PROGRAMME OUTCOMES (POs)

Students graduating from Electronics and communication Engineering should be able to:

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

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

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

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

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

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

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

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

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

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

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

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

PROGRAMME SPECIFIC OUTCOME (PSOs)

PSO1: To apply the Engineering knowledge to develop Innovative Ideas for existing / Novel problems through information and communication technologies (ICT).

PSO2: To design the Analog and Digital system and practice for Developing Quality products.

PSO3: Understand social needs and environmental concerns with ethical responsibility to become a successful professional.

COURSE OUTCOMES

I - SEMESTER	
Course code	**C101**
Subject code	**HS6151**
Subject name	**Communicative English**
COURSE OUTCOMES	
CO1	Illustrate method of technical communication to individuals and groups.
CO2	Summarize different types of learning through observation and perfect reproduction.
CO3	Demonstrate flawless writing using wide range of Vocabulary Practices.
CO4	Interpret different visual materials and forms of interviews.
CO5	Infer email communication and technical creative writing.

Course code	C102
Subject code	MA6151
Subject name	**Engineering Mathematics – I**
COURSE OUTCOMES	
CO1	Analyze the Eigen values & Eigen vectors of the matrices.
CO2	Describe the concepts of Cayley-Hamilton theorem, diagonalization of matrices and reduction of a quadratic form by orthogonal reduction.
CO3	Analyze the angle between two lines, equation of a plane and straights and familiar with the concept of coplanar lines, shortest distance between skew lines, sphere and planes.
CO4	Solve problems on curvature, radius and circle of curvatures in various types of coordinates and obtain evolutes and envelopes of the standard curves.
CO5	Calculate the total derivative, differentiation of implicit function, Taylor series of function of two variables and determine Jacobian elements, Maxima, Minima of two Variables and Lagragian multiplier.

Course code	C103
Subject code	PH6151
Subject name	**Engineering Physics-I**
COURSE OUTCOMES	
CO1	Classify the Bravais lattices and different types of crystal structures and growth techniques.
CO2	Demonstrate the properties of elasticity and heat transfer through objects.
CO3	Discuss black body radiation, properties of matter waves and Schrodinger wave equations.
CO4	Illustrate the acoustic requirements, production and application of ultrasonics.
CO5	Examine the characteristics of laser and optical fiber.

Course code	C104
Subject code	CY6151
Subject name	**Engineering Chemistry-I**

COURSE OUTCOMES	
CO1	Discuss the methods of treatment of water for boiler and domestic use.
CO2	Evaluate the importance and significance of different types of polymers and composites in engineering applications.
CO3	Illustrate the significance of absorption in catalyst and pollution control.
CO4	Differentiate the methodology of harvesting energy from nonconventional energy sources.
CO5	Describe the correct engineering materials for designing machineries, etc.

Course code	C105
Subject code	GE6151
Subject name	**Computer Programming**

COURSE OUTCOMES	
CO1	Demonstrate the organization of a computer and number systems.
CO2	Analyse the attributes of algorithm and programming basics.
CO3	Illustrate the simple programs by using arrays and string functions.
CO4	Interpret the functions and pointers for solving the problems.
CO5	Practice the simple applications using structure and union.

Course code	C106
Subject code	GE6152
Subject name	**ENGINEERING GRAPHICS**

COURSE OUTCOMES	
CO1	Sketch the conic sections, special curves, orthographic views from pictorial views/models and outline their practical applications.
CO2	Apply the principles of orthographic projections of points in all quadrants, lines and planes in first quadrant.
CO3	Sketch the projections of simple solids like prisms, pyramids, cylinder and cone and obtain the traces of plane figures.
CO4	Sketch the sectional views of solids like cube, prisms, pyramids, cylinders, cones and its lateral surfaces.
CO5	Apply the principles of isometric and perspective projections of simple solids, truncated prisms, pyramids, cone and cylinders.

Course code	C107
Subject code	GE6161
Subject name	Computer Practices Laboratory
COURSE OUTCOMES	
CO1	Utilize word processing, spread sheet and power point software tools.
CO2	Model and debug the C language programs.
CO3	Experiment the simple search and sort algorithms.
CO4	Review the use of pointers in C programming.
CO5	Analyze the arrays, functions and structures in C programming.

