List of POs

PO1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems

PO2. Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7. Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

List of PEOs

PEO1. To produce graduates with understanding of fundamentals and applications of Electronics and Communication Engineering.

PEO2. To hone graduates with ability to apply, analyse, design and develop electronic systems.

PEO3. To enhance graduates with latest technologies to enable them to engineer products for real world problems.

PEO4. To build leadership qualities, management skills, communication skills, moral values & team spirit.

PEO5. Involve in lifelong self-learning, career enhancement and adapt to changing multidisciplinary professional and social needs.

List of PSOs

PSO 1. Should be able to clearly understand the concepts and applications in the field of Communication/networking, signal processing, embedded systems and semiconductor technology.

PSO 2. Should be able to associate the learning from the courses related to Microelectronics, Signal processing, Microcomputers, Embedded and Communication Systems to arrive at solutions to real world problems.

PSO 3. Able to apply the concepts of Electronics and Communications to design the products in the field of VLSI, Embedded systems, Networking and Automation.

PSO 4. Demonstrate and implement variety of automation system by controlling, processing different signals according to the required specifications keeping in mind it's societal and environment effect.

PSO 5. An ability to make use of acquired technical knowledge to get employed in the field of Electronics and Communication.

Course Objectives and Outcomes (COs)

Course Name: COMPLEX VARIABLES AND TRANSFORMS

Course Objectives:

This course aims at providing the student to acquire the knowledge on the calculus of functions of complex variables. The student develops the idea of using continuous/discrete transforms.

Course Outcomes (CO): Student will be able to

- Understand the analyticity of complex functions and conformal mappings.
- Apply cauchy's integral formula and cauchy's integral theorem to evaluate improper integrals along contours.
- Understand the usage of laplace transforms, fourier transforms and z transforms.
- Evaluate the fourier series expansion of periodic functions.

• Understand the use of fourier transforms and apply z transforms to solve difference equations.

Course Name: SIGNALS AND SYSTEMS

Course Objectives:

- To introduce students to the basic idea of signal and system analysis and its characterization in time and frequency domains.
- To present Fourier tools through the analogy between vectors and signals.
- To teach concept of sampling and reconstruction of signals.
- To analyze characteristics of linear systems in time and frequency domains.
- To understand Laplace and z-transforms as mathematical tool to analyze continuous and discrete-time signals and systems.

Course Outcomes (CO):

- Understand the mathematical description and representation of continuous-time and discrete-time signals and systems. Also understand the concepts of various transform techniques.
- Apply sampling theorem to convert continuous-time signals to discrete-time signals and reconstruct back, different transform techniques to solve signals and system related problems.
- Analyze the frequency spectra of various continuous-time and discrete-time signals using different transform methods.
- Classify the systems based on their properties and determine the response of them.

Course Name: ELECTRICAL ENGINEERING

Course Objectives:

- Distinguish between classical method and Laplace transform approach in analyzing
- transient phenomenon in DC excitations
- Understand and design the different types of filters.
- To know about various characteristics of DC Generators and motors.

- To know about principle of operation of a DC machine working as a generator and motor.
- To understand computation and predetermination of regulation of a 1-ϕ transformer.
- To know about principle of operation of three phase induction motor.

Course Outcomes (COs):

- Able to acquire knowledge about how to determine the transient response of R-L, R-C, R-L-C series circuits for D.C and A.C excitations.
- Able to solve the problems on R L C circuits for different excitations using different approaches.
- Analyze the complex circuits of R L C circuits.
- Able to solve the problems the e.m.f. generated on DC Generator
- Able to acquire knowledge about how to determine the efficiency and regulation of single-phase transformer and synchronous machine. Complex variables and Transforms.

Course Name: ANALOG CIRCUITS

Course Objectives:

- To review analysis & design of single stage amplifiers using BJT & MOSFETs at low and high frequencies.
- To understand the characteristics of Differential amplifiers, feedback and power amplifiers.
- To examine the response of tuned amplifiers and multivibrators
- To categorize different oscillator circuits based on the application
- To design the electronic circuits for the given specifications and for a given application.

