

K. S. Institute of Technology
DEPARTMENT OF ELECTRONICS AND COMMUNICATION & ENGINEERING
COURSE OUTCOMES 2019-23 BATCH
I SEMESTER

Course code 18MAT11	Course: CALCULUS AND LINEAR ALGEBRA
18MAT11.1	Make use of matrix theory for solving system of linear equations and compute Eigen values and Eigen vectors required for matrix diagonalization process.
18MAT11.2	Establish the notation of partial differentiation to calculate rates of change of multivariate functions and solve problems related to composite functions and Jacobians.
18MAT11.3	Apply the knowledge of calculus to solve problems related to polar curves and its applications in determining the bending of a curve.
18MAT11.4	Solve first order linear/nonlinear differential equations analytically using standard methods.
18MAT11.5	Utilize the concept of change of order of integration and variables to evaluate multiple integrals and their usage in computing the area and volumes.

Course code 18CHE12	Course: ENGINEERING CHEMISTRY
18CHE12.1	Make use of Electrochemical energy systems, battery by using the principles of electrochemistry and study its applications.
18CHE12.2	Identify the concepts of corrosion & apply their knowledge for protection of metals from using different method.
18CHE12.3	Solve energy crisis, knocking in IC engine and emission of toxic pollutants using alternate energy sources (Solar energy, biodiesel and power alcohol).
18CHE12.4	Utilize of sewage treatment, desalination of sea water and control of environmental pollution.
18CHE12.5	Build the knowledge of instrumental methods of analysis and applications of nano materials.

Course code 18CPS13	Course: C PROGRAMMING FOR PROBLEM SOLVING
18CPS13.1	Illustrate simple algorithms from the different domains such as mathematics and physics.
18CPS13.2	Construct a programming solution to the given problem using C.
18CPS13.3	Construct C programs by using arrays, strings and develop modular programs using basic algorithms.
18CPS13.4	Make use of functions and recursion concepts, develop and implement C programming.
18CPS13.5	Construct the C programs by using structures and pointer concepts.

Course code 18ELN14	Course: BASIC ELECTRONICS
18ELN14.1	understand the characteristics and operation of Semiconductor Devices
18ELN14.2	Design electronic circuits for different applications
18ELN14.3	Design analog circuits using operational amplifiers
18ELN14.4	Design Combinational and Sequential circuits using digital electronic fundamentals
18ELN14.5	Illustrate the principles of communication system

Course code 18ME15	Course: ELEMENTS OF MECHANICAL ENGINEERING
18ME15.1	Demonstrate different types of sources of energy; environmental issues like global warming, Ozone depletion, Basic concepts of thermodynamics and steam.
18ME15.2	Illustrate the Boilers and its accessories; principle of operation of different types Turbines and pumps; types of IC engines, Refrigeration and air conditioning and its working principle.
18ME15.3	Explain the Properties, composition and application of engineering metals; Joining processes, belt drive and gear drives; Machining process like Lathe and milling process; Advanced machining processes like CNC and Robots.
18ME15.4	Calculate the internal energy, entropy and enthalpy of thermodynamic system; thermodynamic properties of steam; the efficiency, power and other related working parameters of IC engines.
18ME15.5	Derive the length of the belt in open and cross belt drive and solve the related problems of Belt drive and gear drives.

Course code 18CHEL16	Course: ENGINEERING CHEMISTRY LAB
18CHEL16.1	Estimate the amount of analyte present in the solution using the principles of electro analytical techniques (pH Meter, Conductometer, Potentiometer, Flame Photometry and Photoelectric Colorimeter)
18CHEL16.2	Determine the viscosity coefficient of liquid using Ostwald's Viscometer
18CHEL16.3	Estimate the amount of CaO in cement and Total Hardness of water by complex metric Titration
18CHEL16.4	Estimate the % of copper in brass by Iodometric Titration
18CHEL16.5	Estimate the amount of iron in hematite ore and COD in waste water by Redox Titration & Estimate the % of chlorine in bleaching powder by Iodometric Titration.

