ACADEMIC YEAR: 2020-2021 SEMESTER: I REGULATION: R20

Course Code	Course Name	CO No	CO Statement	Knowledge Level
20MA1T01	LINEAR ALGEBRA	1	Develop the use of matrix algebra techniques that is needed by engineers for practical applications	K3
		2	Apply the functions of several variables which is useful in optimization	K3
		3	Acquire important tools of calculus in higher dimensions and will become familiar with double integral	K3
		4	Solve the multiple integrals and are apply for special functions.	K3
20BS1T01	ENGINEERING PHYSICS	1	Acquire the knowledge of basic crystal systems and determination of crystal structures.	K2
		2	Summarize the Magnetic and Dielectric Materials properties.	K2
		3	Illustrate the concept of Magnetic Induction and Super Conducting properties.	K2
		4	Interpret Pure &Doped Semiconductor materials for better utility.	K2
		5	Acquire the knowledge on Optical fibers and Optical properties of materials and their applications	K2
20CS1T01	PROBLEM SOLVING USINGC PROGRAMMING	1	Develop an algorithm/flowchart to find a solution for computational problem	K3
		2	Develop C programs with branching and looping statements, which uses Arithmetic, Logical, Relational or bitwise operators	K3
		3	Develop a C program using arrays to divide a given computational problem into a number of modules	K3
		4	Apply pointers for array processing and parameter passing	K3
		5	Develop C programs with structure or union and files for storing the data to be processed.	K3

ACADEMIC YEAR: 2020-2021 SEMESTER: I REGULATION: R20

Course Code	Course Name	CO No	CO Statement	Knowledge Level
20BS1L01	ENGINEERING PHYSICS LAB	1	Apply the basic knowledge to know the frequency of a vibrator, hall coefficient.	K3
		2	Apply the knowledge to verify some of the properties of physical optics.	K3
		3	Develop skills to plot various characteristic curves and to calculate the physical properties of given materials.	K3
		4	Estimate some the properties of semiconducting materials.	K3
20CS1L01	C PROGRAMMING LAB	1	Develop basic programs in C and design flowcharts in Raptor.	K3
		2	Apply Conditional and Iterative statements to solve the real time scenarios in C.	K3
		3	Implement the concept of Arrays and Modularity and Strings.	K3
		4	Apply the Dynamic Memory Allocation functions using pointers.	K3
		5	Develop programs using structures and Files.	K3
20HS1L01	ENGLISH PROFICIENCY LAB	1	Acquire the sounds of words for correct pronunciation.	K2
		2	Identify and learn accent of words for mastering language proficiency.	K3
		3	Distinguish the word pronunciation relating to accent and accuracy of English language.	K4
		4	Apply the words for ensuring the ability for correct pronunciation.	K3
		5	Summarize the influence of mother tongue on target language.	K2

ACADEMIC YEAR: 2020-2021 SEMESTER: II REGULATION: R20

Course Code	Course Name	CO No	CO Statement	Knowledge Level
20MA2T02	DIFFERENTIAL EQUATIONS AND NUMERICAL METHODS	1	Solve the differential equations related to various engineering fields	K3
		2	Identify solution methods of partial differential equations that model physical processes	K3
		3	Evaluate the approximate roots of polynomial and transcendental equations by different algorithms	K3
		4	Solve integrate and ordinary differential equations by various numerical techniques.	K3
20BS2T02	ENGINEERING CHEMISTRY	1	Summarize the impurities present in raw water, problems associated and how to avoid them	K2
		2	List out the advantages of Polymers in daily life	K2
		3	Illustrate the theory of construction of battery and fuel cells and theories of corrosion and prevention methods.	K2
		4	Compare conventional and non-conventional energy sources and their advantages and disadvantages.	K2
		5	Interpret the usage of advanced materials in day to day life	K2
20HS2T01	ENGLISH	1	Identify the parts of speech, root words and apply relative writing formats to prepare notes	K3
		2	Precise the ideas coherently in day to day life.	K2
		3	Identify the importance of correct usage of grammar	K3
		4	Illustrate the ideas effectively on various topics	K2
		5	Develop the reports and essays by using appropriate sentences	K3

