DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
R2017 - COURSE OUTCOMES

Semester : 02	Course code : C113	EC8251- CIRCUIT ANALYSIS

COURSE OUTCOMES (CO)

Upon completion of the course, the students will be able to

C113.1	Analyze electrical circuits
C113.2	Apply circuit theorems in real time AC and DC circuits
C113.3	Describe the working of resonance and coupled circuits
C113.4	Analyze transient based DC and sinusoidal source
C113.5	Analyze two port networks and their parameters

Semester : 02	Course code : C114	EC8252 – ELECTRONIC DEVICES

COURSE OUTCOMES (CO)

Upon completion of the course, the students will be able to

C114.1	Analyse the operation and characteristics of basic electronic devices.
C114.2	Analyse and compare the equivalent circuits of the transistors.
C114.3	Operate the diodes, transistors (Bipolar and Junction Field Effect), Power devices (LED, LCD) and other electronic devices.
C114.4	Apply and utilize the basic electronics in display and power devices.
C114.5	Identify the applications of basic electronics and its devices.

Semester : 02	Course code : C115	EC8261 –CIRCUITS AND DEVICES LAB

Course Outcomes

Up on completion of the course students should be able to:

C115.1	Analyze the characteristics of basic electronic devices.
C115.2	Design RL and RC circuits.
C115.3	Verify KVL & KCL, Thevinin, Norton and Super Position Theorems.
C115.4	Verify Reciprocity and Maximum Power Transfer Theorem.
C115.5	Analyze the characteristics of Wave shaping circuits and Rectifier.

Semester : 03	Course code : C201	MA8352 - LINEAR ALGEBRA AND PARTIAL DIFFERENTIAL EQUATIONS

COURSE OUTCOMES (CO)

Upon completion of the course, the students will be able to

C201.1	Explain the fundamental concepts of advanced algebra and their role in modern mathematics and applied contexts.
C201.2	Demonstrate accurate and efficient use of advanced algebraic techniques.
C201.3	Demonstrate their mastery by solving non - trivial problems related to the concepts and by proving simple theorems about the statements proven by the text.
C201.4	Able to solve various types of partial differential equations.
C201.5	Able to solve engineering problems using Fourier series.

Semester : 03	Course code : C202	EC8393- FUNDAMENTALS OF DATA STRUCTURES IN C

COURSE OUTCOMES (CO)

Upon completion of the course, the students will be able to

C202.1	Implement linear and non-linear data structure operations using C
C202.2	Suggest appropriate linear / non-linear data structure for any given data set.
C202.3	Apply hashing concepts for a given problem
C202.4	Modify or suggest new data structure for an application
C202.5	Appropriately choose the sorting algorithm for an application

Semester : 03	Course code : C203	EC 8351 - ELECTRONIC CIRCUITS I

COURSE OUTCOMES (CO)

Upon completion of the course, the students will be able to

C203.1	Analyze, Design and Explain the methods of biasing transistors.
C203.2	Design and analyze single stage and multistage amplifier circuits.
C203.3	Analyze and synthesize the frequency response of small signal amplifiers.
C203.4	Design and synthesize the high frequency response of amplifiers.
C203.5	Design, Troubleshoot and fault analysis of power supplies.

Semester : 03	Course code : C204	EC8352 – SIGNALS AND SYSTEMS

COURSE OUTCOMES (CO)

Upon completion of the course, the students will be able to

C204.1	Determine if a given system is linear/causal/stable.
C204.2	Determine the frequency components present in a deterministic signal.
C204.3	Characterize LTI systems in the time domain and frequency domain .
C204.4	Compute the output of LTI system in the time domain .
C204.5	Compute the output of an LTI system in the frequency domain .

Semester : 03	Course code : C205	EC8392 - DIGITAL ELECTRONICS

COURSE OUTCOMES (CO)

Upon completion of the course, the students will be able to

C205.1	Implement digital electronics in the present contemporary world.
C205.2	Design various combinational digital circuits using logic gates.
C205.3	Analyze the procedures for synchronous and asynchronous sequential circuits.
C205.4	Examine the semiconductor memories and related technology.
C205.5	Investigate electronic circuits involved in the design of logic gates.

