2018 SCHEME COURSE COUTCOMES

Network Theory **18EC32**	1. Determine currents and voltages using source transformation, source shifting, mesh, nodal analysis and reduce given network using star delta, transformation, source transformation and source shifting. 2. Solve network problems by applying network theorems and electrical laws to reduce network complexities and to arrive at feasible solutions. 3. Calculate current and voltage for given circuit under transient conditions. 4. Apply Laplace transforms to solve the given network. 5. Solve the given network using specified two port parameter like Z or Y or h or T and understand the concepts of resonance.
Electronic Devices **18EC33**	1. Understand the principles of semiconductor Physics and types of semiconductor devices. 2. Explain the principles of PN junction diodes and optoelectronic devices. 3. Utilize the mathematical models of semiconductor junctions for circuits and systems 4. Utilize the mathematical models of MOS transistors for circuits and systems. 5. Explain the fabrication process of semiconductors and integrated circuits.
DIGITAL SYSTEM DESIGN **18EC34**	1. Acquire the knowledge of combinational logic circuits and simplify algebraic equations using Karnaugh Maps and Quine-McClusky Techniques. 2. Design various combinational logic circuits like Decoders, Encoders, Multiplexers, De-multiplexers, Comparators, Adders, Subtractors and PLDs. 3. Gain familiarization of sequential circuits and analyze the working of Latches, Flip-flops, Registers and Counters. 4. Design various synchronous and asynchronous Counters and construct Mealy and Moore machines with State Diagrams. 5. Design various applications of Combinational and Sequential Circuits.

COMPUTER ORGANIZATION AND ARCHITECTURE 18EC35	1. Explain the basic sub systems of a computer, their organization, structure and operation. 2. Illustrate the concept of programs as sequences of machine instructions. 3. Demonstrate different ways of communicating with I/O devices 4. Describe memory hierarchy and concept of virtual memory. 5. Illustrate organization of simple pipelined processor and other computing systems.
Power Electronics and Instrumentation 18EC36	1. Explain power electronics devices, power electronic systems and the operating principle of thyristors. 2. Analyze the working of phase controlled converters and choppers using power semiconductor devices. 3. Study the working of inverters, SMPS and also define the different types of errors that occur in measurements 4. Analyze circuits for Ammeters, Voltmeters and Bridges to measure passive component values and frequency. 5. Explore the use of transducers and Instrumentation amplifier for measuring physical parameters and study the basics of Programmable Logic Controller.
Electronic Devices and instrumentation Lab 18ECL37	1. Understand the characteristics of various electronic devices and measurement of parameters. 2. Design and test simple electronic circuits. 3. Use of circuit simulation software for the implementation and characterization of electronic circuits and devices.
DIGITAL SYSTEM DESIGN LABORATORY 18ECL38	1. Build and verify various Boolean functions and De-Morgan's theorem using logic Circuits. 2. Analyse the behaviour of combinational logic circuits using basic logic gates and universal gates. 3. Evaluate sequential circuits like various Flip Flops and counters based on shift registers using logic circuits. 4. Simulate combinational logic circuits using simulation tool
Engineering Statistics and Linear Algebra 18EC44	1. Model the data to fit an appropriate distribution function using the random variables as a tool.

	2. Extract statistical parameters from the distribution to draw valid inference about the data. 3. Model the data as random process and extract time and frequency domain characteristics from the model 4. Cast the given problem as linear algebra problem and solve using linear algebra techniques 5. Analyze using appropriate tools, the nature of population from their samples and arrive at valid conclusion.
Analog Circuits **18EC42**	1. Explain the biasing of BJTs and FETs. 2. Describe types of oscillator, feedback and power amplifier. 3. Design and analyse BJT and FET amplifier circuits. 4. Analyse OPAMP amplifier circuit to obtain different parameters. 5. 5. Design of linear and nonlinear OPAMP based circuits.
CONTROL SYSTEMS **18EC43**	1. Develop the mathematical model of mechanical, electrical and electromechanical systems and analyze analogous systems. 2. Determine the transfer function of given control system using Block diagram reduction and signal flow graph. 3. Apply the mathematical techniques to perform time response analysis of first order and second order control systems. 4. Determine the stability of the system in the time domain using Routh-Hurwitz criterion and Root-locus technique and frequency domain using Bode Plot. 5. Determine the stability of a system in the frequency domain using Nyquist Plot and Develop a control system model in continuous and discrete time using state variable techniques. 6. 6. Analyze the given control systems and find the solutions as per the required method individually or in team and present the factual solution in an appropriate form.
Signals and Systems **18EC45**	1. Understand the mathematical description of continuous and discrete time signals and systems. 2. Classify signals and systems into different categories based on their properties. 3. Analyze the Linear Time Invariant (LTI) systems in time domain using convolution sum and convolution integral.