ACADEMIC YEAR: 2020-2021 SEMESTER: II REGULATION: R20

Course Code	Course Name	CO No	CO Statement	Knowledge Level
20BS2L02	ENGINEERING CHEMISTRY LAB	1	Identify the concentration of given solution by different methods of chemical analysis	K3
		2	Analyze the water purity by checking hardness, DO and Acidity.	K4
		3	Estimate the Cu^{+2}, Fe^{+3}, Ca^{+2}, Mg^{+2} ions and Ascorbic acid present in given solution.	K4
		4	Identify the pour and cloud point of lubricants.	K3
		5	Classify the principles of conductometric and potentiometric titrations.	K2
20IT2L01	IT WORKSHOP	1	Acquire complete knowledge of computer hardware.	K2
		2	Install basic computer engineering software.	K2
		3	Document a task through MS office.	K2
		4	Apply the usage of Google Tools and Email handling.	K3
		5	Make use of network troubleshooting.	K3
20HS2L02	ENGLISH COMMUNICATIONS LAB	1	Identify the difference between impromptu and extempore.	K3
		2	Express hypothetical situations in different ways.	K2
		3	Outline the etiquettes of telephonic conversation and interviews.	K2
		4	Identify the need of the presentation skills to participate in various oral activities.	K3
		5	Apply preparatory techniques for Job interviews.	K3

ACADEMIC YEAR: 2021-2022 SEMESTER: III REGULATION: R20

Course Code	Course Name	CO No	CO Statement	Knowledge Level
20EC3T01	ELECTRONIC CIRCUITS-I	1	Demonstrate the characteristics of different semiconductor diodes and its applications	K3
		2	Evaluate the characteristics of Transistors, FET and biasing.	K4
		3	Construct the wave shaping circuits of non sinusoidal signals.	K3
		4	Analyze and design the Multi vibrators using BJT	(K4
20EC3T02	DIGITAL ELECTRONICS	1	Categorize the different types of number systems and Boolean algebra.	K4
		2	Evaluate the boolean logic expressions using minimization techniques	(K4
		3	Construct the logic circuits of various combinational circuits.	K3
		4	focus the behavior of various sequential circuits.	K4
20EC3T03	SIGNALS AND SYSTEMS	1	Differentiate the signal fundamentals of various signals using physical parameters.	K4
		2	Categorize the concept of Fourier series and Fourier transforms to determine the signal and system characteristics.	K4
		3	Demonstrate the concept of sampling theorem, convolution and correlation and also signal transmission through linear systems.	K3
		4	Demonstrate the concept of ROC (Region Of Convergence) using Laplace and Z- Transforms to analyze the continuous and discrete time systems.	K3,K4

ACADEMIC YEAR: 2021-2022 SEMESTER: III REGULATION: R20

Course Code	Course Name	CO No	CO Statement	Knowledge Level
20EC3T04	ANALOG COMMUNICATION	1	Estimate the concept of communication system, need for modulation, modulation	K3
		2	Analyze demodulation techniques in AM.	K4
		3	Categorize the concepts of DSB-SC, SSB, FM and Pulse Analog modulation techniques.	K4
		4	Analyze the transmission and reception of a signal in a communication system by using	
20EC3L01	ELECTRONICS CIRCUITS - I LAB	1	Evaluate the diode, FET and transistor characteristics	K4
		2	Estimate the rectifier circuits using diodes and implement them using hardware.	K3
		3	Construct various Linear and Non-Linear wave shaping circuits and implement them using hardware, also observe their responses for different input signals.	K3
		4	Analyze the switching characteristics and generate non-sinusoidal waveforms using Transistor circuits.	K4
20EC3L02	DIGITAL ELECTRONICS LAB	1	Outline the characteristics of Universal logic gates .	K4
		2	Evalute Boolean expressions using the theorems and to minimize the combinational functions.	K3
		3	Analyze combinational circuits like Adders, Sub tractors, Encoders, Decoders etc.	K4
		4	Construct various types of sequential circuits like Flip-flops, counters and Registers .	K3

