzle You	Shakuntala Devi	Orient	-----	2005

Online References:

Sr. No.	Website Name	URL	Modules Covered
1	NPTEL	https://onlinecourses.nptel.ac.in/noc22_hs77/preview	M 1-M 2
2	www.indiabix.com	https://www.indiabix.com/verbal-ability/questions-and-answers/	M 3
3	Management Assessment Tests	https://www.practiceaptitudetests.com/industry/management/	M 4, 5, 6