Name of the Course: ELECTRONIC DEVICES CIRCUITS **Regulation:** R20
Year/Sem: II - I   **Course Code: R2021041** **Academic Year:** 2023-24

Course Outcomes:
After the completion of the course the student should be able to:
C201.01: Demonstrate the operation, V-I characteristics, parameters of P-N diode in different modes
Understand the operations, V-I characteristics and applications of Zener diode and special diodes in different modes
C201.02: Evaluate the performance of various rectifiers and filters with relevant expressions
C201.03: Describe the construction, principle of operation of Transistors with their V-I characteristics in different configurations.
C201.04: Describe the construction, principle of operation of Field Effect Transistors with their V-I characteristics in different configurations.
C201.05: Chose the biasing and stabilization techniques for BJT and JFET with necessary expressions
C201.06: Describe the construction, principle of operation of MOS Field Effect Transistors with their V-I characteristics in different configurations.

Name of the Course: SIGNALS AND SYSTEMS **Regulation:** R20
Year/Sem: II – I   **Course Code: R2021043** **Academic Year:** 2023-24

Course Outcomes:
After the completion of the course the student should be able to:
C203.01: Introduction of signals and systems and classification of signals and systems.
C203.02: To learn the applications of Fourier series & Complex Fourier Spectrum, Fourier Transforms & Hilbert Transforms.
C203.03: Classify the systems based on their properties and determine the response of LTI Systems.
C203.04: To learn relation between Convolution and correlation & power and energy density spectrum.
C203.05: Know the sampling process and various types sampling techniques.
C203.06: To learnt applications of Laplace transforms and Z-transforms.

Name of the Course:MATHEMATICS-III   **Regulation:** R20

Year/Sem: II – I   **Course Code:**R2021011   **Academic Year:** 2023-24

Course Outcomes:

After the completion of the course the student should be able to:

C301.01:interpret the physical meaning of different operators such as gradient, curl and divergence.

C301.02:estimate the work done against a field, circulation and flux using vector calculus.

C301.03:apply the Laplace transform for solving differential equations.

C301.04:find or compute the Fourier series of periodic signals

C301.05:.know and be able to apply integral expressions for the forwards and inverse Fourier transform to a range of non-periodic waveforms.

C301.06: identify solution methods for partial differential equations that model physical processes.

Name of the Course: Random variables and stochastic process.   **Regulation:** R20

Year/Sem: II – I   **Course Code:** R2021044   **Academic Year:** 2023-24

Course Outcomes:

After the completion of the course the student should be able to:

C205.01: Identifying the basic concepts of probability and Probability functions.

C205.02: Understand the concepts of expectation and moment generating functions.

C205.03: Implementing the joint density function and distribution functions to the multiple random variables.

C205.04: understanding the operations joint moments and joint characteristic functions on multiple random variables.

C205.05: Understand the concept of random processes, and characterize the random processes in the time domain.

C205.06: Apply the theory of stochastic processes to analyze linear systems with random inputs.

Name of the Course: Switching theory and logic design   **Regulation:** R20

Year/Sem: II – I   **Course Code:** R2022042   **Academic Year:** 2023-24

Course Outcomes:

After the completion of the course the student should be able to:

C202.01: Understand the different number systems and their conversions and apply to generate various code minimization of switching function using Boolean algebra,To optimize logic gates for digital circuits using various techniques.

C202.02: Boolean function simplification using Karnaughmaps and Quine-McCluskey methods and understand concepts of combinational circuits.

C202.03: To understand concepts of advanced combinational circuits.
C202.04: Introduction of PLD'S (PAL,PLA,PROM).
C202.05: To develop advanced sequential circuits, Apply knowledge of flip-flops in designing of Registers and counters
C202.06: To develop advanced sequential circuits and develop ASM charts for Moore and Mealy machines.

