SIR C R REDDY COLLEGE OF ENGINEERING

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

COURSE OUTCOMES 2016-20

COURSE	COURSE CODE	COURSE OUTCOME DESCRIPTION
ENGLISH	**C 111.1**	Apply the four languages learning skills-listening, speaking, reading, writing (LSRW) for professional success.
	C 111.2	Employ knowledge of grammatical structures and vocabulary in speech and writing
	C 111.3	Apply effective communication skills to enhance professional possibilities.
	C 111.4	Develop acceptable personality traits suitable for chosen profession.
MATHEMATICS-I	**C 112.1**	Apply the partial differentiation techniques to solve certain problem arise in engineering.
	C 112.2	Solve the Differential Equations of first order and first degree related to various engineering applications.
	C 112.3	Solve the linear higher order differential equations with constant coefficients.
	C 112.4	Examine the nature, interval of convergence of infinite series.
MATHEMATICS-II	**C 113.1**	Solve system of linear simultaneous equations of various matrix methods.
	C 113.2	Apply Eigen value computation techniques to reduce a given quadratic to canonical form
	C 113.3	Apply Laplace transforms functions for solving ordinary differential equations.
	C 113.4	Apply special functions to evaluate improper integrals.
PHYSICS	**C 114.1**	Know the laws of Thermodynamics, conversion mechanism and efficiency of heat energy to work and their importance in Engineering.
	C 114.2	Learn the Electric & Magnetic fields and their relation, time varying electromagnetic fields and their energy transportation.
	C 114.3	Explain the concepts of interference, diffraction and Polarization undergo analysis of optical effects and contribute to engineering applications.
	C 114.4	Understand the Lasers & its propagation through Optical fibers and importance of Ultrasonic waves and able to apply these in different applications in engineering.
	C 114.5	Understand the importance of Superconductors Nanomaterials in various Engineering applications and also learn the concepts of Quantum mechanics to explain the electrical behavior of the materials at atomic level.
ENGG. GRAPHICS	**C 115.1**	Draw basic components of engineering drawing viz geometric constructions, curves etc.
	C 115.2	Construct scales: plain, diagnol and vernier
	C 115.3	Draw orthographic projections of points, lines and solids as per the International standards.

	C 115.4	Draw sectional drawings and developments as per National and International standards.
	C 115.5	Draw solid machine components using various drawing techniques viz Isometric.
PEHV	**C 116.1**	Understand the values in education and real life
	C 116.2	Understand the values in respective professions and analyze the ethical role of engineers
	C 116.3	Understand the concept of harmony in life and moral responsibility of engineers
	C 116.4	Understand environmental ethics and apply in real life
PHYSICS LAB	**C 117.1**	Apply the knowledge of different phenomena of light like interference, diffraction and handle various optical measuring instruments.
	C 117.2	Verify the laws of thermo dynamics, electro magnetism and stretched string.
	C 117.3	Draw the relevance between theoretical knowledge and the means to imply it in a practical manner by performing various relative experiments
WORKSHOP	**C 118.1**	Apply wood working knowledge in making simple wood joints
	C 118.2	Apply the development of surfaces concept in producing simple sheet metal works
	C 118.3	Prepare simple fitting joints with the use of proper fitting tools
MATHEMATICS III	**C 121.1**	Apply the concept of lines, planes, spheres and the students are through in defining and evaluating geometric figure.
	C 121.2	Solve double and triple integrals to find areas and volumes.
	C 121.3	Apply special functions to evaluate improper integrals.
	C 121.4	Compute Fourier series for different function and also half range series certain types of functions.
CHEMISTRY	**C 122.1**	Select the methods used for purification of water for domestic and industrial purposes
	C 122.2	Identify the advantages and limitations of plastics, building materials and their use in day to day life
	C 122.3	Select the suitable methods of corrosion control.
	C 122.4	Identify the fuels which are commonly used and their economics, advantages and limitations.
	C 122.5	Obtain the knowledge of semiconductors, super conductors and liquid crystals
CPNM	**C 123.1**	Students will be able to identify appropriate C language constructs to solve problem
	C 123.2	Understand the concepts of homogeneous data types to solve different problems.
	C 123.3	Apply the concepts of function modules, its usage and memory allocation using pointers
	C 123.4	Understand the concepts of heterogeneous data types and file handling feature in C
	C 123.5	Solve system of linear algebraic equations and apply Newton's forward & backward interpolation for equal intervals, Langranges's formulae for unequal intervals
	C 123.6	Describe the concept of numerical integration and numerical solutions of differential equations

