ST. ANNE'S COLLEGE OF ENGINEERING AND TECHNOLOGY
Approved by AICTE, New Delhi. Affiliated to Anna University, Chennai
Accredited by NAAC
ANGUCHETTYPALAYAM, PANRUTI – 607 106

COURSE OUTCOMES FOR

B.E ELECTRONICS AND COMMUNICATION ENGINEERING

COURSE OUTCOMES

R2017	HS8151 COMMUNICATIVE ENGLISH
CO1	Read articles of a general kind in magazines and newspapers.
CO2	Participate effectively in informal conversations; introduce themselves and their friends and express opinions in English
CO3	Comprehend conversations and short talks delivered in English
CO4	Write short essays of a general kind and personal letters and emails in English.

R2017	MA8151 ENGINEERING MATHEMATICS–I
CO1	Use both the limit definition and rules of differentiation to differentiate functions.
CO2	Apply differentiation to solve maxima and minima problems.
CO3	Evaluate integrals both by using Riemann sums and by using the Fundamental Theorem of Calculus.
CO4	Apply integration to compute multiple integrals, area, volume, integrals in polar coordinates, in addition to change of order and change of variables.
CO5	Evaluate integrals using techniques of integration, such as substitution, partial fractions and integration by parts.
CO6	Determine convergence/divergence of improper integrals and evaluate convergent improper integrals.
CO7	Apply various techniques in solving differential equations.

R2017	PH8151 ENGINEERING PHYSICS
CO1	The students will gain knowledge on the basics of properties of matter and its applications
CO2	The students will acquire knowledge on the concepts of waves and optical devices and their applications in fibre optics,
CO3	The students will have adequate knowledge on the concepts of thermal properties of materials and their applications in expansion joints and heat exchangers
CO4	The students will get knowledge on advanced physics concepts of quantum theory and its applications in tunneling microscopes
CO5	The students will understand the basics of crystals, their structures and different crystal growth techniques.

R2017	CY8151 ENGINEERING CHEMISTRY
CO1	The knowledge gained on engineering materials, fuels, energy sources and water treatment techniques will facilitate better understanding of engineering processes and applications for further learning.

R2017	GE8151 PROBLEM SOLVING AND PYTHON PROGRAMMING
CO1	Develop algorithmic solutions to simple computational problems
CO2	Read, write, execute by hand simple Python programs.
CO3	Structure simple Python programs for solving problems.
CO4	Decompose a Python program into functions
CO5	Represent compound data using Python lists, tuples, dictionaries
CO6	Read and write data from/to files in Python Programs.

R2017	GE8152 ENGINEERING GRAPHICS
CO1	Familiarize with the fundamentals and standards of Engineering graphics

CO2	Perform free hand sketching of basic geometrical constructions and multiple views of objects.
CO3	Project orthographic projections of lines and plane surfaces.
CO4	Draw projections and solids and development of surfaces.
CO5	Visualize and to project isometric and perspective sections of simple solids.

R2017	GE8161 PROBLEM SOLVING AND PYTHON PROGRAMMING LABORATORY
CO1	Write, test, and debug simple Python programs.
CO2	Implement Python programs with conditionals and loops.
CO3	Develop Python programs step-wise by defining functions and calling them.
CO4	Use Python lists, tuples, dictionaries for representing compound data.
CO5	Read and write data from/to files in Python.

R2017	BS8161 PHYSICS AND CHEMISTRY LABORATORY
CO1	Apply principles of elasticity, optics and thermal properties for engineering applications.
CO2	The students will be outfitted with hands-on knowledge in the quantitative chemical analysis of water quality related parameters.
R2017	HS8251 TECHNICAL ENGLISH
CO1	Read technical texts and write area- specific texts effortlessly.
CO2	Listenandcomprehendlecturesandtalksintheirareaofspecialisationsuccessfully.
CO3	Speak appropriately and effectively in varied formal and informal contexts.
CO4	Write reports and winning job applications.