Course code 18CPL17	Course: C PROGRAMMING LAB
18CPL17.1	Illustrate the knowledge on various parts of a computer.
18CPL17.2	Develop flow charts and write algorithms for every C programs.
18CPL17.3	Develop C problem solving skills.
18CPL17.4	Develop modular programming skills
18CPL17.5	Analyze the tracing and debugging of a program

Course code 18EGH18	Course: TECHNICAL ENGLISH - I
18EGH18.1	Make use of grammatical english and essentials of language skills and identify nuances of phonetics and intonation and flawless pronunciation.
18EGH18.2	Construct english vocabulary at command and language proficiency.
18EGH18.3	Identify common errors in spoken and written communication.
18EGH18.4	Apply and improve the non verbal communication and kinesics.
18EGH18.5	Build in campus recruitment, engineering and all other general competitive examinations

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Course code 18MAT21	Course: ADVANCED CALCULUS AND NUMERICAL METHODS
18MAT21.1	Apply the knowledge of numerical methods in the modeling of various physical and engineering phenomena
18MAT21.2	Demonstrate various physical models through higher order differential equations and solve such linear ordinary differential equations.
18MAT21.3	Construct a variety of partial differential equations and solution by method of separation of variables.
18MAT21.4	Illustrate the applications of multivariate calculus to understand the solenoid and irrational vectors and also exhibit the inner dependence of line, surface and volume integrals.
18MAT21.5	Explain the application of infinite series and obtain series solutions of ordinary differential equations

Course code 18PHY22	Course: ENGINEERING PHYSICS
18PHY22.1	Obtain the knowledge of Quantum Mechanics; compute Eigen values, Eigen function, momentum of atomic and subatomic particles. Apprehend theoretical background of laser, construction and working of different types of lasers and its application in different fields.
18PHY22.2	Make use of different theoretical models to study the electrical and thermal properties of materials like conductors, semiconductors and dielectrics to understand its use in engineering applications.
18PHY22.3	Build the concept of shock waves; discover the role of shock waves in various fields. Understand the various types of oscillations and their implications.
18PHY22.4	Identify the elastic properties of materials; impart the knowledge to understand its engineering applications.
18PHY22.5	Establish the interrelation between time varying electric and magnetic field, transverse nature of electromagnetic waves and realize their role in optical fiber communication.

Course code 18ELE23	Course: BASIC ELECTRICAL ENGINEERING
18ELE23.1	Make use of Ohms law & Kirchoff's laws to study the behavior of electrical circuits with DC sources.
18ELE23.2	Establish relationship between different quantities of electrical circuits powered by single phase and three phase AC sources.
18ELE23.3	Identify the operation of single phase transformers and the concepts of electrical wiring.
18ELE23.4	Identify the performance characteristics of three AC generators and motors.
18ELE23.5	Estimate the performance of DC generators and DC motors.

Course code 18CIV24	Course: ELEMENTS OF CIVIL ENGINEERING & MECHANICS
18CIV24.1	Outline the Role of Civil Engineer in different fields of civil engineering & Infrastructure development of the country and explain free body diagrams, types of force systems and its theorems.
18CIV24.2	Explain the Newton's law of motion, Kinetics, Kinematics, projectiles, Trusses, Wedge and ladder friction
18CIV24.3	Solve for resultant force in the system and also for friction in bodies viz; Wedge and ladder friction
18CIV24.4	Make use of centroid to analyze geometrical figures and solve for support reactions for various beams
18CIV24.5	Solve for moment of inertia and identify the parameter required for Kinematics, Kinetics & Projectiles

Course code 18EGDL25	Course: ENGINEERING GRAPHICS
18EGDL25.1	Explain the standards and conventions followed in preparation of Engineering Drawings
18EGDL25.2	Demonstrate projections of Points, Lines and Plane surfaces on Horizontal and Vertical Planes
18EGDL25.3	Construct the orthographic view of Solids at different positions
18EGDL25.4	Develop the lateral surface of various solids
18EGDL25.5	Build isometric projections which will be helpful in representing the objects in three dimensional appearances

Course code 18PHYL26	Course: ENGG PHYSICS LAB
18PHYL26.1	Analysis the concepts of quantum mechanics to verify the Stefan's law and understand Fermi energy in metals.
18PHYL26.2	Examine the characteristics of Zener diode, photo diode, transistor by utilizing the concepts of semiconductors physics.
18PHYL26.3	Discover the ability to use various passive electrical components, determine Dielectric constant and electrical resonance.
18PHYL26.4	Analysis the concepts of diffraction and interference of light by using diffraction grating and Newton's ring.
18PHYL26.5	Inspect the modulus of elasticity for various rigid bodies by setting up torsional pendulum and uniform bending.