HST	**C 124.1**	Able to understand about the scientific history of India, a particular period's of Indian cultural habitats and the how to improvements of science and tech.
	C 124.2	Able to understand about policy resolution statements of India, and CSIR activities.
	C 124.3	Able to understand the applications Bio-technology & its applications like DNA finger printing, cloning, Tissue culture.
	C 124.4	Able to understand about the Indian Defense research and their imp. & ocean development and biological resources, & research institutions. understand about the Indian satellites, launch vehicle technology, types of satellites etc., technology transfer and fore casting
BEE	**C 125.1**	Understand electronic materials and their properties
	C 125.2	Outline Active & Passive components, Kirchoff laws , measuring meters.
	C 125.3	List various types of Diodes , Transistors and their applications
	C 125.4	Comprehend power electronic devices and Integrated Circuits.
CHEMISTRY LAB	**C 126.1**	Obtain the knowledge of acid-base titrations to determine the strength of acid and base solutions.
	C 126.2	Gain the knowledge of Redox titrations to determine the concentration of samples such as Ores and oxalic acid using different indicators.
	C 126.3	Obtain the knowledge of complexometry titrations to determine the hardness of given water sample by EDTA method.
	C 126.4	Gain the knowledge of commonly used instrument pH meter to determine the strength of given acid solution.
CPNM LAB	**C 127.1**	Students will have a fundamental idea about computer programming concept
	C 127.2	Students will have a fundamental idea to write C program to solve simple engineering programs using control statements, arrays and functions
	C 127.3	Students will have a fundamental idea to write C program to solve simple engineering programs using pointers, Structures and Files
	C 127.4	Students will have a fundamental idea about sources of errors in numerical methods
	C 127.5	Students will have a fundamental idea to carry out interpolation techniques, partial differential and numerical integration
ENGLISH LAB	**C 128.1**	Recognize the sounds of English with the help of audio visual aids
	C 128.2	Build confidence and overcome inhibitions while speaking in English.
	C 128.3	Demonstrate acquired language skills in performing the designated activity.
M IV	**C 211.1**	Apply the concepts of vector calculus to the problems of work done by a force, circulation and flux.
	C 211.2	Apply different theorems related to vector integration like Greens, Stokes and Gauss Divergence theorem.

	C 211.3	Solve the first and higher order of partial differential equations and apply to various engineering problems.
	C 211.4	Apply the concept of Fourier transform to evaluate the given integral.
NTA	**C 212.1**	To define basic Electrical Quantities and associated units and relationship between charge, current, voltage and power.
	C 212.2	Discuss active elements, passive elements and identification of mesh, node, path, loop.
	C 212.3	Analyze the concepts of network theorems for DC and AC and its application in practically.
	C 212.4	Compare Poles and zeros in network functions.
EM	**C 213.1**	Understand the working principle of generator and motor and solve problems on them.
	C 213.2	Analyze the equivalent circuit of transformer.
	C 213.3	Compare the equivalent circuit of induction machine with transformer.
	C 213.4	Determine the voltage regulation of synchronous generator &understand the starting methods of synchronous motor.
	C 213.5	Understand double field revolving theory and starting methods of single-phase induction machines.
EDC	**C 214.1**	Apply and acquire knowledge on basic concepts of semiconductor physics.
	C 214.2	Apply the concept of different PN junction diodes in electronic circuits.
	C 214.3	Analyze various components of power supplies and transistor biasing.
	C 214.4	Design transistor amplifiers in various configurations and low frequency models.
	C 214.5	Implement various applications of transistors using modern tools.
STLD	**C 215.1**	Classify different number systems and apply to generate various codes.
	C 215.2	Use the concept of Boolean algebra & logic gates in the minimization of switching functions.
	C 215.3	Analysis and design of various Combinational circuits.
	C 215.4	Analysis and design of various sequential circuits.
DATA STRUCTURES	**C 216.1**	Learn the basic concepts like array, functions, pointers, files and structures, stack, queue, tree and graphs.
	C 216.2	Apply various operations for maintaining common data structures like stack, queue, search trees.
	C 216.3	Analyze various methods of tree traversals and way of organizing large amounts of data by using different sorting and searching techniques.
	C 216.4	Design appropriate data structures for solving computing problem.
NM LAB	**C 217.1**	Analyze RLC circuits and understand resonant frequency and q factor.
	C 217.2	Determine first order RC/RL networks of non-sinusoidal waveforms.
	C 217.3	Apply network theorems to analyze the electrical network.
	C 217.4	Describe the performance of DC shunt machine.
EDC LAB	**C 218.1**	Identify various electronic components and devices with their specifications.

