

Department of Electronics & Communication Engineering

Course Outcomes(COs) for Academic Year: 2026-27

YEAR:I

SEMESTER:I

REGULATION: R25

Course: Matrices and Calculus

Code: 25MA101BS

CO1	Write the matrix representation of a set of linear equations and to analyse the solution of the system of equations
CO2	Find the Eigen values and Eigenvectors and reduce the quadratic form to canonical form using orthogonal transformations.
CO3	Solve the applications of the mean value theorems.
CO4	Find the extreme values of functions of two variables with/without constraints.
CO5	Evaluate the multiple integrals and apply the concept to find areas, volumes.

Course: Advanced Engineering Physics

Code: 25PH102BS

CO1	Analyze crystal structures, identify defects, and apply XRD and SEM techniques for material characterization.
CO2	Apply quantum mechanical principles to explain particle behavior and energy band formation in solids.
CO3	Classify dielectric and magnetic materials and explain their properties, synthesis, and applications.
CO4	Explain the principles of lasers and fiber optics and their applications in communication and sensing.
CO5	Understand quantum computing concepts, Classical bits and qubits, Single and multiple qubits and quantum gates.

Course: Engineering Drawing and Computer Aided Drafting

Code: 25ME103ES

CO1	Understand and apply the principles of orthographic and isometric projections.
CO2	Create sectional views and dimensioned drawings using BIS standards.
CO3	Use CAD software to generate 2D engineering drawings.
CO4	Visualize and construct solid models from 2D views.
CO5	Interpret and produce engineering drawings of mechanical components and assemblies.
CO6	Demonstrate drafting skills for practical and industrial applications.

Course: English for Skill Enhancement

Code: 25EN103HS

CO1	Demonstrate effective English communication skills by using appropriate vocabulary.
CO2	Strengthen proficiency in English by applying correct grammar in writing and speaking.
CO3	Build comprehension skills to understand texts and respond confidently in Academic and Social contexts.
CO4	Organize ideas logically in writing paragraphs and essays, using connectives.
CO5	Prepare clear and organized technical reports suitable for various contexts.

Course: Introduction to Electrical Engineering**Code: 25EC104ES**

CO1	Understand and analyze basic DC Electrical circuits.
CO2	Formulate and predict the basic AC circuits.
CO3	Study the working principle of Transformers.
CO4	Study and understand the working of Electrical Machines.
CO5	Introduce components of Low Voltage Electrical Installations.

Course : Programming for Problem Solving**Code: 25CS105ES**

CO1	Understand the basics of C language to write and analyze simple programs.
CO2	Apply top-down design principles using functions and pointers to develop modular and reusable C programs
CO3	Utilize arrays and strings effectively in C programming for data storage.
CO4	Implement recursive solutions and work with user-defined data types for complex data management.
CO5	Understand file operations and apply fundamental searching and sorting algorithms to process data efficiently.

Course: Advanced Engineering Physics Lab**Code: 25PH106BS**

CO1	Demonstrate working knowledge of laser systems and determine their characteristics.
CO2	Demonstrate working knowledge of optical fiber parameters through experimental study.
CO3	Determine key electrical, magnetic, and optical properties of semiconductors and other functional materials.
CO4	Characterize semiconductors using Hall effect and energy gap measurement techniques.
CO5	Apply scientific methods for accurate data collection, analysis, and technical report writing.

Course: Programming for Problem Solving Lab**Code: 25CS107ES**

CO1	Demonstrate understanding and application of fundamental C programming constructs.
CO2	Develop , trace, and analyze C programs using control structures.
CO3	Decompose complex problems into modular solutions using functions.
CO4	Implement string manipulation and file handling techniques.
CO5	Apply and evaluate searching and sorting algorithms.

Course: English Language and Communication Skills Lab**Code: 25EN108HS**

CO1	Apply correct pronunciation to communicate well in personal and professional contexts.
CO2	Create opportunities to speak English for developing a clear and consistent accent
CO3	Identify and correct pronunciation errors to reduce mother tongue influence.
CO4	Demonstrate public speaking skills with clarity and confidence
CO5	Develop comprehension and use appropriate language for discussions and interviews.