Name of the Course: ELECTRONIC DEVICES AND CIRCUITS LAB   **Regulation:** R20
Year/Sem: II - I   **Course Code: R2021046**   **Academic Year:** 2023-24

Course Outcomes:
After the completion of the course the student should be able to:
C207.01: Analyze the characteristics of the diodes in forward and reverse bias
C207.02: To interpret the Diode application as rectifier and to analyze Half wave and full wave rectifiers
C207.03: Analyze and understand the characteristics of BJT and FET in CE and CS configuration respectively.
C207.04 : Study and analyze the characteristics of UJT and SCR
C207.05: Understand how to measure the parameters of the signal by using CRO
C207.06: Apply knowledge to calculate the Q-point of the Transistor and to construct amplifiers using BJT and FET

Name of the Course: SWITCHING THEORY AND LOGIC DESIGN LAB   **Regulation:** R20
Year/Sem: II – I   **Course Code:** R2021047   **Academic Year:** 2023-24

Course Outcomes:
After the completion of the course the student should be able to:

C208.01: Test the operations of different logic gates using relevant IC's
C208.02: Examine the operation of different combinational logic circuits.

C208.03: Apply the concept of Boolean algebra to reduce or construct the logic circuit for given function
C208.04: Analyze the truth tables of different flip flops.

C208.05: Design of registers using sequential logic circuits
C208.06: Designing of Synchronous and Asynchronous counters using flip flops

Name of the Course: OOPS THROUGH JAVA LAB   **Regulation:** R20
Year/Sem: II – I   **Course Code: R2021045**   **Academic Year:** 2023-24

Course Outcomes:
After the completion of the course the student should be able to:
C206.01: Identify classes, objects, members of a class and the relationship among them needed for a specific problem
C206.02: Implement programs to distinguish different forms of inheritance.
C206.03: Create packages and to reuse them.
C206.04: Develop programs using Exception Handling mechanism
C206.05: Develop programs using Exception Handling mechanism.
C206.06: Develop multithreaded application using synchronization concept.

Name of the Course: PYTHON PROGRAMMING LAB   **Regulation:** R20
Year/Sem: II – I   **Course Code: R2021048**   **Academic Year:** 2023-24

Course Outcomes:
After the completion of the course the student should be able to:
C209.01: Understand and write simple Python programs
C209.02: Illustrate Python programs with conditionals and loops
C209.03: Apply python functions along with Python data structures –- lists, tuples, dictionaries
C209.04: Apply input/output with files and Illustrate OOPs concepts in python
C209.05: Implement concepts of searching, sorting and merging using Python Programming.

Name of the Course: ELECTRONIC CIRCUIT ANALYSIS   **Regulation:** R20

Year/Sem: II-II   **Course Code: R2022041**   **Academic Year:** 2023-24

Course Outcomes:

After the completion of the course the student should be able to:

C210.01 Design and analysis of small signal high frequency transistor amplifier using BJT and FET.

C210.02: Design and analysis of multistage amplifiers using BJT and FET and Differential amplifier using BJT

C210.03: Design amplifier with gain control using negative feedback and Design signal generators with positive feedback. Evolution of amplifiers gain stabilization improvement of bandwidth.

C210.04:Determine the gain parameters and design amplifiers for high frequency

C210.05: Derive the expressions for frequency of oscillation and condition for oscillation of RC and LC oscillators and their amplitude and frequency stability concept.

C210.06: Know the classification of the power and tuned amplifiers and their analysis with performance comparison

Name of the Course: Analog Communications   **Regulation:** R20

Year/Sem: II – II   **Course Code:** R2022043   **Academic Year:** 2023-24

Course Outcomes:

After the completion of the course the student should be able to:

C310.01: Familiarize with the fundamentals of analog communication systems.

C310.02: Familiarize with various techniques for analog modulation and demodulation of signals.

C310.03: Distinguish the figure of merits of various analog modulation methods.

C310.04:Develop the ability to classify and understand various functional blocks of radio transmitters and receivers

 C310.05: Familiarize with basic techniques for generating and demodulating various pulse modulated signals.