R2017	MA8251 ENGINEERING MATHEMATICS–II
CO1	Eigenvalues and eigenvectors, diagonalization of a matrix, Symmetric matrices, Positive definite matrices and similar matrices.
CO2	Gradient, divergence and curl of a vector point function and related identities.
CO3	Evaluation of line, surface and volume integrals using Gauss, Stokes and Green's theorems and their verification.
CO4	Analytic functions, conformal mapping and complex integration.
CO5	Laplace transform and inverse transform of simple functions, properties, various related theorems and application to differential equations with constant coefficients.

R2017	PH8253 PHYSICS FOR ELECTRONICS ENGINEERING
CO1	Gain knowledge on classical and quantum electron theories, and energy band structuues,
CO2	Acquire knowledge on basics of semiconductor physics and its applications in various devices,
CO3	Get knowledge on magnetic and dielectric properties of materials,
CO4	Have the necessary understanding on the functioning of optical materials for optoelectronics,
CO5	Understand the basics of quantum structures and their applications in spintronics and carbon electronics.

R2017	BE8254 BASIC ELECTRICAL AND INSTRUMENTATION ENGINEERING
CO1	Understand the concept of three phase power circuits and measurement.
CO2	Comprehend the concepts in electrical generators, motors and transformers

CO3	Choose appropriate measuring instruments for given application

R2017	EC8251 CIRCUITAN ALYSIS
CO1	Develop the capacity to analyze electrical circuits, apply the circuit theorems in realtime
CO2	Design and understand and evaluate the AC and DC circuits.

R2017	EC8252 ELECTRONIC DEVICES
CO1	Explain the V-I characteristic of diode, UJT and SCR
CO2	Describe the equivalence circuits of transistors
CO3	Operate the basic electronic devices such as PN junction diode, Bipolar and Field effect Transistors, Power control devices, LED, LCD and other Opto-electronic devices

R2017	EC8261 CIRCUITS AND DEVICES LABORATORY
CO1	Analyze the characteristics of basic electronic devices
CO2	Design RL and RC circuits
CO3	Verify Thevinin & Norton theorem KVL & KCL, and Super Position Theorems

R2017	GE8261 ENGINEERING PRACTICES LABORATORY
CO1	Fabricate carpentry components and pipe connections including plumbing works.
CO2	Use welding equipments to join the structures.
CO3	Carryout the basic machining operations
CO4	Make the models using sheet metal works
CO5	Illustrate on centrifugal pump, Air conditioner, operations of smithy, foundary and fittings
CO6	Carryout basic home electrical works and appliances
CO7	Measure the electrical quantities
CO8	Elaborate on the components, gates, soldering practices.

R2017	MA8352 LINEAR ALGEBRA AND PARTIAL DIFFERENTIAL EQUATIONS
CO1	Explain the fundamental concepts of advanced algebra and their role in modern mathematics and applied contexts.
CO2	Demonstrate accurate and efficient use of advanced algebraic techniques.
CO3	Demonstrate their mastery by solving non-trivial problems related to the concepts and by proving simple theorems about

CO4	Able to solve various types of partial differential equations.
CO5	Able to solve engineering problems using Fourier series.

R2017	EC8393 FUNDAMENTALS OF DATA STRUCTURES IN C
CO1	Implement linear and non-linear data structure operations using C
CO2	Suggest appropriate linear / non-linear data structure for any given dataset.

CO3	Apply hashing concepts for a given problem
CO4	Modify or suggest new data structure for an application

R2017	EC8351 ELECTRONIC CIRCUITS I
CO1	Acquire knowledge of Working principles, characteristics and applications of BJT and FET, Frequency response characteristics of BJT and FET amplifiers
CO2	Analyze the performance of small signal BJT and FET amplifiers – single stage and multistage amplifiers
CO3	Apply the knowledge gained in the design of Electronic circuits

R2017	EC8352 SIGNALS AND SYSTEMS
CO1	To be able to determine if a given system is linear / causal / stable
CO2	Capable of determining the frequency components present in a deterministic signal
CO3	Capable of characterizing LTI systems in the time domain and frequency domain
CO4	To be able to compute the output of an LTI system in the time and frequency domains

R2017	EC8392 DIGITALEL ECTRONICS
CO1	Use digital electronics in the present contemporary world
CO2	Design various combinational digital circuits using logic gates
CO3	Do the analysis and design procedures for synchronous and asynchronous sequential circuits
CO4	Use the semiconductor memories and related technology
CO5	Use electronic circuits involved in the design of logic gates

R2017	EC8391 CONTROL SYSTEMS ENGINEERING
CO1	Identify the various control system components and their representations.
CO2	Analyze the various time domain parameters.
CO3	Analysis the various frequency response plots and its system.
CO4	Apply the concepts of various system stability criterions.
CO5	Design various transfer functions of digital control system using state variable models.