ACADEMIC YEAR: 2021-2022 SEMESTER: III REGULATION: R20

Course Code	Course Name	CO No	CO Statement	Knowledge Level
20EC3L03	ANALOG COMMUNICATION LAB	1	Estimate the concept of communication system, need for modulation, modulation and demodulation techniques in AM.	K4
		2	Categorize the concepts of DSB-SC, SSB, FM and Pulse Analog modulation techniques.	K4
		3	Analyze the transmission and reception of a signal in a communication system by using different types of transmitters and receivers.	K3
		4	Estimate the effect of noise on AM, DSB-SC, SSB and FM.	K4
20EC3S01	PCB LAYOUT DESIGN	1	Demonstrate the concept of PCB LAYOUT techniques .	K4
		2	Categorize different concepts of discrete components fabrication on PCB.	K4
		3	Analyze the different wiring lengths and soldering concepts in PCB.	K3
		4	Estimate the effect ofimproper soldering,circuit development and components fixing methods.	K4

ACADEMIC YEAR: 2021-2022 SEMESTER: IV REGULATION: R20

Course Code	Course Name	CO No	CO Statement	Knowledge Level
20EC4T01	ELECTRONIC CIRCUITS-II	1	Estimate the frequency response of single stage amplifiers and multistage amplifier using .	K4
		2	BJTs and FETs in different configurations.	K3
		3	Construct Hybrid- π Common Emitter transistor model.	K3
		4	Compare and analyze the different types of feedback amplifiers and oscillator .	K4
20EC4T02	DIGITAL COMMUNICATION	1	Estimate the concept various waveform coding techniques.	K3
		2	Catagirise various digital modulation techniques and different information theory oncepts.	K4
		3	Apply the different source coding techniques in the data compression during transmission.	K3
		4	Compare Different channel coding techniques for error detection and correction in digital .	K4
20EC4T03	ELECTROMAGNETIC WAVES AND TRANSMISSION LINES	1	Outline the basics of electrostatic & electromagnetic.	K4
		2	Illustrate Maxwell equations and different postulates of EM fields, depending on the media.	K3
		3	Focus the behavior of EM waves propagation in conducting and dielectric media.	K4
		4	Analyze the propagation problems of EM waves through transmission lines and its design.	K4

ACADEMIC YEAR:2021-2022 SEMESTER: IV REGULATION: R20

Course Code	Course Name	CO No	CO Statement	Knowledge Level
20EC4L01	ELECTRONICS CIRCUITS-II LAB	1	Examine the single stage and multistage amplifier using BJTs and FETs.	(K3
		2	Differentiate different types of feedback amplifiers, calculate the input resistance and output resistance of feedback amplifiers.	K4
		3	Catagirize the wave forms of oscillator with different frequencies. Obtain the efficiency of the single stage power amplifiers.	(K4
		4	Analyze the characteristics of Series Voltage Regulator and Shunt Voltage Regulator.	K4
20EC4L02	DIGITAL COMMUNICATION LAB	1	Estimate the concept various waveform coding techniques.	K3
		2	Catagirise various digital modulation techniques and different information theory concepts.	K4
		3	Apply the different source coding techniques in the data compression during transmission.	K3
		4	Compare Different channel coding techniques for error detection and correction in digital	K4
20EC4S01	SIMULATION BASED CIRCUIT DESIGN	1	Evaluate the single stage amplifier using FETs.	K4
		2	Analyze different types of encoders and decoders.	K4
		3	Estimate the wave forms of different frequencies using Flip-Flops.	K4
		4	Demonstrate the characteristics of Analog To Digital Converter And Digital To Analog Converters .	K3

