



**SIR C R REDDY COLLEGE OF ENGINEERING**  
**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

**COURSE OUTCOMES 2017-21**

<b>COURSE</b>	<b>COURSE CODE</b>	<b>COURSE OUTCOME DESCRIPTION</b>
<b>ENGLISH</b>	<b>C 111.1</b>	Apply the four languages learning skills-listening, speaking, reading, writing (LSRW) for professional success.
	<b>C 111.2</b>	Employ knowledge of grammatical structures and vocabulary in speech and writing
	<b>C 111.3</b>	Apply effective communication skills to enhance professional possibilities.
	<b>C 111.4</b>	Develop acceptable personality traits suitable for chosen profession.
<b>MATHEMATICS-I</b>	<b>C 112.1</b>	Solve the Differential Equations of first and higher order related to various engineering applications.
	<b>C 112.2</b>	Apply Laplace Transforms to solve linear differential equations with constant coefficients.
	<b>C 112.3</b>	Apply the knowledge of partial differentiation techniques to solve physical problem like maxima and minima of functions.
	<b>C 112.4</b>	Solve the first and higher order of partial differential equations and apply to various engineering problems
<b>MATHEMATICS-II</b>	<b>C 113.1</b>	Solve algebraic and transcendental equations by using Numerical methods.
	<b>C 113.2</b>	Apply the concepts of interpolation to numerical integration and solve the differential equations by using numerical methods.
	<b>C 113.3</b>	Apply Cauchy-Riemann equations to analytic functions and find the radius of convergence of the given series in complex field.
	<b>C 113.4</b>	solve the real definite integrals in complex field
<b>APPLIED PHYSICS</b>	<b>C 114.1</b>	Apply the knowledge of different phenomena of light in daily life.
	<b>C 114.2</b>	Characterize the coherent sources over ordinary sources and understand the polarization phenomenon, Lasers and their practical implications
	<b>C 114.3</b>	Able to differentiate the properties of the materials based on the response in electric and magnetic fields.
	<b>C 114.4</b>	Understand the electron transport mechanism in metals based on Quantum mechanics
	<b>C 114.5</b>	Gain the basic knowledge in semiconductor physics.
<b>CP</b>	<b>C 115.1</b>	Gains the knowledge on Computer Hardware, Software concepts, Writing Algorithms, Drawing Flowcharts, Writing, Compiling and Executing simple C programs in Linux environment.
	<b>C 115.2</b>	Distinguishes branching, iteration and data representation using Arrays and Strings.
	<b>C 115.3</b>	Constructs programs using Modular programming and Recursive solution formulation.

	<b>C 115.4</b>	Explains working with pointers and how they are used to allocate memory dynamically and uses miscellaneous aspects like enum, typedef, structure and union types in applications.
	<b>C 115.5</b>	Explains operations on files and working with different types of files.
<b>ED</b>	<b>C 116.1</b>	Construct polygons, scales and draw curves used in engineering applications, draw orthographic projection of points
	<b>C 116.2</b>	Apply concept of orthographic projection to project lines inclined to both reference planes.
	<b>C 116.3</b>	Produce orthographic projections of planes inclined to both the reference planes.
	<b>C 116.4</b>	Produce orthographic projections of regular solids inclined to both the reference planes.
	<b>C 116.5</b>	Construct isometric view from orthographic views and vice versa.
<b>ENG. LAB-I</b>	<b>C 117.1</b>	Recognize the sounds of English with the help of audio visual aids.
	<b>C 117.2</b>	Build confidence and overcome inhibitions while speaking in English.
	<b>C 117.3</b>	Demonstrate acquired language skills in performing the designated activity.
<b>APPLIED PHYSICS LAB</b>	<b>C 118.1</b>	Apply the knowledge of different phenomena of light like interference, diffraction and handle various optical measuring instruments.
	<b>C 118.2</b>	Analyze various electronic circuits and its components and verify the laws of stretched string.
	<b>C 118.3</b>	Draw the relevance between theoretical knowledge and the means to imply it in a practical manner by performing various relative experiments
<b>MATHEMATICS III</b>	<b>C 121.1</b>	Apply the concept of lines, planes, spheres and the students are through in defining and evaluating geometric figure.
	<b>C 121.2</b>	Solve double and triple integrals to find areas and volumes.
	<b>C 121.3</b>	Apply special functions to evaluate improper integrals.
	<b>C 121.4</b>	Compute Fourier series for different function and also half range series certain types of functions.
<b>ENGINEERING WORKSHOP</b>	<b>C 119.1</b>	Understand the fundamentals of assembling, disassembling various hardware components, installation of softwares, Operating systems, various MS office tools, Network configuration & internet, LATEX and MATLAB
	<b>C 119.2</b>	Able to apply & use all the techniques learned at hardware and software versions regarding, assembling, disassembling various hardware components, installation of softwares, Operating systems, various MS office tools, Network configuration & internet, LATEX and MATLAB
	<b>C 119.3</b>	Able to analyze various versions, techniques and methodologies learned in the workshop in real time scenarios
	<b>C 119.4</b>	Evaluate the pros and cons of all the tools learned in all aspects
<b>ENGLISH II</b>	<b>C 121.1</b>	Apply the four language learning skills-listening, speaking, reading, writing (LSRW)
	<b>C 121.2</b>	Employ knowledge of grammatical structures and vocabulary in speech and writing

