CMR ENGINEERING COLLEGE
UGC AUTONOMOUS
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DEPARTMENT OF ELECTRONICS AND ENGINEERING

Course Outcomes of All Courses (R16 Regulation)

Course Name: Mathematics - I (C101)	
Course Code. Co No	**Course Outcomes(CO's)**
C101.1	Obtain general and particular solutions of Ordinary differential equations
C101.2	Formulate certain physical, electrical systems etc in terms of Ordinary differential equations and Solve them.
C101.3	Solve system of equations , interpret the rank of a matrix by various methods and to Find the current in the electrical circuits
C101.4	Apply the concept of eigen values and eigen vectors to Reduce quadratic forms to canonical forms
C101.5	Apply the concept of Partial derivatives to functions of two variables and to relate the concept of maxima and minima to real life problems.
C101.6	Build the Partial differential equations and Solve by using different methods.
Course Name: Engineering Chemistry (C102)	
Course Code. Co No	**Course Outcomes(CO's)**
C102.1	Identify different types of boiler troubles; choose appropriate method for softening and cleaning of water.
C102.2	Explain different types of conductance, electrode, and electrode potential and determine EMF of a cell using Nerns't equation.
C102.3	Compare and contrast the chemical behavior & physical properties of polymers.
C102.4	Explain different sources of energy and determine Calorific value of fuel.
C102.5	Explain the setting and hardening of cement, Classify different types of refractory's, lubricants and composite materials.
C102.6	Distinguish between batteries and fuel cells which are used in different engineering field.

Course Name: Engineering Physics-I (C103)	
Course Code. Co No	**Course Outcomes(CO's)**
C103.1	Distinguish between the intensity distribution in the Phenomenon of Interference and Diffraction.
C103.2	Construct the polarizer and separate the field components of light by different devices.
C103.3	Examine normal light and laser light and categorize various Laser systems
C103.4	Explain the propagation of light through Optical fiber and discus their losses.
C103.5	Distinguish various crystal systems and compare atomic packing factors.
C103.6	Analyze the structure of solids by X-ray diffraction and list the various defects in crystals.
Course Name: Professional Communication in English (C104)	
Course Code.CO No	**Course Outcomes (CO's)**
C104.1	Use English Language effectively in spoken and written forms.
C104.2	Interpret the contextual meaning of words
C104.3	Comprehend the given texts and respond appropriately
C104.4	Recall and reproduce the theme in a given context
C104.5	Communicate confidently in formal and informal contexts.
C104.6	Develop coherent ,cohesive technical report
Course Name: Engineering Mechanics (C105)	
Course Code.CO No	**Course Outcomes (CO's)**
C105.1	Analyze the system of forces and determine the resultant force
C105.2	Apply Lami's theorem for bodies in equilibrium under a system forces
C105.3	Describe the applications of friction and solve problems related to friction.
C105.4	Determine centre of gravity and moment of inertia for different sections.
C105.5	Describe the equations of motion for solid bodies and apply them to engineering problem solving.
C105.6	Explain work-energy theorem and Apply it to various mechanics problems.

Course Name: Basic Electrical and Electronics Engineering (C106)	
Course Code.CO No	**Course Outcomes (CO's)**
C106.1	To analyze and solve problems of electrical circuits using network laws and theorems
C106.2	Understand and Analyze the different types of diodes, operation and its characteristics.
C106.3	Analyze and Understand the DC bias circuitry of BJT and FET.
C106.4	Analyze circuits using diodes and transistors.
C106.5	Analysis of Different configuration of Transistors.
Course Name: English Language Communication Skills Lab (ELCS Lab) (C107)	
Course Code.CO No	**Course Outcomes (CO's)**
C107.1	Adopt active listening skills
C107.2	Acquire standard pronunciation
C107.3	Develop effective Reading Skills
C107.4	Communicate language confidently ensuring fluency, accuracy and intelligibility.
C107.5	Compose concise, clear and coherent write ups
C107.6	Develop coherent, cohesive technical report
Course Name: Engineering Workshop (EW) (C108)	
Course Code.CO No	**Course Outcomes (CO's)**
C108.1	Make use of carpentry tools, Fitting tools, Black smithy tools and tin smithy tools to produce simple shapes.
C108.2	Build electrical circuits commonly used in house wiring.
C108.3	Develop sand moulds, welding joints, using relevant tools.
C108.4	Demonstrate the use of power tools used in construction and wood working.
Course Name: Engineering Physics-II (C111)	
Course Code.CO No	**Course Outcomes (CO's)**
C111.1	Predict the behavior of particle and wave and solve their wave functions.
C111.2	Distinguish difference types of semiconductor devices and examine their properties.

