Second Year

Electronics & Telecommunication Engineering (2019 Course)

Course Outcome & Course Outcomes

Sr. No.	Name of the subject	Engineering Mathematics –III
1	Course Objectives 1	To make the students familiarize with concepts and techniques in Ordinary differential equations, Fourier Transform, Z-Transform, Numerical methods, Vector calculus and functions of a Complex variable.
	Course Objectives 2	The aim is to equip them with the techniques to understand advanced level mathematics and its applications that would enhance analytical thinking power, useful in their disciplines
	Course Outcomes 1	Solve higher order linear differential equation using appropriate techniques for modelling, analyzing of electrical circuits and control systems.
	Course Outcomes 2	Apply concept of Fourier transform & Z-transform and its applications to continuous & discrete systems, signal & image processing and communication systems.
	Course Outcomes 3	Obtain Interpolating polynomials, numerically differentiate and integrate functions, numerical solutions of differential equations using single step and multi-step iterative methods used in modern scientific computing.
	Course Outcomes 4	Perform vector differentiation & integration, analyze the vector fields and apply to electro- magnetic fields & wave theory.
	Course Outcomes 5	Analyze Complex functions, conformal mappings, Contour integration applicable to electrostatics, digital filters, signal and image processing
2	Name of the subject	Electronic Circuits
	Course Objectives 1	Semiconductor device MOSFET, its characteristics, parameters & applications.
	Course Objectives 2	Concepts of feedbacks in amplifiers & oscillators
	Course Objectives 3	Operational amplifier, concept, parameters & applications.
	Course Objectives 4	ADC, DAC as an interface between analog & digital domains.
	Course Objectives 5	Voltage to current and current to voltage converters.
	Course Objectives 6	Concepts, characteristics & applications of PLL.
	Course Outcomes 1	Assimilate the physics, characteristics and parameters of MOSFET towards its

		application as amplifier.
	Course Outcomes 2	Design MOSFET amplifiers, with and without feedback, & MOSFET oscillators, for given specifications.
	Course Outcomes 3	Analyze and assess the performance of linear and switching regulators, with their variants, towards applications in regulated power supplies.
	Course Outcomes 4	Explain internal schematic of Op-Amp and define its performance parameters.
	Course Outcomes 5	Design, Build and test Op-amp based analog signal processing and conditioning circuits towards various real time applications.
	Course Outcomes 6	Understand and compare the principles of various data conversion techniques and PLL with their applications.
3	**Name of the subject**	**Digital Circuits**
	Course Objectives 1	The fundamental principles of two-valued logic and various devices used to implement logical operations on variables.
	Course Objectives 2	Boolean algebra, Karnaugh maps and its application to the design and characterization of digital circuits
	Course Objectives 3	To analyze logic processes and implement logical operations using combinational logic circuits.
	Course Objectives 4	The principles of logic design and use of simple memory devices, flip-flops, and sequential circuits
	Course Objectives 5	Concepts of sequential circuits and to analyze sequential systems in terms of state machines.
	Course Objectives 6	System design approach using programmable logic devices.
	Course Outcomes 1	Identify and prevent various hazards and timing problems in a digital design.
	Course Outcomes 2	Use the basic logic gates and various reduction techniques of digital logic circuit.
	Course Outcomes 3	Analyze, design and implement combinational logic circuits.
	Course Outcomes 4	Analyze, design and implement sequential circuits.
	Course Outcomes 5	Differentiate between Mealy and Moore machines.
	Course Outcomes 6	Analyze digital system design using PLD.
4	**Name of the Subject**	**Electrical Circuits**
	Course Objectives 1	To analyze simple DC and AC circuits with circuit simplification techniques.
	Course Objectives 2	To formulate and analyze driven and source free RL and RC circuits.
	Course Objectives 3	To formulate & determine network parameters for given network.
	Course Objectives 4	To understand the constructional details, characteristics, features and application areas of various types of electric motors.