Course Outcomes (CO):

- Understand the characteristics of differential amplifiers, feedback and power amplifiers. (L2)

- Examine the frequency response of multistage and differential amplifier circuits using BJT & MOSFETs at low and high frequencies. (L3)
- Investigate different feedback and power amplifier circuits based on the application. (L4)
- Derive the expressions for frequency of oscillation and condition for oscillation of RC and LC oscillator circuits. (L4)
- Evaluate the performance of different tuned amplifiers and multivibrators (L5)
- Design analog circuits for the given specifications and application. (L6)

Course Name: MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS

Course Objectives:

- To inculcate the basic knowledge of micro economics and financial accounting
- To make the students learn how demand is estimated for different products, input-output
- relationship for optimizing production and cost
- To Know the Various types of market structure and pricing methods and strategy
- To give an overview on investment appraisal methods to promote the students to learn how to plan long-term investment decisions.
- To provide fundamental skills on accounting and to explain the process of preparing financial statements

Course Outcomes (CO):

- Define the concepts related to Managerial Economics, financial accounting and management.
- Understand the fundamentals of Economics viz., Demand, Production, cost, revenue and markets
- Apply the Concept of Production cost and revenues for effective Business decision
- Analyze how to invest their capital and maximize returns
- Evaluate the capital budgeting techniques

- Develop the accounting statements and evaluate the financial performance of business entity.

Course Name: SIMULATION LAB

Course Objectives:

- To realize the concepts studied in theory
- To simulate various Signals and Systems through MATLAB
- To apply the concepts of signals to determine their energy, power, psd etc.
- To analyze the output of a system when it is excited by different types of deterministic and random signals.
- To generate random signals for the given specifications

Course Outcomes (CO):

- Learn how to use the MATLAB software and know syntax of MATLAB programming.
- Understand how to simulate different types of signals and system response.
- Find the Fourier Transform of a given signal and plot amplitude and phase characteristics.
- Analyze the response of different systems when they are excited by different signals and plot power spectral density of signals.
- Generate/Simulate different random signals for the given specifications

Course Name: ELECTRICAL ENGINEERING LAB

Course Objectives:

- Understand and experimentally verify various resonance circuits
- Apply and experimentally analyze two port network parameters
- To do experiments on DC Machines
- To do experiments on AC Machines

Course Outcomes (CO):

- To determine the various parameters experimentally

- To understand various characteristics of DC generators and DC motors
- To predetermine the efficiency and regulation of a 1-ϕ transformer.

Course Name: ANALOG CIRCUITS LAB

Course Objectives:

- To review analysis & design of single stage amplifiers using BJT & MOSFETs at low and
- high frequencies.
- To understand the characteristics of Differential amplifiers, feedback and power
- amplifiers.
- To examine the response of tuned amplifiers and multivibrators
- To categorize different oscillator circuits based on the application
- To design the electronic circuits for the given specifications and for a given application.

Course Outcomes (CO):

- Know about the usage of equipment/components/software tools used to conduct the experiments in analog circuits.
- Conduct the experiment based on the knowledge acquired in the theory about various analog circuits using BJT/MOSFETs to find the important parameters of the circuit (viz. Voltage gain, Current gain, bandwidth, input and output impedances etc) experimentally.
- Analyze the given analog circuit to find required important metrics of it theoretically.
- Draw the relevant graphs between important metrics of the system from the observed measurements.
- Compare the experimental results with that of theoretical ones and infer the conclusions.
- Design the circuit for the given specifications.