Semester : 03	Course code : C206	EC8391 - CONTROL SYSTEMS ENGINEERING

COURSE OUTCOMES (CO)

Upon completion of the course, the students will be able to

C206.1	Describe the Modeling of Electrical & Mechanical systems & representation of systems.
C206.2	Test the time domain analysis of control systems required for stability analysis.
C206.3	Test the frequency domain analysis & to design the compensation technique that can be used to stabilize control systems.
C206.4	Examine the stability analysis of control systems.
C206.5	Inspect and explore the CT & DT systems in state variable analysis and digital control systems

Semester : 03	Course code : C207	EC8381- FUNDAMENTALS OF DATA STRUCTURES IN C LABORATORY

COURSE OUTCOMES (CO)

Upon completion of the course, the students will be able to

C207.1	Write basic and advanced programs in C.
C207.2	Implement functions and recursive functions in C.
C207.3	Implement data structures using C.
C207.4	Choose appropriate sorting algorithm for an application and implement it in a modularized way .
C207.5	Implementation of algorithm in a modularized way.

Semester : 03	Course code : C208	EC8361 - ANALOG AND DIGITAL CIRCUITS LAB

COURSE OUTCOMES (CO)

Upon completion of the course, the students will be able to

C208.1	Discriminate and judge the characteristics of Cascade and Cascode Amplifier.
C208.2	Appraise the limitation in bandwidth of single Stage Transistor and FET Amplifiers.
C208.3	Examine and interpret Amplifiers characteristics using Spice.
C208.4	Incorporate and demonstrate the characteristics of Combinational Circuits.
C208.5	Incorporate and demonstrate the characteristics of Sequential circuits.

Semester : 03	Course code : C209	HS8381- INTERPERSONAL SKILLS/ LISTENING & SPEAKING

COURSE OUTCOMES (CO)

Upon completion of the course, the students will be able to

C209.1	Comprehend information by listening actively and to give appropriate response
C209.2	Articulate ideas and converse in formal and informal contexts with accuracy and clarity.
C209.3	Initiate conversations, compare and contrast information fluently, using lexical chunks
C209.4	Participate effectively in group discussions and conversations by employing appropriate verbal and non-verbal feedback.
C209.5	Speak clearly and fluently with correct pronunciation, stress and intonation.

Semester : 04	Course code : C210	MA 8451 - PROBABILITY AND RANDOM PROCESSES

COURSE OUTCOMES (CO)

Upon completion of the course, the students will be able to

C210.1	Understand the concepts of probability, discrete and continuous random variables as well as certain special discrete and continuous distributions.
C210.2	Extend the concepts to two-dimensional random variables and to compute various important statistical quantities associated with them.
C210.3	Understand random process and recognize the various types while dealing with signals and communication systems.
C210.4	Appreciate the role of autocorrelation, cross correlation, power spectral density and its importance in communication Engineering.
C210.5	Apply concepts in linear systems and their important variants in practical applications.

Semester : 04	Course code : C211	EC8452- ELECTRONIC CIRCUITS II

COURSE OUTCOMES (CO)

Upon completion of the course, the students will be able to

C211.1	Analyze different types of amplifier, oscillator and multivibrator circuits
C211.2	Design BJT amplifier and oscillator circuits
C211.3	Analyze transistorized amplifier and oscillator circuits
C211.4	Design and analyze feedback amplifiers
C211.5	Design LC and RC oscillators, tuned amplifiers, wave shaping circuits, multivibrators, power amplifier and DC convertors.

Semester : 04	Course code : C212	EC8491- COMMUNICATION THEORY

COURSE OUTCOMES (CO)

Upon completion of the course, the students will be able to

C212.1	Design AM communication systems.
C212.2	Design Angle modulated communication systems.
C212.3	Apply the concepts of Random Process to the design of Communication systems.
C212.4	Analyze the noise performance of AM and FM systems.
C212.5	Interpret the concept of sampling and quantization.