Department of Electronics & Communication Engineering

Course Outcomes (COs) for Academic Year: 2026-27

YEAR:II

SEMESTER:I

REGULATION: R25

Course : Probability Theory and Stochastic Processes

Code: 25EC301PC

CO1	Understand the knowledge of Probability theory and random variables
CO2	Perform the operations on single and multiple Random Variables
CO3	Analyze the temporal characteristics of Random Processes
CO4	Determine the spectral characteristics of Random Processes.
CO5	Analyze the concepts of Noise in Communication systems

Course : Signals and Systems

Code:25EC302PC

CO1	Interpret any signal in terms of the complete set of orthogonal functions and the types of signals.
CO2	Analyze the Fourier spectrum using Fourier series and Fourier transform.
CO3	Examine an LTI system and its filter characteristics of a system.
CO4	Analyze Laplace Transforms and Correlation functions.
CO5	Explain the Sampling theorem and Z-Transforms.

Course: Electronic Devices and Circuits

Code: 25EC303PC

CO1	Analyze the electrical characteristics and models of semiconductor diodes and apply them in rectifier and clipping circuits.
CO2	Evaluate the operation and configurations of Bipolar Junction Transistors (BJTs) and design appropriate biasing networks for BJTs.
CO3	Analyze the operation of FETs and design appropriate biasing networks for FETs.
CO4	Analyze transistor amplifier circuits using h-parameter models and assess performance for various configurations.
CO5	Analyze the structure, working, and characteristics of JFETs, MOSFETs, and advanced devices like FinFETs and CNTFETs.

Course: Digital Logic Design

Code: 25EC304PC

CO1	Understand number systems and Boolean functions for digital logic.
CO2	Illustrate the minimization of boolean functions and realization of logic families.
CO3	Design various Combinational and Sequential logic Circuits.
CO4	Build different type of Memories and State Machines.
CO5	Examine different types of Finite State Machines.

Course: Control Systems**Code:25EC305PC**

CO1	Develop mathematical models for open/closed loop system using block diagram and signal flow graph.
CO2	Analyze system response in time domain for stability.
CO3	Examine system response for stability in frequency domain.
CO4	Design compensators and controllers for specific performance in control system.
CO5	Apply the state variable approach for LTI systems to analyze controllability and observability.

Course: Innovation and Entrepreneurship**Code: 25MS306HS**

CO1	Understand the entrepreneurship and the entrepreneurial process and its significance economic development.
CO2	Assess the problem from an industry perspective and generate solutions using the design thinking principles.
CO3	Assess market competition, estimate market size, and develop a prototype.
CO4	Analyze Business and financial planning models and Go-to-Market strategies.
CO5	Able to build a start-up, register IP and identify funding opportunities.

Course: Modelling and Simulation Lab**Code: 25EC307PC**

CO1	Use a simulation tool for generating, analyzing and performing various operations on Signals/ Sequences both in time and Frequency domain.
CO2	Use a simulation tool for Analyzing and Characterizing Continuous and Discrete Time Systems both in Time and Frequency domain along with the concept of Sampling.
CO3	Use a simulation tool for generating different Random Signals; analyze their characteristics by finding different higher order Moments and noise removal applications.
CO4	Use a simulink for Control System applications.

Course: Electronic Devices and Circuits Lab**Code: 25EC308PC**

CO1	Analyze I-V characteristics of diodes, BJTs, JFETs, and MOSFETs.
CO2	Design rectifier, clipper, and clamper circuits with and without filters.
CO3	Determine operating points of BJTs using biasing and load line analysis.
CO4	Evaluate amplifier and CMOS inverter circuits using hardware and simulation
CO5	Simulate analog and digital circuits to study performance parameters

Course: Digital logic Design Laboratory**Code: 25EC309PC**

CO1	Analyze and simplify Boolean expressions and implement them using logic gates and ICs.
CO2	Design and realize combinational and sequential logic circuits using logic gate hardware.
CO3	Model digital systems in Verilog HDL using dataflow, behavioral, and structural styles.
CO4	Simulate and verify digital designs using industry-standard EDA tools and test benches.
CO5	Build modular and hierarchical designs such as counters, FSMs, and shift registers.