Course Name: Application Development with Python

Course Objectives:

- To learn the basic concepts of software engineering and life cycle models
- To explore the importance of Databases in application Development
- Acquire programming skills in core Python
- To understand the importance of Object-oriented Programming

Course Outcomes (CO):

Students should be able to

- Identify the issues in software requirements specification and enable to write SRS documents
- for software development problems
- Explore the use of Object-oriented concepts to solve Real-life problems
- Design database for any real-world problem
- Solve mathematical problems using Python programming language

Course Name: UNIVERSAL HUMAN VALUES

Course Objectives:

The objective of the course is fourfold:

- Development of a holistic perspective based on self-exploration about themselves (human being), family, society and nature/existence.
- Understanding (or developing clarity) of the harmony in the human being, family, ociety and nature/existence
- Strengthening of self-reflection.
- Development of commitment and courage to act.

Course Outcomes (CO):

By the end of the course,

- Students are expected to become more aware of themselves, and their surroundings (family, society, nature)

- They would become more responsible in life, and in handling problems with sustainable solutions, while keeping human relationships and human nature in mind.
- They would have better critical ability.
- They would also become sensitive to their commitment towards what they have understood (human values, human relationship and human society).
- It is hoped that they would be able to apply what they have learnt to their own self in different day-to-day settings in real life, at least a beginning would be made in this direction.

COURSE NAME: PROBABILITY THEORY AND STOCHASTIC PROCESS

Course Objectives:

- To gain the knowledge of the basic probability concepts and acquire skills in handling
- situations involving more than one random variable and functions of random variables.
- To understand the principles of random signals and random processes.
- To be acquainted with systems involving random signals.
- To gain knowledge of standard distributions that can describe real life phenomena

Course Outcomes (CO):

- Understanding the concepts of Probability, Random Variables, Random Processes and their characteristics learn how to deal with multiple random variables, conditional probability, joint distribution and statistical independence. (L1)
- Formulate and solve the engineering problems involving random variables and random processes. (L2)
- Analyze various probability density functions of random variables. (L3)
- Derive the response of linear system for Gaussian noise and random signals as inputs. (L3)

COURSE NAME: DIGITAL LOGIC DESIGN

Course Objectives:

- To familiarize with the concepts of different number systems and Boolean algebra.
- To introduce the design techniques of combinational, sequential logic circuits.
- To model combinational and sequential circuits using HDLs.

Course Outcomes (CO):

- Understand the properties of Boolean algebra, other logic operations, and minimization of
- Boolean functions using Karnaugh map.
- Make use of the concepts to solve the problems related to the logic circuits.
- Analyze the combinational and sequential logic circuits.
- Develop digital circuits using HDL, and Compare various Programmable logic devices
- Design various logic circuits using Boolean algebra, combinational and sequential logic circuits.

COURSE NAME: ELECTROMAGNETIC WAVES AND TRANSMISSION LINES

Course Objectives:

- To introduce fundamentals of static and time varying electromagnetic fields.
- To teach problem solving in Electromagnetic fields using vector calculus.
- To demonstrate wave concept with the help of Maxwell's equations.
- To introduce concepts of polarization and fundamental theory of electromagnetic waves in transmission lines and their practical applications.
- To analyze reflection and refraction of electromagnetic waves propagated in normal and oblique incidences.

Course Outcomes (CO):

- Explain basic laws of electromagnetic fields and know the wave concept. (L2)
- Solve problems related to electromagnetic fields. (L3)
- Analyze electric and magnetic fields at the interface of different media. (L3)
- Derive Maxwell's equations for static and time varying fields. (L3)
- Analogy between electric and magnetic fields. (L5)
- Describes the transmission lines with equivalent circuit and explain their characteristic with various lengths.