Course code	C108
Subject code	GE6162
Subject name	Engineering Practices Laboratory
COURSE OUTCOMES	
CO1	Make use of wiring circuits for residential house, fluorescent lamp and stair case.
CO2	Classify the electrical quantities of V, I & PF in RLC and energy with single phase energy meter.
CO3	Demonstrate the logic gates and electronic components.
CO4	Manipulate PCB with electronic components, devices and circuits for general purposes.
CO5	Perform HWR & FWR with ripple factor and clock signal generation.

Course code	C109
Subject code	GE6163
Subject name	Physics and Chemistry Laboratory- I
COURSE OUTCOMES	
CO1	Calculate the wavelength of spectral lines using spectrometer and laser, particle size, acceptance angle of an optical fiber using semiconductor diode laser.
CO2	Enumerate the optic knowledge in non-ideal elements, such as lasers and optics in experiments.
CO3	Appraise the Young's modulus of the beam by non-uniform bending method.
CO4	Examine the DO content in water sample by Winkler's method and molecular weight of polymer by Ostwald viscometer.
CO5	Test for the strength of an acid using pH meter and conductometer.

II - SEMESTER	
Course code	C110
Subject code	HS6251
Subject name	Technical English-II
COURSE OUTCOMES	
CO1	Demonstrate informal communication and participating.
CO2	Illustrate conversation practices and phrasal verbs in real life situations.
CO3	Sketch the structure of conversation and writing strategies.
CO4	Infer forms of interviews and profile preparation for a job.
CO5	Make use of skills in group discussion & project report preparation.

Course code	C111
Subject code	MA6251
Subject name	Mathematics – II
COURSE OUTCOMES	
CO1	Calculate Laplace Transforms of periodic functions and solve the ODE using InverseLaplace Transform.
CO2	Discover solenoidal, irrotational vectors and explain the concepts of Green's & Gauss divergence, Stokes theorem to evaluate single, double and triple integrals.
CO3	Recall the properties of analytic functions for verifying C-R equations and determine Bilinear Transformation.
CO4	Change the order of integration using Cartesian and polar coordinates and find thearea enclosed by a plane curves and volume of solids.
CO5	Manipulate the functions of two variables as Taylor's & Laurent's series and evaluateContour integrals using Cauch's Integral formula.

Course code	C112
Subject code	PH6251
Subject name	Engineering Physics -II
COURSE OUTCOMES	
CO1	Illustrate Classical and Quantum free electron theory& calculate carrier concentration in metals.
CO2	Describe the carrier concentration in semiconductors and identify the P-type & N-type semiconductor using Hall effect.
CO3	Classify the different types of magnetic and superconducting materials.
CO4	Generalize the dielectrics, types of polarization, losses and breakdowns.
CO5	Discuss the properties, preparation and applications of Metallic Alloys, SMA, Nano materials, NLO, Biomaterials.

Course code	C113
Subject code	CY6251
Subject name	Engineering Chemistry-II
COURSE OUTCOMES	
CO1	Demonstrate the electrochemical reaction, types of electrodes and EMF of a cell and its applications.
CO2	Describe the different types of corrosion & its consequences and also its prevention.
CO3	Classify the types of fuels like solid, liquid & gaseous. Calculate the GCV, LCV stoichiometric of fuel & air ratio and also analysis of fuel gas.
CO4	Analyze the phase transitions of one & two component systems, types of alloys and their significance in industries.
CO5	Report the principles and instrumentations of various spectroscopic techniques.

Course code	C114
Subject code	EC6201
Subject name	Electronic Devices
COURSE OUTCOMES	
CO1	Describe the theory, construction and operation of semiconductor diodes.
CO2	Discuss the operation and characteristics of bipolar junction devices.
CO3	Summarize field effect transistor characteristics and their operations.
CO4	Illustrate working of various types of special semiconductor devices.
CO5	Analyze the construction, operation and applications of power and display devices.