C310.06: To analyze the performance of digital communication systems

Name of the Course: MOB   **Regulation:** R20

Year/Sem: II-II   **Course Code:R2022045**   **Academic Year:** 2023-24

Course Outcomes:

After the completion of the course the student should be able to:

C214.01: the knowledge on management functions, global leadership and organizational structure.

C214.02 Will familiarize with the concepts of functional management that is HR Mand Marketing Of new product developments.

C214.03 The learner sable to think in strategically through contemporary management practices.

C214.04 Analysis of Value Chain Analysis & SWOT Analysis

C214.05 The learner can develop positive attitude through personality development and can equip

With motivational theories.

C214.06 The student can attain the group performance and grievance handling in managing the Organizational culture.

Name of the Course: LINEAR CONTROL SYSTEMS   **Regulation:** R20
Year/Sem: II – II   **Course Code:**R2022044   **Academic Year:** 2023-24

Course Outcomes:
At the end of the course the students will be able
C213.CO1: To discuss the performance of basic open loop and closed loop control systems and Demonstrate transfer function model for electrical and mechanical systems.
C213.CO2: To learn block diagram algebra and signal flow graph to determine overall transfer function and to analyse the stability of a system based on time response.
C203.CO3: To study the stability of closed loop systems using Routh's stability criterion
C213.CO4: To Analyse the stability of control systems through time domain
C213.CO5: To present the Frequency Response approaches for the analysis of linear time invariant (LTI) systems using Bode plots, polar plots and Nyquist stability criterion
C213.CO6: To study state models & analyze the systems and to present the concepts of Controllability & Observability

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Name of the Course: Digital Integrated Circuit Design   **Regulation:** R20
Year/Sem: II – II   **Course Code:** R2022042   **Academic Year:** 2023-24

Course Outcomes:
After the completion of the course the student should be able to:

C211.01: Introduction to VHDL and Verilog and Understand the concept of data types in vhdl and verilog
C211.02: To understand concepts of combinational circuits and Design the Hdl for different combinational circuits.
C211.03: To understand concepts of sequential circuits Apply knowledge of flip-flops in designing of Registers design with the help of HDL models.
C211.04: Apply knowledge of flip-flops in designing of counters with the help of HDL models.
C211.05: To design combinational cmos logic circuits .
C211.06: To develop advanced sequential mos logic circuits .

Name of the Course: Digital Integrated Circuit Design LAB   **Regulation:** R20

Year/Sem: II – II   **Course Code:** R2022048   **Academic Year:** 2022-23

Course Outcomes:

After the completion of the course the student should be able to:

C217.01: Design logic gates using VHDL and Verilog.

C217.02: Design combinational circuits using HDL models.

C217.03: Design the truth tables of different flip flops using VHDL and Verilog.

C217.04: Design the Registers with the help of HDL models.

C217.05: Design the counters using HDL models.

Name of the Course:ANALOG COMMUNICATIONS LAB   **Regulation:** R20

Year/Sem: II - I   **Course Code:**R2022047   **Academic Year:** 2023-24

Course Outcomes:

After the completion of the course the student should be able to:

C216.01: Verify the working of different modulation techniques.

C216.02: Analyze the operation of different modulation techniques for given input data.

C216.03: Design the different communication circuits and verify the working of the circuits.

C216.04: Verification of Sampling Theorem and pulse modulation techniques.

C216.05: Understand the working of Radio receiver characteristics.

C216.06: Analyze how a continuous signal is converted to digital signal.

Name of the Course:ELECTRONIC CIRCUIT ANALYSIS LAB   **Regulation:** R20

Year/Sem: II-II   **Course Code:**R2022046   **Academic Year:** 2023-24

Course Outcomes:

After the completion of the course the student should be able to:

C215.01 . Design and simulate two stage amplifiers for different gain and band width considerations

C215.02: Designand simulate different multistage amplifiers for different gain and bandwidth considerations using BJT and FET

C215.03: Design and simulate the performance of diverse type of feedback amplifiers for quality improvement in amplification.