	Course Outcomes 1	Analyze the simple DC and AC circuit with circuit simplification techniques.
	Course Outcomes 2	Formulate and analyze driven and source free RL and RC circuits.
	Course Outcomes 3	Formulate & determine network parameters for given network and analyze the given network using Laplace Transform to find the network transfer function.
	Course Outcomes 4	Explain construction, working and applications of DC Machines / Single Phase & Three Phase AC Motors.
	Course Outcomes 5	Explain construction, working and applications of special purpose motors & understand motors used in electrical vehicles.
	Course Outcomes 6	Analyze and select a suitable motor for different applications.
5	**Name of the subject**	**Data Structures**
	Course Objectives 1	To learn different sorting and searching algorithms and their analysis.
	Course Objectives 2	To learn linear data structures: Stack and Queue, Linked List and their applications.
	Course Objectives 3	To learn nonlinear data structures: Tree, Graph and their applications.
	Course Objectives 4	To study the systematic ways of solving problem, various methods of organizing large amount of data.
	Course Objectives 5	To solve problems using data structures such as binary tree, binary search tree, and graph and writing programs.
	Course Outcomes 1	Solve mathematical problems using C programming language.
	Course Outcomes 2	Implement sorting and searching algorithms and calculate their complexity.
	Course Outcomes 3	Develop applications of stack and queue using array.
	Course Outcomes 4	Demonstrate applicability of Linked List.
	Course Outcomes 5	Demonstrate applicability of nonlinear data structures - Binary Tree with respect to its time complexity.
	Course Outcomes 6	Apply the knowledge of graph for solving the problems of spanning tree and shortest path algorithm.
6	**Name of the subject**	**Signals & Systems**
	Course Objectives 1	To understand the mathematical representation of continuous and discrete time signals and systems.
	Course Objectives 2	To classify signals and systems into different categories
	Course Objectives 3	To analyze Linear Time Invariant (LTI) systems in time and transform domains.
	Course Objectives 4	To build basics for understanding of courses such as signal processing, control system and communication.

	Course Objectives 5	To develop basis of probability and random variables.
	Course Outcomes 1	Identifyclassify basic signals and perform operations on signals.
	Course Outcomes 2	Identify, Classify the systems based on their properties in terms of input output relation and in terms of impulse response and will be able to determine the convolution between to signals.
	Course Outcomes 3	Analyze and resolve the signals in frequency domain using Fourier series and Fourier Transform.
	Course Outcomes 4	Resolve the signals in complex frequency domain using Laplace Transform, and will be able to apply and analyze the LTI systems using Laplace Transforms.
	Course Outcomes 5	Define and describe the probability, random variables and random signals. Compute the probability of a given event, model, compute the CDF and PDF.
	Course Outcomes 6	Compute the mean, mean square, variance and standard deviation for given random variables using PDF.
7	**Name of the subject**	**Control Systems**
	Course Objectives 1	To Introduce elements of control system and their modeling using various Techniques
	Course Objectives 2	To get acquainted with the methods for analyzing the time response and Stability of System
	Course Objectives 3	To Introduce and analyze the frequency response and Stability of System
	Course Objectives 4	To Introduce concept of root locus, Bode plots, Nyquist plots.
	Course Objectives 5	To Introduce State Variable Analysis method.
	Course Objectives 6	To get acquainted with Concepts of PID controllers and IoT based Industrial Automation.
	Course Outcomes 1	Determine and use models of physical systems in forms suitable for use in the analysis and design of control systems.
	Course Outcomes 2	Determine the (absolute) stability of a closed-loop control system.
	Course Outcomes 3	Perform time domain analysis of control systems required for stability analysis.
	Course Outcomes 4	Perform frequency domain analysis of control systems required for stability analysis.
	Course Outcomes 5	Apply root-locus, Frequency Plots technique to analyze control systems.
	Course Outcomes 6	Express and solve system equations in state variable form.
	Course Outcome 7	Differentiate between various digital controllers and understand the role of the controllers in Industrial automation.
8	**Name of the subject**	**Principles of Communication Systems**