CO1	Understand the structure, function, and significance of ecosystems, including energy flow, biogeochemical cycles, and biodiversity conservation through field experiences.
CO2	Analyze the classification, utilization, and sustainable management of natural resources, along with alternative energy options.
CO3	Evaluate biodiversity at genetic, species, and ecosystem levels, its values, threats, and conservation methods under national and international frameworks.
CO4	Identify types, sources, and impacts of environmental pollution, and apply suitable control technologies while assessing global environmental challenges and protocols.
CO5	Interpret environmental policies, legislation, and the EIA process to propose management plans addressing contemporary environmental and sustainability issues.

Department of Electronics & Communication Engineering

Course Outcomes (COs) for Academic Year: 2026-27

YEAR: III

SEMESTER: I

REGULATION: R22

Course: Microcontrollers and Applications

Code: 22EC501PC

CO1	Discuss the internal architecture of 8086 microprocessor and 8051 Microcontroller.
CO2	Illustrate how to implement the I/O devices and memory interfaces to 8051 for various applications.
CO3	Explain various communication bus interfaces of microcontrollers.
CO4	Describe the Architecture and Instruction set of ARM Processor.
CO5	Examine the Architectures of Advanced ARM Processors.

Course: IoT Architectures and Protocols

Code: 22EC502PC

CO1	Describe the Fundamentals of IoT with its Applications.
CO2	Compare M2M & IoT Architectures with Value chains.
CO3	Examine IoT Data Link and Network Layer Protocols.
CO4	Explain various Transport and Session Layer Protocols in IoT Communication.
CO5	Describe the use of Service Layer Protocols and Security Mechanisms in IoT.

Course: Control Systems

Code: 22EC503PC

CO1	Examine the mathematical model of physical systems
CO2	Estimate the system response & stability in Time domain
CO3	Analyze the system response & stability in Frequency domain
CO4	Design different types of controllers and compensators
CO5	Analyze linear time systems using state space representation

Course: Antennas and Wave Propagation

Code: 22EC504PC

CO1	Examine the fundamentals of antennas and thin linear wire antennas.
CO2	Investigate various types of antenna arrays for directivity and gain.
CO3	Explain the different methods to measure antenna gain.
CO4	Characterize various VHF, UHF and Microwave Antennas.
CO5	Distinguish various methods of wave propagation with related parameters.

Course: Data Communications & Networks**Code: 22EC512PE**

CO1	Discuss the basics of Data Communication with its standard reference models.
CO2	Examine Error Control and Access control methods in Data Link Layer.
CO3	Inspect routing and addressing mechanisms in Network Layer.
CO4	Distinguish various types of Transport Layer Protocols.
CO5	Explain the functions of various Application Layer Protocols.

Course: Microcontrollers Laboratory**Code: 22EC505PC**

CO1	Develop and execute 8086 and 8051 programs to perform various operations.
CO2	Design , interface, and program I/O devices.
CO3	Build and evaluate embedded applications on Cortex-M3 development boards

Course: IoT Architectures and Protocols Laboratory**Code: 22EC506PC**

CO1	Interface various sensors with microcontrollers for data acquisition and transmission.
CO2	Implement IoT communication protocols and demonstrate remote control using cloud integration.
CO3	Design IoT-based systems and communication protocols.

Course: Advanced Communication Laboratory**Code: 22EC507PC**

CO1	Proficiently utilize test and measurement equipment to characterize and analyze signals, antennas, and communication systems.
CO2	Design , implement, and analyze digital modulation and multiplexing techniques using software tools.
CO3	Develop and implement embedded systems for sensor data acquisition and wireless communication using UART and RIME protocols on an ICONT platform, demonstrating an understanding of sensor network principles.

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Course Outcomes (COs) for Academic Year: 2026-27

YEAR: IV

SEMESTER: I

REGULATION: R22

Course: Microwave and Optical Communications

Code: 22EC701PC

CO1	Compare O and M microwave tubes, their structures and principles of microwave power generation
CO2	Explain the principles of solid-state devices
CO3	Identify the waveguide components
CO4	Analyse the microwave components by scattering parameters and verify it by measurements.
CO5	Classify optical fibers on basis of core and cladding and analyse the link budget.