COURSE NAME: COMMUNICATION SYSTEMS

Course Objectives:

- To introduce various modulation and demodulation techniques of analog and digital
- communication systems.
- To analyze different parameters of analog and digital communication techniques.
- To Know Noise Figure in AM & FM receiver systems.
- To understand Function of various stages of AM, FM transmitters and Know Characteristics of
- AM &FM receivers.
- To analyze the performance of various digital modulation techniques in the presence of AWGN.
- To evaluate the performance of each modulation scheme to know the merits and demerits interms of bandwidth and power efficiency

Course Outcomes (CO):

- Recognize/List the basic terminology used in analog and digital communication techniques for transmission of information/data.
- Explain/Discuss the basic operation of different analog and digital communication systems at baseband and passband level.
- Compute various parameters of baseband and passband transmission schemes by applying basic engineering knowledge.
- Analyze/Investigate the performance of different modulation & demodulation techniques to solve complex problems in the presence of noise.
- Evaluate/Assess the performance of all analog and digital modulation techniques to know the merits and demerits of each one of them in terms of bandwidth and power efficiency.

COURSE NAME: LINEAR AND DIGITAL IC APPLICATIONS

Course Objectives:

- To introduce the basic building blocks of linear integrated circuits.
- To teach the linear and non-linear applications of operational amplifiers.
- To introduce the theory and applications of PLL.
- To introduce the concepts of waveform generation and introduce some special function ICs.
- Exposure to digital IC's

Course Outcomes (CO):

- List out the characteristics of Linear and Digital ICs.
- Discuss the various applications of linear & Digital ICs.
- Solve the application-based problems related to linear and digital ICs.
- Analyze various applications-based circuits of linear and digital ICs.
- Design the circuits using either linear ICs or Digital ICs from the given specifications.

COURSE NAME: DIGITAL LOGIC DESIGN LAB

Course Objectives:

- To understand various pin configurations of the Digital ICs used in the laboratory
- To conduct the experiments and verify the truth tables of various logic circuits.
- To analyze the logic circuits
- To design sequential and combinational logic circuits and verify their properties.
- To design of any sequential/combinational circuit using Hardware Description Language.

Course Outcomes (CO):

- Understand the pin configuration of various digital ICs used in the lab
- Conduct the experiment and verify the properties of various logic circuits.
- Analyze the sequential and combinational circuits.
- Design of any sequential/combinational circuit using Hardware/ HDL.

COURSE NAME: COMMUNICATION SYSTEMS LAB

Course Objectives:

- To understandthe basics of analog and digital modulation techniques.
- To Integrate theory with experiments so that the students appreciate the knowledge gained from the theory course.
- To design and implement different modulation and demodulation techniques and their applications.
- To develop cognitive and behavioral skills for performance analysis of various modulation techniques.

Course Outcomes (CO):

- Know about the usage of equipment/components/software tools used to conduct the experiments in analog and digital modulation techniques.
- Conduct the experiment based on the knowledge acquired in the theory about modulation and
- demodulation schemes to find the important metrics of the communication system experimentally.
- Analyze the performance of a given modulation scheme to find the important metrics of the system theoretically.
- Draw the relevant graphs between important metrics of the system from the observed measurements.
- Compare the experimental results with that of theoretical ones and infer the conclusions.

COURSE NAME: LINEAR AND DIGITAL IC APPLICATIONS LAB

Course Objectives:

The objective of the course is to learn design, testing and characterizing of circuit behaviour with digital and analog ICs.

Course Outcomes (CO):

- Understand the pin configuration of each linear/ digital IC and its functional diagram.
- Conduct the experiment and obtain the expected results.
- Analyze the given circuit/designed circuit and verify the practical observations with the analyzed results.
- Design the circuits for the given specifications using linear and digital ICs.
- Acquaintance with lab equipment about the operation and its use.

COURSE NAME: SOFT SKILLS

Course Objectives:

- To encourage all round development of the students by focusing on soft skills
- To make the students aware of critical thinking and problem-solving skills
- To develop leadership skills and organizational skills through group activities
- To function effectively with heterogeneous teams

Course Outcomes (CO):

By the end of the program students should be able to

- Memorize various elements of effective communicative skills
- Interpret people at the emotional level through emotional intelligence
- apply critical thinking skills in problem solving
- analyse the needs of an organization for team building
- Judge the situation and take necessary decisions as a leader
- Develop social and work-life skills as well as personal and emotional well-being.