C111.3	Identify deferent Di-electric materials and evaluate their pole strength.
C111.4	Choose various magnetic materials based on their properties.
C111.5	Define super conductivity and differentiate the types of super conductors.
C111.6	Categorize Nano material by fabrication methods.
Course Name: Mathematics – II (C112)	
Course Code.CO No	**Course Outcomes (CO's)**
C112.1	Interpret the concept of Laplace transforms
C112.2	Apply Laplace transform techniques for solving DE's
C112.3	Evaluate integrals using Beta and Gamma functions
C112.4	Determine the multiple integrals and can apply these concepts to find areas, volumes, moment of inertia etc of regions on a plane or in space .
C112.5	Demonstrate an understanding of vector differentiation
C112.6	Find the line, surface and volume integrals and converting them from one to another.
Course Name: Mathematics - III (C113)	
Course Code.CO No	**Course Outcomes (CO's)**
C113.1	Differentiate and Study various random variables and distributions.
C113.2	Calculate mean, proportions and variances of sampling distributions and to Estimate the confidence interval for population parameters.
C113.3	Test the hypothesis for single and difference of means and proportions
C113.4	Perform ANOVA test for several means.
C113.5	Find the root of an equation, Solve the system of equations and to Fit a curve to the given tabulated data.
C113.6	To study Numerical Integration and to find approximate solutions of first order ODE with initial conditions.
Course Name: Computer Programming in C (C114)	
Course Code.CO No	**Course Outcomes (CO's)**
C114.1	Demonstrate computer system and program development process
C114.2	Design algorithms and develop programs using control structures
C114.3	Design and develop programs using functions and arrays
C114.4	Develop programs for managing memory using pointers and for processing strings
C114.5	Organize heterogeneous data

C114.6	Develop programs for file processing
Course Name: Engineering Graphics (C115)	
Course Code.CO No	**Course Outcomes (CO's)**
C115.1	Construct engineering curves of conics sections, cycloid curves, involutes and scales.
C115.2	Construct projections of points, straight lines & planes inclined to one or both the projection planes.
C115.3	Construct Projections of solids and sectional solids inclined to one or both the projection planes.
C115.4	Construct intersections of solids or penetrations of solids.
C115.5	Convert orthographic projections to isometric and vice versa. Develop isometric views for objects.
C115.6	Develop surfaces for cones, cylinders, prisms and pyramid projections. Draw perspective projections of planes and solids.
Course Name: ENGINEERING CHEMISTRY LAB (C116)	
Course Code.CO No	**Course Outcomes (CO's)**
C116.1	Estimation of Ferrous ion by Dichrometry and Estimation of hardness of water by Complex metric method using EDTA.
C116.2	Estimation of copper by Iodomery and Estimation of percentage of purity of MnO_2 in pyrolusite.
C116.3	Determination of percentage of available chlorine in bleaching powder.
C116.4	Preparation of Bakelite and urea formalehyde resin.
C116.5	Estimation of HCl by Conductometry andEstimation of Ferrous ion by Potentiometry Determination of Ferrous iron in cement by Colorimetric method.
C116.6	Estimation of HCl and Acetic acid in a given mixture by Conductometry and Estimation of HCl by Potentiometry.
Course Name: Engineering Physics Lab (C117)	
Course Code. CO No	**Course Outcomes (CO's)**
C117.1	Analyze the various properties of light and determine the related parameters of light.
C117.2	Discuss the working of electronic components and built the circuits by selecting the appropriate components.