	<b>C 121.3</b>	Apply effective communication skills for professional students.
	<b>C 121.4</b>	Develop acceptable personality traits to become leaders.
<b>MATHEMATICS-III</b>	<b>C 122.1</b>	Solve system of linear algebraic equations and apply Eigen value computation technics to reduce a given quadratic to canonical form
	<b>C 122.2</b>	Apply double and triple integrals to find areas and volumes.
	<b>C 122.3</b>	Apply special functions to evaluate improper integrals
	<b>C 122.4</b>	Apply the concepts of vector calculus to the problems of work done by a force, circulation and flux
<b>APPLIED CHEMISTRY</b>	<b>C 123.1</b>	Identify the advantages and limitations of plastics, elastomers and their use in day to day life.
	<b>C 123.2</b>	Identify the fuels which are commonly used and their economics, advantages and limitations.
	<b>C 123.3</b>	Select the suitable methods of corrosion control and gain the knowledge of applications of batteries.
	<b>C 123.4</b>	Recognize the need of nano materials, green synthesis, liquid crystals, Superconductors and their uses.
	<b>C 123.5</b>	Obtain the knowledge of semiconductors, insulators and magnetic materials.
	<b>C 123.6</b>	Obtain the knowledge of generation of electricity from various non conventional energy sources like solar, hydro power and geo thermal energy
<b>ELECTRICAL &amp; MECHANICAL TECHNOLOGY</b>	<b>C 124.1</b>	Explain the operation of DC generator, DC motor, 3-point starter and Speed control methods.
	<b>C 124.2</b>	Explain the operation of 3-Phase alternator and 3-Phase Induction motors.
	<b>C 124.3</b>	Explain the working principle of various measuring instruments.
	<b>C 124.4</b>	Explain generation from various sources and transformation of power and principles of basic thermodynamics.
	<b>C 124.5</b>	Explain the transfer of heat from various bodies through various modes
	<b>C 124.6</b>	Explain the transmission of power and various manufacturing methods
<b>ES</b>	<b>C 125.1</b>	Acquire knowledge about the importance of environment & availability of resources
	<b>C 125.2</b>	Understand different environmental challenges induced due to anthropogenic activities as well as nature.
	<b>C 125.3</b>	Identify the solutions to the environmental problems for the sake of healthy life by protecting our natural resources.
	<b>C 125.4</b>	Create awareness on the social issues, environmental protection acts
	<b>C 125.5</b>	Understand the environmental impact of developmental activities.
<b>DS</b>	<b>C 126.1</b>	Understand basic concepts like array, sorting, searching, linear and non-linear data Structures and algorithms.
	<b>C 126.2</b>	Apply various linear and non-linear data structures, sorting and searching algorithms for solving computing problems.
	<b>C 126.3</b>	Analyze various methods of linear and non-linear data structures, sorting and searching algorithms.
	<b>C 126.4</b>	Evaluate the linear and non-linear data structures in a given application