Course code 18ELEL27	Course: BASIC ELECTRICAL ENGINEERING LAB
18ELEL27.1	Analyse the effect of open circuit and short circuit in DC circuits using KCL, KVL.
18ELEL27.2	Compare the power factor for different types of lamps
18ELEL27.3	Measure the parameters of choke coil and earth resistance
18ELEL27.4	Measure current and the power consumed in three phase load.
18ELEL27.5	Examine the truth table for two-way and three-way control of lamps.

Course code 18EGH28	Course: TECHNICAL ENGLISH -II
18EGH28.1	Identify the common errors in spoken and written communication.
18EGH28.2	Get familiarized with English vocabulary and language proficiency.
18EGH28.3	Improve nature and style of sensible writing and acquire employment and work place communication skills.
18EGH28.4	Improve the technical communication skills through technical reading and writing practices.
18EGH28.5	Perform well in campus recruitment, engineering and all other general competitive examinations.

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Course code 18MAT31	Course: TRANSFORM CALCULUS, FOURIER SERIES AND NUMERICAL TECHNIQUES
18MAT31.1	Solve first and second order ordinary differential equations arising in engineering problems using single step and multistep numerical methods.
18MAT31.2	Use Laplace transform and inverse Laplace transform in solving differential/ integral equation arising in network analysis, control systems and other fields of engineering.
18MAT31.3	Demonstrate Fourier series to study the behaviour of periodic functions and their applications in system communications, digital signal processing and field theory.
18MAT31.4	Determine the external of functionals using calculus of variations and solve problems arising in dynamics of rigid bodies and vibrational analysis.
18MAT31.5	Make use of Fourier transform and Z-transform to illustrate discrete/continuous function arising in wave and heat propagation, signals and systems.

Course code 18EC32	Course: NETWORK THEORY
18EC32.1	Analyze ac and dc electrical networks.
18EC32.2	Analyze electrical circuits using network theorems.
18EC32.3	Analyze transient behavior and initial conditions to find response of RLC circuits.
18EC32.4	Analyze Laplace transforms and transient analysis to find response of RLC circuits.
18EC32.5	Analyze the various parameters of Series and Parallel resonance circuits and two port network parameters.

Course code 18EC33	Course: ELECTRONIC DEVICES
18EC33.1	Apply the principles of semiconductor physics to electronic devices.
18EC33.2	Identify the characteristics of semiconductor and Optoelectronic devices.
18EC33.3	Analyze the BJTs and FETs circuits using mathematical model.
18EC33.4	Identify the operation of BJT,FET and its frequency limitation.
18EC33.5	Identify the fabrication process of semiconductor devices and CMOS process integration.

Course code 18EC34	Course: DIGITAL SYSTEM DESIGN
18EC34.1	Simplify switching equations using K-map and Quine Mc-Cluskey techniques.
18EC34.2	Design combinational logic circuits.
18EC34.3	Design sequential logic circuits.
18EC34.4	Analyze sequential logic circuits using Mealy and Moore Finite state machine
18EC34.5	Design complex digital circuits for various applications.

Course code 18EC35	Course: COMPUTER ORGANIZATION AND ARCHITECTURE
18EC35.1	Categorize the operations of major subsystems of computer
18EC35.2	Analyze different types of semiconductor memories and secondary memories.
18EC35.3	Analyze ALU and control unit operations.
18EC35.4	Analyze the working of stacks, queues, subroutines and handling different types of interrupts.
18EC35.5	Apply the concepts of hardwired control and micro programmed control.

