Mar Ephraem College of Engineering and Technology

Catholic Diocese of Marthandam

Approved by AICTE. Affiliated to Anna University, Chennai

Department of Electrical and Electronics Engineering

Course Outcome of 2021 regulation

Semester	Subject code	Subject	CO	CO Statement
III	MA3303	PROBABILITY AND COMPLEX FUNCTIONS	CO1	Understand the fundamental knowledge of the concepts of probability and have knowledge of standard distributions which can describe real life phenomenon.
			CO2	Understand the basic concepts of one and two dimensional random variables and applyin engineering applications.
			CO3	To develop an understanding of the standard techniques of complex variable theory in particular analytic function and its mapping property.
			CO4	To familiarize the students with complex integration techniques and contour integration techniques which can be used in real integrals.
			CO5	To acquaint the students with Differential Equations which are significantly used in engineering problems.
III	EE3301	ELECTROMAGNETIC FIELDS	CO1	Visualize and explain Gradient, Divergence, and Curl operations on electromagneticvector fields and identify the electromagnetic sources and their effects.
			CO2	Compute and analyse electrostatic fields, electric potential, energy density along withtheir applications.
			CO3	Compute and analyse magneto static fields, magnetic flux density, vector potential along with their applications.
			CO4	Explain different methods of emf generation and Maxwell's equations
			CO5	Explain the concept of electromagnetic waves and characterizing parameters
III	EE3302	DIGITAL LOGIC CIRCUITS	CO1	Explain various number systems and characteristics of digital logic families
			CO2	Apply K-maps and Quine McCluskey methods to simplify the given Boolean expressions
			CO3	Explain the implementation of combinational circuit such as multiplexers and de multiplexers - code converters, adders, subtractors, Encoders and Decoders
			CO4	Design various synchronous and asynchronous circuits using Flip Flops

			CO5	Explain asynchronous sequential circuits and programmable logic devices
			CO6	Use VHDL for simulating and testing RTL, combinatorial and sequential circuits
III	EC3301	**ELECTRON DEVICES AND CIRCUITS**	C01	Explain the structure and operation of PN junction devices (diode, Zener diode, LED andLaser diode)
			CO2	Design clipper, clamper, half wave and full wave rectifier, regulator circuits using PNjunction diodes
			CO3	Analyse the structure and characteristics BJT, FET, MOSFET, UJT, Thyristor and IGBT
			CO4	Analyse the performance of various configurations of BJT and MOSFET based amplifier
			CO5	Explain the characteristics of MOS based cascade and differential amplifier
			CO6	Explain the operation of various feedback amplifiers and oscillators
III	EE3303	**ELECTRICAL MACHINES-1**	CO1	Apply the laws governing the electromechanical energy conversion for singly and multipleexcited systems. Compute various performance parameters of the machine, by conducting suitable tests.
			CO2	Explain the construction and working principle of DC machines.
			CO3	Interpret various characteristics of DC machines.
			CO4	Compute various performance parameters of the machine, by conducting suitable tests.
			CO5	Draw the equivalent circuit of transformer and predetermine the efficiency and regulation.
			CO6	Describe the working principle of auto transformer, three phase transformer withdifferent types of connections.
III	CS3353	**C PROGRAMMING AND DATA STRUCTURES**	CO1	Developing c program for real world/technical applications.
			CO2	Apply advanced features of c in solving problems.
			CO3	Write functions to implement linear and non–linear data structure operations
			CO4	Suggest and use appropriate linear/non–linear data structure operations for solving a givenproblem.
			CO5	Appropriately use sort and search algorithms for a given application.
			CO6	Apply appropriate hash functions that result in a collision free scenario for data storage and retrieval.
III	EC3311	**ELECTRONIC DEVICES AND CIRCUITS LABORATORY**	CO1	Analyse the characteristics of PN, Zener diode and BJT in CE,CC,CB configurationsexperimentally
			CO2	Analyse the characteristics of JFET and UJT experimentally
			CO3	Analyse frequency response characteristics of a Common Emitter amplifierexperimentally
			CO4	Analyse the characteristics of RC phase shift and LC oscillators experimentally
			CO5	Analyse the characteristics of half-wave and full-wave rectifier with and without filters experimentally

			CO6	Analyse the characteristics of FET based differential amplifier experimentally
			CO7	Calculate the frequency and phase angle using CRO experimentally
			CO8	Analyse the frequency response characteristics of passive filters experimentally
III	EE3311	**ELECTRICAL MACHINES LABORATORY - I**	CO1	Construct the circuit with appropriate connections for the given DC machine/transformer.
			CO2	Experimentally determine the characteristics of different types of DC machines.
			CO3	Demonstrate the speed control techniques for a DC motor for industrial applications.
			CO4	Identify suitable methods for testing of transformer and DC machines.
			CO5	Predetermine the performance parameters of transformers and DC motor.
			CO6	Understand DC motor starters and 3-phase transformer connections.
III	CS3362	**C PROGRAMMING AND DATA STRUCTURES LABORATORY**	CO1	Use different constructs of C and develop applications
			CO2	write functions to implement linear and non-linear data structure operations
			CO3	Suggest and use the appropriate linear / non-linear data structure operations for a given problem
			CO4	Apply appropriate hash functions that result in a collision free scenario for data storage and Retrieval
			CO5	Implement Sorting and searching algorithms for a given application
IV	GE3451	**ENVIRONMENTAL SCIENCES AND SUSTAINABILITY**	CO1	To recognize and understand the functions of environment, ecosystems and biodiversity and their conservation.
			CO2	To identify the causes, effects of environmental pollution and natural disasters and contributeto the preventive measures in the society.
			CO3	To identify and apply the understanding of renewable and non-renewable resources and contribute to the sustainable measures to preserve them for future generations
			CO4	To recognize the different goals of sustainable development and apply them for suitable technological advancement and societal development.
			CO5	To demonstrate the knowledge of sustainability practices and identify green materials, energy cycles and the role of sustainable urbanization.