C117.3	Select semiconductor material and examine their characteristics.
C117.4	Estimate the strength of materials and choose the appropriate material.
C117.5	Recall the different types of waves and observe their Propagation.
C117.6	Conclude the results based on interpretation of data and graph.
Course Name: Computer Programming in C Lab (C118)	
Course Code.CO No	**Course Outcomes (CO's)**
C118.1	Demonstrate computer system and program development process
C118.2	Design algorithms and develop programs using control structures
C118.3	Design and develop programs using functions and arrays
C118.4	Develop programs for managing memory using pointers and for processing strings
C118.5	Organize heterogeneous data
C118.6	Develop programs for file processing
Course Name: Mathematics - IV (C211)	
Course Code.CO No	**Course Outcomes (CO's)**
C211.1	Analyze the complex functions with reference to their analyticity and to find the conjugate harmonic functions.
C211.2	Find the Taylor's and Laurent's series expansion of complex functions.
C211.3	Evaluate Improper Integrals and to find the bilinear transformation, fixed point and inverse ratio.
C211.4	Express any periodic function in terms of sine's and cosine's using Fourier Series.
C211.5	Obtain Fourier Transforms of non-periodic functions as integral representation.
C211.6	Solve one dimensional wave and heat equation by Method of Separation of variables.
Course Name: Analog Electronics (C212)	
Course Code.CO No	**Course Outcomes (CO's)**
C212.1	Classifying different types of transistor amplifier circuits.
C212.2	Designing the transistor amplifier circuits and their frequency responses characteristics.
C212.3	Analysis and Design of feedback Amplifiers.
C212.4	Analyze the frequency responses characteristics of oscillator circuits.

C212.5	Analyze and design of large signal amplifiers.
C212.6	Design a system and Analysis of Tuned amplifiers.
Course Name: Electrical Technology (C213)	
Course Code.CO No	**Course Outcomes (CO's)**
C213.1	Analyze the performance of DC generators and motors.
C213.2	Apply the knowledge about the performance of transformer in electrical power transmission and distribution systems.
C213.3	Illustrate the in-depth knowledge on three phase induction motor.
C213.4	Interpret the basic operation and performance of the alternator.
C213.5	Explain the performance of special motors and electrical instruments in real time applications.
Course Name: Signals and Stochastic Process (C214)	
Course Code.CO No	**Course outcome (CO's)**
C214.1	Illustrate any arbitrary signal in terms of complete set of orthogonal functions. Analyze the signal transmission through LTI systems.
C214.2	Apply Fourier Series and Fourier transforms to periodic and non periodic signals.
C214.3	Analyze the Laplace transform and Z transform for solution of differential and difference equations
C214.4	Test the temporal characteristics of a Random Process.
C214.5	Measure the Spectral characteristics of a Random Processes.
Course Name: Network Analysis (C215)	
Course Code.CO No	**Course outcome (CO's)**
C215.1	Describe the knowledge on Basic network elements.
C215.2	Explain and analyze the RLC circuits behavior in detail
C215.3	Analyze the performance of periodic waves
C215.4	Describe the knowledge in characteristics of two port network parameters (Z, Y, ABCD, h and g)
C215.5	Analyze the filter design concepts in real world applications
Course Name: Electronic Devices and Circuits Lab (c216)	
Course	**Course outcome (CO's)**