COURSE NAME: DESIGN THINKING FOR INNOVATION

Course Objectives:

The objective of this course is to familiarize students with design thinking process as a tool for breakthrough innovation. It aims to equip students with design thinking skills and ignite the minds to create innovative ideas, develop solutions for real-time problems.

Course Outcomes (CO):

- Define the concepts related to design thinking.
- Explain the fundamentals of Design Thinking and innovation
- Apply the design thinking techniques for solving problems in various sectors.
- Analyse to work in a multidisciplinary environment
- Evaluate the value of creativity
- Formulate specific problem statements of real time issues

COURSE NAME: CONTROL SYSTEMS ENGINEERING

Course Objectives:

- To introduce concepts of open loop and closed loop systems, mathematical models of mechanical and electrical systems and concept of feedback.
- To describe characteristics of the given system in terms of the transfer function.
- To provide knowledge in analyzing the system response in time-domain and frequency domain
- To impart skills for designing different control systems for different applications as per given specifications.

- To introduce concepts of state variable analysis and design.

Course Outcomes:

- Identify open and closed loop control system
- Formulate mathematical model for physical systems
- Use standard test signals to identify performance characteristics of first and second-order
- Systems
- Analyze stability of the closed and open loop systems
- Design closed-loop control system to satisfy dynamic performance specifications using frequency response, root-locus, and state-space techniques.

COURSE NAME: DIGITAL SIGNAL PROCESSING

Course Objectives:

- To describe discrete time signals and systems.
- To teach importance of FFT algorithm for computation of Discrete Fourier Transform.
- To expose various implementations of digital filter structures.
- To present FIR and IIR Filter design procedures.
- To outline need of Multi-rate Processing.

Course Outcomes:

- Formulate difference equations for the given discrete time systems
- Apply FFT algorithms for determining the DFT of a given signal
- Compare FIR and IIR filter structures
- Design digital filter (FIR & IIR) from the given specifications
- Outline the concept of multirate DSP and applications of DSP.

COURSE NAME: MICROPROCESSORS AND MICROCONTROLLERS

Course Objectives:

- To introduce fundamental architectural concepts of microprocessors and microcontrollers.
- To impart knowledge on addressing modes and instruction set of 8086 and 8051
- To introduce assembly language programming concepts
- To explain memory and I/O interfacing with 8086 and 8051
- To introduce16 bit and 32-bit microcontrollers.

Course Outcomes:

- Distinguish between microprocessors & microcontrollers
- Develop assembly language programming
- Describe interfacing of 8086 with peripheral devices
- Design applications using microcontrollers

COURSE NAME: COMPUTER ARCHITECTURE & ORGANIZATION

Course Objectives:

The purpose of the course is to introduce principles of computer organization and the basic architectural concepts.

Course Outcomes:

- Understand the basics of instructions sets and their impact on processor design.
- Demonstrate an understanding of the design of the functional units of a digital computer system.
- Evaluate cost performance and design trade-offs in designing and constructing a computer processor including memory.
- Design a pipeline for consistent execution of instructions with minimum hazards.
- Recognize and manipulate representations of numbers stored in digital computers.

COURSE NAME: DIGITAL SIGNAL PROCESSING LAB

Course Outcomes:

- Implement various DSP Algorithms using software packages.
- Implement DSP algorithms with Digital Signal Processor.
- Analyze and observe magnitude and phase characteristics (Frequency response
- Characteristics) of digital IIR-Butterworth, Chebyshev filters.
- Analyze and observe magnitude and phase characteristics (Frequency response
- Characteristics) of digital FIR filters using window techniques.
- Analyze digital filters using Software Tools.

COURSE NAME: MICROPROCESSORS AND MICROCONTROLLERS LAB

Course Objectives:

To acquire the knowledge on microprocessors and microcontrollers, interfacing various peripherals, configure and develop programs to interface peripherals/sensors.

