

DEPARTMENT OF SCIENCE & HUMANITIES**SEMESTER I**

SL NO	COURSE CODE	COURSE NAME	CO No	CO DESCRIPTION
SEMESTER I				
1	MAT101	LINEAR ALGEBRA AND CALCULUS	1	Solve systems of linear equations, diagonalize matrices and characterise quadratic forms
			2	Compute the partial and total derivatives and maxima and minima of multivariable functions
			3	Compute multiple integrals and apply them to find areas and volumes of geometrical shapes, mass and centre of gravity of plane laminae
			4	Perform various tests to determine whether a given series is convergent, absolutely convergent conditionally convergent.
			5	Determine the Taylor and Fourier series expansion of functions and learn their applications.
2	EST130	BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING	1	Apply fundamental concepts and circuit laws to solve simple DC electric circuits
			2	Develop and solve models of magnetic circuits
			3	Apply the fundamental laws of electrical engineering to solve simple ac circuits in steady state
			4	Describe working of a voltage amplifier
			5	Outline the principle of an electronic instrumentation system
			6	Explain the principle of radio and cellular communication

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3	EST100	ENGINEERING MECHANICS	1	Recall principles and theorems related to rigid body mechanics
			2	Identify and describe the components of system of forces acting on the rigid body
			3	Apply the conditions of equilibrium to various practical problems involving different force system.
			4	Choose appropriate theorems, principles or formulae to solve problems of mechanics.
			5	Solve problems involving rigid bodies, applying the properties of distributed areas and masses

4	ESL130	ELECTRICAL & ELECTRONICS WORKSHOP	1	Demonstrate safety measures against electric shocks.
			2	Identify the tools used for electrical wiring, electrical accessories, wires, cables, batteries and standard symbols.
			3	Develop the connection diagram, identify the suitable accessories and materials necessary for wiring simple lighting circuits for domestic buildings.
			4	Identify and test various electronic components
			5	Draw circuit schematics with EDA tools
			6	Assemble and test electronic circuits on boards
			7	Work in a team with good interpersonal skills
5	CYT100	ENGINEERING CHEMISTRY	1	Apply the basic concepts of electrochemistry and corrosion to explore its possible applications in various engineering fields.
			2	Understand various spectroscopic techniques like UV-Visible, IR, NMR and its applications.
			3	Apply the knowledge of analytical methods for characterizing a chemical mixture or a compound. Understand the basic concept of SEM for surface characterisation of nanomaterials.
			4	Learn about the basics of stereochemistry and its application. Apply the knowledge of conducting polymers and advanced polymers in engineering
			5	Study various types of water treatment methods to develop skills for treating wastewater.

6	CYL120	ENGINEERING CHEMISTRY LAB	1	Understand and practice different techniques of quantitative chemical analysis to generate experimental skills and apply these skills to various analyses
			2	Develop skills relevant to synthesize organic polymers and acquire the practical skill to use TLC for the identification of drugs
			3	Develop the ability to understand and explain the use of modern spectroscopic techniques for analysing and interpreting the IR spectra and NMR spectra of some organic compounds
			4	Acquire the ability to understand, explain and use instrumental techniques for chemical analysis
			5	Learn to design and carry out scientific experiments as well as accurately record and analyze the results of such experiments , Function as a member of a team, communicate effectively and engage in further
7	HUN101	LIFE SKILLS	1	Define and Identify different life skills required in personal and professional life
			2	Develop an awareness of the self and apply well-defined techniques to cope with emotions and stress.
			3	Explain the basic mechanics of effective communication and demonstrate these through presentations.
			4	Take part in group discussions
			5	Use appropriate thinking and problem solving techniques to solve new problems, Understand the basics of teamwork and leadership

SEMESTER II

1	MAT102	VECTOR CALCULUS, DIFFERENTIAL EQUATIONS AND TRANSFORMS	1	Compute the derivatives and line integrals of vector functions and learn their applications
			2	Evaluate surface and volume integrals and learn their inter-relations and applications
			3	Solve homogeneous and non-homogeneous linear differential equation with constant coefficients
			4	Compute Laplace transform and apply them to solve odes arising in engineering
			5	Determine the Fourier transforms of functions and apply them to solve problems arising in engineering