Course: Radar Systems

Code: 22EC711PE

CO1	Discuss the Radar fundamentals with its Range performance.
CO2	Examine the Doppler effect in CW and FM-CW Radars.
CO3	Analyze the Performance of MTI and Pulse Doppler Radars.
CO4	Distinguish various types of Tracking Radars.
CO5	Inspect the noise of Matched Filter in Radar receiver.

Course: Biomedical Instrumentation

Code: 22EC723PE

CO1	Make use of bio-systems and medical systems for an engineering perspective
CO2	Identify various techniques/Instruments for measuring physiological parameters
CO3	Apply the Categorize different EEG electrodes and their applications
CO4	Explain about various critical care equipment
CO5	Elaborate principles of medical imaging such as MRI,SPECT,PET,CT

Course: AI & Applications

Code: 22AM722OE

CO1	Correlate AI and solutions to modern problems
CO2	Use of AI in business applications
CO3	Application of AI in manufacturing automation
CO4	Use of AI in streaming of data and Network applications

Course : Professional Practice, Law & Ethics**Code: 22SM702MS**

CO1	Understand Professional Ethics & Personal Ethics, code of Ethics, Conflict of Interest. Will able to learn the concept of professionalism, Whistle blowing and the brief introduction of GST
CO2	Identify various techniques/Instruments for measuring physiological parameters. Recognize the element of contract, unlawful and illegal agreement. Will analyze the remedies for breach of contract, sale of goods act 1930 and performance of contract of sales
CO3	Illustrate Arbitration, Conciliation and ADR different forms of laws and the dispute resolution board.; Distinction between conciliation, negotiation, mediation and arbitration, confidentiality
CO4	Enumerate the concept of labor laws and other construction related laws and other different types of ACT (1946, 1947, 1923) and also); RERA Act 2017, NBC 2017
CO5	Understand IPR Copyright, Trademarks, Patents and Designs, Secrets, Piracy in Internet Remedies and procedures in India

Course : Microwave and Optical Communications Lab**Code: 22EC705PC**

CO1	Identify and demonstrate the working of various microwave and optical components
CO2	Analyze Microwave Passive Devices by conducting experiments and measuring various parameters
CO3	Analyze the characteristics of Optical semiconductor Sources like LED, LASER Diode, by conducting experiments and measuring various parameters

Course : Project Stage-I**Code: 22EC706PC**

CO1	Formulate and apply mathematical, science, and engineering principles to solve real-time engineering problems
CO2	Implement the existing technique in domains of VLSI, Image & Signal Processing, Communication, and Embedded system using modern tools and technology
CO3	Structure future work to promote life-long learning in the context of technological adaptation

Department of Electronics & Communication Engineering
Course Outcomes (COs) for Academic Year: 2025-26

YEAR: I

SEMESTER: II

REGULATION: R25

Course : Ordinary Differential Equations and Vector Calculus

Code: 25MA201BS

CO1	Identify whether the given differential equation of first order is exact or not
CO2	Solve higher differential equation and apply the concept of differential equation to real world problems
CO3	Use the Laplace transforms techniques for solving ODE's.
CO4	Find the physical quantities involved in engineering field related to the vector valued functions.
CO5	Evaluate the line, surface and volume integrals and converting them from one to another.

Course : Engineering Chemistry

Code: 25CH202BS

CO1	Interpret the various parameters of water, problems caused by hard water in the industry and also able to identify suitable method for treatment of water.
CO2	Acquire basic knowledge of electrodes and electrochemical processes and their importance to corrosion and its control methods.
CO3	Perceive the significance and practical applications of batteries and various energy sources, enhancing their potential as future engineers and entrepreneurs.
CO4	Classify and characterize different polymers and apply its knowledge to select suitable materials for specific applications.
CO5	Identify the use of functional materials in modern devices and also apply the principles of spectroscopic techniques in analyzing various applications.

Course : Python Programming

Code: 25CS203ES

CO1	Write Python Programs using variables, operators, expressions, and control structures.
CO2	Implement Python programs using built-in data structures like lists, tuples, sets, and dictionaries
CO3	Apply modular and object-oriented programming principles in Python.
CO4	Handle files, exceptions, and apply Python libraries for problem-solving
CO5	Develop small-scale applications in Python for automation and data manipulation.