Code.CO No	
C216.1	Analyze V-I characteristics of semiconductor diodes.
C216.2	Analyze the operation of rectifiers and their design with different filters.
C216.3	Estimate the input and output characteristics of BJT in various configurations.
C216.4	Study high frequency response of all amplifiers
C216.5	Study waveforms of Clippers and Clampers
Course Name: Basic Simulation Lab (C217)	
Course Code.CO No	**Course outcome (CO's)**
C217.1	Analyze the generation of Various Signals and Sequences in MATLAB, including the operations on Signals and Sequences.
C217.2	Demonstrate the importance of Fourier Transform, Laplace Transform and Z Transform s in the analysis of signals and systems.
C217.3	Determine the Convolution and Correlation between Signals and sequences.
C217.4	Prove the sampling theorem.
C217.5	Analyze the concepts of Linearity, Stationary of random process, Gibb's phenomenon, wiener-kinchin relations and Gaussian function.
Course Name: Basic Electrical Engineering Lab (C218)	
Course Code.CO No	**Course outcome (CO's)**
C218.1	Test and verify Kirchhoff's Laws.
C218.2	Verify and demonstrate various resonance and two-port networks. Reactance, impedance, susceptance, admittance, phase
C218.3	Illustrate Thevenin's, Norton's, Superposition and Maximum power transfer theorem.
C218.4	Determine the performance of DC machines both directly and indirectly.
C218.5	Evaluate the efficiency of the different machine by analyzing their test results.
C218.6	Determine regulation and perform synchronization of alternator.
Course Name: Environmental Science and Technology(C219)	
Course Code.CO No	**Course outcome (CO's)**
C219.1	Define basic definitions and explain complex relationship between Predators, Prey and the plant community.
C219.2	Categorize resources in natural environment and its relationship with human

	activities.
C219.3	Demonstrate an awareness, knowledge and appreciation of the intrinsic values of ecological processes and communities.
C219.4	Assess different scientific research strategies and role of information technology in environment.
C219.5	Examine the transnational character of environmental problems & protection acts.
C219.6	Formulate an action plan for integration of science, humanity and social perspectives.
Course Name: Switching Theory and Logic Design (C221)	
Course Code.CO No	**Course outcome (CO's)**
C221.1	Understand the numeric information in different forms like different bases, signed integers, various codes such as ASCII, Gray and BCD.
C221.2	Evaluate simple Boolean expressions using the theorems and postulates Of Boolean algebra and to minimize combinational functions.
C221.3	Design and Analyze small combinational circuits and to use standard Combinational functions/building blocks to build complex circuits.
C221.4	Design and Analyze small sequential circuits and devices and to use Standard sequential functions/building blocks to build complex circuits.
C221.5	Analyze the logic families and to Understand the realization of logic gates
Course Name: Pulse and Digital Circuits (C222)	
Course Code. CO No	**Course outcome (CO's)**
C222.1	Design and Analyze the High pass and low pass RC circuits, applications of integrator, differentiator response for various non sinusoidal signals can be understood clearly.
C222.2	Analyze and design different types of Clippers and Clampers along with reference voltages.
C222.3	Learn and realize various switching times of Diodes, transistors and SCR.
C222.4	Design multivibrators for various applications, and sweep circuits, voltage time base wave forms and know the importance of synchronization techniques.
C222.5	Analyze diode sampling gates (Unidirectional and Bi-directional) and how to realize the logic gates using various logic families such as DTL, RTL, TTL, CMOS etc.
Course Name: Control Systems (C223)	
Course Code. CO No	**Course outcome (CO's)**

C223.1	Classify control systems and concept of feedback in control systems.
C223.2	Apply different rules and techniques to determine the transfer function of the block diagrams, signal flow graphs and mathematical models.
C223.3	Analyze time response of different ordered systems and the stability of the systems using R-H criterion and root locus techniques.
C223.4	Determine stability of the systems using BODE and Polar plots, design the compensators.
C223.5	Develop state models from block diagrams and discuss observability, controllability and compensators.
Course Name: Analog Communications (C224)	
Course Code. CO No	**Course Outcomes (CO's)**
C224.1	Explain basic concepts of communication systems and also classify the Multiplexing Techniques.
C224.2	Design and Compare the different amplitude modulation techniques.
C224.3	Design the various types of Angle modulation and demodulation techniques.
C224.4	Analyze the characteristics of noise present in Analog Communication Systems.
C224.5	Demonstrate various Pulse Modulation Systems.
Course Name: Business Economics and Financial Analysis (C225)	
Course Code. CO No	**Course Outcomes (CO's)**
C225.1	Define business economics techniques and concepts
C225.2	Illustrate demand function and supply to determine demand of the product
C225.3	Identify production and cost functions to determine the price
C225.4	List basic accounting concepts and conventions
C225.5	Conclude the financial statements through ratio analysis and define business economics techniques and concepts
Course Name: Analog Communications Lab (C226)	
Course Code. CO No	**Course Outcomes (CO's)**
C226.1	Analyze and design various modulation and demodulation analog systems
C226.2	Understand the characteristics of noise present in analog systems
C226.3	Analyze and design the various pulse modulation systems
C226.4	Acquire the knowledge on design concept of radio receivers
C226.5	Understand the Concepts of multiplexing 1)TDM 2)FDM