C215.04: Design and simulate different types of oscillators and understand the performance of frequency of oscillators

C215.05: Design and simulate the power and their performance.

C215.06: Tuned amplifiers and their analysis with their performance comparison

Name of the Course: ANALOG ICS AND APPLICATIONS   **Regulation:** R20
Year/Sem: III-I   **Course Code: R2031041**   **Academic Year:** 2023-24

Course Outcomes:
After the completion of the course the student should be able to:
C301.01: Describe the Op-Amp and internal Circuitry, understand the characteristics of opamp
C301.02: analysis and design of linear and nonlinear Applications of Operational amplifier
C301.03: Design the Active filters using Operational Amplifier .
C301.04: Analysis of active filters using operational amplifiers..
C301.05: Analysis and Design of multi vibrators using IC555 and understand working principle of PLL.
C301.06: Classify and comprehend the working principle of data converters

Name of the Course: electromagnetics waves and transmission lines   **Regulation:** R20
Year/Sem: III - I   **Course Code: R2031042**   **Academic Year:** 2023-24

Course Outcomes:
After the completion of the course the student should be able to:
    C302.01: Interpret and apply the static electrostatic fields with respect to coordinate systems.
    C302.02: Analyze and demonstrate the static magnetic fields in real time applications.
    C302.03: Formulate the Maxwell's Equations in different forms with time considerations.
    C302.04: Formulate the theory of electromagnetic waves in free space with practical applications.
    C302.05: Evaluate and Relate wave propagation characteristics in different conducting and non conducting media.
    C302.06: Demonstrate the reflection and Refraction of EM waves at normal and oblique incidences.

Name of the Course: Digital Communications   **Regulation:** R20
Year/Sem: III – I   **Course Code:** R2031043   **Academic Year:** 2023-24

Course Outcomes:
After the completion of the course the student should be able to:
C303.01: Analyze the performance of a Digital Communication System for probability of error and are able to design a digital communication system.
C303.02: Analyze various digital modulation techniques
C303.03: Analyze various source coding techniques.
C303.04: Compute and analyze Block codes, cyclic codes and convolution codes.
C303.05: Design a coded communication system.
C303.06: To apply the concept of information theory in digital systems

Name of the Course: Antenna Wave and Propagation   **Regulation:** R20
Year/Sem: III – I   **Course Code: R203104A**   **Academic Year:** 2023-24

Course Outcomes:
After the completion of the course the student should be able to:
C305.01: Understand the basic antenna radiation parameters and radiation mechanism of single wire and two wire antennas with current distribution analysis.
C305.02: Quantify the radiation fields and power radiated by dipole antennas also analyzes their radiation characteristics using mathematical approach.
C305.03: Illustrate the different types of arrays.
C305.04: Their radiation patterns with both mathematical and geometrical analysis.
C305.05: Understand the geometry and working principle of operation of non-resonant radiators and micro strip antennas.
C305.06: Analyze various types of microwave antennas and identify and distinguish the characteristics of different modes of wave propagation.

Name of the Course: DIGITAL COMMUNICATIONS LAB   **Regulation:** R20
Year/Sem: III – I   **Course Code:R2032045**   **Academic Year:** 2023-24

Course Outcomes:
After the completion of the course the student should be able to:
C307.01: Analyze how a continuous signal is converted to digital signal.
C307.02: Demonstrate various digital modulation schemes.
C307.03: Evaluate the characteristics of PAM, PWM and PPM.
C307.04: Understand the multiplexing Techniques of TDM.
C307.05: Understand Linear Block Code and Binary Cyclic Code-Encoder and Decoder
C307.06: Convolution Code and BCH Codes Encoder and Decoder.