ACADEMIC YEAR:2022-2023 SEMESTER: V REGULATION: R20

Course Code	Course Name	CO No	CO Statement	Knowledge Level
20EC5T01	LINEAR AND DIGITAL IC APPLICATIONS	1	Demonstrate the performance parameters and characteristics of operational amplifiers.	K3
		2	Estimate the function of Opamp based active filters, timers and converters.	K4
		3	Construct and implement the Combinational circuits using digital ICs.	K3
		4	Construct and implement the Sequential circuits using digital ICs	K3
20EC5T02	DIGITAL SIGNAL PROCESSING	1	Illustrate digital signals, systems and their significance.	K3
		2	Develop the digital signals using various digital transforms DFT, FFT …	K3
		3	Estimate the FIR and IIR structures from the designed digital filter.	K4
		4	Use the Multirate Processing concepts in various applications.	K3
20EC5T03	ANTENNAS AND WAVE PROPAGATION	1	Differentiate various types of antenna parameters.	K4
		2	Calculate the fields radiated by various types of antennas.	K3
		3	Categorize different types of antenna arrays	K4
		4	Illustrate and identify the characteristics of radio wave propagation.	K3

ACADEMIC YEAR: 2022-2023 SEMESTER: V REGULATION: R20

Course Code	Course Name	CO No	CO Statement	Knowledge Level
20EC5E01	MEDICAL ELECTRONICS	1	Illustratethe various bio signals and vital parameters.	K3
		2	Demonstrate the various Assist Devices.	K3
		3	Differentiate the function and application of various diagnostic and therapeutic equipment.	K4
		4	Collect the recent developments in the field of biomedical engineering	K3
20EC5E02	DIGITAL SYSTEM DESIGN	1	Develop the Combinational and Sequential logic circuit.	K3
		2	Evaluate the FSM and synchronous state machines.	K4
		3	Differentiate various logic families.	K4
		4	Construct the HDL Design flow.	K3
20EC5E03	SIGNAL TRANSFORM TECHNIQUES	1	Categorize the basics of various two dimensional transforms and its applications	K4
		2	Examine the concepts of CWT	K3
		3	Estimate the multi rate analysis and DWT	K4
		4	List the fundamentals of special transforms	K3

ACADEMIC YEAR: 2022-2023 SEMESTER: V REGULATION: R20

Course Code	Course Name	CO No	CO Statement	Knowledge Level
20EC5E04	RADAR AND SATELLITE COMMUNICATION SYSTEM	1	Classify different concepts of radar system.	K4
		2	Estimate the operation and applicability of CW, MTI Radar and detection of Radar signals in noise	K4
		3	Demonstrate the concept of satellite communications and orbital mechanics	K3
		4	Categorise the different multiple access techniques used in Satellite Communication	K4
20EC5L01	LINEAR AND DIGITAL IC APPLICATIONS LAB	1	Illustrate various linear circuits using operational amplifiers.	K3
		2	Demonstrate various combinational circuits and Sequential Circuits using Digital IC's.	K3
		3	Estimate the different Circuits with different IC's	K4
		4	Examine the knowledge on analog circuits & digital circuits	K3
20EC5L02	DIGITAL SIGNAL PROCESSING LAB	1	Apply the basics of MATLAB and C-languages for the development of various DSP applications.	K3
		2	Analyze the various applications by transforming the input sequence using FFT algorithm.	K2
		3	Illustrate the IIR and FIR digital filters and use them in different applications.	K3
		4	Develop various real time applications using digital signal processor such as TMS3206713/TMS6712.	K3

ACADEMIC YEAR:2022-2023 SEMESTER: VI REGULATION: R20

Course Code	Course Name	CO No	CO Statement	Knowledge Level
20EC6T01	MICROPROCESSORS AND MICROCONTROLLERS	1	Estimate the concepts of Electrical and Mechanical Transducers	K4
		2	Determine the measurement and characteristics of various instruments	K3
		3	Conclude the knowledge about basic Signal Conditioning Elements	K4
		4	Estimate about the feedback in Instruments	K4
20EC6T02	VLSI DESIGN	1	Outline the basics of HDL Programming basics and different tools used in developing HDL Programs	K4
		2	Demonstrate the gate level and behavioural modelling	K3
		3	Categorize any digital circuit using concurrent and Sequential Programming concepts	K4
		4	Estimate the various Testing techniques used in testing digital circuits	K4
20EC6T03	MICROWAVE AND OPTICAL COMMUNICATIONS	1	Distinguish the basic concepts of digital image processing, intensity transformations and spatial filtering	K4
		2	Apply image restoration and reconstruction process in the images	K3
		3	Differentiate the Multi-Resolution Processing And Image Compression	K4
		4	Understand the concepts of Morphological Image Processing, segmentation and color Image Processing	K3