<b>APPLIED CHEMISTRY LAB</b>	<b>C 127.1</b>	Obtain the knowledge of acid-base titrations to determine the strength of acid and base solutions.
	<b>C 127.2</b>	Gain the knowledge of Redox titrations to determine the concentration of samples such as Ores, KMnO <sub>4</sub> and Copper using different indicators.
	<b>C 127.3</b>	Obtain the knowledge of complexometry titrations to determine the hardness of given water sample by EDTA method.
	<b>C 127.4</b>	Gain the knowledge of commonly used instruments such as pH meter, Conductivity meter and Potentiometer to determine the strength of given acid solutions.
<b>ENG. LAB-II</b>	<b>C 128.1</b>	Recognize the sounds of English with the help of audio visual aids
	<b>C 128.2</b>	Build confidence and overcome inhibitions while speaking in English.
	<b>C 128.3</b>	Demonstrate acquired language skills in performing the designated activity.
<b>CP LAB</b>	<b>C 129.1</b>	Understand various computer components, Installation of software. C programming development environment, compiling, debugging, and linking and executing a program using the development environment.
	<b>C 129.2</b>	Analyzing the complexity of problems, Modularize the problems into small modules and then convert them into programs.
	<b>C 129.3</b>	Construct programs that demonstrate effective use of C features including arrays, strings, structures, pointers and files.
	<b>C 129.4</b>	Apply and practice logical ability to solve the real world problems.
<b>EDC</b>	<b>C 211.1</b>	Apply and acquire knowledge on basic concepts of semiconductor physics.
	<b>C 211.2</b>	Apply the concept of different PN junction diodes in electronic circuits.
	<b>C 211.3</b>	Analyze various components of power supplies and transistor biasing.
	<b>C 211.4</b>	Design transistor amplifiers in various configurations and low frequency models.
	<b>C 211.5</b>	Implement various applications of transistors using modern tools.
<b>STLD</b>	<b>C 212.1</b>	Summarize different number systems and apply to generate various codes.
	<b>C 212.2</b>	Use the concept of Boolean algebra & basic gates to solve minimization of switching functions
	<b>C 212.3</b>	Design different types of combinational logic circuits.
	<b>C 212.4</b>	Apply knowledge of flip-flops in designing of Registers, counters & fsm
	<b>C 212.5</b>	Use EDA tool to design combinational and sequential circuits.
<b>SS</b>	<b>C 213.1</b>	Classify signals and systems as continuous time and discrete time based on their properties
	<b>C 213.2</b>	Analyze spectral characteristics of signals using Fourier series and Fourier transforms.
	<b>C 213.3</b>	Apply sampling theorem to convert continuous-time signals to discrete-time signal and reconstruct back
	<b>C 213.4</b>	Analyze the LTI systems in time and frequency domains.

	<b>C 213.5</b>	Analyze the signals with different transform technique(L.T & Z.T)
<b>NA</b>	<b>C 214.1</b>	To Define basic Electrical Quantities and associated units and relationship between charge, current, voltage and power.
	<b>C 214.2</b>	Discuss about what is active elements, passive elements and identification of mesh, node, path, loop.
	<b>C 214.3</b>	Analyze the dc excitations for RL,RC,RLC circuits
	<b>C 214.4</b>	To Analyze the concepts of network theorems for DC and AC and its application in practically
	<b>C 214.5</b>	Calculate the two port network parameters (Z, Y, ABCD, h & g).
<b>RVSP</b>	<b>C 215.1</b>	Understand the concepts of Random variables and its operations
	<b>C 215.2</b>	Analyze the operations like expectation, variance and moments of multiple random variables
	<b>C 215.3</b>	Characterize the random processes in time and frequency domain
	<b>C 215.4</b>	Analyze LTI systems driven by a stationary random process using correlation and spectral density functions.
<b>MEFA</b>	<b>C 216.1</b>	Analyze the scope of managerial economics.
	<b>C 216.2</b>	Analyze how production function is carried out to achieve maximum output.
	<b>C 216.3</b>	Analyze changing business environment in post liberalization scenario.
	<b>C 216.4</b>	Evaluate and interpret the financial statements to make informed decisions
<b>EDC LAB</b>	<b>C 217.1</b>	Identify various electronic components and devices with their specifications.
	<b>C 217.2</b>	Analyze the characteristics of various junction diodes and transistors and calculate their parameters.
	<b>C 217.3</b>	Verify the parameters of rectifier circuits with and without filter and voltage regulator.
	<b>C 217.4</b>	Design various amplifiers and observe its frequency response
<b>NET LAB</b>	<b>C 218.1</b>	Analyze RLC circuits and understand resonant frequency and q factor
	<b>C 218.2</b>	Determine first order RC/RL networks of non-sinusoidal waveforms.
	<b>C 218.3</b>	Apply network theorems to analyze the electrical network.
	<b>C 218.4</b>	Describe the performance of dc shunt machine and OC, SC test's on a Transformer
<b>ECA</b>	<b>C 221.1</b>	Design and analysis of small signal high frequency transistor amplifier using BJT and FET.
	<b>C 221.2</b>	Design and analysis of multi stage amplifiers using BJT and FET and Differential amplifier using BJT
	<b>C 221.3</b>	Deduce the expressions for frequency of oscillation and condition for oscillation of RC and LC oscillators and their amplitude and frequency stability concept.
	<b>C 221.4</b>	Know the classification of the power and tuned amplifiers and their analysis with performance comparison
<b>CS</b>	<b>C 222.1</b>	Illustrate the classification of control systems , effect of feedback on the performance of the system and controller components.
	<b>C 222.2</b>	Evaluating the transfer function of various types of control systems with different methods.
	<b>C 222.3</b>	Evaluating the time, frequency response of the system and the stability of the system using various plots.