Course code 18EC36	Course: POWER ELECTRONICS AND INSTRUMENTATION
18EC36.1	Analyse the SCR characteristics, turn-on and turn-off mechanisms.
18EC36.2	Analyse the power electronic converters and controllers.
18EC36.3	Identify the measurement errors and characteristics of the instruments.
18EC36.4	Determine the unknown value of AC Bridges.
18EC36.5	Analyse operations of digital measuring instruments, Transducers and PLCs.

Course code 18ECL37	Course: ELECTRONIC DEVICES AND INSTRUMENTATION LAB
18ECL37.1	Construct and test rectifiers, clipping circuits, clamping circuits and voltage regulators.
18ECL37.2	Determine the characteristics of SCRs and SCR rectifier circuits.
18ECL37.3	Determine the characteristics of photodiode, LDR and its applications.
18ECL37.4	Determine the characteristics of temperature resistance bridge circuits.
18ECL37.5	Model the V-I characteristics BJT, MOSFET and the characteristics of UJT triggering and regulated power supply using simulation software.

Course code 18ECL38	Course: DIGITAL SYSTEM DESIGN LAB
18ECL38.1	Design and test the working of combinational circuits .
18ECL38.2	Analyse the working of adders and code converter using multiplexer and decoder.
18ECL38.3	Design the flip flop circuits and verify its working using universal gates.
18ECL38.4	Design synchronous counters and asynchronous counters.
18ECL38.5	Analyze the working of serial adder and multiplier using tool.

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Course code 18MAT41	Course: COMPLEX ANALYSIS, PROBABILITY AND STATISTICAL METHODS
18MAT41.1	Use the concepts of analytic function and complex potentials to solve the problems arising in electromagnetic field theory.
18MAT41.2	Apply discrete and continuous probability distributions in analyzing the probability models arising in engineering field.
18MAT41.3	Fit a suitable curve for given data and analyze the relationship between two variables using statistical methods.
18MAT41.4	Utilize conformal transformation and complex integral arising in fluid flow visualization and image processing.
18MAT41.5	Apply the knowledge of joint probability distributions in attempting engineering problems for feasible random events and also Understand the concepts of sampling theory and apply it to related real life problems.

Course code 18EC42	Course: ANALOG CIRCUITS
18EC42.1	Model the BJT and FET amplifiers using small signal and high frequency parameters.
18EC42.2	Analyze the high frequency model of MOSFET and oscillator circuits.
18EC42.3	Analyse the behaviour of BJT power amplifier.
18EC42.4	Examine the operation and application of linear ICs
18EC42.5	Examine the performance of linear IC based circuits like DAC, ADC, Rectifier and filters.

Course code 18EC43	Course: CONTROL SYSTEMS
18EC43.1	Develop the mathematical model of mechanical / electrical systems and obtain its transfer function using block reduction method /Signal flow graph method
18EC43.2	Ability to relate transient performance parameters (overshoot, rise time, peak time and settling time) for the given system and to evaluate steady state error.
18EC43.3	Identify various stability criteria and Determine the stability of a system in the time domain using Routh-Hurwitz criterion and Root-locus technique.
18EC43.4	Determine the stability of a system in the frequency domain using Nyquist and bode plots
18EC43.5	Develop a control system model in continuous and discrete time using state variable techniques

Course code 18EC44	Course: ENGINEERING STATISTICS and LINEAR ALGEBRA
18EC44.1	Identify Random Variables to extract quantitative statistical parameters and apply the same for special distributions.
18EC44.2	Analyze the concept of multiple Random variables to extract quantitative statistical parameters.
18EC44.3	Analyze Random events in typical communication events to extract quantitative statistical parameters.
18EC44.4	Analyze vectors and vector spaces using suitable transformations and basis function sets.
18EC44.5	Analyze statistical representations and Eigen values of some special matrices and demonstrate the same using MATLAB.

Course code 18EC45	Course: SIGNALS AND SYSTEMS
18EC45.1	Make use of Z-transforms, inverse Z-transforms and transfer functions to analyze LTI systems.
18EC45.2	Make use of the properties of Fourier Transform on a periodic signals to represent the signals in frequency domain.
18EC45.3	Identify the system properties and represent periodic continuous/discrete signals in time and frequency domain using Fourier series.
18EC45.4	Identify the various systems and analyze the concepts of convolution sum & integral on signals.
18EC45.5	Apply the basic operations on signals and classify elementary signals.