Semester : 04	Course code : C213	EC8451–ELECTROMAGNETIC FIELDS

COURSE OUTCOMES (CO)

Upon completion of the course, the students will be able to

C213.1	Employ the fundamental electromagnetic laws and concepts.
C213.2	Examine how materials affect electric and magnetic fields.
C213.3	Cast Maxwell's equations in integral, differential and phasor forms and interpret their physical meaning.
C213.4	Enunciate electromagnetic wave propagation in lossy and in lossless media
C213.5	Solve simple problems requiring estimation of electric and magnetic field quantities based on these concepts and laws.

Semester : 04	Course code : C214	EC8354– LINEAR INTEGRATED CRICUITS

COURSE OUTCOMES (CO)

Upon completion of the course, the students will be able to

C214.1	To introduce the basic building blocks of linear integrated circuits.
C214.2	To teach the linear and non-linear applications of operational amplifiers.
C214.3	To introduce the theory and applications of analog multipliers and PLL.
C214.4	To teach the theory of ADC and DAC.
C214.5	To introduce the concepts of waveform generation and introduce some special function ICs.

Semester : 04	Course code : C215	GE8291 - ENVIRONMENTAL SCIENCE AND ENGINEERING

COURSE OUTCOMES (CO)

Upon completion of the course, the students will be able to

C215.1	Obtain knowledge about environment, ecosystems and biodiversity.
C215.2	Take control measures of environmental pollution.
C215.3	Gain knowledge about natural resources and energy sources.
C215.4	Find and implement scientific, technological, economic and political solutions to environmental problems.
C215.5	Understand the impact of environment on human population.

Semester : 04	Course code : C216	EC8461 - CIRCUITS DESIGN AND SIMULATION LABORATORY

COURSE OUTCOMES (CO)

Upon completion of the course, the students will be able to

C216.1	Classify various types of feedback amplifiers.
C216.2	Explain oscillators, tuned amplifiers.
C216.3	Construct wave-shaping circuits and multivibrators.
C216.4	Implement and simulate feedback amplifiers, oscillators using SPICE Tool.
C216.5	Construct tuned amplifiers, wave-shaping circuits and multivibrators using SPICE Tool.

Semester : 04	Course code : C217	EC8462 - LINEAR INTEGRATED CIRCUITS LAB

COURSE OUTCOMES (CO)

Upon completion of the course, the students will be able to

C217.1	Design amplifiers, oscillators, D-A converters using operational amplifiers.
C217.2	Design filters using op-amp and performs an experiment on frequency response.
C217.3	Analyze the working of PLL and describe its application as a frequency multiplier.
C217.4	Design DC power supply using ICs.
C217.5	Analyze the performance of filters, multivibrators, A/D converter and analog multiplier using SPICE.

Semester : 05	Course code : C301	EC6501–DIGITAL COMMUNICATION

COURSE OUTCOMES (CO)

Upon completion of the course, the students will be able to

C301.1	Explain the basic concepts of Information theory
C301.2	Compute the source coding techniques such as Shannon Fano and Huffman coding.
C301.3	Illustrate and compare the Encoding schemes such as DPCM, DM, ADPCM, ADM & LPC and different waveform coding schemes.
C301.4	Analyse the baseband transmission and Reception techniques
C301.5	Evaluate the performance of digital modulation schemes such as BPSK, BFSK, QPSK, DPSK & QAM
C301.6	Infer the channel coding theorem and error control coding and decoding schemes like block codes, hamming codes, cyclic codes, convolutional codes and viterbi decoder

Semester : 05	Course code : C302	EC8553 - DISCRETE TIME SIGNAL PROCESSING

COURSE OUTCOMES (CO)

Upon completion of the course, the students will be able to

C302.1	Analyse the signals in frequency domain using DFT and FFT algorithm. (K4)
C302.2	Perform Linear filtering to demonstrate the output response of a system and characterize frequency selective filters. (K3)
C302.3	Design digital IIR and FIR to select specific frequency components present in the signal. (K4)
C302.4	Select appropriate realization structure for various filters and characterize the effects of finite word length in filters. (K4)
C302.5	Analyse the errors due to quantization and realize the architecture of digital signal processors. (K4)
C315.6	Demonstrate their ability to program DSP processors for various signal processing applications. (K3)