R2017	EC8381 FUNDAMENTALS OF DATA STRUCTURES IN C LABORATORY
CO1	Write basic and advanced programs in C
CO2	Implement functions and recursive functions in C
CO3	Implement data structures using C
CO4	Choose appropriate sorting algorithm for an application and implement it in a modularized way

R2017	EC8361 ANALOG AND DIGITAL CIRCUITS LABORATORY
CO1	Design and Test rectifiers, filters and regulated power supplies.
CO2	Design and Test BJT/JFET amplifiers.
CO3	Differentiate cascade and cascade amplifiers

CO4	Analyze the limitation in band width of single stage and multi stage amplifier
CO5	Measure CMRR in differential amplifier
CO6	Simulate and analyze amplifier circuits using P Spice.
CO7	Design and Test the digital logic circuits.

R2017	HS8381 INTERPERSONAL SKILLS/LISTENING & SPEAKING
CO1	Listen and respond appropriately.
CO2	Participate in group discussions
CO3	Make effective presentations
CO4	Participate confidently and appropriately in conversations both formal and in formal

R2017	MA8451 PROBABILITY AND RANDOM PROCESSES
CO1	Understand the fundamental knowledge of the concepts of probability and have knowledge of standard distributions which can describe real life phenomenon.
CO2	Understand the basic concepts of one and two dimensional random variables and apply in engineering applications
CO3	Apply the concept of random processes in engineering disciplines.
CO4	Understand and apply the concept of correlation and spectral densities.
CO5	The students will have an exposure of various distribution functions and help in acquiring skills in handling situations involving more than one variable. Able to analyze the response of random inputs to linear time invariant systems.

R2017	EC8452 ELECTRONIC CIRCUITS II
CO1	Analyze different types of amplifier, oscillator and multivibrator circuits
CO2	Design BJT amplifier and oscillator circuits
CO3	Analyze transistorized amplifier and oscillator circuits
CO4	Design and analyze feedback amplifiers
CO5	Design LC and RC oscillators, tuned amplifiers, wave shaping circuits, multivibrators, power amplifier and DC convertors.

R2017	EC8491 COMMUNICATION THEORY
CO1	Design AM communication systems
CO2	Design Angle modulated communication systems
CO3	Apply the concepts of Random Process to the design of Communication systems
CO4	Analyze the noise performance of AM and FM systems
CO5	Gain knowledge in sampling and quantization

R2017	EC8451 ELECTROMAGNETIC FIELDS
CO1	Display an understanding of fundamental electromagnetic laws and concepts
CO2	WriteMaxwell'sequationsinintegral,differentialandphasorformsandexplaintheirphysicalmeaning
CO3	Explain electromagnetic wave propagation in loss and in lossless media
CO4	Solve simple problems requiring estimation of electric and magnetic field quantities based on, these concepts and laws

R2017	EC8453 LINEAR INTEGRATED CIRCUITS
CO1	Design linear and nonlinear applications of OP–AMPS
CO2	Design applications using analog multiplier and PLL
CO3	Design ADC and DAC using OP–AMPS
CO4	Generate wave forms using OP–AMP Circuits
CO5	Analyze special function Ics

R2017	GE8291 ENVIRONMENTAL SCIENCE AND ENGINEERING
CO1	Environmental Pollution or problems cannot be solved by mere laws. Public participation is an important aspect which serves the environmental Protection. One will obtain knowledge on the following after completing the course.
CO2	Public awareness of environmental is at infant stage.
CO3	Ignorance and incomplete knowledge has lead to misconceptions
CO4	Development and improvement instead of living has lead to serious environmental disasters

R2017	EC8461 CIRCUITS DESIGN AND SIMULATION LABORATORY
CO1	Analyze various types of feedback amplifiers
CO2	Design oscillators, tuned amplifiers, wave-shaping circuits and multivibrators
CO3	Design and simulate feedback amplifiers, oscillators, tuned amplifiers, wave-shaping circuits and multivibrators using SPICE Tool.