Course: Network Analysis and Synthesis

Code: 25EE204ES

CO1	Identify the behaviour of Electric and Magnetic Networks.
CO2	Analyze the transient and steady-state responses of combined passive elements.
CO3	Examine Two-port Network using various parameters.
CO4	Construct various Filter Networks and Attenuators.
CO5	Inspect transfer functions of passive elements for network synthesis.

Course: Data Structures**Code: 25CS205ES**

CO1	Understand and implement basic linear data structures like linked lists, stacks, and queues.
CO2	Construct and manipulate various trees, including binary search and balanced trees, applying traversal and balancing techniques.
CO3	Analyze and implement multi-way search trees and heaps, applying efficient search algorithms.
CO4	Represent graphs, perform graph traversals, and apply advanced sorting algorithms.
CO5	Implement hashing techniques, handle collisions, and understand file organization and indexing methods.

Course : Engineering Chemistry Laboratory**Code: 25CH206BS**

CO1	Estimate the amount of substance by applying potentiometry, pH metry and conductometry.
CO2	Analyse the parameters such as hardness in water and estimate the corrosion rate of metals.
CO3	Evaluate the linear relationship between absorbance and concentration to verify the Beer-Lambert's law.
CO4	Identify the importance of polymers by synthesizing them.
CO5	Build their thinking abilities and skills using virtual labs.

Course : Data Structures Laboratory**Code: 25CH206BS**

CO1	Implement and manipulate various types of linked lists with fundamental operations.
CO2	Design and develop stack and queue data structures using arrays and abstract data types.
CO3	Apply and implement different sorting algorithms to organize data in ascending order.
CO4	Construct and traverse complex tree data structures including Binary Search Trees, B- Trees, B+ Trees, AVL Trees, and Red-Black Trees.
CO5	Implement graph traversal algorithms and various hashing functions for efficient data searching and storage.

Course : Applied Python Programming Laboratory**Code: 25EC208ES**

CO1	Outline the fundamental Concepts and illustrate the basic programs.
CO2	Develop python codes for different applications
CO3	Utilize Raspberry Pi to implement basic applications

Course : Engineering Workshop**Code: 25ME209ES**

CO1	Understanding basic manufacturing processes and operations
CO2	Use hand tools and equipment safely and efficiently.
CO3	Performing basic operations in various trades like carpentry, fitting, welding, etc.
CO4	Interpreting workshop drawings.
CO5	Develop team work, time management, and quality awareness in a workshop environment.

Course : Electrical Engineering Laboratory**Code: 25EC210ES**

CO1	Verify the basic DC Electrical circuits through different experiments.
CO2	Analyze the transient responses of R, L and C circuits for different input conditions.
CO3	Evaluate the performance calculations of Transformer through suitable testing methods.
CO4	Acknowledge the principles of operation and the main features of electric machines and their applications.

CO5	Acquire skills in using electrical measuring devices.
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Department of Electronics & Communication Engineering
Academic Year: 2025-26

YEAR: II

SEMESTER: II

REGULATION: R22

Course: Numerical Methods and Complex Variables

Code: 22MA401BS

CO1	Apply Fourier series and Fourier transforms to represent periodic functions and solve engineering problems.
CO2	Apply numeric methods to solve algebraic and linear system equations and construct interpolating polynomials.
CO3	Obtain approximate solutions by Applying numerical integration and numerical methods for first-order ordinary differential equations.
CO4	Analyze complex functions using their analyticity, harmonic functions, and conformal mappings for engineering applications.
CO5	Evaluate complex integrals by Applying Cauchy's theorems, series expansions, and residue theory in engineering application

Course : Electromagnetic Fields and Transmission Lines

Code: 22EC401PC

CO1	Understand the basic laws and equations related to electrostatic fields
CO2	Demonstrate the concepts and laws related to magnetostatic fields
CO3	Apply the Maxwell's equations in different conditions
CO4	Explain the characteristics of EM waves in different medium
CO5	Analyze transmission lines and its characteristics

Course : Analog and Digital Communications

Code:22EC402PC

CO1	Examine AM, DSB-SC, SSB, and VSB modulation and demodulation techniques.
CO2	Evaluate FM and PM systems with respect to spectrum, bandwidth, and noise performance.
CO3	Illustrate transmitter and receiver operation, including super heterodyne receivers.
CO4	Implement pulse modulation and multiplexing techniques in communication systems.
CO5	Assess digital modulation and baseband transmission for communication system performance.