Semester : 05	Course code : C303	EC 8552 - COMPUTER ARCHITECTURE AND ORGANIZATION

COURSE OUTCOMES (CO)

Upon completion of the course, the students will be able to

C303.1	Describe the computer organisation,Instruction set and algorithms for arithmetic .(K2)
C303.2	Illustrate the implementation schemes of the control unit and data path design.(K3)
C303.3	Classify the performance of different pipelined processors and interpret parallel processing.(K4)
C303.4	Categorize the memory design,performance improvement techniques and compare the properties of shared memory and multiprocessor systems.(K4)
C303.5	Discuss the concept of input,output organisation and internal communication methodologies.(K4)
C303.6	Explain the knowledge gained in various unconventional computer architectures.(K3)

Semester : 05	Course code : C304	EC 8551 - COMPUTER NETWORKS

COURSE OUTCOMES (CO)

Upon completion of the course, the students will be able to

C304.1	Identify the different components and protocols required to build data communication networks. (K1)
C304.2	Understand the required functionality of each layer for the given application. (K2)
C304.3	Illustrate the data formats of each layer for successful end to end communication. (K2)
C304.4	Analyze and trace the flow of information from one node to another node in the network. (K4)
C304.5	Apply the ideas learnt in developing a computer network. (K3)
C304.6	Design Security aspects at each layer of computer networks. (K4)

Semester : 05	Course code : C306	EC8073 - MEDICAL ELECTRONICS

COURSE OUTCOMES (CO)

Upon completion of the course, the students will be able to

C306.1	Identify the amplitude and frequency of ECG, EEG, EMG & PCG. (K3)
C306.2	Sketch the lead systems and recording setup of ECG, EEG, EMG & PCG for diagnosis. (K2)
C306.3	Describe the measurement techniques for biochemical and non electrical parameters for the purpose of screening.(K2)
C306.4	Illustrate the working of assist devices and application of therapeutic instruments on different diseased conditions.(K2)
C306.5	Explain the functioning of MRI and Ultrasound imaging for diagnosis.(K2)
C306.6	Summarize the working principle of Bio -Telemetry, Tele-medicine and recent trends in various diagnostic equipment.(K2)

Semester : 05	Course code : C315	OIT552 - CLOUD COMPUTING

COURSE OUTCOMES (CO)

Upon completion of the course, the students will be able to

C315.1	Articulate the main concepts, key technologies, strengths and limitations of cloud computing.
C315.2	Learn the key and enabling technologies that help in the development of the cloud.
C315.3	Develop the ability to understand and use the architecture of compute and storage cloud, service and delivery models.
C315.4	Explain the core issues of cloud computing such as resource management and security.
C315.5	Be able to install and use current cloud technologies.
C315.6	Choose the appropriate technologies, algorithms and approaches for implementation and use cloud.

Semester : 05	Course code : C331	ORO551 - RENEWABLE ENERGY SOURCES

COURSE OUTCOMES (CO)

Upon completion of the course, the students will be able to

C331.1	Describe different methods of utilization of renewable energy sources (K1)
C331.2	Classify various energy conversion devices used for renewable energy Utilization (K2).
C331.3	Summarize various energy storage methodologies applicable to renewable energy sources (K2)
C331.4	Interpret the economic aspects of utilization of renewable sources of energy (K2).
C331.5	Apply the knowledge of energy conversion techniques into renewable energy utilization in economically viable practical situations (K3).
C331.6	Integrate the knowledge in capturing and applying various forms of renewable energy sources.(K3).