	4. Analyze Linear Time Invariant (LTI) systems in Fourier domain and z-domain. 5. Select the appropriate transformation required for a particular class of signal. 6. Use tools to analyze a given problem and apply various signal-processing techniques to obtain the solution.
Microcontroller 18EC46	1. Explain the difference between Microprocessors & Microcontrollers, Architecture of 8051 Microcontroller, and Interfacing of 8051 to external memory and Instruction set of 8051. 2. Explain the Interrupt system, operation of Timers/Counters and Serial port of 8051. 3. Write and execute 8051 Assembly level programs and C programs using 8051 instruction set. 4. Write and implement 8051 Assembly language programs to generate waveforms using 5. 8051 timers and C programs to send and receive serial data using 8051 serial port. 6. Interface simple switches, simple LEDs, ADC 0804, LCD and Stepper Motor to 8051 using 8051 I/O ports.
Microcontroller Lab 18ECL47	1. Write Assembly language programs in 8051 for solving simple problems that manipulate input data using different instructions of 8051. 2. Interface different input and output devices to 8051 and control them using Assembly language programs. 3. Interface the serial devices to 8051 and do the serial transfer using C programming. 4. Implement and demonstrate a microcontroller based project as a team.
Analog Circuit Lab 18ECL48	1. Design amplifier and oscillator circuits to meet the given requirements and extract operating parameters 2. Implement linear and non-linear operations using op amp. 3. Construct electronic subsystem to implement functionality by assembling modules 4. Use PSPICE simulation tool to analyse given electronic circuit 5. Conduct experiment individually or in team to test the circuit and present the data with valid conclusions

	6. Investigate, analyze and develop circuits involving BJTs, FETs, MOSFETs, Op amps and other discrete components to solve given problem
TECHNOLOGICAL INNOVATION MANAGEMENT AND ENTREPRENEURSHIP (18ES51)	1. Discuss the characteristics and functional areas of management 2. Distinguish the Organizing, directing and controlling abilities of a leader. 3. Interpret the concepts of social responsibilities of Business, Entrepreneurship and various stages of entrepreneurial process. 4. Develop the idea for family business and feasibility in the marketing field. 5. Awareness about selecting the various sources of funding and institutions supporting entrepreneurs.
Digital Signal Processing 18EC52	1. Apply the discrete Fourier transform (DFT) on a sequence, relate it to the discrete-time Fourier transform (DTFT), z-transform and Fourier transform (FT) and use the DFT to compute the linear and circular convolution of two sequences. 2. Apply various DFT properties to evaluate the given sequence, use the fast Fourier transform on a sequence using two approaches namely, the divide and conquer approach and the linear filtering approach 3. Design the digital finite impulse response (FIR) filter for a given specifications and realize the digital FIR filter. 4. Design the analog infinite impulse response (IIR) filter for a given specifications, design the digital IIR filter from its analog counterpart and realize the digital IIR filter. 5. Describe DSP Architecture, DSP Hardware Units, Fixed point format, Floating point Format, IEEE Floating point formats, Fixed point digital signal processors, Floating point processors, FIR and IIR filter implementations in Fixed point systems

Principles of Communication Systems (18EC53)	1. Describe the Principles, Generation, Reconstruction and Applications of 2. Amplitude and Angle Modulation Schemes. 3. Apply Sampling and Quantization Techniques for Pulse Modulation Schemes. 4. Analyze the effects of noise on the performance of CW modulation systems. 5. Design and analyze; multiplexing and de-multiplexing of the digitally formatted 6. Signals at Transmitter and their reconstruction at the receiver.
Information Theory and Coding 18EC54	1. Describe and find self-information, Entropy of long dependent & independent sequences. 2. Analyze and Compare different types of encoding algorithms. 3. Analyze different types of Communication Channels. 4. Apply different encoding and decoding techniques with error Detection and Correction. 5. Apply encoding techniques for Convolution codes.
Electromagnetic Waves 18EC55	1. Solve problems on finding electric field intensity and electric flux density due to various charge distributions using Coulomb's law or by Gauss's law. 2. Apply Gauss Divergence Theorem to evaluate Electric fields due to different charge distributions and Volume Charge distribution. 3. Determine potential and energy with respect to point charge and capacitance using Laplace equation. 4. Apply Biot-Savart's and Ampere's laws for evaluating Magnetic field for different current Configurations. 5. Calculate magnetic field, force, and potential energy with respect to magnetic materials. 6. Apply Maxwell's equation for time varying fields, EM waves in free space and conductors and evaluate power associated with EM waves using Poynting theorem.

Verilog HDL **18EC56**	1. Describe the design flow, syntax, lexical conventions, data types of Verilog HDL 2. Design and model digital circuits with different levels of abstraction using Verilog HDL 3. Verify the functionality of digital circuit/system using test benches 4. Perform timing and delay Simulation 5. Interpret the various constructs in logic synthesis
Digital Signal Processing Laboratory **18ECL57**	1. Understand the concepts of analog to digital conversion of signals and frequency domain sampling of signals 2. Modeling of discrete time signals and systems and verification of its properties and results 3. Implementation of discrete computations using DSP processor and verify the results 4. Realize the digital filtes using a simulation tool and analyze the response of the filter for an audio signal
HDL LAB **18ECL58**	1. Write the Verilog programs to simulate Combinational circuits in Dataflow, Behavioral and Gate level Abstractions. 2. Describe sequential circuits like flip flops and counters in Behavioral description and obtain simulation waveforms. 3. Synthesize Combinational and Sequential circuits on programmable ICs and test the hardware. 4. Interface the hardware to the programmable chips and obtain the required output