	C 218.2	Analyze the characteristics of various junction diodes and transistors and calculate their parameters.
	C 218.3	Verify the parameters of rectifier circuits with and without filter and voltage regulator.
	C 218.4	Design various amplifiers and observe its frequency response.
M V	**C 221.1**	Understand and apply the concepts of analytic functions, sequences and series of the complex functions.
	C 221.2	Define principal concepts about sampling and Apply the Simple Random Sampling (SRS) methods.
	C 221.3	Apply difference equation to find solution of linear difference equations.
	C 221.4	Apply z-transforms to the solution of certain types of difference equation.
EMTL	**C 222.1**	Apply vector calculus to static electric fields in different engineering solutions.
	C 222.2	Analyze the problems related to magneto static fields with proper knowledge of law's, theorems & equations.
	C 222.3	Apply the Maxwell equations to analyze the time varying behaviour of EM waves &gain the knowledge in uniform plane wave concept and characteristics of uniform plane wave in various media.
	C 222.4	Apply the transmission line concepts and use smith chart to find various parameters useful to design a circuit at radiofrequency.
	C 222.5	Analyze the propagation parameters of TE and TM waves in rectangular waveguides.
AEC	**C 223.1**	Design and analysis of small signal high frequency transistor amplifier using BJT and FET.
	C 223.2	Design and analysis of multi stage amplifiers using BJT and FET and Differential amplifier using BJT.
	C 223.3	Deduce the expressions for frequency of oscillation and condition for oscillation of RC and LC oscillators and their amplitude and frequency stability concept.
	C 223.4	Know the classification of the power and tuned amplifiers and their analysis with performance comparison.
PDC	**C 224.1**	Analyze wave shaping and switching characteristics of linear and non-linear circuits.
	C 224.2	Analyze and generate gating, and time – base signals.
	C 224.3	Design regenerative feedback circuits.
	C 224.4	Design digital circuits using diodes and transistors.
PTRP	**C 225.1**	Comprehend the axiomatic formulation of probability theory.
	C 225.2	Understand the concepts of Random variables and its operations.
	C 225.3	Characterize the random processes in time and frequency domain.
	C 225.4	Analyze LTI systems driven by a stationary random process using correlation and spectral density functions.
SS	**C 226.1**	Classify signals and systems as continuous time and discrete time based on their properties.
	C 226.2	Analyse spectral characteristics of signals using Fourier series and Fourier transforms.
	C 226.3	Analyze and evaluate the response of LTI system using the concepts of convolution and correlation.
	C 226.4	Analyze and evaluate the transform domain and its significance.

	C 226.5	Understand the process of sampling and reconstruction.
ES	**C 227.1**	Ability to acquire knowledge about the importance of environment & availability of resources.
	C 227.2	Understand different environmental challenges induced due to anthropogenic activities as well as nature.
	C 227.3	Identify the solutions to the environmental problems for the sake of healthy life by protecting our natural resources.
	C 227.4	Create awareness on the social issues, environmental protection acts.
	C 227.5	Understand the environmental impact of developmental activities.
DIC & HDL LAB	**C 228.1**	Verify the functionality of logic gates and realize them using basic building blocks.
	C 228.2	Design and verify various combinational and sequential logic circuits using digital IC's
	C 228.3	Analyze the working of seven segment display.
	C 228.4	Simulate various combinational and sequential logic circuits using VHDL.
AEC LAB	**C 229.1**	Ability to perform and calculate various parameters of OPAMP.
	C 229.2	Analyze the working of various oscillators.
	C 229.3	Analyze the working of various amplifiers.
	C 229.4	Simulate various amplifiers and oscillators using modern tools.
LICA	**C 311.1**	Identify the basic characteristics of op amp.
	C 311.2	List various linear and nonlinear applications of op-amp.
	C 311.3	Construct different active filters and signal conditioning circuits.
	C 311.4	Examine the need of different special ICs and converters.
AC	**C 312.1**	Describe the various modulation and demodulation techniques and different types noise.
	C 312.2	Formulate and solve the analog communication problems.
	C 312.3	Analyze the performance of different analog Communication systems.
	C 312.4	Analyze and design various transmitters and Receivers of analog communication systems.
	C 312.5	Able to apply Modern tools like MATLAB and Python
CAO	**C 313.1**	Apply and analyze about major components of a computer such as processor, memory and I/O modules along with their interconnections internally with outside world.
	C 313.2	Design and analysis about architecture of central processing unit and functions of micro programmed control unit.
	C 313.3	Illustrate the operation and interface of different of I/O devices and memory systems.
	C 313.4	Describe about simple and multiple processor organization and analyze their issues.
AWP	**C 314.1**	Understand the performance of various types of antennas parameters.
	C 314.2	Design, develop and fabricate antennas that are used in practice.