Internal Correspondence For Department

	Course Objectives 1	To equip/ familiarize students with basic mathematical tools for time and frequency domain analysis of communication signal and systems.
	Course Objectives 2	To acquaint the students with the fundamental principles of modulation process and different amplitude and angle modulation systems.
	Course Objectives 3	To introduce the students with the concept of Sampling theorem and pulse modulation techniques PAM, PWM, PPM.
	Course Objectives 4	To impart pre-requisites of digital communication systems and explore digital representation techniques like PCM, DPCM, DM and ADM.
	Course Objectives 5	To highlight the issues in baseband digital transmission such as data representation, synchronization, multiplexing and ISI.
	Course Outcomes 1	To compute & compare the bandwidth and transmission power requirements by analyzing time and frequency domain spectra of signal required for modulation schemes under study.
	Course Outcomes 2	Describe and analyze the techniques of generation, transmission and reception of Amplitude Modulation Systems.
	Course Outcomes 3	Explain generation and detection of FM systems and compare with AM systems.
	Course Outcomes 4	Exhibit the importance of Sampling Theorem and correlate with Pulse Modulation technique (PAM, PWM, and PPM).
	Course Outcomes 5	Characterize the quantization process and elaborate digital representation techniques (PCM, DPCM, DM and ADM).
	Course Outcomes 6	Illustrate waveform coding, multiplexing and synchronization techniques and articulate their importance in baseband digital transmission.
9	**Name of the subject**	**Object Oriented Programming**
	Course Objectives 1	Make the students familiar with basic concepts and techniques of object oriented programming in C++ To acquaint the students with the fundamental principles of modulation process and different amplitude and angle modulation systems.
	Course Objectives 2	Develop an ability to write programs in C++ for problem solving.
	Course Outcomes 1	Describe the principles of object oriented programming.
	Course Outcomes 2	Apply the concepts of data encapsulation, inheritance in C++.
	Course Outcomes 3	Understand Operator overloading and friend functions in C++.
	Course Outcomes 4	Apply the concepts of classes, methods inheritance and polymorphism to write programs C++.
	Course Outcomes 5	Apply Templates, Namespaces and Exception Handling concepts to write programs in C++.
	Course Outcomes 6	Describe and use of File handling in C++.

10	**Name of the subject**	**Employability Skills Development**
	Course Objectives 1	Develop good communication skills – both oral as well as written.
	Course Objectives 2	Encourage creative and critical thinking among students.
	Course Objectives 3	Nurture collaborative behavior to work efficiently in groups.
	Course Outcomes 1	Define personal and career goals using introspective skills and SWOC assessment. Outline and evaluate short-term and long-term goals.
	Course Outcomes 2	Develop effective communication skills (listening, reading, writing, and speaking), self- management attributes, problem solving abilities and team working & building capabilities in order to fetch employment opportunities and further succeed in the workplace.
	Course Outcomes 3	Be a part of a multi-cultural professional environment and work effectively by enhancing inter-personal relationships, conflict management and leadership skills.
	Course Outcomes 4	Comprehend the importance of professional ethics, etiquettes & morals and demonstrate sensitivity towards it throughout certified career.
	Course Outcomes 5	Develop practically deployable skill set involving critical thinking, effective presentations and leadership qualities to hone the opportunities of employability and excel in the professional environment.
11	**Name of the subject**	**Project Based Learning**
	Course Objectives 1	To emphasize project based learning activities that are long-term, interdisciplinary and student-centric.
	Course Objectives 2	To inculcate independent and group learning by solving real world problem with the help of available resources.
	Course Objectives 3	To be able to develop application based on the fundamentals of electronics and communication engineering by possibly the integration of previously acquired knowledge.
	Course Objectives 4	To get practical experience in all steps in the life cycle of the development of electronic systems: specification, design, implementation, and testing.
	Course Objectives 5	To be able to select and utilize appropriate hardware and software tools to design and analyze the proposed system.
	Course Objectives 6	To provide every student the opportunity to get involved either individually or as a group so as to develop team skills and learn professionalism.
	Course Outcomes 1	Identify the real-world problem (possibly of interdisciplinary nature) through a rigorous literature survey and formulate / set relevant aim and objectives.
	Course Outcomes 2	Contribute to society through proposed solution by strictly following professional ethics and safety measures.
	Course Outcomes 3	Propose a suitable solution based on the fundamentals of electronics and

		communication engineering by possibly the integration of previously acquired knowledge.
	Course Outcomes 4	Analyze the results and arrive at valid conclusion.
	Course Outcomes 5	Use of technology in proposed work and demonstrate learning in oral and written form.
	Course Outcomes 6	Develop ability to work as an individual and as a team member.

Head of the department

Electronics & Telecommunication Engineering

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