	<b>C 222.4</b>	Illustrate the types of compensators to design compensators using time-domain and frequency domain specification
	<b>C 222.5</b>	Analyze the system response and stability of systems represented in state space form
<b>EMWTL</b>	<b>C 223.1</b>	Determine E and H using various laws and applications of electric & magnetic fields
	<b>C 223.2</b>	Apply the Maxwell equations to analyze the time varying behavior of EM waves
	<b>C 223.3</b>	Gain the knowledge in uniform plane wave concept and characteristics of uniform plane wave in various media
	<b>C 223.4</b>	Derive the expressions for input impedance of transmission lines and analyze the transmission line parameters
	<b>C 223.5</b>	Calculate reflection coefficient, VSWR etc. using smith chart
<b>AC</b>	<b>C 224.1</b>	Analyze various Analog modulation and demodulation schemes and their spectral characteristics
	<b>C 224.2</b>	Analyze noise characteristics of various analog modulation methods.
	<b>C 224.3</b>	Analyze various functional blocks of radio transmitters and receivers
	<b>C 224.4</b>	Design simple analog systems for various modulation techniques.
	<b>C 224.5</b>	Apply Modern tools like MATLAB and Python
<b>PDC</b>	<b>C 225.1</b>	Describe the concept of wave shaping circuits, Switching characteristics of diode and transistor.
	<b>C 225.2</b>	Design and analyze various multivibrators.
	<b>C 225.3</b>	Understand the functioning of different types of time-base generators.
	<b>C 225.4</b>	Compare different logic families and study working of sampling gates.
<b>MS</b>	<b>C 226.1</b>	Identify Different Organization Structures.
	<b>C 226.2</b>	Understand The Concepts of Principles Of Management.
	<b>C 226.3</b>	Apply Quality Control, Work-Study Principles in Real Life Industry.
	<b>C 226.4</b>	Develop Mission, Objectives, Goals & Strategies for An Enterprise in Dynamic Environment.
<b>ECA LAB</b>	<b>C 227.1</b>	Calculate various parameters of OPAMP using modern tools
	<b>C 227.2</b>	Analyze the working of various oscillators
	<b>C 227.3</b>	Analyze the working of various amplifiers.
	<b>C 227.4</b>	Simulate various amplifiers and oscillators using modern tools
<b>AC LAB</b>	<b>C 228.1</b>	Verify the working of linear and non-linear modulation techniques using hardware.
	<b>C 228.2</b>	Analyze the characteristics of pre-emphasis and de-emphasis circuits.
	<b>C 228.3</b>	Design and observe free running frequency, lock range and capture range of PLL
	<b>C 228.4</b>	Verify the characteristics of PAM, PWM, PPM using trainer kits
<b>CAO</b>	<b>C 311.1</b>	Analyze the architecture of modern computer and the performance of a computer using performance equation.