Course code	C115
Subject code	EC6202
Subject name	Circuit Theory
COURSE OUTCOMES	
CO1	Analyze electrical circuits using Kirchhoff's law.
CO2	Apply circuit theorems to evaluate AC & DC circuits.
CO3	Deduce the concepts of resonance & coupled circuit.
CO4	Analyze the transient response for AC & DC circuits.
CO5	Calculate the power and power factor in three phase circuits.

Course code	C116
Subject code	GE6262
Subject name	Physics and Chemistry Laboratory– II
COURSE OUTCOMES	
CO1	Appraise the Young's modulus of the beam by uniform bending method, the moment of inertia and Rigidity Modulus for thin wire using Torsion Pendulum.
CO2	Use Poiseuille's method for determining the coefficient of viscosity of the liquid.
CO3	Analyze the refractive index of spectral lines for determining the dispersive power of prism and the thickness of a thin wire through interference fringes using Air wedge apparatus.
CO4	Determine the type, amount of alkalinity, hardness in given water sample and find the amount of copper using EDTA method.
CO5	Examine the potentiometric redox titration and Conductometric precipitation titration.

Course code	C117
Subject code	EC6211
Subject name	Circuits and Devices Laboratory
COURSE OUTCOMES	
CO1	Determine the characteristics of diodes and transistors.
CO2	Demonstrate the clipper, clamper & FWR circuits.
CO3	Apply KVL, KCL, Thevenin, Norton, Superposition, maximum power transferand reciprocity theorems to DC circuits.
CO4	Design serial & parallel RLC Circuits.
CO5	Illustrate the transient response of RL and RC circuits.

III – SEMESTER	
Course code	C201
Subject code	MA 6351
Subject name	**TRANSFORMS AND PARTIAL DIFFERENTIAL EQUATIONS**
COURSE OUTCOMES	
CO1	Apply Fourier series analysis in Engineering problems.
CO2	Classify and solve wave equations and heat equations.
CO3	Solve problems related to engineering applications by using Fourier transform techniques.
CO4	Solve discrete transforms and difference equations.
CO5	Formulate and solve problems involving Partial Differential Equations.

Course code	C202
Subject code	EE6352
Subject name	**Electrical Engineering and Instrumentation**
COURSE OUTCOMES	
CO1	Familiar with the concepts of transformers and its application in power transmission and distribution.
CO2	Perform experiments to analyze the concepts of DC generators and speed control of DC motor.
CO3	Interpret the operationsof electrical AC generator and motor.
CO4	Sketch functional blocks of data acquisition system.
CO5	Analyze the importance of digital instruments in measurements.

Course code	C203
Subject code	EC6301
Subject name	**Object Oriented Programming and Data structures**
COURSE OUTCOMES	
CO1	Discuss fundamentals of class scope, constructors, destructors, overloading concepts.
CO2	Experiment the concepts of polymorphism and classify inheritance with the understanding of memory management.
CO3	Apply data structures such as arrays, linked lists, stacks and queues in various applications.
CO4	Able to solve problem involving graphs and trees.
CO5	Apply Algorithm for solving problems like insertion and deletion of data.

Course code	C204
Subject code	EC 6302
Subject name	Digital Electronics
COURSE OUTCOMES	
CO1	Analyze different methods used for simplification of Boolean expressions.
CO2	Analyze and design various combinational circuits using logic gates.
CO3	Design and analyze the timing properties of sequential circuits using state machines.
CO4	Design and develop various modes of asynchronous sequential circuits.
CO5	Synthesize combinational and sequential circuits using Verilog HDL.

Course code	C205
Subject code	EC6303
Subject name	Signals and Systems
COURSE OUTCOMES	
CO1	Apply the transforms in analysis of signals and system in continuous and discrete time domain.
CO2	Develop input output relationship for linear shift invariant system and evaluate the time and frequency response.
CO3	Analyze the limitations of Fourier transform and need for Laplace transform to analyze the system in s- domain.
CO4	Evaluate the signals in frequency domain using Fourier series and Fourier transforms.
CO5	Analyze discrete time LTI systems using Z transform and DTFT.