R2017	EC8462 LINEAR INTEGRATED CIRCUITS LABORATORY
CO1	Design amplifiers, oscillators, D-A converters using operational amplifiers.
CO2	Design filters using op-amp and performs an experiment on frequency response.
CO3	Analyze the working of PLL and describe its application as a frequency multiplier.
CO4	Design DC power supply using ICs.
CO5	Analyze the performance of filters, multivibrators, A/D converter and analog multiplier using SPICE.

R2017	EC8501DIGITAL COMMUNICATION
CO1	Design PCM systems
CO2	Design and implement base band transmission schemes
CO3	Design and implement band pass signaling schemes
CO4	Analyze the spectral characteristics of band pass signaling schemes and their noise performance
CO5	Design error control coding schemes

R2017	EC8553 DISCRETE-TIME SIGNAL PROCESSING
CO1	Apply DFT for the analysis of digital signals and systems
CO2	Design IIR and FIR filters

CO3	Characterize the effects of finite precision representation on digital filters
CO4	Design multirate filters
CO5	Apply adaptive filters appropriately in communication systems.

R2017	EC8552 COMPUTER ARCHITECTURE AND ORGANIZATION
CO1	Describe data representation, instruction formats and the operation of a digital computer
CO2	Illustrate the fixed point and floating-point arithmetic for ALU operation
CO3	Discuss about implementation schemes of control unit and pipeline performance
CO4	Explain the concept of various memories, interfacing and organization of multiple processors
CO5	Discuss parallel processing technique and unconventional architectures

R2017	EC8551 COMMUNICATION NETWORKS
CO1	Identify the components required to build different types of networks
CO2	Choose the required functionality at each layer for given application
CO3	Identify solution for each functionality at each layer
CO4	Trace the flow of information from one node to another node in the network

R2017	TOTAL QUALITY MANAGEMENT
CO1	The student would be able to apply the tools and techniques of quality management to manufacturing and services processes.

R2017	BASIC OF BIOMEDICAL INSTRUMENTATION
CO1	To Learn the different bio potential and its propagation.
CO2	To get Familiarize the different electrode placement for various physiological recording
CO3	Students will be able design bio amplifier for various physiological recording
CO4	Students will understand various technique non electrical physiogical measurements
CO5	Understand the different bio chemical measurements

R2017	EC8562 DIGITALSIGNAL PROCESSING LABORATORY
CO1	Carryout basic signal processing operations
CO2	Demonstrate their abilities towards MATLAB based implementation of various DSP systems
CO3	Analyze the architecture of a DSP Processor
CO4	Design and Implement the FIR and IIR Filters in DSP Processor for performing filtering operation over real-time signals
CO5	Design a DSP system for various applications of DSP

R2017	EC8561 COMMUNICATION SYSTEMS LABORATORY
CO1	Simulate &validate the various functional modules of a communication system
CO2	Demonstrate their knowledge in base band signaling schemes through implementation of digital modulation schemes
CO3	Apply various channel coding schemes & demonstrate their capabilities towards the improvement of the noise performance of communication system
CO4	Simulate end-to-end communication Link

R2017	EC8563 COMMUNICATION NETWORKS LABORATORY
CO1	Communicate between two desktop computers
CO2	Implement the different protocols
CO3	Program using sockets.
CO4	Implement and compare the various routing algorithms
CO5	Use the simulation tool.

R2017	EC8691 MICROPROCESSORS AND MICRO CONTROLLERS
CO1	Understand and execute programs based on 8086 microprocessor.
CO2	Design Memory Interfacing circuits.
CO3	Design and interface I/O circuits.
CO4	Design and implement 8051microcontroller based systems.

R2017	EC8095 VLSI DESIGN
CO1	Realize the concepts of digital building blocks using MOS transistor.
CO2	Design combinational MOS circuits and power strategies.
CO3	Design and construct Sequential Circuits and Timing systems.
CO4	Design arithmetic building blocks and memory sub systems.
CO5	Apply and implement FPGA design flow and testing.