Name of the Course: AICA LAB   **Regulation:** R20
Year/Sem: III-I   **Course Code:R2031044**   **Academic Year:** 2023-24

Course Outcomes:
After the completion of the course the student should be able to:
C306.01Design and analyze various combinational circuits using Op Amp IC-741
C306.02 Design and analyze various combinational circuits like adder, substractor,
Comparator, integrator, Differentiator and Schmitt trigger using IC741
C306.03 Design and analyze for ACTIVE FILTERS Applications and Wave Form
Generators using IC 741
C306.04 Design multi vibrators using IC555
C306.05 Design waveform generators and PLL circuits using ICs
C306.06 Analyze the practical applications of VCO using various ICs

Name of the Course:VLSI   **Regulation:** R20
Year/Sem: III– II   **Course Code:** R2032042   **Academic Year:** 2023-24

Course Outcomes:
After the completion of the course the student should be able to:

C310.01: Identify the various IC fabrication process and   the layout of simple MOS circuits.
C310.02: Understand the concept of scaling models and calculate the noise margin and propogation delay of moscircuits
C310.03: To understand modelling of transistor and biasing effects
C310.04: To design single stage amplifiers,current sources and sinks
C310.05: To develop static and dynamic cmos design
C310.06: Understand the concept of FPGA design architecture and its families and introduce advanced technologies.

Name of the Course: Microprocessor & Microcontrollers   **Regulation:** R20
Year/Sem: III – II   **Course Code:** R2032041   **Academic Year:** 2023-24

Course Outcomes:
After the completion of the course the student should be able to:
C309.01: Understand the architecture of 8086 microprocessor and their operation.
C309.02: Learn programming skills in Assembly language for 8086 microprocessor.
C309.03: Analyze various interfacing techniques for applying them for processor based design.
C309.04: Interface 8086 microprocessor with different peripherals (Memory & I/O devices).
C309.05: Understand the architecture & Programming skills with 8051 Microcontroller.
C309.06: Learn about ARM processor Architecture & Programming.

Name of the Course:Digital signal processing   **Regulation:** R20
Year/Sem: III-II   **Course Code:R2032043**   **Academic Year:** 2023-24

Course Outcomes:
After the completion of the course the student should be able to:
C311.01: Understand the representation of different Discrete time signals and apply the difference equations concept in the analysis of discrete time systems
C311.02: Interpret and explore the concepts of Discrete Fourier Transforms and Fast Fourier Transforms for various Discrete Time Signals and Sequences.
C311.03: Use FFT algorithm for solving DFT of sequence
C311.04: Design the Digital IIR Filters from the analog filters using frequency transformations and FIR filters using windowing techniques.
C311.05: Construct the basic structures of Digital FIR and IIR systems. (eg: Design of phase shifters, Interfacing of digital systems)
And apply the signal processing concepts on DSP Processor.

C311.06:Apply the signal processing concepts on programmable Digital Signal Processors.

Name of the Course: EMBEDDED SYSTEMS   **Regulation:** R20
Year/Sem: III-II   **Course Code: R203204C**   **Academic Year:** 2023-24

Course Outcomes:
After the completion of the course the student should be able to:
C312.01: Understand the basic concepts of an embedded system and able to know an embedded system design approach to perform a specific function.
C312.02: Analyze The different hardware components used to design the embedded system
C312.03: the design Various approaches for embedded firmware.
C312.04: Design RTOS for an embedded system design.
C312.05: Understand the fundamental issues in hardware software codesign.
C312.06: Understand the IDE and Various tools used in implementing the embedded system.

Name of the Course: Microprocessor & Microcontrollers Lab   **Regulation:** R20
Year/Sem: III – II   **Course Code:** R2032044   **Academic Year:** 2023-24

Course Outcomes:
After the completion of the course the student should be able to:

C314.01: Develop the assembly language programs for 8086 microprocessor on arithmetic, logical & string operations.
C314.02: Use Assembler TASM to verify and simulate the 8086 programs.
C 314.03: Interfacing programs on different interfacing ICs.
C314.04: Use Keil software to verify and simulate assembly language programming on 8051 microcontroller.
C314.05: Use various Interfacing circuits on 8051 microcontroller for Real world and practical applications.
C314.06: Demonstrate assembly language programs on ARM Cortex M3 processor.

