



SCIENCE AND HUMANITIES

Regulation : 2025							
SEMESTER I							
COURSE OUTCOMES							
Applied Calculus	MA25C01	C01	Explain the meaning of derivative, integral, and their geometric and physical interpretations.				
		C02	Apply differentiation and integration techniques to compute maxima, minima, and area.				
		C03	Evaluate definite, indefinite, and improper integrals using standard techniques and apply the Fundamental Theorem of Calculus.				
		C04	Apply integration to determine area, arc length, and surface area of revolution in engineering applications.				
		C05	Utilize modern computational software and online platforms to deepen understanding, perform complex calculations, and visualize mathematical concepts.				
Introduction to Mechanical Engineering	ME25C03	C01	Understand the historical development and evolution of mechanical engineering.				
		C02	Apply the fundamentals of bending, torsion, and axial loading in basic structural analysis and design.				
		C03	Interpret the concept of a system and various forms of energy transfer and the basic operation and components of refrigeration and HVAC systems.				
		C04	Understand the functions and working principles of common machine components.				
		C05	Understand the fundamental manufacturing processes, CNC and additive manufacturing, and the basics of smart manufacturing				

Engineering Drawing	ME25C01	CO1	Explain the basics of engineering drawing, including instruments, BIS standards, lettering, sheet layout, and dimensioning
		CO2	Apply the fundamentals of engineering drawing to the orthographic projection of lines and planes
		CO3	Understand the orthographic projection of solids and the section of solids
		CO4	Convert 3D objects into 2D orthographic views and draw isometric views
		CO5	Explain the principles of perspective projection for simple solids
Applied Physics – I	PH25C01	CO1	Apply the fundamental concepts of elasticity, viscosity, surface tension, and thermal effects to analyze material behavior and verify them experimentally using methods such as non-uniform bending and torsional pendulum.
		CO2	Analyze oscillations, wave motion, ultrasonics, and electromagnetic waves, and validate theoretical principles through experiments such as Melde's string method and demonstrations of EM wave propagation.
		CO3	Interpret the principles of quantum mechanics including black-body radiation, photoelectric effect, de Broglie hypothesis, Schrödinger's equation, and tunneling, and connect them with experiments such as the determination of Planck's constant.
		CO4	Explain and experimentally demonstrate optical interference and diffraction phenomena using techniques such as air wedge and Michelson's interferometer.
		CO5	Apply the principles of fiber optics and lasers for communication and sensing, and demonstrate their applications through experiments and virtual simulations
Applied Chemistry – I	CY25C01	CO1	Able to identify the quality of water from quality parameter data and propose suitable treatment methodologies to treat water.
		CO2	Identify and apply basic concepts of nanoscience and nanotechnology in designing the synthesis of nano materials for engineering and technology applications.
		CO3	Apply the fundamental concepts of electrochemical cells to design simple electrochemical experiments to demonstrate redox reactions and measure electrode potentials.
		CO4	Interpret the galvanic series to predict corrosion tendencies of metals and alloys and to recommend appropriate corrosion protection strategies for given engineering problems.

		C05	Analyze the performance characteristics of batteries and describe the components and configuration of battery packs for various applications.
தமிழர் மரபு / Heritage of Tamils	UC25H01	C01	Understand Knowledge about Language and literature.
		C02	Roll of Tamil People in Sculpture.
		C03	Role of Tamil people in folk arts and heroic sports.
		C04	To Know the flora and fauna of Ancient Tamilnadu.
		C05	Understand the role of tamils in indian independence Movement.
English Essentials – I	EN25C01	C01	Develop the ability to actively comprehend spoken English with clarity and understanding by cultivating effective note-taking and drafting skills for academic and professional communication.
		C02	Apply a wide range of vocabulary effectively in diverse contexts with precision and clarity, by strengthening drafting and communication skills through appropriate strategies.
		C03	Analyze a variety of texts across different contexts to understand their meaning and purpose, and apply appropriate reading strategies to interpret, evaluate, and respond effectively to the content.
		C04	Communicate thoughts and ideas clearly and effectively in planned situations, such as presentations, meetings, or formal discussions.
		C05	Continuously improve English communication skills to meet professional demands and apply these skills effectively in engineering and scientific work.
Computer Programming: Python	CS25C02	C01	Explain the fundamental concepts of Python programming, including problem solving, algorithm development and basic syntax structures
		C02	Apply control structures and develop logical solutions to solve computational and Engineering problems.
		C03	Analyze and differentiate function types, parameters, recursion and modular programming techniques for problem solving.