Course code	C206
Subject code	EC6304
Subject name	Electronic Circuits-I
COURSE OUTCOMES	
CO1	Design and troubleshoot the regulated DC power supplies.
CO2	Characterize various biasing methods for amplifier circuits.
CO3	Perform small signal analysis of BJT,FET transistors for single-stage and multi stage amplifiers.
CO4	Analyze the characteristics of large signal power amplifiers.
CO5	Compare low frequency and high frequency analysis of BJT and FET Amplifiers.

Course code	C207
Subject code	EC6311
Subject name	**Analog and Digital Circuits laboratory**
COURSE OUTCOMES	
CO1	Design the combinational circuits using standard gates and classify minimization methods.
CO2	Design and analyze the frequency Response of Amplifiers.
CO3	Apply various sequential circuits using Flip-flops.
CO4	Design rectifiers using active and passive elements.
CO5	Simulate Amplifier using SPICE.

Course code	C208
Subject code	EC6312
Subject name	**OOPS and Data structures Laboratory**
COURSE OUTCOMES	
CO1	Demonstrate the C++ programs for manipulating constructors, destructors, overloading concepts.
CO2	Apply data structures such as arrays, linked lists in various applications.
CO3	Execute the different data structures like stacks and queues for developing solutions to practical problems.
CO4	Perform with Stack ADT - Array and linked list developing and their application.
CO5	Write and execute the program for Heap Sort , Quick Sort program counter and status register.

IV - SEMESTER	

Course code	C209
Subject code	MA6451
Subject name	**Probability and Random Process**
COURSE OUTCOMES	
CO1	Identify the functions of discrete & continuous random variables, moments and moment generating functions.
CO2	Solve problems in marginal and conditional distributions using the concept of correlation, regressions and transformation of two dimensional random variables.
CO3	Determine the process is either SSS or WSS and classify the TPM of Markov chain process.
CO4	Analyse the autocorrelation and cross correlation between two

	random variables.
CO5	Evaluate the power spectral density and cross power spectral density.

Course code	C210
Subject code	EC6401
Subject name	**Electronic Circuits II**
COURSE OUTCOMES	
CO1	Summarize the concepts of feedback amplifiers.
CO2	Classify the various types of oscillators.
CO3	Design different types of tuned amplifiers and analyze its performance.
CO4	Discuss various types of wave shaping circuits and multivibrators.
CO5	Examine the blocking oscillator and time base generator circuits.

Course code	C211
Subject code	EC6402
Subject name	**Communication Theory**
COURSE OUTCOMES	
CO1	Classify the various types of amplitude modulation systems such as DSBSC, SSB and VSB.
CO2	Discuss the various types of angle modulation system such as narrow and wide band FM circuits.
CO3	Apply the concepts of Random Process to the design of communication systems.
CO4	Classify the types of noise sources added in communication channel.
CO5	Discuss about information theory and compute the Huffman and Shannon-fanon encoding models and Examine the noise performance in AM and FM systems.

Course code	C212
Subject code	EC6403
Subject name	**Electromagnetic Fields**
COURSE OUTCOMES	
CO1	Analyze field potentials due to static charges using theorems and laws such as Coulomb's Law, Gauss Law.
CO2	Discuss different boundary conditions for electric field and apply Poisson's & Laplace's equations to find capacitance.
CO3	Analyze the field potentials due to charges in static magnetic fields.
CO4	Illustrate how materials affect magnetic fields.
CO5	Analyze the relation between the fields under time varying situations and Interpret integral and differential Maxwell's equation for time varying functions.

Course code	C213
Subject code	EC6404
Subject name	**Linear Integrated Circuits**
COURSE OUTCOMES	
CO1	Interpret the performance characteristics of operational amplifier.
CO2	Practice linear and non-linear operational amplifier applications such as adders, sub tractors, integrator, differentiator, log amplifiers and filters.
CO3	Design the applications using analog multiplier and PLL.
CO4	Construct ADC and DAC using OP – AMPS.
CO5	Determine waveforms using OP – AMP Circuits and Analyze linear and non linear applications of OP – AMPS.