Course Name: Pulse & Digital Circuits Lab (C227)	
Course Code.CO No	**Course Outcomes (CO's)**
C227.1	Demonstrate generation of pulse wave with nonlinear and linear elements
C227.2	Construct various Multi-vibrators using transistors, design of sweep circuits and sampling gates.
C227.3	Design different Time Base Generators
C227.4	Analyze switching characteristics of Transistors and Pulse synchronization of an Astable Circuit.
C227.5	Study of Logic Gates and Sampling Gates.
Course Name: Analog Electronics Lab (C228)	
Course Code.CO No	**Course Outcomes (CO's)**
C228.1	Design and simulation of single and multistage amplifiers.
C228.2	Design and simulation of oscillators and feedback amplifiers.
C228.3	Analyze of Class A and Class B amplifiers..
C228.4	Analyze of MOS amplifiers.
Course Name: Gender Sensitization Lab(C229)	
Course Code.CO No	**Course Outcomes (CO's)**
C229.1	
C229.2	
C229.3	
C229.4	
C229.5	
C229.6	
Course Name: Electromagnetic Theory and Transmission Lines (C311)	
Course Code.CO No	**Course Outcomes (CO's)**
C311.1	Distinguish between the static and time-varying fields, establish the corresponding sets of Maxwell's Equations and Boundary Conditions, and use them for solving engineering problems.
C311.2	Analyze the Wave Equations for good conductors and good dielectrics, and evaluate the UPW Characteristics for several practical media of interest.
C311.3	Examine the proof and estimate the polarization features, reflection and transmission coefficients for UPW propagation, distinguish between Brewster and Critical Angles, and acquire knowledge of their applications.
C311.4	Determine the Transmission Line parameters for different lines, characterize the distortions and estimate the characteristics for different lines.

C311.5	Analyze the RF Line features and configure them as SC, OC Lines, QWTs and HWTs, and design the same for effective impedance transformation
C311.6	Explain the Smith Chart profile and stub matching features, and gain ability to practically use the same for solving practical problems.
Course Name: Linear and Digital IC Applications (C312)	
Course Code. CO No	**Course Outcomes (CO's)**
C312.1	Analyze the characteristics of operational amplifiers.
C312.2	Design the various linear and non-linear applications of op-amp.
C312.3	Describe the oscillators and voltage regulators.
C312.4	Compare the Different type of Converters (ADC and DAC).
C312.5	Apply the Digital IC's in various Applications.
C312.6	Acquire the knowledge about the CMOS logic, combinational and sequential circuits.
Course Name: Digital Communications (C313)	
Course Code.CO No	**Course Outcomes (CO's)**
C313.1	Understand basic components of Digital Communication Systems.
C313.2	Design optimum receiver for Digital Modulation techniques.
C313 .3	Analyze the error performance of Digital Modulation Techniques.
C313.4	Understand the redundancy present in Digital Communication by using various source coding techniques.
C313.5	Know about different error detecting and error correction codes like block codes, cyclic codes and convolution codes.
Course Name: Fundamentals of Management (C314)	
Course Code. CO No	**Course Outcomes (CO's)**
C314.1	Able to define functions of management in different levels.
C314.2	Able to summarize planning in business decision making.
C314.3	Able to construct organization design and structure and HRM process organization.
C314.4	Able to simplify leadership and motivation.
C314.5	Able to evaluate control and controlling process in business.
Course Name: Operating Systems (C315)	
Course Code.CO No	**Course Outcomes (CO's)**
C315.1	Identify the significance of operating system in computing devices.
C315.2	Exemplify the communication between application programs and hardware