ACADEMIC YEAR: 2022-2023 SEMESTER: VI REGULATION: R20

Course Code	Course Name	CO No	CO Statement	Knowledge Level
20EC6E01	SENSORS AND INSTRUMENTATION	1	Demonstrate architecture, instructions and addressing modes of 8086 Microprocessor	K3
		2	Analyze 8086 interfacing with different peripherals and implement programs	K4
		3	Examine 8051 Microcontroller interfacing and implement programs	K3
		4	Sketch the architecture and applications of advanced processors	K3
20EC6E02	DIGITAL DESIGN USING HDL	1	Develop the VHDL program for digital circuits using different styles	K3
		2	Analyze the fabrication process and Electrical properties of MOS Circuits	K4
		3	Categorize the CMOS circuit design processes, scaling and testing of MOS circuits	K4
		4	Estimate the applications of different semiconductor ICs and digital devices	K4
20EC6E03	DIGITAL IMAGE PROCESSING AND ITS APPLICATION	1	Classify different types of modes in wave guides and characteristics.	K4
		2	Interpret different types of microwave devices and measurements.	K3
		3	Examine the optical fiber components such as sources, detectors and amplifiers.	K3
		4	Categorize the key features of optical fiber, and describe various types of optical fibers and coupling losses.	K4

ACADEMIC YEAR: 2022-2023 SEMESTER: VI REGULATION: R20

Course Code	Course Name	CO No	CO Statement	Knowledge Level
20EC6E04	WIRELESS COMMUNICATION	1	Describe the functioning of various example wireless communication systems, their evolution and standards.	K1
		2	Construct on cellular communication system, architecture, functioning, various standards.(K3)	K3
		3	Demonstrate an understanding on signal propagation in cellular environment and to explain wireless communication networks.	K3
		4	Understand the functioning, protocols, capabilities and application of various wireless communication networks.(K2)	K2
20EC6O01	MOBILE COMMUNICATION AND IT'S APPLICATIONS	1	Design Hexagonal shaped cells and how these are implemented in real world.	K4
		2	Explain different types of antenna systems in mobile communication.	K3
		3	Analyze Handoffs and different types of handoffs and Dropped call rates and their evaluation.	K4
		4	Describe the Parameters of Mobile multipath channels, Types of small scale fading .	K3

ACADEMIC YEAR: 2022-2023 SEMESTER: VI REGULATION: R20

Course Code	Course Name	CO No	CO Statement	Knowledge Level
20EC6L01	MICROPROCESSORS AND MICROCONTROLLERS LAB	1	Categorize different ALPs for logic and Arithmetic operations	K4
		2	Demonstrate 8086 interfacing with different peripherals and implement programs	K3
		3	Outline different modes of timers in 8051	K4
		4	Prepare the Programs in ARM CORTEX M3 PROCESSOR using KEIL MDK ARM	K3
20EC6L02	VLSI DESIGN LAB	1	Categorize the fundamental concepts of hardware description language (HDL).	K4
		2	Compare and simulate combinational and sequential digital circuits using Modelsim & Xilinx – VHDL language.	K4
		3	Demonstrate the memory Read and Write operations using VHDL	K4
		4	Develop different logic gates and logic cells using micro wind tool.	K3
20EC6L03	MICROWAVE AND OPTICAL COMMUNICATIONS LAB	1	Discriminate different types of wave guide modes and characteristics	K4
		2	Interpret different types of components which are using in microwave communication.	K3
		3	Evaluate the operation of different optical fiber components	K4
		4	Demonstrate the various losses in optical fibres	K3

