	ESC110 Fundamentals of Electronics and Computer
ESC110.1	Students understand construction, biasing, V-I characteristics and application of Diode and BJT.
ESC110.2	Students understand basics of Digital Electronics.
ESC110.3	Students understand basic applications of Transducers and appliances
ESC110.4	Acquire the essential knowledge of computer system & peripherals.
ESC110.5	Understand operating system features and practice application software.
ESC110.6	Demonstrate use of computer networks and Internet.

	ET201 Engineering Mathematics-III
ET201.1	An ability to identify, formulates, and solves Linear differential equation with constant coefficient
ET201.2	Understand application of Linear differential equation with constant coefficient which are related to Electrical engineering Systems.
ET201.3	Find the solution by Z-Transform.
ET201.4	Understand basic of inverse Laplace transform, Periodic & Heaviside function.
ET201.5	Knowledge of periodic function, Euler formulae, Fourier series and their different possible forms
	ET202 Electronic Circuit Design-I
ET202.1	Analyze and design electronic circuits such as rectifiers & unregulated power supply.
ET202.2	Analyze and design electronic circuits such as regulated power supply.
ET202.3	Analyze & Design of BJT & FET Biasing.
ET202.4	Explain the hybrid model of transistor and analyze the transistor amplifier (CE,CB, CC) using h-parameters
ET202.5	Analysis of CE Amplifier for low frequency & High frequency response for sinusoidal & square wave input.
ET202.6	Explain frequency response of single stage RC coupled amplifier. Also explain construction, working & characteristics of JFET & MOSFET.
	ET203 Network Analysis

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ET203.1	Analyze the basic of AC and DC circuits using KCL, KVL and network Theorems.
ET203.2	Determine the voltages, currents, power and impedances at various nodes and loops using all simplification techniques.
ET203.3	Understand, identify and analyze the series, parallel resonance circuits, calculate the bandwidth, selectivity factor also.
ET203.4	Understand, analyze and design prototype LC filters.
ET203.5	Characterize and model the network in terms of all network parameters and analyze.
ET203.6	Formulate and solve the differential equation for RL, RC, and RLC circuits and carry out transient analysis.
	ET204 Transducers and Measurement
ET204.1	Explain principle of operation of different sensors & transducers and will be able to use it for measurement of digital parameters
ET204.2	Describe signal conditioning & data acquisition system.
ET204.3	Demonstrate testing & measuring instruments
ET204.4	Compare various display devices for appropriate application
ET204.5	Differentiate bridges according to their use
	ET205 Analog Communication
ET205.1	Understand and identify the fundamental concepts and various components of analog communication systems.
ET205.2	Understand, analyze and explain various analog modulation schemes.

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ET205.3	Understand the performance of analog communications systems under the presence of noise.
ET205.4	Develop the ability to compare and contrast the strengths and weaknesses of various communication systems
ET205.5	Analyze Basic communications systems and their performance under the presence of noise
ET205.6	Differentiate between various pulse modulation techniques.
	ET206 Programming Lab-I
ET206.1	Student will be able to understand the basic concepts of procedure oriented programming language.
ET206.2	Student will be able to implement the control statements, looping statements and functions concepts.
ET206.3	Student will be able to design programs using user defined functions and data type
ET206.4	Student will be able to design & apply the skills for solving the engineering problems.
ET206.5	Students will be able to understand the concept string & relevant operations on it.
ET206.6	Students will be able to understand the concept of file &relevant operations on it.
ET206.7	Understand the basic programming concepts