	devices through system calls
C315.3	Compare and illustrate various process scheduling algorithms.
C315.4	Apply appropriate memory and file management schemes
C315.5	Illustrate various disk scheduling algorithms.
C315.6	Appreciate the need of access control and protection in an operating system.
Course Name: Database Management System(C316)	
Course Code.CO No	**Course Outcomes (CO's)**
C316.1	Define the basic concepts of database management systems.
C316.2	Ability to design entity relationship model and convert entity relationship diagrams into RDBMS and formulate SQL queries on the data.
C316.3	Able to demonstrate transaction processing and concurrency control.
C316.4	Able to apply normalization technique for schema refinement.
C316.5	Ability to compare different storage structures.
Course Name: Linear IC Applications Lab (C317)	
Course Code.CO No	**Course Outcomes (CO's)**
C317.1	Design and Analyze the various linear & non-linear application of Op-Amp.
C317.2	Design and Analyze Active filters and Hysteresis voltage of Schmitt trigger using 741 IC
C317.3	Build the Multivibrator circuits using IC555 and Determine the frequency of oscillation and time delay.
C317.4	Examine the functionality of IC723 and Verify the load and line regulations.
C317.5	Test the characteristics of PLL & Design the various applications of PLL.
Course Name: Digital IC Applications Lab (C318)	
Course Code.CO No	**Course Outcomes (CO's)**
C318.1	Recall knowledge of Digital Circuits and Systems.
C318.2	Understand IC numbers for different Digital Circuits.
C318.3	Design Digital Circuits using IC's.
C318.4	Understand use of combinational and sequential circuits for various applications.
Course Name: Digital Communications Lab (C319)	
Course Code.CO No	**Course Outcomes (CO's)**

C319.1	Demonstrate the Knowledge in various waveform coding techniques PCM,DPCM,DM and ADM.
C319.2	Understand the Multiplexing techniques of TDM and OFDM.
C319.3	Design and implement digital modulation techniques like ASK,FSK,PSK,DPSK and QPSK
C319.4	Study the Spectral characteristics of PAM,PWM and QAM
Course Name: Professional Ethics(C31A)	
Course Code.CO No	**Course Outcomes (CO's)**
C31A.1	Understand the importance of Values and Ethics in their personal lives and professional careers.
C31A.2	Learn the rights and responsibilities as an employee, team member and a global citizen.
C31A.3	Learn professional practices in engineering and got knowledge work rights and responsibilities.
C31A.4	Learn global issues in professional ethics in manufacturing and marketing.
Course Name: Digital System Design (C321)	
Course Code.CO No	**Course Outcomes (CO's)**
C321.1	Analyze the minimization of Finite state machine
C321.2	Analyze the design approaches using ROM's, PAL's and PLA's
C321.3	Explain the in depth understanding of Fault models.
C321.4	Design the test pattern generation techniques for fault detection
C321.5	Design fault diagnosis in sequential circuits.
Course Name: Digital Image Processing (C322)	
Course Code.CO No	**Course Outcomes (CO's)**
C322.1	Demonstrate the different Transforms Techniques & their uses in Image Processing applications.
C322.2	Examine Spatial & frequency domain filtering (like smoothing & sharpening operations) on Images.
C322.3	Make use of various restoration operations/techniques on Images.
C322.4	Analyze Image segmentation methods and morphological operations.
C322.5	Build the Image compression Techniques for the transmission of the Images Form.
Course Name: Antenna Wave Propagation (C323)	