Course code	C214
Subject code	EC6405
Subject name	**Control System Engineering**
COURSE OUTCOMES	
CO1	Compute the transfer function of different physical systems.
CO2	Analyze the time domain specifications and calculate the steady state error.
CO3	Illustrate the frequency response characteristics of open loop and closed loop system response.
CO4	Analyze the stability using Routh Hurwitz criterion and root locus techniques.
CO5	Illustrate the state space model of a physical system.

Course code	C215
Subject code	EC6411
Subject name	**Circuits and Simulation Integrated Laboratory**
COURSE OUTCOMES	
CO1	Analyze various types of feedback amplifiers.
CO2	Design of oscillators, tuned amplifiers, wave-shaping circuits.
CO3	Demonstrate the oscillators and tuned amplifiers using SPICE.
CO4	Demonstrate the wave-shaping circuits and multivibrators using SPICE.
CO5	Demonstrate the voltage and current time base circuits using SPICE.

Course code	C216
Subject code	EE6461
Subject name	**Electrical Engineering and Control System Laboratory**
COURSE OUTCOMES	
CO1	Classify the starters for various applications and test the characteristics of DC shunt machines under various conditions.
CO2	Compute the transfer function of a DC shunt generator and the regulation of three phase alternator.
CO3	Analyze the performance of a single phase transformer and performance curves of AC machines.
CO4	Construct the bridge network circuit to measure the value of passive elements and analyze the stability of linear system through the simulation software.
CO5	Illustrate the effect of P, PI and PID controllers and design the Lead & Lag compensators And Analyze the characteristics of DC and AC machines.

Course code	C217
Subject code	EC6412
Subject name	**Linear Integrated Circuits Laboratory**
COURSE OUTCOMES	
CO1	Design of oscillators and amplifiers using Op-Amp.
CO2	Design of filters using Op-Amp and analyze the frequency response.
CO3	Investigate the working of PLL and its frequency multiplier circuit.
CO4	Design of DC power supply circuit using ICs.
CO5	Analyze the performance of oscillators and multi vibrators using PSPICE.

V - SEMESTER	
Course code	C301
Subject code	EC6501
Subject name	**Digital Communication**
COURSE OUTCOMES	
CO1	Discuss sampling, quantization and encoding techniques.
CO2	Summarize DPCM, DM, ADPCM and ADM techniques.
CO3	Analyze the line coding and techniques for eliminating ISI in digital communication system.
CO4	Design and implement base band transmission and reception schemes and implement band pass signaling schemes.
CO5	Apply error control coding techniques in digital communication system.

Course code	C302
Subject code	EC6502
Subject name	**Principle of Digital Signal Processing**
COURSE OUTCOMES	
CO1	Apply Discrete Fourier Transform (DFT) for the analysis of digital signals & systems.
CO2	Design an analog to digital Infinite Impulse Response (IIR) filters and its realization.
CO3	Design of digital Finite Impulse Response (FIR) filters using the windowing technique.
CO4	Evaluate the frequency sampling method and to realize their structure.
CO5	Illustrate the finite word length effects on filters.

Course code	C303
Subject code	EC6503
Subject name	**Transmission Lines and Waveguides**
COURSE OUTCOMES	
CO1	Describe the different forms of Maxwell's equations.
CO2	Discuss the propagation of signals through transmission lines and analyze impedance matching using smith chart.
CO3	Illustrate uniform plane wave propagation in different mediums.
CO4	Define the transmission and reflection characteristics of plane waves at boundaries.
CO5	Analyze the propagation of waves in waveguides and resonators.

Course code	C304
Subject code	GE6351
Subject name	**Environmental Science and Engineering**
COURSE OUTCOMES	
CO1	Relate the structure and functions of different Eco Systems and Bio diversity.
CO2	Classify the effects and control measures of various environmental pollutions.
CO3	Analyze the role of an individual in conservation of various natural resources.
CO4	Discuss about the various environmental protection acts.
CO5	Report the impact of population growth on environment and discuss about welfare programme.