ACADEMIC YEAR: 2023-2024 SEMESTER:VII SEMESTER REGULATION: R20

Course Code	Course Name	CO No	CO Statement	Knowledge Level
20EC7E01	OPTO ELECTRONIC DEVICES	1	Interpret the basics of solid state physics	K3
		2	Discriminate the LED and Laser operations	K4
		3	Demonstrate the operation of optical detectors	K3
		4	Analyse the optoelectronic modulators and ICs	K4
20EC7E02	ASIC DESIGN	1	Analyze the operations of ASICs and various logic cells	K4
		2	Compare the different programmable ASIC architectures	K4
		3	Apply Logic Synthesis in Placement and Routing	K3
		4	Categorize different types in System-on-Chip (SoC)	K4
20EC7E03	SPEECH PROCESSING	1	Illustrate the speech production system and describe the time domain methods	K3
		2	Discriminate the frequency domain methods in speech processing	K4
		3	Estimate the linear predictive analysis of speech processing.	K4
		4	Develop various speech enhancement techniques.	K3

ACADEMIC YEAR: 2023-2024 SEMESTER:VII REGULATION: R20

Course Code	Course Name	CO No	CO Statement	Knowledge Level
20EC7E04	TELECOMMUNICATION SWITCHING NETWORKS	1	Demonstrate the operation of basic switching networks.	K3
		2	Analyze the different signaling techniques in Switching networks	K4
		3	Analyze ISDN and BISDN	K4
		4	Illustrate DSL and SONET	K3
20EC7E05	ANALOG IC DESIGN	1	Outline the significance of different biasing styles	K4
		2	Predict the functionality of Current Mirrors, Current Sinks, Differential amplifiers and Current amplifiers.	K3
		3	Compare basic building blocks of analog ICs like current mirrors, current sources, current sinks, two stage CMOS Power amplifiers and comparators.	K4
		4	Analyze the characterization of different types of analog Comparators	K4
20EC7E06	EMBEDDED SYSTEMS	1	Demonstrate the basic knowledge about fundamentals of Embedded Systems	K3
		2	Discriminate about various components used in Embedded systems	K4
		3	Analyze the PIC, AVR controllers and Processors	K4
		4	Use the design case study of Embedded Systems	K3

ACADEMIC YEAR: 2023-2024 SEMESTER:VII REGULATION: R20

Course Code	Course Name	CO No	CO Statement	Knowledge Level
20EC7E07	VIDEO PROCESSING	1	Categorize the characteristics of Video Raster.(K4)	K4
		2	Compare different types of Spatial Frequency Response and Spatio-temporal Frequency Response.(K4)	K4
		3	Demonstrate the characteristics of Sampling Video in Two Dimensions. (K3)	K3
		4	Analyse the different operations in video processing(K4)	K4
20EC7E08	GLOBAL POSITIONING AND NAVIGATION SYSTEMS	1	Demonstrate the various global navigation satellite systems (K3)	K3
		2	Categorise GNSS Satellite signal characteristics (K4)	K4
		3	Develop GNSS Receiver (K3)	K3
		4	Analyze the impact of various error sources on the precision of positioning. (K4)	K4
20EC7E09	TELEVISION SYSTEMS AND DESIGN	1	Categorize the TV components based on their operations(K4)	K4
		2	Demonstrate the working of Monochrome Television Transmitter and Receiver systems(K3)	K3
		3	Compare various Color Television systems with a greater emphasis on PAL systems(K4)	K4
		4	Interpret the advanced topics in Television systems and Video Engineering.	K3

ACADEMIC YEAR: 2023-2024 SEMESTER:VII REGULATION: R20

Course Code	Course Name	CO No	CO Statement	Knowledge Level
20EC7E10	LOW POWER VLSI DESIGN	1	Estimate the power dissipation of MOS circuits	K4
		2	Develop the various MOS logic circuits	K3
		3	Calculate the low power techniques for low power dissipation	K3
		4	Infer power dissipation of ICs and some algorithms to overcome	K4
20EC7E11	PATTERN RECOGNITION AND MACHINE LEARNING	1	Interpret the concepts of pattern recognition techniques and machine learning	K3
		2	Categorise the various classification of clustering methods	K4
		3	Demonstrate various dimensionality reduction techniques and classifiers	K3
		4	Apply the supervised learning and local model based pattern recognition	K3
20EC7E12	ADVANCED COMMUNICATION SYSTEMS	1	Categorize different generation wireless technologies	K4
		2	Demonstrate encoding and decoding the transmitted data (	K3
		3	Outline the characteristics of MIMO channel	K4
		4	List Some Multiple access Schemes	K3