Course : Linear and Digital IC Applications

Code:22EC403PC

CO1	Understand and design various applications of operational amplifier using IC-741
CO2	Design the applications of Timer IC-555, Voltage regulator-IC565 & PLL-IC566
CO3	Illustrate the types of analog to digital and digital to analog converters.
CO4	Examine various families of ICs and applications of combinational circuits.
CO5	Analyze various families of ICs and applications of sequential circuits.

Course: Electronic Circuit Analysis**Code:22EC404PC**

CO1	Explain the concepts of power amplifiers
CO2	Analyze the Frequency response of various Tuned Amplifiers
CO3	Construct Multivibrators for various applications.
CO4	Compare the characteristics of various Timebase generators
CO5	Examine the concepts of Synchronization, frequency division & sampling gates

Course: Analog and Digital Communications Laboratory**Code:22EC405PC**

CO1	Design and implement various Analog and Pulse modulation and demodulation Techniques and observe the time and frequency domain characteristics.
CO2	Attain the knowledge about AM, FM Transmitters and Receivers.
CO3	Design and implement various Digital modulation and demodulation Techniques and observe the waveforms of these modulated Signals practically.

Course: Linear and Digital IC Applications Laboratory**Code:22EC406PC**

CO1	Perform the design of various applications of operational amplifier using IC-741.
CO2	Execute the various applications of Timer using IC-555 and Voltage regulators using IC-565.
CO3	Design the various logic circuits using digital ICs.

Course: Electronic Circuit Analysis Laboratory**Code:22EC407PC**

CO1	Design and Simulate power amplifiers for various applications
CO2	Analyze the Frequency Response of Tuned Amplifiers
CO3	Design the Multivibrator and Sweep circuits for various applications

Course: Real Time Project/ Field Based Project**Code: 22EC408PC**

CO1	Analyze, formulate, and implement the proposed method in domains of VLSI, Image & Signal Processing, Communication, and Embedded systems that find a solution to the society and environment
CO2	Demonstrate effectively the engineering principles used in their project individually and as a team.
CO3	Structure future work to promote life-long learning in the context of technological adaptation

Department of Electronics & Communication Engineering

Course Outcomes (COs) for Academic Year: 2025-26

YEAR: III

SEMESTER: II

REGULATION: R22

Course: Digital Signal Processing

Code: 22EC601PC

CO1	Classify the Continuous time and Discrete time signals and systems.
CO2	Illustrate discrete time domain and frequency domain of signals.
CO3	Design of Digital IIR filters from Analog Filters
CO4	Design of FIR filters using Fourier method and Windowing techniques
CO5	Realize the Digital filters in various forms.

Course: CMOS VLSI Design

Code: 22EC602PC

CO1	Interpret various fabrication steps involved in IC technology with their properties.
CO2	Describe the design rules for layout of CMOS logic circuits using stick diagrams.
CO3	Explain transistor level implementation of various gate level circuits.
CO4	Analyze the data path sub-systems and various forms of memories.
CO5	Develop programmable logic devices along with CMOS testing.

Course: Business Economics & Financial Analysis

Code: 22SM603MS

CO1	Understand the various forms of business.
CO2	Describe the concepts of economics & importance of economics.
CO3	Adapt the demand, supply, production, cost, market structure, pricing concepts.
CO4	Calculate the process of accounting and prepare accounting statements.
CO5	Analyze the firm's financial position by comparing the financial statements of company.

Course: Embedded System Design

Code: 22EC613PE

CO1	Illustrate the fundamentals of Embedded Systems
CO2	Analyze the embedded systems core and its communication Interfaces
CO3	Develop Embedded Firmware design approaches
CO4	Summarize the concepts of RTOS
CO5	Discuss the task communication and synchronization techniques

Course : Fundamentals of Artificial Intelligence

Code: 22AM611OE

CO1	Explain the Fundamental Concepts, History, Ethics and Intelligent Agent Models in AI
CO2	Apply Uninformed and Informed Search Strategies to Solve Computational Problems Effectively
CO3	Construct Logical Representations and Perform Inference In First-Order Logic

CO4	Analyze Uncertain Environments Using Probabilistic Models
CO5	Implement Machine Learning, NLP, and Computer Vision Techniques for Intelligent System Applications.