	C 314.3	Analysis & Synthesis of antenna arrays.
	C 314.4	Analyze the problems associated with radio wave propagation.
CS	**C 315.1**	Compare different types of control systems and derive its transfer functions.
	C 315.2	Analyze the mathematical modelling of mechanical and electrical systems.
	C 315.3	Analyze the transient and steady state response of first and second order systems.
	C 315.4	Analyze the stability of higher order systems from transfer functions using R-H criteria and various plots.
DSP	**C 316.1**	Apply the concepts of signals and systems.
	C 316.2	Analyze and evaluate the Transform domain and its significance.
	C 316.3	Apply FFT algorithms for efficient computation of the DFT.
	C 316.4	Design and realize the filter with desired specifications.
	C 316.5	Analyze the applications of FFT and DSP.
LIC & PC LAB	**C 317.1**	Understand the basic working of voltage regulator, Schmitt trigger and Operational Amplifier.
	C 317.2	Analyze the working principle of Linear, Non-Linear Wave shaping circuits and relaxation oscillator.
	C 317.3	Design Multivibrator circuits using IC 555 and determine its frequency of oscillations.
	C 317.4	Simulate various filters and multivibrators using modern tools.
AC LAB	**C 318.1**	Verify the working of linear and non-linear modulation techniques using hardware.
	C 318.2	Analyze and Design filters and observe their frequency response characteristics.
	C 318.3	Analyze the characteristics of pre-emphasis and de-emphasis circuits.
	C 318.4	Design and observe free running frequency, lock range and capture range of PLL.
CNE	**C 321.1**	Describe the different aspects of networks, protocols and network design models.
	C 321.2	Illustrate various data link layer design issues and data link protocols.
	C 321.3	Analyze and compare different LAN protocols.
	C 321.4	Compare and select appropriate routing algorithms for a network.
	C 321.5	Examine the important aspects and functions of network layer, transport layer and application layer in inter networking.
MPMC	**C 322.1**	compare /the architectural features and programming concepts of 8086,80386 and 80486 microprocessors.
	C 322.2	Develop the assembly language program for 8086 microprocessors.
	C 322.3	Analyse the concept of 8086 microprocessor interfacing with memory and peripherals.
	C 322.4	Compare the architectural and programming concepts of 8051 and PIC and ARM microcontroller.
DC	**C 323.1**	Compare various pulse digital modulation techniques.
	C 323.2	Analyze and evaluate the concepts of digital modulation techniques for optimal reception.
	C 323.3	Design the source coding techniques based on the concept of information theory.