Course code 18EC46	Course: MICROCONTROLLER
18EC46.1	Distinguish the role of functional units in the architecture of 8051 microcontroller
18EC46.2	Identify various instructions of 8051 Microcontroller
18EC46.3	Build solutions using assembly level language and high level language
18EC46.4	Make use of timers/counters, serial port and interrupts to generate delay and perform serial communication
18EC46.5	Design interfacing of peripherals to 8051 Microcontroller

Course code 18ECL47	Course: MICROCONTROLLER LAB
18ECL47.1	Identify the instructions of microcontroller for perform arithmetic operations.
18ECL47.2	Make use of various instructions for generating the delay and convert the code
18ECL47.3	Build solutions using interrupts to operate a switch.
18ECL47.4	MAke use of ADC inetrface to generate the different waveforms.
18ECL47.5	Build solutions to interface LCD and stepper motor to 8051 microcontroller.

Course code 18ECL48	Course: ANALOG CIRCUITS LAB
18ECL48.1	Design and test the setup of BJT and FET amplifiers and Oscillators.
18ECL48.2	Design and analyse the applications of opamps for DACs, filetrs ,Schmitt trigger and adder, integrator and differentiator circuits.
18ECL48.3	Analyze and test the Multivibrators using 555 Timer.
18ECL48.4	Analyze and implement the circuits of Oscillators, Filters, Rectifiers and Multivibrators using BJTs, ICs 741 using simulation software.
18ECL48.5	Analyse and implement the circuits Multivibrators using 555 using simulation software.

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Course code 18ES51	Course: TECHNOLOGICAL INNOVATION MANAGEMENT AND ENTREPRENEURSHIP
18ES51.1	Understand various management functions, planning and different ways of decision making.
18ES51.2	Understand principles of organizing staffing, directing & Controlling.
18ES51.3	Understand Social Responsibilities of Business & basics of Entrepreneurship
18ES51.4	Understand family business, idea generation and feasibility analysis.
18ES51.5	Apply the knowledge of Project Formulation and Evaluation Techniques

Course code 18EC52	Course: DIGITAL SIGNAL PROCESSING
18EC52.1	Construct the frequency domain sampling and reconstruction of discrete time signals.
18EC52.2	Make use of the properties and develop efficient algorithms for the computation of DFT.
18EC52.3	Construct FIR filters in different structural forms.
18EC52.4	Utilize the procedures to design IIR filters from the analog filters using impulse invariance and bilinear transformation.
18EC52.5	Make use of the characteristics of DSP processor and implement FIR and IIR filters.

Course code 18EC53	Course: PRINCIPLES OF COMMUNICATION SYSTEMS
18EC53.1	Apply the time and frequency domain knowledge for the generation and demodulation of amplitude modulated signals.
18EC53.2	Identify the performance of different generation and detection methodologies of AM, FM and multiplexing.
18EC53.3	Identify the influence of noise in receivers of analog modulated signals
18EC53.4	Distinguish the characteristics of pulse modulation techniques.
18EC53.5	Identify the processes involved in pulse code modulation .

Course code 18EC54	Course: INFORMATION THEORY AND CODING
18EC54.1	Apply Info theory concepts to simple real-life examples and understand the underlying concepts.
18EC54.2	Apply source encoding algorithms
18EC54.3	Model communication channels
18EC54.4	Compare discrete and continuous channels
18EC54.5	Choose appropriate error control algorithms

Course code 18EC55	Course: ELECTROMAGNETIC WAVES
18EC55.1	Interpret the problems on electric fields due to point, linear, volume charges by applying conventional methods or by Gauss law.
18EC55.2	Apply potential and energy with respect to point charge and capacitance using Laplace equation.
18EC55.3	Solve for magnetic field, force, and potential energy of magnetic materials.
18EC55.4	Apply Maxwell's equation for time varying fields, EM waves in free space and conductors.
18EC55.5	Make use of the Poynting theorem to find power associated with EM waves.