Semester : 05	Course code : C319	OBT553 - FUNDAMENTALS OF NUTRITION

COURSE OUTCOMES (CO)

Upon completion of the course, the students will be able to

C319.1	Thrive knowledge on basic concept of food chemistry and different nutrients in food
C319.2	Identify and describe nutritional requirement during special conditions and various methods assessing nutritional status
C319.3	Describe the chemical components in foods with the relationship of digestion and absorption process in our body.
C319.4	Emphasis the essential nutrients - the function of carbohydrates and their role in promoting a maintaining optimal health.
C319.5	Illustrate the functions and sources of proteins and lipids and their role in maintenance of go health.
C319.6	Recognize the significance of maintaining body weight & regular exercise for healthy living.

Semester : 05	Course code : C338	EC8562 - DIGITAL SIGNAL PROCESSING LABORATORY

COURSE OUTCOMES (CO)

Upon completion of the course, the students will be able to

C338.1	Analyze discrete time signals & systems using MATLAB
C338.2	Design the digital filters for various applications meeting the requirements
C338.3	Apply programming knowledge in developing projects
C338.4	Develop DSP based applications on DSP processors.
C338.5	Work effectively in as team and individual in doing digital signal processing experimen following the safety procedures and ethics
C338.6	Document effectively the digital signal processing experiments carried in the laboratory

Semester : 05	Course code : C339	EC8561 - COMMUNICATION SYSTEMS LABORATORY

COURSE OUTCOMES (CO)

Upon completion of the course, the students will be able to

C339.1	Demonstrate signal sampling and Multiplexing Scheme. (K3)
C339.2	Generate and detect amplitude and frequency modulation. (K3)
C339.3	Implement encoding schemes using PCM and DM techniques. (K3)
C339.4	Demonstrate base band transmission schemes such as ASK, BFSK, BPSK. QPSK, QAM and DPSK. (K3)
C339.5	Apply various channel coding schemes and demonstrate the improvement of noise performance. (K3)
C339.6	Simulate and validate the various functional modules of communication systems.(K4)

Semester : 05	Course code : C340	EC8563 - COMMUNICATION NETWORKS LABORATORY

COURSE OUTCOMES (CO)

Upon completion of the course, the students will be able to

C340.1	Communicate between two desktop computers
C340.2	Implement different Protocols such as Stop & Wait, Go back N/Sliding window & Selecti repeat
C340.3	Study the performance of network with CSMA / CA protocol and compare with CSMA/CD protocols.
C340.4	Program using Sockets –Client server model, Echo/Ping/Talk commands
C340.5	Implement and compare Distance vector and Link state routing algorithms & congestion cont algorithm
C340.6	Use simulation tool such as NS2/OPNET.

Semester : 06	Course code : C341	EC8691 – MICROPROCESSORS AND MICROCONTROLLERS

COURSE OUTCOMES (CO)

Upon completion of the course, the students will be able to

C341.1	Restate the architecture, memory organization of 8086 and 8051.(K2)
C341.2	Identify the different ways of interfacing memory,I/O with 8086 and 8051 (K1)
C341.3	Apply the programming using ALP in 8086 and 8051 for arithmetic logical and real time applications.(K3)
C341.4	Analyze the interfacing concept of different programmable interfacing devices.(K4)
C341.5	Developing programming concepts for various applications.(K6)
C341.6	Design microprocessor and microcontroller based applications.(K6)

Semester : 06	Course code : C342	EC8095 –VLSI DESIGN

COURSE OUTCOMES (CO)

Upon completion of the course, the students will be able to

C342.1	Apply the Fundamentals of CMOS Circuits and its Characteristics. (K3)
C342.2	Design and realize Combinational and Digital Sequential Circuits. (K6)
C342.3	Analyze Power and Timing Issues of CMOS Circuits. (K4)
C342.4	Develop the Architectural Choices and evaluate the performance tradeoff involved in designing and realizing the circuits in CMOS Technology. (k6)
C342.5	Interpret the different FPGA and Memory Architecture. (K2)
C342.6	Examine different techniques for testing of VLSI Circuits. (K4)

Semester : 06	Course code : C343	EC8652 –WIRELESS COMMUNICATION

COURSE OUTCOMES (CO)