2	HUN102	PROFESSIONAL COMMUNICATION	1	Develop vocabulary and language skills relevant to engineering as a profession
			2	Analyze, interpret and effectively summarize a variety of textual content
			3	Create effective technical presentations
			4	Discuss a given technical/non-technical topic in a group setting and arrive at generalizations/consensus
			5	Identify drawbacks in listening patterns and apply listening techniques for specific needs, Create professional and technical documents that are clear and adhering to all the necessary conventions
3	PHT100	ENGINEERING PHYSICS A	1	Compute the quantitative aspects of waves and oscillations in engineering systems.
			2	Apply the interaction of light with matter through interference, diffraction and identify these phenomena in different natural optical processes and optical instruments.
			3	Analyze the behaviour of matter in the atomic and subatomic level through the principles of quantum mechanics to perceive the microscopic processes in electronic devices.
			4	Classify the properties of magnetic materials and apply vector calculus to static magnetic fields and use Maxwell's equations to diverse engineering problems
			5	Analyze the principles behind various superconducting applications, explain the working of solid state lighting devices and fibre optic communication system
4	PHL120	ENGINEERING PHYSICS LAB	1	Develop analytical/experimental skills and impan prerequisite hands on experience for engineering laboratories
			2	Understand the need for precise measurement practices for data recording
			3	Understand the principle, concept, working and applications of relevant technologies and comparison of results with theoretical calculations
			4	Analyze the techniques and skills associated with modem scientific tools such as lasers and fiber optics
			5	Develop basic communication skills through working in groups in performing laboratory experiments by interpreting the results.

5	EST110	ENGINEERING GRAPHICS	1	Draw the projection of points and lines located in different quadrants
			2	Prepare multiview orthographic projections of objects by visualizing them in different positions
			3	Draw sectional views and develop surfaces of a given object
			4	Prepare pictorial drawings using the principles of isometric and perspective projections to visualize objects in three dimensions.
			5	Convert 3D views to orthographic views
			6	Obtain multiview projections and solid models of objects using CAD tools
6	EST120	BASICS OF CIVIL & MECHANICAL ENGINEERING		Recall the role of civil engineer in society and to relate the various disciplines of Civil Engineering.
			2	Explain different types of buildings, building components, building materials and building construction
			3	Describe the importance, objectives and principles of surveying.
			4	Summarise the basic infrastructure services MEP, HVAC, elevators, escalators and ramps
			5	Discuss the Materials, energy systems, water management and environment for green buildings.
			6	Analyse thermodynamic cycles and calculate its efficiency
			7	Illustrate the working and features of IC Engines
			8	Explain the basic principles of Refrigeration and Air Conditioning
			9	Describe the working of hydraulic machines
			10	Explain the working of power transmission elements
			11	Describe the basic manufacturing, metal joining and machining processes

7	EST102	PROGRAMMING IN C	1	Analyze a computational problem and develop an algorithm/flowchart to find its solution
			2	Develop readable* C programs with branching and looping statements, which uses Arithmetic, Logical, Relational or Bitwise operators.
			3	Write readable C programs with arrays, structure or union for storing the the data to be processed
			4	Divide a given computational problem into a number of modules and develop a readable multi-function C program by using recursion if required, to find the solution to the computational problem
			5	Write readable C programs which use pointers for array processing and parameter passing
			6	Develop readable C programs with files for reading input and storing output
8	PHT110	ENGINEERING PHYSICS B		Compute the quantitative aspects of waves and oscillations in engineering systems.
			2	Apply the interaction of light with matter through interference, diffraction and identify these phenomena in different natural optical processes and optical instruments.
			3	Analyze the behaviour of matter in the atomic and subatomic level through the principles of quantum mechanics to perceive the microscopic processes in electronic devices.
			4	Apply the knowledge of ultrasonics in non-destructive testing and use the principles of acoustics to explain the nature and characterization of acoustic design and to provide a safe and healthy environment
			5	Apply the comprehended knowledge about laser and fibre optic communication systems in various engineering applications

9	ESL 120	CIVIL & MECHANICAL WORKSHOP	1	Name different devices and tools used for civil engineering measurements
			2	Explain the use of various tools and devices for various field measurements
			3	Demonstrate the steps involved in basic civil engineering activities like plot measurement, setting out operation, evaluating the natural profile of land, plumbing and undertaking simple construction work.
			4	Choose materials and methods required for basic civil engineering activities like field measurements, masonry work and plumbing.
			5	Compare different techniques and devices used in civil engineering measurements
			6	Identify Basic Mechanical workshop operations by the material and objects
			7	Apply appropriate Tools and Instruments with respect to the mechanical workshop trades
			8	Apply appropriate safety measures with respect to the mechanical workshop trades