Course code 18EC56	Course: Verilog HDL
18EC56.1	Write Verilog programs in gate, dataflow (RTL), behavioral and switch modeling levels of abstraction.
18EC56.2	Design and verify the functionality of digital circuit/system using test benches.
18EC56.3	Identify the suitable abstraction level for a particular digital design.
18EC56.4	Write the programs more effectively using Verilog tasks, functions and directives.
18EC56.5	Perform timing and delay Simulation and interpret the various constructs in logic synthesis.

Course code 18ECL57	Course: DSP LAB
18ECL57.1	Apply sampling theorem and effective reconstruction of signal.
18ECL57.2	Make use of Compute the DFT for a discrete signal and verification of its properties using MATLAB.
18ECL57.3	Solve difference equations and perform different operations on discrete time signals
18ECL57.4	Design IIR and FIR filters for the given specifications.
18ECL57.5	Develop DSP computations on TMS processor and verify the result

Course code 18ECL58	Course: HDL LAB
18ECL58.1	Develop and write the Verilog programs to simulate combinational circuits in Dataflow, Behavioral and Gate level abstractions
18ECL58.2	Develop and describe sequential circuits like flip flops and counters in Behavioral description and obtain simulation waveforms
18ECL58.3	Develop and synthesize combinational and sequential circuits on programmable ICs and test the hardware
18ECL58.4	Develop and interface the hardware to the programmable chips and obtain the required output
18ECL58.5	Develop and write test benches for performance analysis of digital designs in Hardware Descriptive Language

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Course code 18EC61	Course: DIGITAL COMMUNICATION
18EC61.1	Develop the concepts of Band pass sampling to well specified signals and channels.
18EC61.2	Utilize performance parameters and transfer rates for low pass and band pass symbol under ideal and corrupted non band limited channels.
18EC61.3	Identify valid symbol processing and performance parameters at the receiver under ideal and corrupted band limited channels.
18EC61.4	Identify the band pass signals when subjected to corruption and distortion during transmission over a band limited channel.
18EC61.5	Identify the need for data security using spread spectrum technique and error rate calculation.

Course code 18EC62	Course: EMBEDDED SYSTEMS
18EC62.1	Construct the architectural features and instructions of 32 bit microcontroller ARM Cortex M3.
18EC62.2	Make use of the knowledge gained for Programming ARM Cortex M3 for different applications.
18EC62.3	Identify the basic hardware components and their selection method based on the characteristics and attributes of an embedded system.
18EC62.4	Develop the hardware/software co-design and firmware design using ARM Cortex M3 instruction set.
18EC62.5	Establish the need for real time operating system in embedded system applications

Course code 18EC63	Course: MICROWAVE AND ANTENNA
18EC63.1	Identify the working of reflex Klystron by studying the mode curves and also understand transmission lines structures along with its line equations using smith charts to calculate the reflection coefficient ,SWR, input and load impedance.
18EC63.2	Solve for microwave network parameters using S-matrix and also study passive microwave devices like connectors, Adapters attenuators ,Tees and phase shifters .
18EC63.3	Identify the different types of strip lines and understand the antenna basics to find various parameters like antenna gain, directivity.
18EC63.4	Classify the point source of n-isotropic antennas and electric dipole.

18EC63.5	Identify loop, horn antenna and the helical antenna by making use of the design considerations.
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Course code 18EC641	Course: OPERATING SYSTEM
18EC641.1	Identify the role of operating system
18EC641.2	Analyze scheduling policies and deadlock situations
18EC641.3	Apply file organization and IOCS techniques
18EC641.4	Analyze memory management techniques for efficient storage
18EC641.5	Identify message passing techniques

Course code 18EC646	Course: PYTHON APPLICATION PROGRAMMING
18EC646.1	Make use of Python syntax and semantics, and build functions with variables, expressions, and statements.
18EC646.2	Utilize the concepts of Iterations and Strings to model File Systems.
18EC646.3	Make use of core data structures like Lists, Dictionaries and Regular Expressions to build Python programs.
18EC646.4	Apply classes, objects, and functions to develop Object-Oriented Programs in Python.
18EC646.5	Make use of Network Programming, Web Services and Databases to Construct exemplary applications related to Python.