Upon completion of the course, the students will be able to

C343.1	Outline the different path loss models and describe the different dispersion parameters
C343.2	Analyze the different multiple access Techniques and evaluate the capacity of the trunking system.
C343.3	Compare and contrast different signalling Techniques
C343.4	Summarize the performance of the Diversity schemes
C343.5	Apply the concept of Equalization techniques and algorithms for multipath mitigation
C343.6	Design the MIMO system and derive the capacity for Fading and Non-fading channels

Semester : 06	Course code : C344	MG8591 –PRINCIPLES OF MANAGEMENT

COURSE OUTCOMES (CO)

Upon completion of the course, the students will be able to

C344.1	Have a clear understanding of different management thoughts and its application in the real world organization.
C344.2	Apply various managerial functions like planning, organizing, staffing, leading & controlling
C344.3	Analyse theories, strategies and current trends in management development and communication.
C344.4	Evaluate the working intricacies of various forms of organization
C344.5	Comply with relevant concepts in order to maintain ethicality in business practices
C344.6	Have insight into recent trends and tools in management

Semester : 06	Course code : C345	EC8651- TRANSMISSION LINES AND RF SYSTEMS

COURSE OUTCOMES (CO)

Upon completion of the course, the students will be able to

C345.1	Explain the fundamentals of transmission line and propagation of signals
C345.2	Analyse signal propagation at Radio frequencies..
C345.3	Evaluate matching networks through smith chart
C345.4	Analyse the Characteristics of TE, TM and TEM Waves
C345.5	Design RF circuit using active components for communication applications
C345.6	Discuss propagation of signals in transmission lines and guided medium

Semester : 06	Course code : C351	EC8004- WIRELESS NETWORKS

COURSE OUTCOMES (CO)

Upon completion of the course, the students will be able to

C351.1	Define various architecture and protocol layers of Wireless LAN, WPAN, Mobile IP and 3G networks.
C351.2	Identify the various standards to connect multiple network components using session based routing and solutions.
C351.3	Explain the implementation of mobile network layer and adhoc routing in wireless networks
C351.4	Summarize the different forms of interconnectivity among homogenous and heterogenous networks.
C351.5	Illustrate the multimode applications for wireless network environment using wireless protocols and standards in 4G
C351.6	Classify the multipoint and multichannel distribution systems for smart antennas with advanced broadband wireless services.

Semester : 06	Course code : C353	EC8681- MICROPROCESSORS AND MICROCONTROLLERS LABORATORY

COURSE OUTCOMES (CO)

Upon completion of the course, the students will be able to

C353.1	Write and execute programs for fixed and floating point arithmetic operations and MASM
C353.2	Execute time delay, passwords, Printer Status, Serial & Parallel Interface
C353.3	To generate waveforms through software with A/D & D/A interface
C353.4	Apply arithmetic, logical operations, square and cube programs through 8051 kits and MASM
C353.5	To unpack BCD to ASCII using 8051 kit and use MASM software to stimulate and emulate
C353.6	To interface traffic light control, stepper motor execute, Digital Clock, Keyboard & Display

Semester : 06	Course code : C354	EC8661- VLSI DESIGN LABORATORY

COURSE OUTCOMES (CO)

Upon completion of the course, the students will be able to

C354.1	Illustrate the syntax of HDL code and design digital integrated circuits by writing codes in HDL. (K3, K6)
C354.2	Interpret the syntax of HDL code and build analog circuits by writing codes in HDL. (K2, K6)
C354.3	Apply the knowledge of Xilinx software and develop and import the logic modules into FPGA boards. (K3,K6)
C354.4	Analyze and synthesize the digital ICs and based on the synthesis done, determine the critical paths and power consumption in analog and digital circuits. (K4, K5)
C354.5	Create the place and route design of digital ICs. (K6)
C354.6	Design, simulate and evaluate the layouts of analog IC Blocks using EDA tools. (K5, K6)

Semester : 06	Course code : C355	EC8611- TECHNICAL SEMINAR

COURSE OUTCOMES (CO)