	<b>C 311.2</b>	Classify different instruction types and calculates the effective address of an operand by addressing modes.
	<b>C 311.3</b>	Illustrate the operation and interface of different I/O devices and memory systems.
	<b>C 311.4</b>	Design and describe the execution of instructions using hardwired and micro programmed control units.
<b>LICA</b>	<b>C 312.1</b>	Compute DC and AC Parameters for various Differential amplifier configurations
	<b>C 312.2</b>	Describe the concepts of operational amplifiers with linear integrated circuits
	<b>C 312.3</b>	Design circuits using operation amplifiers for various applications
	<b>C 312.4</b>	Design Butterworth filters and oscillators using functional ICs
<b>DICA</b>	<b>C 313.1</b>	Describe the structure of commercially available digital integrated circuit families
	<b>C 313.2</b>	Learn the IEEE Standard- 1076 Hardware Description Language (VHDL).
	<b>C 313.3</b>	Develop the VHDL code for the complex digital systems at several levels of abstractions,
	<b>C 313.4</b>	Analyze and design digital circuits with combinational and sequential logic circuits using VHDL
<b>DC</b>	<b>C 314.1</b>	Compare various pulse digital modulation techniques.
	<b>C 314.2</b>	Analyze and evaluate the concepts of digital modulation techniques for optimal reception.
	<b>C 314.3</b>	Design the source coding techniques based on the concept of information theory.
	<b>C 314.4</b>	Apply linear block codes and convolution codes for channel coding.
<b>AWP</b>	<b>C 315.1</b>	Understand the performance of various types of antennas parameters.
	<b>C 315.2</b>	Design, develop and fabricate antennas that are used in practice.
	<b>C 315.3</b>	Analysis & Synthesis of antenna arrays.
	<b>C 315.4</b>	Analyze the problems associated with radio wave propagation.
<b>PDC LAB</b>	<b>C 316.1</b>	Analyze the working principle of Linear, Non-Linear Wave shaping circuits.
	<b>C 316.2</b>	Understand the working of Schmitt trigger, relaxation oscillator and sweep circuits
	<b>C 316.3</b>	Design Multivibrator circuits using discrete components and determine its frequency of oscillations.
	<b>C 316.4</b>	Simulate various gates and flipflops using modern tools
<b>LICA LAB</b>	<b>C 317.1</b>	Understand the basic working of voltage regulator, Schmitt trigger and Operational Amplifier
	<b>C 317.2</b>	Analyze the working principle of oscillator and determine its frequency.
	<b>C 317.3</b>	Design Multivibrator circuits using IC 555 timers and determine its duty cycle
	<b>C 317.4</b>	Analyze various filters using op-amps
<b>DICA LAB</b>	<b>C 318.1</b>	Verify the functionality of logic gates using VHDL
	<b>C 318.2</b>	Design and verify various combinational logic circuits using VHDL
	<b>C 318.3</b>	Design and verify various sequential logic circuits using VHDL
	<b>C 318.4</b>	Implement MAC and ALU using VHDL.
<b>MPMC LAB</b>	<b>C 321.1</b>	Compare the architectural features and programming concepts of 8086,80386 and 80486 microprocessors.