Course: Digital Signal Processing Laboratory

Code: 22EC605PC

CO1	Understand Basics of MATLAB syntax, functions and programming and find the generation Various Signals and Sequences in MATLAB, including the operations on Signals and Sequences
CO2	Explain the Convolution and Correlation between Signals and sequences, Verification of noise removal in a signal
CO3	Analyze the Fourier Transform of a given signal and plotting its magnitude and phase spectrum
CO4	Remember for impulse response of finite and infinite
CO5	Construct the multi rate signal processing and Identify Spectrograms and DTMF Filtering.

Course: CMOS VLSI Design Laboratory

Code: 22EC606PC

CO1	Illustrate HDL programs for combinational and sequential logics with simulations and synthesis
CO2	Design and analyze NMOS and CMOS logic circuits.
CO3	Design layouts for logic circuits and perform physical verification

Course : Advanced English Communication Skills Laboratory

Code: 22EC606PC

CO1	Develops confidence to use relevant vocabulary, using apt kinesics or body language in communication.
CO2	Infer the meaning of the text easily through comprehension techniques like, skimming, scanning and effective reading through proper vocabulary
CO3	Analyze the writing skills through letters, reports and resume writing from the text and use for all professional settings.
CO4	Gather ideas, information and organize them relevantly in making presentations.
CO5	Self assured to organize and deliver discussions, presentations and strategies to face the interviews effectively.

Course : Intellectual Property Rights

Code: 22MC609IP

CO1	Distinguish various forms of IPRs and explain them
CO2	Recognize criteria to fit one's own intellectual work in particular form of IPRs
CO3	Apply legal provisions to protect particular form of IPRs.
CO4	Evaluate new developments in IPR laws at national and international level

Course: Industry Oriented Mini Project/ Internship

Code: 22EC607PC/ C32A

CO1	Apply mathematical, scientific, and engineering principles to analyze and solve real engineering problems effectively.
CO2	Utilize current methodologies in various Electronics and Communication domains and propose advanced, innovative solutions to address pressing societal challenges
CO3	Demonstrate proficiency in implementing advanced techniques both independently and collaboratively while fostering a commitment to life-long learning and continuous adaptation to emerging technologies.

Department of Electronics & Communication Engineering

Course Outcomes (COs) for Academic Year: 2025-26

YEAR: IV

SEMESTER: II

REGULATION: R22

Course : Wireless Sensor Networks

Code: 22EC823PE

CO1	Explain various architectures of wireless sensor networks.
CO2	Articulate enabling technologies and challenges in wireless sensor networks.
CO3	Determine the performance of various routing and MAC protocols.
CO4	Categorizing various data gathering and data dissemination methods.
CO5	Explain gateway concepts and communication between wireless sensor networks and internet.

Course : Introduction to Computer Networks

Code: 22CS832OE

CO1	Explain Network Topologies and its Components used
CO2	Illustrate and compare different type of Networks Communication models with different types of communication types.
CO3	Explain different layers and its functions, protocols used in those layers and its applications.
CO4	Choose best routing algorithm for congestion free transmission.
CO5	Illustrate how communication occurs between two systems.

Course : Machine learning

Code: 22EC813PE

CO1	Understand fundamentals of artificial neural networks and supervised learning models.
CO2	Analyze unsupervised learning and associative memory neural network techniques.
CO3	Apply linear, probabilistic, and Bayesian models for regression and classification.
CO4	Design and evaluate kernel-based and sparse learning methods for complex problems.
CO5	Interpret graphical models for inference and decision-making applications.

Course : Project Stage-II

Code: 22EC801PC

CO1	Analyze , formulate, and implement a proposed methodology that finds a solution to the existing real-time engineering problems
CO2	Demonstrate effectively the engineering principles that solve Contemporary societal issues as an individual and a team
CO3	Validate the obtained results to promote life-long learning and sustainability