		CO4	Evaluate data manipulation operations using strings, lists, tuples, sets, dictionaries and file handling.
		CO5	Design and create real time applications by integrating user-defined modules and Python libraries such as Numpy, Scipy and Pandas.
Makerspace	ME25C04	CO1	Apply appropriate tools and techniques for the safe disassembly and assembly of mechanical and electromechanical systems such as home appliances, bicycles, and refrigeration units.
		CO2	Demonstrate welding practices including preparation of base material, joint formation, and operation of MAW, GMAW, and GTAW processes on different materials.
		CO3	Perform basic electrical wiring tasks for residential and industrial applications, including protection devices, lighting circuits, motors, and UPS connections.
		CO4	Integrate electronic components, sensors, and actuators with microcontrollers through soldering, circuit assembly, and testing.
		CO5	Utilize contemporary prototyping tools such as CAD modeling, 3D printing, and laser cutting to fabricate simple components and assemblies.
Life Skills for Engineers – I*	UC25A01	CO1	Demonstrate improved self-awareness, empathy, and emotional regulation in various situations.
		CO2	Implement practical techniques to balance academics, work, and personal life efficiently.
		CO3	Engage in productive teamwork, guided discussions, and conflict resolution.
		CO4	Create and follow a personal budget, practice safe online behaviour, and maintain digital well-being.
		CO5	Participate in community service and demonstrate respect for social values and professional ethics.
Physical Education – I*	UC25A02	CO1	Demonstrate knowledge of the importance of exercise, posture, and physical fitness in maintaining overall health.
		CO2	Apply appropriate warm-up, conditioning, and relaxation techniques to improve body coordination and prevent injuries.

		C03	Interpret and follow the rules and regulations of athletic events such as sprints, jumps, throws, and hurdles
		C04	Develop basic and advanced skills in at least one selected outdoor game and demonstrate teamwork, coordination, and strategic play.
		C05	Demonstrate proficiency in at least one selected indoor game, showcasing concentration, strategy, and performance accuracy.
Introduction to Civil Engineering	CE25C01	C01	Explain the responsibilities, ethical practices, and significant accomplishments of civil engineers, along with future trends in the profession.
		C02	Demonstrate knowledge of structural, construction, geotechnical, environmental, transportation, and water resources engineering, including basics of engineering geology and seismology.
		C03	Apply the knowledge of material properties to select suitable traditional and modern construction materials for specific building applications.
		C04	Interpret building plans, describe construction stages (foundations, masonry, beams, columns, roofing, flooring, plastering) and apply relevant codes such as NBC.
		C05	Describe the design and function of bridges, dams, highways, railways, water supply networks, solid waste management, rainwater harvesting and green buildings.
Computer Programming: C	CS25C01	C01	Understand the fundamental concepts of C programming such as problem-solving methods, algorithms, flowcharts, data types, operators, and basic program structure.
		C02	Apply appropriate control structures and functions to develop modular and efficient C programs.
		C03	Analyze and implement functions, array, string, and pointer operations for effective data handling and memory management.
		C04	Evaluate the use of structures, unions, and enumerations to design well-structured and optimized C programs for complex data management.
		C05	Create robust programs using file handling operations and user-defined libraries to enable data persistence and modular software design.
Essentials of Computing	CS25C03	C01	Describe the basic components and functioning of computers, number systems, and data representation.

		CO2	Apply computational thinking and problem-solving techniques to design simple algorithms for real- world problems
		CO3	Design and represent solutions using flowcharts, pseudocode, and basic visual programming tools.
		CO4	Illustrate the ability to independently learn new computing tools and practices essential for life- long learning
		CO5	Demonstrate simple applications using visual programming and app development platforms to solve real-life problems.
Basic Electronics and Electrical Engineering	EE25C04	CO1	Understand the characteristics and behavior of basic electronic components and semiconductor devices.
		CO2	Analyze the construction, operating principle, and applications of electrical machines.
		CO3	Apply the concepts of electrical measurements and instrumentation for circuit analysis and testing.
		CO4	Analyze the structure, operation, and safety aspects of power systems and protective devices.
		CO5	Understand the working principles of sensors and transducers and their applications in industrial systems.
Fundamentals of Electrical and Electronics Engineering	EE25C03	CO1	Apply Ohm's law, Kirchhoff's laws, and basic circuit theorems to analyze simple DC and AC electrical circuits.
		CO2	Demonstrate an understanding of magnetic circuits, their properties, and evaluate hysteresis and eddy current losses in practical applications.
		CO3	Illustrate the structure of power systems, types of generation methods, and distribution systems with suitable one-line diagrams.
		CO4	Outline different types of domestic wiring, cables, earthing systems, fuses, and protective devices for safe electrical installation.
		CO5	Analyze the operation and characteristics of basic electronic devices and design simple analog and digital circuits using diodes, BJTs, logic gates, and flip-flops.