Course code 18CS652	Course: INTRODUCTION TO DATA STRUCTURES AND ALGORITHM
18CS652.1	Identify and implement primitive data structures for solving some real world problems using C programming language.
18CS652.2	Appraise the performance of algorithms in problem solving using asymptotic notations.
18CS652.3	Identify and implement linear data structures for solving some real world problems using C programming language.
18CS652.4	Identify and implement non-linear data structures for solving some real world problems using C programming language.
18CS652.5	Identify and implement different searching and sorting techniques for solving some real world problems using C programming language.

Course code 18ECL66	Course: EMBEDDED controller LAB
18ECL66.1	Understand the instruction set of 32 bit microcontroller ARM Cortex M3, and the software tool required for programming in assembly and C language.
18ECL66.2	Develop a assembly language programs using ARM Cortex M3 for differnt applications.
18ECL66.3	Develop a C language programs to interface external devices and I/O with ARM Cortex M3
18ECL66.4	Develop C language programs for embedded system applications.
18ECL66.5	Develop C language programs which makes use of library functions for embedded system applications.

Course code 18ECL67	Course: COMMUNICATION LABORATORY
18ECL67.1	Make use of the characteristics and response of microwave devices
18ECL67.2	Utilize the characteristics of micro-strip antennas and measurement of its parameters.
18ECL67.3	Construct the analog and digital modulation schemes with the display of waveforms and computation of performance parameters.
18ECL67.4	Make use of the sampling and multiplexing concepts and reconstruct.
18ECL67.5	Model different digital communication concepts using simulation.

Course code 18ECMP68	Course: Mini Project
18ECMP68.1	Build the block diagram using hardware required for the mini project.
18ECMP68.2	Develop the software required for the mini project.
18ECMP68.3	Test for functionality of the mini project
18ECMP68.4	Develop team work and communication skills
18ECMP68.5	Design the mini project as per the specifications

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Course code 18EC71	COURSE: COMPUTER NETWORKS
18EC71.1	Examine the layering architecture of computer networks and distinguish between the OSI reference model and TCP/IP protocol suite.
18EC71.2	Evaluate different DLL protocols and distinguish wired and wireless LAN architecture.
18EC71.3	Distinguish classful and classless IP addresses and analyze different network layer routing protocols
18EC71.4	Analyze services of TCP and UDP and evaluate the performance of transport layer protocols.
18EC71.5	Analyze services of application layer and examine various protocols such as FTP, WWW, TELNET and DNS.

Course code 18EC72	COURSE: VLSI DESIGN
18EC72.1	Interpret the concept of MOS transistor theory and its V-I characteristics.
18EC72.2	Make use of the steps involved in CMOS fabrication and utilize layout design rules with respect to technology scaling.
18EC72.3	Utilize the basic concepts of combinational and sequential circuit design considering its delay factor.
18EC72.4	Identify the concepts of dynamic logic circuits and Memory elements with its timing considerations.
18EC72.5	Interpret the principles involved in logic verification and testability issues in VLSI design.

Course code 18EC732	Course: SATELLITE COMMUNICATION
18EC732.1	Analyze the mathematical preliminaries in analyzing the orbital and satellite performance parameters and characteristics and apply the same.
18EC732.2	Evaluate various subsystems of satellite and earth station design architectures and identify the specific functions in their design.
18EC732.3	Identify different Multiple Access Techniques and examine the various parameters required for satellite link design.

18EC732.4	Analyze various parameters, characteristics and application of Communication satellites and categorize the same in different communication applications
18EC732.5	Categorize different types of satellites, orbits and systems for different applications and identify the function of each application.

Course code 18EC744	Course: CRYPTOGRAPHY
18EC744.1	Examine the Fundamental Concepts, Principles of Classical Encryption Techniques and design the same.
18EC744.2	Examine the concepts of Symmetrical ciphers and determine its working function.
18EC744.3	Interpret various concepts of number theory and design cryptographic algorithm using these concepts.
18EC744.4	Examine the prominent techniques used for public-key cryptosystems and Asymmetric Cipher schemes and evaluate the same.
18EC744.5	Examine Pseudo-Random-Sequence Generators and Stream Ciphers & design the same.