Course Code.CO No	Course Outcomes (CO's)
C323. 1	Classify the different Antenna parameters.
C323.2	Analyze the characteristics of different antennas.
C323.3	Design the antenna and understand the set up requirements for antenna measurements.
C323.4	Classify the different types of wave propagation.
C323.5	Analyze the different parameters involved in wave propagation.
Course Name: Microprocessors and Microcontrollers (C324)	
Course Code.CO No	**Course Outcomes (CO's)**
C324.1	Discuss the architecture, and classify Addressing modes and instruction set of 8086.
C324.2	Discuss the operation of Microprocessors using assembly language programs using the instructions of 8086.
C324.3	Design the architecture and classify the addressing modes and instruction set of 8051 Microcontroller.
C324.4	Design complete Microcontroller based system using Interfacing techniques of the microcontroller with Peripheral devices.
C324.5	Discuss the operation of advanced Microcontrollers like ARM, CORTEX, OMAP.
Course Name: Digital Signal Processing(C325)	
Course Code.CO No	**Course Outcomes (CO's)**
C325.1	Apply mathematical tools such as DFT, DTFT to analyze a processing system.
C325.2	Choose FFT algorithms in frequency and time domain analysis in processing of digital signals.
C325.3	Design IIR and FIR filters to meet specific magnitude and phase requirements.
C325.4	Construct IIR and FIR filters using direct forms, cascade and parallel forms.
C325.5	Compare the tradeoffs between normal and multirate DSP techniques and can explore the finite length word effects.
Course Name: Digital Signal Processing lab (C326)	
Course Code.CO No	**Course Outcomes (CO's)**
C326.1	Implement mathematical tools such as DFT, IDFT & Z-Trasnsform, and Histogram to a processing system using MATLAB.

C326.2	Apply FFT algorithms to sequences and determine Power Spectrum of a given Signal(s).
C326.3	Design FIR filters to meet specific magnitude and phase requirements
C326.4	Estimate the I/D sampling rate conversions and generate DTMF signals
C326.5	Solve impulse response for first order and second order systems
Course Name: Microprocessors and Microcontrollers Lab (C327)	
Course Code.CO No	**Course Outcomes (CO's)**
C327.1	Classify the instruction set of 8086 Microprocessors.
C327.2	Develop the assembly language programs in 8086 Microprocessors.
C327.3	Classify the instruction set of 8051 Microcontroller.
C327.4	Develop the interfacing of microprocessor with I/O devices.
C327.5	Develop the assembly language programs in 8051 Microcontroller.
Course Name: Advanced English Communication Skills Lab (AECS Lab) (C328)	
Course Code.CO No	**Course Outcomes (CO's)**
C328.1	Adopt active listening skills
C328.2	Acquire standard pronunciation
C328.3	Develop effective Reading Skills
C328.4	Communicate language confidently ensuring fluency, accuracy and
C328.5	Compose concise, clear and coherent write ups
C328.6	Develop coherent, cohesive technical report
Course Name: Java Programming (C329)	
Course Code. CO No	**Course Outcomes (CO's)**
C329.1	Explain the real world problems using OOP techniques.
C329.2	Discuss basic Code Reusability concepts. Inheritance, Package and Interface
C329.3	Analyze basic programming concepts in Java with different object related
C329.4	Implement Exception handling, Multithreading concept in Java
C329.5	Design GUI based applications
Course Name: MICROWAVE ENGINEERING (C411)	
Course Code.CO No	**Course Outcomes (CO's)**
C411.1	Analyze the rectangular waveguides and their mode characteristics
C411.2	Explain the functioning of ferrite rotation principle for engineering
C411.3	Compare the methods of power generation at microwave frequencies and
C411.4	Develop the concepts of TEDs, RWH Theory and explain the salient
C411.5	Construct the Scattering Matrix of various microwave junctions for
C411.6	Experiment with a microwave bench for measurement of various microwave
Course Name: VLSI Design (C412)	
Course Code.CO No	**Course Outcomes (CO's)**
C412.1	Explain fundamentals of IC technology and testing of CMOS circuits.
C412.2	Choose an appropriate inverter using electrical properties of MOS circuits.
C412.3	Draw layout of any logic circuit using concepts of stick diagrams and design