ACADEMIC YEAR: 2023-2024 SEMESTER: VII REGULATION:R20

Course Code	Course Name	CO No	CO Statement	Knowledge Level
20EC7O01	INTRODUCTION TO GLOBAL POSITIONING SYSTEMS	1	Demonstrate the various global navigation satellite systems	K3
		2	Categorize GNSS Satellite signal characteristics	K4
		3	Develop GNSS Receiver	K3
		4	Analyze the impact of various error sources on the precision of positioning. Illustrate some basic steps in satellite design	K4

ACADEMIC YEAR: 2024-2025 SEMESTER: III REGULATION: R23

Course Code	Course Name	CO No	CO Statement	Knowledge Level
23BS3T03	Complex Variables & Random Process	1	To familiarize the complex variables.	K4
		2	This gives basic understanding of random variables and operations that can be performed on them.	K3
		3	To know the Spectral and temporal characteristics of Random Process	K4
23BM3T01	Managerial Economics And Financial Analysis	1	To inculcate the basic knowledge of microeconomics and financial accounting	K4
		2	To make the students learn how demand is estimated for different products, input-output relationship for optimizing production and cost	K4
		3	To Know the Various types of market structure and pricing methods and strategy	K3
		4	To give an overview on investment appraisal methods to promote the students to learn how to plan long-term investment decisions.	K4
		5	To provide fundamental skills on accounting and to explain the process of preparing financial statements.	K3
23EC3T01	Signals And Systems	1	Differentiate the various classifications of signals and systems	K3
		2	Analyze the frequency domain representation of signals using Fourier concepts	.K4
		3	Classify different LTI Systems along with explanation on sampling process and various types of sampling techniques	K2
		4	Apply Laplace and z-transforms to analyze signals and Systems (continuous & discrete)	K3
23EC3T02	Electronic Devices And Circuits	1	Demonstrate the current components of Diodes and Rectifiers with filters	K3
		2	Analyze the construction, working principle of Semiconductor Devices and Diode Circuits	K4
		3	Illustrate the need of transistor biasing and amplifiers using BJT	K3
		4	Apply small signal low frequency transistor amplifier circuits using BJT and FET in different configurations	K4

ACADEMIC YEAR: 2024-2025 SEMESTER: III REGULATION: R23

Course Code	Course Name	CO No	CO Statement	Knowledge Level
23EC3T03	Switching Theory And Logic Design	1	Categorize the different number systems to generate various codes and to implement SOP and POS forms	K4
		2	Design different types of combinational logic circuits.	K3
		3	Apply knowledge of flip-flops in designing of Registers and counters	K3
		4	Demonstrate the methodology for synchronous sequential circuits and realization of state machines	K4
23EC3L01	Electronic Devices And Circuits Lab	1	Describe the diode circuits, Transistor and FET characteristics	K4
		2	Design the rectifier circuits using diodes with filters.	K3
		3	Construct various Non-Linear wave shaping circuits,	K4
		4	Analyze the amplifiers using BJT.	K3
23EC3L02	Switching Theory And Logic Design Lab	1	Design the basic gates using universal gates	K4
		2	Construct and verify the flip-flops.	K3
		3	Analyze combinational circuits like Encoders, and Decoders etc	K3
		4	Construct various types of sequential circuits like counters and Registers	K3
23CS3S03	Data Structures Using Python	1	Understand and Implement Object-Oriented Programming Concepts in Python	K4
		2	Create and Manage Inheritance Hierarchies in Python	K3
		3	Use Python to Work with Different Data Structures	K3
		4	Apply Search Algorithms	K4
		5	Implement and Compare Sorting Algorithms	K3