	C 323.4	Apply linear block codes and convolution codes for channel coding.
EMI	**C 324.1**	Present the static and dynamic characteristics of instruments and types of errors. Analyze the AC and DC bridges.
	C 324.2	Illustrate the working principle of ammeters, voltmeters, ohmmeters, multimeters and signal generators for appropriate measurement.
	C 324.3	Analyze different types of digital instruments like Frequency Counters, Oscilloscopes, Wave Analyzers, Q-meters.
	C 324.4	Determine appropriate passive and active transducers for measurement of physical parameters.
CMC	**C 325.1**	Compare the different mobile telephone systems, multiple access schemes and types of interference.
	C 325.2	Describe the concepts of cellular systems and Radio propagation and modelling.
	C 325.3	Analyze and Design the frequency management, channel assignment strategies and interference in cellular systems.
	C 325.4	Analyze carrier to interference ratio and different handoff strategies.
	C 325.5	Able to apply modern tools.
DIP	**C 326.1**	Describe and analyse the fundamental concepts of gray scale and color image processing system.
	C 326.2	Develop Fourier transform techniques for image processing in frequency domain.
	C 326.3	Analyse methodologies for Image segmentation and Restoration.
	C 326.4	Apply and design image processing algorithms in practical applications.
DSP LAB	**C 327.1**	Understand the handling of discrete signals in time and frequency domain and using MATLAB.
	C 327.2	Demonstrate various signal processing operations using MATLAB.
	C 327.3	Analyze and Design IIR and FIR filters using MATLAB.
	C 327.4	Verify various signal processing operations on DSP kit.
MPMC LAB	**C 328.1**	An ability to understand programming of 8086 and 8051.
	C 328.2	Develop assembly language programs using 8086 microprocessors.
	C 328.3	Develop assembly language programs for various applications using 8051 microcontrollers.
	C 328.4	An ability to perform interfacing with 8086 and 8051.
PEM	**C 411.1**	Apply the concept of economics, principles and functions of management.
	C 411.2	Analyze different forms of business organizations and conditions of different market structures.
	C 411.3	Analyze the functional areas of the management.
	C 411.4	Analyze the role of an entrepreneur and entrepreneurship in the present business world.
RE	**C 412.1**	Apply and analyze the basic principle of radar system.
	C 412.2	Differentiate & compare the various types of Radars.

	C 412.3	Analyze and calculate the various kinds of Radar's parameters.
	C 412.4	Evaluate the various radar system's performance.
FOC	**C 413.1**	Interpreting the relevant components theory and working principle of optical fiber communication system and optical networks.
	C 413.2	Analyze the electromagnetic modes in waveguides, the amount of light lost going through an optical system, dispersion, bitrate of optical fibers.
	C 413.3	analyze and design different types of sources and photo detectors, and optical test equipment to analyze and design optical fiber and light wave systems.
	C 413.4	Designing the optical link using transmitter, Receiver and connectors. And choose the optical cables for better communication with minimum losses.
VLSID	**C 414.1**	Compare the various IC fabrication methods.
	C 414.2	Apply the concept of design rules for layouts.
	C 414.3	Analyze the impact of scaling of MOSFETs.
	C 414.4	Design various subsystem circuits.
	C 414.5	Implement various sub-circuits using modern tools.
ME	**C 415.1**	Design different modes in waveguide structures.
	C 415.2	Calculate S-matrix for various waveguide components and splitting the microwave energy in a desired direction.
	C 415.3	Distinguish between Microwave tubes and Solid State Devices, calculation of efficiency of devices.
	C 415.4	Measure various microwave parameters using a Microwave test bench & fabricate simple micro strip circuits.
GPS	**C 416.1**	Apply the knowledge of evolution and development of GPS.
	C 416.2	Illustrat and apply GPS working principle to determine the receiver & user position.
	C 416.3	Interprete the navigational message and signals received by the GPS satellite and coordinate systems.
	C 416.4	Compare the basics of other Global Navigation Satellite Systems.
ME LAB	**C 417.1**	Observe the characteristics of various microwave sources.
	C 417.2	Measure and analyze Scattering parameters of various microwave components using microwave bench.
	C 417.3	Determine electrical parameters of various microwave components using microwave bench.
	C 417.4	Examine the radiation pattern of the antennas.
DC LAB	**C 418.1**	Verify and compare functionality of converters.
	C 418.2	Demonstrate various digital modulation schemes.
	C 418.3	verify the characteristics of PAM, PWM, PPM using trainer kits.

	C 418.4	Analyze the multiplexing Techniques of TDM, OFDM..
PROJECT	**C 421.1**	Identify the complex engineering problems relevant to the society and Industry.
	C 421.2	Apply modern technologies, tools and systems in the field of electronics and communication engineering to analyze and identify problems.
	C 421.3	Design and implement a viable solution to the problem.
	C 421.4	Apply communication, report writing skills and presentation skills.
	C 421.5	Develop the team work and leadership skills with professional and ethical values.