Name of the Course: VLSI DESIGN LAB   **Regulation:** R20
Year/Sem: III – II   **Course Code: R2032045**   **Academic Year:** 2023-24

Course Outcomes:
After the completion of the course the student should be able to:
C315.01: Analyze various combinational and sequential logic circuits using simulation tools
C315.02: Model arithmetic logic circuits using simulation tools.
C315.03: Analyze various amplifiers using simulation tools.
C315.04: Simulate memories using simulation tools
C315.05: Make an effective report based on experiments.
C315.06: Implement schematic and layout of various digital CMOS logic circuits using EDA tools.

Name of the Course: ARM/AURDINO LAB   **Regulation:** R20
Year/Sem: III – II   **Course Code:R2032047**   **Academic Year:** 2023-24

Course Outcomes:
After the completion of the course the student should be able to:
C317.01: Comprehend Microcontroller-Transducers Interface techniques.
C317.02: Establish Serial Communication link with AURDINO.
C317.03: Analyze basics of SPI interface.
C317.04: Interface Stepper Motor with AURDINO.
C317.05: Analyze Accelerometer interface Techniques.

Name of the Course:DIGITAL SIGNAL PROCESSING LAB   **Regulation:** R20
Year/Sem: III – II   **Course Code:R2032046**   **Academic Year:** 2023-24

Course Outcomes:
After the completion of the course the student should be able to:
C316.01: Make use of a software tool to generate various discrete time signals and perform different operations on them.
C316.02: Examine Linear and Circular Convolution of discrete time signals.
C316.03: Evaluate the Discrete Fourier Transform of a signal and its inverse.
C316.04: Analyze the Frequency response of IIR Filters using Butterworth and Chebyshev Approximations.
C316.05: Analyze the Frequency Response of FIR filters using windowing techniques.
C316.06: Implementation of of FFT,FIR,IIR filters usingCypressFM4StarterKit.

Name of the Course: Radar Engineering   **Regulation:** R20
Year/Sem: IV – I   **Course Code: R204104G**   **Academic Year:** 2023-24

Course Outcomes:
After the completion of the course the student should be able to:
C403.01: Acquire the knowledge of Radar system to apply and to design required parameters for a radar system and to derive the RADAR Equation.
C403.02: Analyze the working principle of CW and Frequency Modulated Radar and their applications.
C403.03: Understand the principle of MTI Radar and analyze its parameters and their limitations.
C403.04: To understand pulse Doppler radar and compare it with MTI radar.
C403.05: Analyze different types of tracking RADARs and to study different types of Radar receivers and displays.
C403.06: Detection of Radar signals in the presence of noise and analyze the performance of matched filter receiver and its characteristics.

Name of the Course: Optical Communication   **Regulation:** R20
Year/Sem: IV – I   **Course Code:** R204104A   **Academic Year:** 2023-24

Course Outcomes:
After the completion of the course the student should be able to:
C301.01: Understand the overview of optical fiber communication and classify optical fibers
C301.02: Knows about different materials & losses that occur in optical communication system.
C301.03: Understands about different Connectors and losses occurring in connectors.
C301.04: Understands about different Splicing & Joining techniques of optical fibers.
C301.05: Analyze different types of Optical sources & detectors in designing of optical fiber communication system.
C301.06: Design, and demonstrate optical fiber communication system and classify the principles and types of WDM.