	<b>C 321.2</b>	Develop the assembly language program for 8086 microprocessors.
	<b>C 321.3</b>	Analyze the concepts of 8086 microprocessor and 8051 micro controller interfacing with peripherals.
	<b>C 321.4</b>	Compare the architectural and programming concepts of 8051 and PIC microcontroller.
<b>MWE</b>	<b>C 322.1</b>	Analyze rectangular waveguides, and design wave guides for solving practical microwave transmission line problems
	<b>C 322.2</b>	Calculate S-matrix for various waveguide components and splitting the microwave energy in a desired direction
	<b>C 322.3</b>	Distinguish between Microwave tubes and Solid State Devices, calculation of efficiency of devices.
	<b>C 322.4</b>	Measure various microwave parameters using a Microwave test bench
<b>VLSID</b>	<b>C 323.1</b>	Compare the various IC fabrication methods
	<b>C 323.2</b>	Apply the concept of design rules for layouts
	<b>C 323.3</b>	Analyze the impact of scaling of MOSFETs
	<b>C 323.4</b>	Understand FPGA and low power design concepts and apply to various sub circuits
	<b>C 323.5</b>	Implement various sub-circuits using modern tools
<b>DSP</b>	<b>C 324.1</b>	Analyze the Discrete Time Signals and Systems
	<b>C 324.2</b>	Apply FFT algorithms for efficient computation of the DFT.
	<b>C 324.3</b>	Design and realize digital filters for desired specifications
	<b>C 324.4</b>	Use the multi-rate processing concepts in various applications
	<b>C 324.5</b>	Apply the signal processing concepts on DSP Processor
<b>BME</b>	<b>C 325.1</b>	Recall development of biomedical instrumentation, physiological systems of the body and bio-electric potentials.
	<b>C 325.2</b>	Classify several types of biopotential electrodes and transducers for biomedical applications.
	<b>C 325.3</b>	Describe various physiological systems of the body, elements of intensive care unit and therapeutic and prosthetic devices.
	<b>C 325.4</b>	Illustrate modern diagnostic techniques, bio-telemetry, biopotential amplifiers and recorders
<b>MPMC LAB</b>	<b>C 326.1</b>	An ability to understand programming of 8086 and 8051
	<b>C 326.2</b>	Develop assembly language programs using 8086 microprocessor.
	<b>C 326.3</b>	Develop assembly language programs for various applications using 8051 microcontroller
	<b>C 326.4</b>	An ability to perform interfacing with 8086 and 8051.
<b>VLSI LAB</b>	<b>C 327.1</b>	Design and implement logic gates using mentor graphics
	<b>C 327.2</b>	Design and implement combinational circuits using mentor graphics
	<b>C 327.3</b>	Design and implement sequential circuits using mentor graphics



	<b>C 327.4</b>	Design and implement memory using mentor graphics
<b>DC LAB</b>	<b>C 328.1</b>	Verify And Compare Various Digital Modulation Schemes in Time Domain
	<b>C 328.2</b>	Analyze The Multiplexing Techniques of TDM and companding
	<b>C 328.3</b>	Verify The Channel Coding Techniques Using Digital Trainer Kits
	<b>C 328.4</b>	Simulate The Source Coding Techniques Using Modern Tools
<b>RS</b>	<b>C 411.1</b>	Derive the radar range equations and solve related problems
	<b>C 411.2</b>	Interpret the different types of radars and its applications
	<b>C 411.3</b>	compare the different tracking techniques
	<b>C 411.4</b>	Analyze the performance of radar receiver and distinguish different components of a radar receiver
<b>DIP</b>	<b>C 412.1</b>	Perform image manipulations and different digital image processing techniques
	<b>C 412.2</b>	Perform basic operations like – Enhancement, segmentation, compression, Image transforms and restoration techniques on image.
	<b>C 412.3</b>	Analyze pseudo and full color image processing techniques.
	<b>C 412.4</b>	Apply various morphological operators on images
	<b>C 412.5</b>	Use of MATLAB/python to develop applications of image processing
<b>CN</b>	<b>C 413.1</b>	Describe the different aspects of networks, protocols and network design models.
	<b>C 413.2</b>	Illustrate various data link layer design issues and data link protocols.
	<b>C 413.3</b>	Analyze and compare different LAN protocols.
	<b>C 413.4</b>	Compare and select appropriate routing algorithms for a network.
	<b>C 413.5</b>	Examine the important aspects and functions of network layer, transport layer and application layer in inter networking.
<b>OC</b>	<b>C 414.1</b>	Interpreting the relevant components theory and working principle of optical fiber communication system and optical networks.
	<b>C 414.2</b>	Analyze the electromagnetic modes in waveguides, the amount of light lost going through an optical system, dispersion, bitrate of optical fibers.
	<b>C 414.3</b>	analyze and design different types of sources and photo detectors, and optical test equipment to analyze and design optical fiber and light wave systems.
	<b>C 414.4</b>	Designing the optical link using transmitter, Receiver and connectors. And choose the optical cables for better communication with minimum losses.
<b>SDTV</b>	<b>C 415.1</b>	interpret language construct and conventions in Verilog HDL
	<b>C 415.2</b>	construct various basic digital modules using Verilog HDL
	<b>C 415.3</b>	analyze the synthesis of various combinational and Sequential circuits