Course code	C305
Subject code	EC6504
Subject name	**Microprocessor and Microcontroller**
COURSE OUTCOMES	
CO1	Illustrate the architecture of 8086 and write its assembly language programs.
CO2	Develop the 8086 system bus structure and multiprocessor configurations.
CO3	Discuss memory and I/O interfacing with applications such as traffic light controller, display interface and alarm controller.
CO4	Describe the architecture of 8051 microcontroller and write its assembly language programs.
CO5	Experiment the interfacing programs such as ADC, DAC, stepper motor and waveform generation with the help of 8051 microcontroller.

Course code	C306
Subject code	EC6511
Subject name	**Digital Signal Processing Laboratory**
COURSE OUTCOMES	
CO1	Develop and experiment coding from basic mathematical operations to complex operations like DFT and FFT.
CO2	Analyse the amplitude and phase spectrum of the signal in frequency domain.
CO3	Analyze the finite word length effect on DSP systems.
CO4	Apply the FFT techniques for various applications of DSP systems.
CO5	Apply the adaptive filters for various applications of DSP systems.

Course code	C307
Subject code	EC6512
Subject name	**Communication Systems Laboratory**
COURSE OUTCOMES	
CO1	Design and verify the sampling & reconstruction and TDM circuits.
CO2	Design and verify the AM, FM and its demodulation circuits.
CO3	Discuss the working of PCM, DM, ADM and demodulation circuits.
CO4	Design band pass digital signaling schemes through simulation for FSK, PSK, QPSK and QAM techniques.
CO5	Compute the line coding schemes to improve the noise performance of communication systems through simulations.

Course code	C308
Subject code	EC6513
Subject name	**Microprocessor and Microcontroller Laboratory**
COURSE OUTCOMES	
CO1	Develop the ALP Programs for fixed point arithmetic circuits.
CO2	Design and develop programs on 8086 microprocessor by understanding its architecture, instruction set and interrupt process.
CO3	Compile the ALP for generating waveforms such as square wave and triangular wave using microprocessors.
CO4	Design a communication interface by understanding the system bus structure of 8086 microprocessor.
CO5	Develop the programs in 8051 microcontroller for ADC, DAC, stepper motor.

VI – SEMESTER

Course code	C309
Subject code	MG8651
Subject name	**Principles of Management**
COURSE OUTCOMES	
CO1	Interpret the managerial roles in local and global organization, environmental factors & Strategies for International business.
CO2	Categorize the planning process & benefits of MBO.
CO3	Infer the decision making model under different conditions.
CO4	Illustrate the different organization structure, Line & staff authority, staff selection & Career development and performance appraisal process.
CO5	Demonstrate the creativity, innovation and leadership styles through the principles of effective communication and organization culture.

Course code	C310
Subject code	CS6303
Subject name	**Computer Architecture**
COURSE OUTCOMES	
CO1	Identify data representation, instruction formats and the operation of a digital computer.
CO2	Illustrate the arithmetic and logic unit.
CO3	Discuss about development schemes of control unit and pipeline performance.
CO4	Illustrate the parallel processing architectures.
CO5	Describe the performance of memory and I/O systems.

Course code	C311
Subject code	CS6551
Subject name	Computer Networks
COURSE OUTCOMES	
CO1	Identify the components required to build different types of networks.
CO2	Discuss the required functionality at data link layer for an application.
CO3	Analyze the routing path of network.
CO4	Sketch the solution for functionalities of transport layer protocol.
CO5	Discuss the protocols in the application layer.

Course code	C312
Subject code	EC6601
Subject name	VLSI Design
COURSE OUTCOMES	
CO1	Outline the CMOS semiconductor technology and its principles.
CO2	Discuss the design principles of various combinational logic circuits for digital operations.
CO3	Design the various arithmetic building blocks of the combinational and sequential circuits.
CO4	Experiment with the design principles of various sequential logic circuits for digital operations.
CO5	Illustrate the various development strategies of the combinational and sequential logic circuits.