Upon completion of the course, the students will be able to

C355.1	Present seminar in the recent advancement in electronics and communication engineering discipline.
C355.2	Review and prepare the State-of-art technologies in the present technological developments.
C355.3	Organize the presentation using the concepts of ordering and determining the central, main and supporting ideas.
C355.4	Present any topic in any recent advancement with good communicative skill infront of peers and faculty members.
C355.5	Perform well in placement recruitment drive with good technical skills and communication skills.
C355.6	Handle questions after the presentation with confidence

Semester : 07	Course code : C401	EC8701- ANTENNAS AND MICROWAVE ENGINEERINg

COURSE OUTCOMES (CO)

Upon completion of the course, the students will be able to

C401.1	Discuss the basic concepts of microwave frequency bands and to derive various antenna parameters. (K3)
C401.2	Derive link power budget and analyze receiver noise characterization. (K3)
C401.3	Illustrate the radiation mechanisms of antenna elements and arrays and to derive the antenna parameters. (K3)
C401.4	Examine the design considerations for antennas and arrays. (K3)
C401.5	Demonstrate the working of active and passive microwave components. (K2)
C401.6	Apply the design concepts of the microwave systems for the given specifications.(K3)

Semester : 07	Course code : C402	EC8751- OPTICAL COMMUNICATION

COURSE OUTCOMES (CO)

Upon completion of the course, the students will be able to

C402.1	Recognize and classify the structures of optical fibers and types (K1)
C402.2	Explain the signal degradation factors associated with optical fiber (K2)
C402.3	Illustrate the characteristics optical sources & detectors and their use in optical communication system (K3)
C402.4	Discuss the fundamental receiver operation, pre amplifiers and various parameter measurements & Coupling Techniques (K2)
C402.5	Appraise the knowledge gain on fiber optic systems and networks (K4)

C402.6	Analyze the characteristics of optical fiber and Familiarize with Design considerations of fiber optic systems (K4)

Semester : 07	Course code : C403	EC8791-EMBEDDED AND REAL TIME SYSTEMS

COURSE OUTCOMES (CO)

Upon completion of the course, the students will be able to

C403.1	Discuss the concepts of embedded systems.(K2)
C403.2	Design and demonstrate common applications using embedded systems.(K3)
C403.3	Describe the architecture and programming of ARM processor.(K3)
C403.4	Apply the system design techniques to design the software for embedded systems.(K3
C403.5	Explain the basic concepts of real time operating system design.(K2)
C403.6	Model real-time applications using embedded-system concepts.(K4)

Semester : 07	Course code : C404	EC8702-AD HOC AND WIRELESS SENSOR NETWORKS

COURSE OUTCOMES (CO)

Upon completion of the course, the students will be able to

C404.1	Describe the unique issues in ad-hoc/sensor networks(K1)
C404.2	Explain the working principles of sensor nodes and sensor network architecture (K5)
C404.3	Discuss the challenges in designing MAC and routing protocols for Ad hoc/wireless sensor networks(K3)
C404.4	Examine the challenges and issues in Transport layer protocol(K4)
C404.5	Investigate security issues in wireless sensor networks and also examine the possible solutions.(K4)

C404.6	Comprehend the various sensor network Platforms, tools and applications. (K1)

Semester : 07	Course code : C408	CS8082-MACHINE LEARNING TECHNIQUES

COURSE OUTCOMES (CO)

Upon completion of the course, the students will be able to

C408.1	Describe learning paradigms ,algorithms and applications of machine learning techniques.(K3)
C408.2	Apply symbolic and logical representation over the hypothesis and analyze the need for inductive bias technique.(K3)
C408.3	Evaluate the need for neural network and Genetic algorithm models.(K4)
C408.4	Classify the data using a computational learning method.(K3)
C408.5	Design and make modifications to existing machine learning algorithms to suit an individ application.(K4)
C408.6	Analyze case studies by applying advanced machine learning algorithm.(K2)

Semester : 07	Course code : C423	OME754 - INDUSTRIAL SAFETY

COURSE OUTCOMES (CO)

Upon completion of the course, the students will be able to

C423.1	Recognize various types of industrial hazards.
C423.2	Interpret to prevent chemical, environmental mechanical, fire hazard through analysis.
C423.3	Relate proper safety techniques in engineering and management.
C423.4	Correlate appropriate personal protective equipment to overcome disasters.
C423.5	Prioritize analytical skill to understand safety system.