	<b>C 415.4</b>	identify various Verilog models like memory, microprocessor and microcontroller, bus models etc.
<b>ES</b>	<b>C 416.1</b>	Understand the basic concepts of an embedded system along with the ability to know a typical embedded system design approach to perform a specific function.
	<b>C 416.2</b>	Analyze to understand different concepts of communication interface, timers & counter, analog and digital electronic components required for an embedded hardware design.
	<b>C 416.3</b>	Make use of various embedded firmware design approaches, development languages and interrupts on embedded environment.
	<b>C 416.4</b>	Understand how to integrate hardware and firmware of an embedded system using real time operating system.
	<b>C 416.5</b>	Analyze and develop embedded software development life cycles and tools including testing.
<b>ME LAB</b>	<b>C 417.1</b>	Observe the characteristics of various microwave and optical sources
	<b>C 417.2</b>	Measure and analyze electrical and Scattering parameters of various microwave components using microwave bench
	<b>C 417.3</b>	Determine the losses and data rate in optical link.
	<b>C 417.4</b>	Examine the radiation pattern of the antennas.
<b>DSP LAB</b>	<b>C 418.1</b>	Understand the handling of discrete signals in time and frequency domain using MATLAB
	<b>C 418.2</b>	Demonstrate various signal and image processing operations using MATLAB
	<b>C 418.3</b>	Analyze and Design IIR and FIR filters using MATLAB.
	<b>C 418.4</b>	Verify various signal processing operations on DSP kit
<b>CMC</b>	<b>C 421.1</b>	Compare the different mobile telephone systems, multiple access schemes and types of interference.
	<b>C 421.2</b>	Describe the concepts of cellular systems and Radio propagation and modelling.
	<b>C 421.3</b>	Analyze and design the frequency management, channel assignment strategies and interference in cellular systems.
	<b>C 421.4</b>	Analyze carrier to interference ratio and different handoff strategies.
	<b>C 421.5</b>	Able to apply modern tools.
<b>EMI</b>	<b>C 422.1</b>	Analyze AC and DC bridges and know the static and dynamic characteristics of instruments, types of errors.
	<b>C 422.2</b>	Illustrate the working principle of Ammeters, Voltmeters, Ohmmeters, Multimeters, Wave Analyzers, and Signal generators for appropriate measurement.
	<b>C 422.3</b>	Analyze different types of digital instruments like Frequency Counters, Oscilloscopes, Q-meters
	<b>C 422.4</b>	Determine appropriate passive and active transducers for measurement of physical parameters.
<b>SC</b>	<b>C 423.1</b>	Understand the concepts, applications and subsystems of Satellite communications.
	<b>C 423.2</b>	Derive the expression for G/T ratio and to solve some analytical problems on satellite link design.

	<b>C 423.3</b>	Compare and analyze the various types of multiple access techniques and architecture of earth station.
	<b>C 423.4</b>	Understand the concepts of GPS and its architecture.
<b>WSN</b>	<b>C 424.1</b>	Demonstrate key concepts and wireless sensor node architectures.
	<b>C 424.2</b>	Illustrate knowledge of MAC protocols and routing protocols of WSN.
	<b>C 424.3</b>	Outline the operation of transport & security protocols of WSN.
	<b>C 424.4</b>	Develop different sensor networks through its respective tools.
<b>SEMINAR</b>	<b>C 425.1</b>	Acquire The Basic Skills For Performing Literature Survey And Paper Presentation
	<b>C 425.2</b>	Understand Methodologies And Professional Way Of Documentation And Communications
	<b>C 425.3</b>	Describe The Current Topics In Electronics, Communication And Related Areas Based On Current Publications
	<b>C 425.4</b>	Develop The Team Work And Leadership Skills With Professional And Ethical Values
<b>PROJECT</b>	<b>C 426.1</b>	Identify the complex engineering problems relevant to the society and Industry
	<b>C 426.2</b>	Apply modern technologies, tools and systems in the field of electronics and communication engineering to analyze and identify problems
	<b>C 426.3</b>	Design and implement a viable solution to the problem
	<b>C 426.4</b>	Apply communication, report writing skills and presentation skills
	<b>C 426.5</b>	Develop the team work and leadership skills with professional and ethical values