Name of the Course: SATELLITE COMMUNICATIONS   **Regulation:** R20
Year/Sem: IV-I   **Course Code: R204104D**   **Academic Year:** 2023-24

Course Outcomes:
After the completion of the course the student should be able to:
C402.01: Illustrate the basic concepts of satellite communication and different Frequency allocations for satellite services.
C402.02: Analyze various satellite subsystems and its functionality.
C402.03: Able to design antennas to provide uplink and downlink frequency and analyze multipul access like TDMA, CDMA, and FDMA.
C402.04: Derive the expression for G/T ratio and to solve some analytical problems on satellite link design.
C402.05: Choose appropriate multiple access technique for a given satellite communication application.
C402.06: Understand the various types of multiple access techniques and architecture of earth station design.

Name of the Course: Image Processing   **Regulation:** R20
Year/Sem: IV – I   **Course Code: R204105O**   **Academic Year:** 2023-24

Course Outcomes:
After the completion of the course the student should be able to:
C404.01: Understand the fundamentals of image processing.
C404.02: Study transforms and introduce different intensity transformation functions and filtering techniques in spatial domain to enhance quality of image.
C404.03: Explain the concept image compression
C404.04: To understand various image compression techniques.
C404.05: Discuss the concepts of wavelet transforms.
C404.06: Apply morphological and segmentation techniques for processing images.

Name of the Course: UHV   **Regulation:** R20
Year/Sem: IV – I   **Course Code:**   **Academic Year:** 2023-24

After completion of this course, students will be able to:

C404.01: analyse the essentials of human values and skills, self-exploration, happiness and prosperity.

C404.02: Evaluate coexistence of the "I" with the body.

C404.03: Identify and evaluate the role of harmony in family, society and universal order.

C404.04: Understand and associate the holistic perception of harmony at all levels of existence.

C404.05: Develop appropriate technologies and management patterns to create harmony in professional and personal lives.

C404.06: 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

Name of the Course: 'DESIGNER TOOLS HFSS'   **Regulation:** R20
Year/Sem: IV – I   **Course Code:** R204104Z   **Academic Year:** 2023-24

Course Outcomes:
After the completion of the course the student should be able to:

C407.01: Identify basic antenna parameters and simulate an antenna model as per the required operating characteristics.

C407.02: Optimize the performance of the antenna as per the requirement and can develop research oriented thinking.

C407.03: Design of Rectangular Patch Antenna with Probe feed and Microstrip Line Feed.

C407.04: Design of Two-Element Microstrip Array Antenna with Corporate Feeding.

C407.05: Design and Study of Conical Horn Antenna.

C407.06: Design and analysis of a Monofilar Helical Antenna

Name of the Course: COMMUNICATION STANDARD PROTOCOL   **Regulation:** R19
Year/Sem: IV - I   **Course Code:** R194104A   **Academic Year:** 2022-23

Course Outcomes:

After the completion of the course the student should be able to:

C404.01: Able to develop sensor networks

C404.02: Configure and test communication technologies

C404.03: Explain WIMAX and Wireless LAN protocols and standards.

C404.04: Describe IP and routing strategies.

C404.05: Infer the TCP enhancements for wireless protocols.

C404.06: Explain Wireless WAN architectures, protocols and its features

Name of the Course: EMBEDDED SYSTEMS   **Regulation:** R19
Year/Sem: IV-I   **Course Code:** R194104H   **Academic Year:** 2022-23

Course Outcomes:
After the completion of the course the student should be able to:

C405.01: Understand the basic concepts of an embedded system and able to know an embedded system design approach to perform a specific function.

C405.02: Analyze The different hardware components used to design the embedded system

C405.03: the design Various approaches for embedded firmware.

C405.04: Design RTOS for an embedded system design.

C405.05: Understand the fundamental issues in hardware software codesign.

C405.06: Understand the IDE and Various tools used in implementing the embedded system.