C423.6	Execute safety programs to prevent or mitigate damage or losses

Semester : 07	Course code : C438	EC8711 – EMBEDDED LABORATORY

COURSE OUTCOMES (CO)

Upon completion of the course, the students will be able to

C428.1	Demonstrate skills to write programs in ARM for a specific Application. (K3)
C428.2	Design systems by writing programs for interfacing keyboard, display, motor and sensor. (K6)
C428.3	Analyze the performance of interrupt. (K4)
C428.4	Construct systems using memory, A/D, D/A interface with ARM system. (K6)
C428.5	Evaluate ARM programs for wireless and interprocess communication. (K6)
C428.6	Formulate a mini project using embedded system. (K6)

Semester : 07	Course code : C439	EC8761 –ADVANCED COMMUNICATION LABORATORY

COURSE OUTCOMES (CO)

Upon completion of the course, the students will be able to

C439.1	Analyze the performance of a simple optical link by obtaining the frequency response(analog), eye diagram and BER (digital)
C439.2	Demonstrate the working principle of optical sources, detector, fibers to examine its characteristics and various losses
C439.3	Measure the parameters of active and passive microwave components to understand its characteristics.
C439.4	Design Microwave IC Filter and study its Characteristics.
C439.5	Simulate various wireless channels to investigate the channel performance.

C439.6	Analyze Wireless Transmission and Reception of signals using Software Defined Radio.

Semester : 08	Course code : C445	GE8076 -PROFESSIONAL ETHICS IN ENGINEERING

COURSE OUTCOMES (CO)

Upon completion of the course, the students will be able to

C445.1	To acquire the basic knowledge of human values, moral, ethics, industrial standards, code of ethics and role of professional ethics in engineering field.
C445.2	To have an awareness of professional rights and responsibilities of an engineer, and to have an understanding for safety and risk benefit analysis.
C445.3	To imbibe the various ethical theories developed and apply them for a professional and societal advancement.
C445.4	To imbibe adequate knowledge about the culture & the value system adopted by MNC's, local business houses and to create an ethical based work environment.
C445.5	To understand and solve the employees' conflict & grievances in an amicable and ethical way.
C445.6	Formulate and provide solutions to overcome ethical issues for win-win outcome.

Semester : 08	Course code : C448	EC8094 -SATELLITE COMMUNICATION

COURSE OUTCOMES (CO)

Upon completion of the course, the students will be able to

C448.1	To introduce the fundamentals of satellite communication(K1).
C448.2	To distinguish the satellite orbits (K2)
C448.3	To describe the earth segment and space segment (K2)
C448.4	To explain the satellite Link design (K2)
C448.5	To enrich the knowledge about various access and coding methods (K4)

C448.6	To gain knowledge on various satellite applications(K3)

Semester : 08	Course code : C449	CS8086 - SOFT COMPUTING

COURSE OUTCOMES (CO)

Upon completion of the course, the students will be able to

C449.1	Differentiate the principle behind Soft computing techniques and conventional AI techniques
C449.2	Describe Artificial neural network, fuzzy logic and Genetic algorithm concepts
C449.3	Analyze evolutionary and fuzzy techniques to provide human like expertise.
C449.4	Apply ANN models and Fuzzy logic principles for industrial and societal application
C449.5	Create hybrid soft computing techniques to handle uncertain and imprecise environment
C449.6	Develop soft computing tools to provide solutions to complex real life problems.

Semester : 08	Course code : C452	EC8811 - PROJECT WORK

COURSE OUTCOMES (CO)

Upon completion of the course, the students will be able to

C452.1	Understand the sustainable Development goals mapping the work done to SDG
C452.2	Technically equip in various domain with relevant tools
C452.3	Improve the presentation skill and build the team work
C452.4	Write the project report based on the findings
C452.5	Convert the project done in to product with good business model

| C452.6 | Initiate the idea of entrepreneurship and start up |