IV	EE3401	TRANSMISSION AND DISTRIBUTION	CO1	Understand the structure of power system, computation of transmission line parameters for different configurations.
			CO2	Model the transmission lines to determine the line performance and to understand the impactof Ferranti effect and corona on line performance.
			CO3	Do Mechanical design of transmission lines, grounding and to understand about the insulatorsin transmission system.
			CO4	Design the underground cables and understand the performance analysis of undergroundcable.
			CO5	Understand the modelling, performance analysis and modern trends in distribution system.
IV	EE3402	LINEAR INTEGRATED CIRCUITS	CO1	Explain monolithic IC fabrication process
			CO2	Explain the fabrication of diodes, capacitance, resistance, FETs and PV Cell.
			CO3	Analyse the characteristics and basic applications (inverting/non-inverting amplifier, summer, differentiator, integrator, V/I and I/V converter) of Op-Amp
			CO4	Explain circuit and applications of op-amp based instrumentation amplifier, log/antilog amplifier, analog multiplier /divider, active filters, comparators, waveform generators, A/D and D/A converters
			CO5	Explain Functional blocks, characteristics and applications of Timer, PLL, analog multiplier ICs.
			CO6	Explain the applications of ICs in Instrumentation amplifier, fixed and variable voltage regulator, SMPS and function generator
IV	EE3403	MEASUREMENTS AND INSTRUMENTATION	CO1	Ability to understand the fundamental art of measurement in engineering.
			CO2	Ability to understand the structural elements of various instruments
			CO3	Ability to understand the importance of bridge circuits.
			CO4	Ability to understand about various transducers and their characteristics by experiments.
			CO5	Ability to understand the concept of digital instrumentation and virtual instrumentation by experiments.
IV	EE3404	MICROPROCESSOR AND MICROCONTROLLER	CO1	Ability to write assembly language program for microprocessor and microcontroller
			CO2	Ability to design and implement interfacing of peripheral with microprocessor and Microcontroller
			CO3	Ability to analyse, comprehend, design and simulate microprocessor based systems used for control and monitoring.
			CO4	Ability to analyse, comprehend, design and simulate

				microcontroller basedsystems used for control and monitoring.
			CO5	Ability to understand and appreciate advanced architecture evolving microprocessor field
IV	EE3405	ELECTRICAL MACHINES - II	CO1	Ability to understand the construction and working principle of Synchronous generator
			CO2	Ability to understand the construction and working principle of Synchronous Motor
			CO3	Ability to understand the construction and working principle of Three Phase Induction Motor
			CO4	Acquire knowledge about the starting and speed control of induction motors.
			CO5	To gain knowledge about the basic principles and working of Single phase inductionmotors and Special Electrical Machines.
IV	EE3411	ELECTRICAL MACHINES LABORATORY - II	CO1	Ability to understand and analyse EMF and MMF methods
			CO2	Ability to analyse the characteristics of v curves
			CO3	Acquire hands on experience of conducting various tests on alternators and obtainingtheir performance indices using standard analytical as well as graphical methods to understand the importance of Synchronous machines
			CO4	Acquire hands on experience of conducting various tests on induction motors and obtaining their performance indices using standard analytical as well as graphical methods. to understand the importance of single and three phase Induction motors
			CO5	Ability to acquire knowledge on separation of losses
IV	EE3412	LINEAR AND DIGITAL CIRCUITS LABORATORY	CO1	Ability to understand and implement Boolean Functions.
			CO2	Ability to understand code conversion
			CO3	Ability to Design and implement circuits with digital ICs like decoders, multiplexers,register.
			CO4	Ability to acquire knowledge on Application of Op-Amp
			CO5	Ability to Design and implement counters using analog ICs like timers, VCOs and digitalICs like Flip-flops and counters.

IV	EE3413	MICROPROCESSOR AND MICROCONTROLLER LABORATORY	CO1	Ability to write assembly language program for microprocessor
			CO2	Ability to write assembly language program for microcontroller
			CO3	Ability to design and implement interfacing of peripheral with microprocessor andmicrocontroller
			CO4	Ability to analyse, comprehend, design and simulate microprocessor based systemsused for control and monitoring
			CO5	Ability to analyse, comprehend, design and simulate microcontroller based systems usedfor control and monitoring.