Course code	C313
Subject code	EC6602
Subject name	Antenna and Wave propagation
COURSE OUTCOMES	
CO1	Describe the fundamentals of antenna parameters, impedance matching and dipole antennas.
CO2	Examine the concepts of aperture antennas and understand its design procedures.
CO3	Analyze the various types of antenna arrays, N element antenna arrays and pattern multiplication.
CO4	Design and explain the principles of special antennas, EBG structures, antenna measurement procedure for radiation pattern, gain.
CO5	Classify the various propagation methods and understand the structure of ionosphere and its electrical properties due to the magnetic field of earth.

Course code	C314
Subject code	EC6001
Subject name	Medical Electronics
COURSE OUTCOMES	
CO1	Discuss the terminologies of electro-physiology and its recording.
CO2	Analyse the measurement techniques of bio-chemical and non-electrical parameters.
CO3	Classify the various types of assist devices.
CO4	Examine the various diathermy and bio-telemetry techniques.
CO5	Outline current trends in medical instrumentation.

Course code	C315
Subject code	EC6611
Subject name	Computer Networks Laboratory
COURSE OUTCOMES	
CO1	Demonstrate the communication between two desktop computers.
CO2	Elaborate the different protocols used incomputer communication.
CO3	Develop and compare the various routing algorithms.
CO4	Develop the cryptography techniques.
CO5	Develop both wired and wireless networks.

Course code	C316
Subject code	EC6612
Subject name	VLSI DesignLaboratory
COURSE OUTCOMES	
CO1	Design the Verilog HDL code for basic as well as advanced digital integrated circuits.
CO2	Develop the integrated circuit logics into Xilinx FPGA Boards.
CO3	Calculate area, speed, power and delay of the integrated circuit modules.
CO4	Model the analog IC blocks using EDA tools and build the GDSII format.
CO5	Design the digital integrated circuits and analyze its performance using internal logic analyzer.

Course code	C317
Subject code	GE6674
Subject name	**Communication and Soft skills Laboratory**
COURSE OUTCOMES	
CO1	Apply appropriate communication skills across settings, purposes and audiences.
CO2	Discover the knowledge of communication using technology prominent to diverse situations.
CO3	Develop the critical thinking for innovative and well-founded perspectives related to the students' emphases.
CO4	Take part in international examination such as IELTS and TOEFL.
CO5	Demonstrate the appropriate and professional ethical behavior.

VII - SEMESTER

Course code	C401
Subject code	EC6701
Subject name	**ANTENNAS AND MICROWAVE ENGINEERING**
COURSE OUTCOMES	
CO1	Analyze the different low frequency parameters and S parameters and describe the RF component basics.
CO2	Analyze the amplifiers by means of stability, noise figures and study of various matching networks.
CO3	Describe the operation of passive and active microwave devices.
CO4	Discuss about the working principle of various microwave tubes and the limitations of conventional tubes.
CO5	Analyze the principle of operation of measuring instruments.

Course code	C402
Subject code	EC6702
Subject name	**OPTICAL COMMUNICATION AND NETWORKS**
COURSE OUTCOMES	
CO1	Describe the various optical fiber modes and configurations.
CO2	Discuss the various signal degradation associated with optical fiber transmission.
CO3	Interpret various optical sources and detectors.
CO4	Examine the receiver operation and various fibre parameter measurements.
CO5	Infer the optical networks and its associated parameters on system

	performance.

Course code	C403
Subject code	EC6703
Subject name	EMBEDDED AND REAL TIME SYSTEMS

COURSE OUTCOMES	
CO1	Develop the architecture and programming of ARM processor.
CO2	Outline the concepts program level in embedded processor computing.
CO3	Discuss the basic concepts of real time Operating system.
CO4	Illustrate the concept of design methodologies techniques for embedded system.
CO5	Evaluate the performance of various RTOS mechanisms.

Course code	C404
Subject code	IT6005
Subject name	DIGITAL IMAGE PROCESSING

COURSE OUTCOMES	
CO1	Synthesize the fundamentals of digital image processing techniques.
CO2	List the various image enhancement techniques in spatial and frequency domain.
CO3	Analyze the various filtering methods for image restoration and segmentation.
CO4	Utilize various coding techniques for image compression.
CO5	Infer various features of image representation techniques.