R2017	EC8652 WIRELESS COMMUNICATION
CO1	Characterizeawirelesschannelandevolvethesystemdesignspecifications
CO2	Designacellularsystembasedonresourceavailabilityandtrafficdemands
CO3	Identify suitable signaling and multi path mitigation techniques for the wireless channel and system under consideration.

R2017	MG8591 PRINCIPLES OF MANAGEMENT
CO1	Managerial functions like planning, organizing, staffing, leading & controlling and have same basic knowledge on international aspect of management

R2017	EC8651 TRANSMISSION LINES AND RF SYSTEMS

CO1	Explain the characteristics of transmission lines and its losses
CO2	Write about the standing wave ratio and input impedance in high frequency transmission lines
CO3	Analyze impedance matching by stubs using smith charts
CO4	Analyze the characteristics of TE and TM waves
CO5	Design a RF transceiver system for wireless communication

R2017	EC8681 MICROPROCESSORS AND MICROCONTROLLERS LABORATORY
CO1	Write ALP Programmes for fixed and Floating Point and Arithmetic operations
CO2	Interface different I/O switch processor
CO3	Generate wave forms using Microprocessors
CO4	Execute Programs in 8051
CO5	Explain the difference between simulator and Emulator

R2017	EC8661 VLSI DESIGN LABORATORY
CO1	Write HDL code for basic as well as advanced digital integrated circuit
CO2	Import the logic modules in to FPGA Boards
CO3	Synthesize Place and Route the digital Ips
CO4	Design, Simulate and Extract the layouts of Digital & Analog IC Blocks using EDA tools

R2017	EC8701 ANTENNAS AND MICROWAVE ENGINEERING
CO1	Apply the basic principles and evaluate antenna parameters and link power budgets
CO2	Design and assess the performance of various antennas
CO3	Design a microwave system given the application specifications

R2017	EC8751 OPTICAL COMMUNICATION
CO1	Realize basic elements in optical fibers, different modes and configurations.
CO2	Analyze the transmission characteristics associated with dispersion and polarization techniques.
CO3	Design optical sources and detectors with their use in optical communication system.
CO4	Construct fiber optic receiver systems, measurements and coupling techniques.
CO5	Design optical communication systems and its networks.

R2017	EC8791 EMBEDDED AND REALTIME SYSTEMS
CO1	Describe the architecture and programming of ARM processor
CO2	Outline the concepts of embedded systems
CO3	Explain the basic concepts of real time operating system design
CO4	Model real-time applications using embedded-system concepts

R2017	EC8702 ADHOC AND WIRELESS SENSOR NETWORKS
CO1	Know the basics of Adhoc networks and Wireless Sensor Networks
CO2	Apply this knowledge to identify the suitable routing algorithm based on the network and user requirement
CO3	Apply the knowledge to identify appropriate physical and MAC layer protocols
CO4	Understand the transport layer and security issues possible in Adhoc and sensor networks.
CO5	Be familiar with the OS used in Wireless Sensor Networks and build basic modules

R2017	EC8711 EMBEDDED LABORATORY
CO1	Write programs in ARM for a specific Application
CO2	Interface memory, A/D and D/A convertors with ARM system
CO3	Analyze the performance of interrupt
CO4	Write program for interfacing keyboard, display, motor and sensor.
CO5	Formulate a mini project using embedded system

R2017	EC8761 ADVANCED COMMUNICATION LABORATORY
CO1	Analyze the performance of simple optical link by measurement of losses and Analyzing the mode characteristics of fiber
CO2	Analyze the Eye Pattern, Pulse broadening of optical fiber and the impact on BER
CO3	Estimate the Wireless Channel Characteristics and Analyze the performance of Wireless Communication System
CO4	Understand the intricacies in Microwave System design
R2017	EC8811 PROJECT WORK
CO1	Students should be able to analyze a real-world problem, review literature, and suggest a solution
CO2	Students should be able to perform data analysis, interpret it, and provide valid conclusions.
C03	Students should be able to develop analytical skills, requirement analysis, and design skills
C04	Students should be able to take on challenging practical problems in the field of engineering design.

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