Course Outcomes:

- Formulate problems and implement algorithms using Assembly language.
- Develop programs for different applications.
- Interface peripheral devices with 8086 and 8051.
- Use Assembly/Embedded C programming approach for solving real world problems.

COURSE NAME: ANTENNAS&MICROWAVE ENGINEERING

Course Objectives:

- To enable the student to understand the basic principles in antenna and microwave system design
- To make the student to acquire knowledge in the area of various antenna designs.
- To enhance the student knowledge in the area of microwave components and antenna for
- practical applications.

Course Outcomes:

At the end of this course, the students will be able to

- Learn about the antenna's basics and wire antennas.
- Gain knowledge on few types of antennas, their operation and applications.
- Understand the uses of antenna arrays and analyze waveguides and resonators
- Analyze various microwave components and understand the principles of different microwave sources.
- Gain knowledge on microwave semiconductor devices and microwave measurements.

COURSE NAME: VLSI DESIGN

Course Objectives:

- To give exposure to different steps involved in fabrication of ICs using MOS transistor,
- CMOS/BICOM transistors and passive components.
- To provide knowledge on electrical properties of MOS &BICMOS devices to analyze the behavior of inverters designed with various loads.
- To provide concepts to design building blocks of data path of any system using gates.
- To teach about basic programmable logic devices and testing of CMOS circuits.

Course Outcomes:

- Acquire qualitative knowledge about the fabrication process of integrated circuit using MOS transistors,
- Draw the layout of any logic circuit which helps to understand and estimate parasitic of any logic circuit
- Design building blocks of data path using gates.
- Design simple memories using MOS transistors and can understand design of large memories
- Understand the concept of testing and adding extra hardware to improve testability of system

COURSE NAME: DATA COMMUNICATION &NETWORKS

Course Objectives:

To provide a solid conceptual understanding of the fundamentals of data communications and computer networks.

Course Outcomes:

- Understand the basics of data communication, networking, internet and their importance.
- Analyze the services and features of various protocol layers in data networks.
- Differentiate wired and wireless computer networks
- Analyse TCP/IP and their protocols.
- Recognize the different internet devices and their functions.

COURSE NAME: ELECTRONIC MEASUREMENTS AND INSTRUMENTATION

Course Objectives:

The objective of the course is to introduce the fundamentals of Electronics Instruments and Measurement providing an in-depth understanding of Measurement errors, Bridge measurements, Digital Storage Oscilloscope, Function Generator and Analyzer, Display devices, Data acquisition systems and transducers.

Course Outcomes:

- Explain operation of various instruments required in measurements
- Apply measurement techniques for different types of tests
- Select specific instruments for specific measurement function
- Use oscilloscope to determine frequency and phase of a sinusoidal signal
- Compare different types of bridge circuits
- Analyze various measuring techniques for both electrical and nonelectrical quantities

COURSE NAME: EMBEDDED SYSTEM DESIGN

Course Objectives:

- To teach the basics of an embedded system and RTOS.
- To introduce the typical components of an embedded system & different communication interfaces.
- To provide knowledge on the design process of embedded system applications

Course Outcomes:

- Identify hardware and software components of an embedded system
- Learn the basics of OS and RTOS
- Illustrate different Inter Process Communication (IPC) mechanisms used by
- tasks/process/tasks to communicate in multitasking environment
- Design simple embedded system-based applications

COURSE NAME: OPTICAL COMMUNICATIONS

Course Objectives:

- To understand the construction and characteristics of optical fibre cable.
- To develop the knowledge of optical signal sources and power launching.
- To identify and understand the operation of various optical detectors.
- To understand the design of optical systems and WDM.

Course Outcomes:

- At the end of the course, the student will be able to:
- Understand and analyze the constructional parameters of optical fibres.
- Estimate the losses due to attenuation, absorption, scattering and bending.
- Compare various optical detectors and choose suitable one for different applications.