ACADEMIC YEAR: 2024-2025 SEMESTER: III REGULATION: R23

Course Code	Course Name	CO No	CO Statement	Knowledge Level
23EC3T03	environmental science	1	To make the students to get awareness on environment	K3
		2	To understand the importance of protecting natural resources, ecosystems for future generations and pollution causes due to the day-to-day activities of human life	K4
		3	To save earth from the inventions by the engineers.	K3
23HS4T01	universal human values – understanding harmony and ethical human conduct	1	Define the terms like Natural Acceptance, Happiness and Prosperity	K1,K2
		2	Identify one‘s self, and one‘s surroundings (family, society nature)	K1,K2
		3	Apply what they have learnt to their own self in different day-to-day settings in real life	K3
		4	Relate human values with human relationship and human society.	K4
		5	Justify the need for universal human values and harmonious existence	K5
		6	Develop as socially and ecologically responsible engineers	K3,K6

ACADEMIC YEAR: 2024-2025 SEMESTER: IV REGULATION: R23

Course Code	Course Name	CO No	CO Statement	Knowledge Level
23EE4T04	Linear Control Systems	1	Classify control systems and represent in various models	K2
		2	Apply standard test signals to a system to determine their characteristics	K3
		3	Make use of stability concepts to obtain the desired characteristics	K3
		4	Determine the characteristics of a linear control system using various time and frequency domain tools	K5
		5	Design Lag, Lead, Lag-Lead compensators to improve system performance	56
23EC4T01	Electromagnetic Waves And Transmission lines	1	Determine the basics of Electrostatics by using Coulomb‘s law and Gauss law.	K3
		2	Illustrate Magneto statics and Max well Equations of Electromagnetic fields, depending up on the media	K3
		3	AnalyzetheElectromagneticWavePropagationindielectricandconductingmedia.	K4
		4	Focus on propagation problems of Electromagnetic Waves through Transmission Lines and its design.	K4
23CS4T02	Electronic Circuit Analysis	1	Differentiate hybrid- π parameters at high frequency with low frequency parameters	K4
		2	Demonstrate the cascading of single stage amplifiers ,feedback amplifiers and derive the overall voltage gain	K3
		3	Illustrate the basic principle of oscillator circuits and perform the analysis of different oscillator circuits	K4
		4	Compare and analyze different Power amplifiers like Class A, Class B, Class C, Class AB and other types of amplifiers	K4
23EC4T03	Analog Communications		Demonstrate the Modulation and Demodulation techniques of standard AM,DSBSC,SSB and VSB	K3
			Analyze the concepts of generation and detection of Angle Modulated signals.	K4
			Outline the Radio Transmitters and Radio Receivers with different sections.	K4
			Illustrate the noise performance in Analog Modulation techniques and also the concepts of Pulse Analog Modulation and Demodulation techniques	K3

ACADEMIC YEAR: 2024-2025 SEMESTER: IV REGULATION: R23

Course Code	Course Name	CO No	CO Statement	Knowledge Level
23EC4L01	Signals And Systems Lab	1	Demonstrate the graphical shapes of basic functions	K3
		2	Differentiate the Energy and Power signals	K4
		3	Determine the convolution and deconvolution in different signals	K3
		4	Examine the Laplace and Z-Transformations on different analog and discrete signals	K3
23EC4L02	Electronic Circuit Analysis Lab	1	Experiment the different Feedback Amplifiers	K3
		2	Distinguish the various Oscillator circuits	K4
		3	Construct the different multistage amplifier circuits	K3
		4	Analyze the various power amplifiers	K4
23EC4S01	Soft Skills	1	Assimilate and understood the meaning and importance of soft skills and learn how to develop them.	K1
		2	Understand the significance of soft skills in the working environment for professional excellence.	K2
		3	Prepare to undergo the placement process with confidence and clarity.	K3
		4	Ready to face any situation in life and equip themselves to handle them effectively.	K6
		5	Understand and learn the importance of etiquette in both professional and personal life	K2
23EC4Z01	Design Thinking & Innovation	1	Outline the concepts related to design thinking.	K2
		2	Interpret the fundamentals of Design Thinking and innovation.	K2
		3	Apply the design thinking techniques for solving problems in various sectors	K3
		4	Analyze to work in a multidisciplinary environment	K4
		5	Evaluate the value of creativity	K5