C412.4	Analyze characteristics of different logic gates.
C412.5	Design memories and building blocks of data path of sub system.
C412.6	Design logic circuits using PLA's, PAL's, FPGA's and CPLD's.
Course Name: Wireless Communications & Networks (C413)	
Course Code.CO No	**Course Outcomes (CO's)**
C413.1	Recall the concepts of Cellular system design fundamentals.
C413.2	Understand the various kinds of wireless networks and its operations.
C413.3	Design traditional and emerging wireless networks.
C413.4	Explain the importance of radio propagation in wireless communications.
C413.5	Analyze equalization and diversity in wireless communications.
Course Name: Embedded System Design(C414)	
Course Code.CO No	**Course Outcomes (CO's)**
C414.1	Describe the differences between the general computing system and the
C414.2	Explain the core of the Embedded System
C414.3	Become familiar with programming environment used to develop embedded
C414.4	Design real time embedded systems using the concepts of RTOS.
C414.5	Evaluate the correlation between task synchronization and latency issues.
Course Name: FPGA Programming (C415)	
Course Code.CO No	**Course Outcomes (CO's)**
C415.1	Explain fundamentals of PLD'S and FPGA"s.
C415.2	Choose an appropriate design method and Basic key words to write the code
C415.3	Explain fundamentals of HDL for Data flow model and behavioral model.
C415.4	Understand the concept of Structural and Switch level Descriptions for HDL
C415.5	Study the Concept of Procedures, Tasks, Functions and Verification.
Course Name: Electronic Measurement and Instrumentation (C416)	
Course Code.CO No	**Course Outcomes (CO's)**
C416.1	Discuss the static and dynamic characteristics of measurement system.
C416.2	Analyze the AC and DC voltmeters and current meters also analyze the
C416.3	Discuss the different types of signal generators and oscilloscopes.
C416.4	Classify and analyze the different types of transducers.
C416.5	Design the different types of bridges.
C416.6	Demonstrate the Measurement of Physical Parameters.
Course Name: VLSI & ECAD LAB (C417)	
Course Code. CO No	**Course Outcomes (CO's)**
C417.1	Write HDL programs for combinational and sequential logics.
C417.2	Perform simulation, synthesis and implementation of various digital logics.
C417.3	Design and analyze nMOS and CMOS logic circuits.
C417.4	Design layouts for logic circuits and perform physical verification.
Course Name: MWE Lab (C418)	
Course Code. CO No	**Course Outcomes (CO's)**
C418.1	Analyze completely the waveguides, their mode characteristics.
C418.2	Distinguish between the ferrite components, explain their functioning.

C418.3	Distinguish between the characteristics of various microwave generators.
C418.4	Realize the characteristics for solid state microwave sources.
C418.5	Measure scattering parameters of various microwave components using microwave bench.
C418.6	Determine electrical parameters of various microwave components using microwave bench.
Course Name: Linux Programming (C421)	
Course Code. CO No	**Course Outcomes (CO's)**
C421.1	Explain and Categorize Linux utilities for file processing.
C421.2	Classify the system calls to create, manage and control the processes in
C421.3	Compare the Inter Process Communication (IPC) and Message Queues for message passing between processes.
C421.4	Analyze the methods to overcome conflicts arise in the processes.
C421.5	Identify the system calls supported for threads and synchronization.
C421.6	Develop the socket programming for client/server architecture.
COURSE NAME: R Programming(C422)	
Course Code. CO No	**Course Outcomes (CO's)**
C422.1	Write algorithmic programs in R Programming language.
C422.2	Solve statistical problems using R programming.
C422.3	Implement and describe monte Carlo technology.
C422.4	Analyze minimize and maximize functions using R programming.
Course Name: Optical Communication (C423)	
Course Code.CO No	**Course Outcomes (CO's)**
C423.1	Understand and analyze the constructional parameters of optical fibers.
C423.2	Classify and recognize the structures of Optical fiber and its types.
C423.3	Analyze and estimate the losses due to attenuation, absorption, scattering
C423.4	Classify the construction and characteristics of optical sources and
C423.5	Familiar with Design considerations of fiber optic systems.
Course Name: Global Positioning System (C424)	
Course Code.CO No	**Course Outcomes (CO's)**
C424.1	Understanding various types of GPS navigation system.
C424.2	To analyzing and implement GPS modules.
C424.3	Understanding of various GPS and its architecture and GEO system.
C424.4	Identify error sources in GPS observations, and apply the corrections for accurate positioning.
C424.5	To estimate in mapping the geographical features.