Course code	C405
Subject code	EC6009
Subject name	Advanced Computer Architecture

COURSE OUTCOMES	
CO1	Outline the fundamentals of Computer design.
CO2	Demonstrate the performance of instruction level parallelism.
CO3	Classify the different data level parallelism.
CO4	Compare the performance of different architectures.
CO5	Illustrate the hardware features involved in memory and I/O.

Course code	C406
Subject code	EC6016
Subject name	Opto Electronic Devices
COURSE OUTCOMES	
CO1	Discuss the elements of light and semiconductor physics.
CO2	Categorize the various display devices and LASER modes.
CO3	Discuss the working of optical detection devices.
CO4	Illustrate the types of opto electronic modulator.
CO5	List the application of optoelectronic integrated circuits.

Course code	C407
Subject code	EC6711
Subject name	Embedded Laboratory
COURSE OUTCOMES	
CO1	Create the programs for ARM based applications.
CO2	Demonstrate the memory operations, A/D & D/A convertors using ARM system.
CO3	Analyze the interrupt functions in ARM based systems.
CO4	Demonstrate the keyboard, display, motor and sensor interfacing units.
CO5	Evaluate the ARM performance for various optimization.

Course code	C408
Subject code	EC6712
Subject name	Optical and Microwave Laboratory
COURSE OUTCOMES	
CO1	Different characteristics of klystron and Gunn diode.
CO2	Solve theoretical S – Parameter measurement with the practical value.
CO3	Apply S – Matrix characterization.
CO4	Evaluate the radiation pattern, gain and directivity of any antenna.
CO5	Design fiber optic analog and digital link.

VIII - SEMESTER	
Course code	C409
Subject code	EC6801
Subject name	**Wireless Communication**
COURSE OUTCOMES	
CO1	Discuss about wireless channels and various signaling schemes for fading channels.
CO2	Compare multipath mitigation techniques and analyze their performance.
CO3	Examine the cellular system.
CO4	Analyze the various digital signaling methods and error performance in fading channels.
CO5	Discuss about MIMO systems with transmit/receive diversity.

Course code	C410
Subject code	EC6802
Subject name	**Wireless Networks**
COURSE OUTCOMES	
CO1	Categorize the various protocols and standards of wireless LAN.
CO2	Relate the protocols for mobile network layer and routing in mobile ad-hoc network.
CO3	Illustrate the TCP for mobile transport layer.
CO4	Discuss about the different wireless WAN architectures.
CO5	Discuss the 4G technologies and its applications.

Course code	C411
Subject code	GE6075
Subject name	**Professional Ethics in Engineering**
COURSE OUTCOMES	
CO1	Create an awareness of human values to appreciate the rights of others and stress management.
CO2	Illustrate the moral issues and models of professional roles.
CO3	Discuss the ethical issues related to engineering and realize the responsibilities and rights in the society.
CO4	Analyze the responsibilities, rights and assesses of the safety and risk.
CO5	Apply the social responsibility on multinational corporations related to engineering.

Course code	C412
Subject code	GE6751
Subject name	**Total Quality Management**
COURSE OUTCOMES	
CO1	Examine the need and dimensions of quality in Engineering practice.
CO2	Illustrate the TQM principles such as leadership, quality plan, customer focus, employee involvement and six sigma concepts.
CO3	Discuss the benchmarking process and various stages of FMEA.
CO4	Describe various tools and techniques of TQM such as QFD, Taguchi quality loss function and TPM.
CO5	Illustrate the need of ISO 9000, QS 9000, ISO 14000 quality system elements, documentation and quality audit.

Course code	C413
Subject code	EC6811
Subject name	**Project Work**
COURSE OUTCOMES	
CO1	Identify challenging practical problems, solutions to cope up with present scenario of Electronics and Communication Engineering field.
CO2	Analyze the various methodologies and technologies and discuss with team for solving the problem.
CO3	Apply technical knowledge and project management skills for solving the problem.
CO4	Design and develop hardware and/or software for their project specific problem.
CO5	Formulate the project reports and give proper explanation during the presentation and demonstration.