Course code 18ME751	Course: ENERGY AND ENVIRONMENT
18ME751.1	Understand various energy sources and interpret the global and Indian energy scenario and their utilization.
18ME751.2	Make use of energy storage and management methods to model economic analysis.
18ME751.3	Understand the concepts of environment and illustrate various eco systems.
18ME751.4	Understand the environment pollution types and illustrate the relevant hazards
18ME751.5	Summarize the environment related social issues and outline the acts.

Course code 18ECL76	Course: Computer Networks Laboratory
18ECL76.1	Construct the operations of network protocols and algorithms using C programming.
18ECL76.2	Utilize the network simulator for learning and practice of networking algorithms.

18ECL76.3	Build the network with different configurations to measure the performance parameters.
18ECL76.4	Develop the data link and routing protocols using C programming.
18ECL76.5	Develop wired and wireless LAN protocol using network simulator.

Course code 18ECL77	Course: VLSI Laboratory
18ECL77.1	Model basic digital circuits to simulate using EDA Tool.
18ECL77.2	Experiment with synthesis process of digital circuits using EDA tool.
18ECL77.3	Make use of steps involved in synthesis to obtain gate level netlist and to meet desired constraints.
18ECL77.4	Experiment with the basic amplifiers to design higher level circuits like operational amplifier and Analog / Digital converters to meet desired parameters.
18ECL77.5	Inspect steps involved in RTL-GDSII flow and understand the stages in ASIC design.

Course code 18ECP78	COURSE: PROJECT PHASE – 1
18ECP78.1	Carry out Literature survey in their specific area of interest.
18ECP78.2	Identify the Problem statement and technology used.
18ECP78.3	Formulate specific Objectives and methodology.
18ECP78.4	Develop technical writing and presentation skills.
18ECP78.5	Develop leadership qualities through effective team work.

K. S. Institute of Technology
DEPARTMENT OF ELECTRONICS AND COMMUNICATION & ENGINEERING
COURSE OUTCOMES 2019-23 BATCH
VIII SEMESTER

Course code 18EC81	COURSE: WIRELESS AND CELLULAR COMMUNICATION
18EC81.1	Make use of the concepts of propagation mechanisms like Reflection, Diffraction, Scattering and apply in designing cellular communication systems.
18EC81.2	Utilize the concepts of GSM and Develop a scheme for call handling and call tear down in a GSM cellular network.
18EC81.3	Utilize the concepts of CDMA and Develop a scheme for call handling in a CDMA cellular network.
18EC81.4	Make use of the system architecture of LTE 4G and apply it in multicarrier modulation.
18EC81.5	Utilize the Basic operations of Air Interface and apply it in LTE 4G system.

Course code 18EC823	COURSE: RADAR ENGINEERING
18EC823.1	Identify the mathematical fundamentals of radar and apply them for range tracking and measurement
18EC823.2	Utilize principle of Doppler frequency shift and examine the object parameter assessment through Doppler radars
18EC823.3	Make use of the radar equation and identify their specific functions in digital MTI processing
18EC823.4	Analyze various angle tracking methods and Develop tracking radar and sequential lobing
18EC823.5	Categorize the different radar transmitting and receiving components and Analyze radar antenna parameters and tracking range

Course code 18ECP83	COURSE: PROJECT PHASE – 1
18ECP83.1	Build the block diagram using hardware required for the project.
18ECP83.2	Develop the software required for the project.
18ECP83.3	Test for functionality of the project
18ECP83.4	Develop team work and communication skills
18ECP83.5	Design the project as per the specifications

Course code 18ECS84	COURSE: PROJECT PHASE – 1
18ECS84.1	Build the block diagram using hardware required for the project.
18ECS84.2	Develop the software required for the project.
18ECS84.3	Test for functionality of the project
18ECS84.4	Develop team work and communication skills
18ECS84.5	Design the project as per the specifications

Course code 18ECI85	COURSE: INTERNSHIP
18ECI85.1	Examine the knowledge and skills acquired in the classroom to the professional context
18ECI85.2	Determine the methods for solving the complex problems so that it can be applied for solving the problems
18ECI85.3	Develop the organizational skills
18ECI85.4	Develop the ability to write the report
18ECI85.5	Develop the skills of communication and team working



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