COURSE NAME: ANTENNAS &MICROWAVE ENGINEERING LAB

Course Objectives:

- To understand the working, different microwave components and verify characteristics using
- microwave bench setup.
- To study various antennas

Course Outcomes:

- At the end of this course, the students will be able to
- Understand the working, different microwave components and sources in a microwave bench
- Verify the characteristics of various microwave components using microwave bench setup

- Design and study of various antennas
- Analyze performance characteristics of Antennas

COURSE NAME: VLSI DESIGN LAB

Course Outcomes:

- Design any logic circuit using CMOS transistor.
- Use different software tools for analysis of circuits.
- Design layouts to the CMOS circuits.
- Use different software tools for analog layout

COURSE NAME: DSP PROCESSORS & ARCHITECTURES

Course Objectives:

- To describe unique features of Digital signal processing.
- To demonstrate various computational parameters of DSP devices.
- To introduce architectural improvements in programmable DSP devices.
- To expose to basic DSP algorithms.
- To outline DSP processors for developing various applications.

Course Outcomes:

- Summarize features of Digital Signal Processing
- Evaluate dynamic ranges and precision for the given DSP system
- Explain architectural features of DSP processors
- Analyze performance of DSP algorithms on programmable DSP platform for given application
- Select DSP processors for building real time applications

COURSE NAME: INTRODUCTION TO INTERNET OF THINGS

Course Objectives:

Students will understand the concepts of Internet of Things and can able to build IoT applications.

Course Outcomes:

- Understand the concepts of Internet of Things

- Identify hardware and software components of Internet of Things
- Analyze basic communication protocols
- Design IoT applications in different domain and be able to analyze their performance

COURSE NAME: SATELLITE COMMUNICATIONS

Course Objectives:

To introduce various aspects in the design of systems for satellite communication.

Course Outcomes:

- Learn the dynamics of the satellite.
- Understand the communication satellite design.
- Understand how analog and digital technologies are used for satellite communication networks.
- Learn the design of satellite links.
- Study the design of Earth station and tracking of the satellites.

COURSE NAME: DIGITAL IMAGE PROCESSING

Course Objectives:

This course is designed to enable the students to familiarize themselves with basic concepts of digital image processing and different image transforms and learn various image processing techniques like image enhancement, restoration, segmentation and compression

Course Outcomes:

After completion of the course, students will be able to

- Perform image manipulations and different digital image processing techniques
- Illustrate basic operations like – Enhancement, segmentation, compression, Image
- transforms and restoration techniques on image.
- Analyze pseudo and full color image processing techniques.
- Apply various morphological operators on images

COURSE NAME: RADAR ENGINEERING

Course Objectives:

- To make student to acquire the knowledge on types of Radars, working principles, tracking a
- target, applications and understand on phased array antennas, navigational aids

Course Outcomes:

- Learn the basic working principle of Radar and target detection procedure
- Know the working and applications of CW and Frequency modulated Radar
- Gain the knowledge of about MTI and Pulse Doppler Radar
- Understand different methods of tracking a target and analyze the effect of noise at the receiver
- Learn about the phased array antennas and navigational aids

COURSE NAME: CELLUAR & MOBILE COMMUNICATIONS

Course Objectives:

- To explain cell coverage for signal and traffic, diversity techniques and mobile antennas by the use of Engineering Mathematics.
- To present impairments due to multipath fading channel, fundamental techniques to
- overcome different fading effects, frequency management, Channel assignment and types of handoffs.
- To teach concepts and solve problems on mobile antennas and cellular systems.

Course Outcomes:

- Know about cell coverage for signal and traffic, diversity techniques and mobile antennas by the use of Engineering Mathematics
- Explain impairments due to multipath fading channel, fundamental techniques to overcome different fading effects, frequency management, Channel assignment and types of handoff
- Apply concepts to solve problems on mobile antennas and cellular systems
- Analyze Co-channel and Non-Co-channel interferences, different Hand-offs and dropped call rates

- Evaluate performance of dropped call rate and false alarm rate and compare different handoffs.