Name of the Course: Digital Image and Video Processing   **Regulation:** R19
Year/Sem: IV – I   **Course Code: R1941043**   **Academic Year:** 2022-23

Course Outcomes:
After the completion of the course the student should be able to:
C403.01: Study the digital image representation importance and its advantages in transform domains and its application.
C403.02: Understand image enhancement by using histogram, filtering techniques etc
C403.03: Study of detection of point, line and edges in images, edge linking through local and global processing.
C403.04: To understand various image compression techniques.
C403.05: Study of video technology and video processing.
C403.06: Study the general methodologies for 2D motion estimation.

Name of the Course: Microwave and optical communication engineering   **REGULATION:** R19
Year/Sem: IV – I   **Course Code: R1941041**   **Academic Year:** 2022-23

Course Outcomes:
After going through this course the student will be able to

    C401.01: Understand the principle of operation of Microwave tubes & microwave solid state   devices.

    C401.02: Understand the basic properties of waveguide components and Ferrite materials composition

    C401.03: Knows about the basic principle & parameters of Optical fibre communication system

    C401.04: Knows about different types of connectors & splicing techniques

    C401.05: Understand operating principle of optical sources & detectors and capable to design an optical system.

    C401.06: Understand a Microwave test bench setup for different parameters measurement.

Name of the Course: Data communications & computer network   **REGULATION:** R19

Year/Sem: IV – I   **Course Code: R1941042**   **Academic Year:** 2022-23

Course Outcomes:
After going through this course the student will be able to

C402.1 Know the Categories and functions of various Data communication Networks

C402.2 Design and analyze various error detection techniques.

C402.3 Demonstrate the mechanism of routing the data in network layer

C402.4 Know the Parity Checks, Check summing Methods, Cyclic Redundancy Check

C402.5 Know the significance of various Flow control and Congestion control Mechanisms

C402.6 Know the Functioning of various Application layer Protocols.

Name of the Course: skill oriented course iot applications of electrical engineering **REGULATION:**R19

 Year/Sem: IV – II   **Course Code: R194**C218   **Academic Year:** 2022-23

Course Outcomes: On completion of the course, the students will be able to
C218.01: apply various technologies of Internet of Things to real time applications.
C218.02: apply various communication technologies used in the Internet of Things.
C218.03: connect the devices using web and internet in the IoT environment.
C218.04: implement IoT to study Smart Home, Smart city, etc.

Name of the Course: Microwave and Optical Communication Lab   **Regulation:** R19
Year/Sem: IV – I   **Course Code:**   **Academic Year:** 2022-23

Course Outcomes:
After the completion of the course the student should be able to:
C303.01: Knows the characteristics of Microwave tubes
C303.02: Knows about the measurement of various components of microwave devices
C303.03: Knows about the measurement of different parameters of antennas.
C303.04: Understand the characteristics of optical sources.
C303.05: Knows about measurement of different components of an optical system.
C303.06: Understand a Microwave test bench setup for different parameters measurement.

Name of the Course: cryptography and cyber security   **REGULATION:** R19

Year/Sem: IV – II   **Course Code: R194204G**   **Academic Year:** 2022-23

Course Outcomes:

After going through this course the student will be able to

C408.01: Cyber Security architecture principles.

C408.02 Identifying System and application security threats and vulnerabilities

C408.03: Cyber Security incidents to apply appropriate response

C408.04: Cyber Security incidents to apply appropriate response

C408.05: Describing risk management processes and practices

C408.06: Evaluation of decision-making outcomes of Cyber Security scenario

Name of the Course: wireless communication   **Regulation:** R19

Year/Sem: IV – II   **Course Code:** R194204A   **Academic Year:** 2022-23

Course Outcomes:

After the completion of the course the student should be able to:

C409.01 Know about the Wireless systems and Standards (1G/2G/3Gsystems).

C409.02 Concept and analysis of CDMA-based wireless networks.

C409.03: Understand the concepts of Multiple-Input Multiple-Output(MIMO).

C409.04: Understand the concepts of SVD(singular value decomposition)

C409.05: Understand the modern wireless systems using OFDM.

C409.06: Analysis of Satellite-Based Wireless systems.