Course Outcomes

	ET207 Electronic Circuit Design-II
ET207.1	Analyze & Design Multistage and Feedback Amplifier
ET207.2	Analyze & Design Power Amplifier
ET207.3	Describe & Design Different types of Oscillators using BJT
ET207.4	Describe & Design Different types of Multivibrator using BJT
ET207.5	Describe & Design IC voltage Regulators
	ET208 Linear Integrated Circuits
ET208.1	Explain operational amplifier with its parameters
ET208.2	Classify different configuration of op-amp
ET208.3	Identify and explain different applications of op-amp
ET208.4	Design and implement various filters
ET208.5	Analyze different waveform generator circuits
ET208.6	Apply knowledge of op-amp in various industrial applications
	ET209 Control System Engineering
ET209.1	Compute overall transfer function of system using Block diagram reduction and signal flow graph technique.
ET209.2	Understand and analyze time response and steady state errors of first and second order control systems for different standard test

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Course Outcomes

	signals.
ET209.3	Explain stability of control system and apply different techniques to determine stability.
ET209.4	Plot frequency domain response for control system using bode plot and Nyquist stability criterion and determine stability.
ET209.5	Identify the needs of different types of controllers and compensator to ascertain the required dynamic response from the system
ET209.6	Formulate and analyze state model for given system
	ET211 Digital Communication
ET211.1	Realize and solve the problems related to random signals and also the related issues like power spectral density.
ET211.2	Work with the information availability and code the information in different formats.
ET211.3	Acquire knowledge of different source coding techniques available with their pros and cons.
ET211.4	Understand the baseband transmission with optical receiver operation and working.
ET211.5	Describe the channel coding techniques with error handling methods.
	ET210 Data Structure
ET210.1	Elaborate the basic concept of data structure & its types
ET210.2	Design and Implement the various algorithms on arrays & records

Course Outcomes

ET210.3	Implement algorithms on linked list
ET210.4	Understand the concept of stacks, queues & its applications.
ET210.5	Construct various types of trees & their applications
	ET212 Programming Lab-I
ET212.1	Understand the basic concepts of procedure oriented programming language.
ET212.2	Identify the function and operator overloading concepts.
ET212.3	Understand and implement the concept of inheritance, template and exception handling applications.
ET212.4	Identify the concept of inheritance, virtual functions, dynamic binding & polymorphism.
ET212.5	Identify the types of inheritance & its design for code reuse in C++.

	ET301 Antenna Wave Propagation
ET301.1	Understand the importance of basics of antenna systems to differentiate the applicability of each type of antenna.
ET301.2	Aanalyze and characterize the utilization of Antenna systems in wide areas like wireless communication, fixed line communication, computer communication etc.
ET301.3	Solve various problems on various parameters of antennas.
ET301.4	Explain radiation and explain the effect of ground on electromagnetic waves propagation.Explain different modes of wave propagations.

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ET301.5	Explain properties of Ionospheric layer used for electromagnetic wave propagation , also explain fundamentals of RADAR system.
	ET302 Control Systems
ET302.1	Compute overall transfer function of system using Block diagram reduction and signal flow graph technique.
ET302.2	Understand and analyze time response and steady state errors of first and second order control systems for different standard test signals.
ET302.3	Explain stability of control system and apply different techniques to determine stability.
ET302.4	Plot frequency domain response for control system using bode plot and Nyquist stability criterion and determine stability.
ET302.5	Identify the needs of different types of controllers and compensator to ascertain the required dynamic response from the system
ET302.6	Formulate and analyze state model for given system
	ET303 Signals and Systems
ET303.1	Define CT signals mathematically & solve problems related to operations on signals.
ET303.2	Classify different systems & learn its properties.
ET303.3	Understand Fourier series & Transforms and represent different signals using these techniques.

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Course Outcomes

ET303.4	Apply different tools like Z-transform, Fourier Transform to analyze the systems.
	ET304 Power Electronics
ET304.1	Understand power electronics DC Drives, devices and its firing circuits.
ET304.2	Aware with Thyristors and allied applications, design and simulate Controlled rectifier circuits
ET304.3	Analyze the allied applications of Power Electronics.
ET304.4	Describe the PLC/SCADA and other miscellaneous applications.
	ET305 Digital Communication
ET305.1	Solve Problems on Probability.
ET305.2	Use information theory in communication System.
ET305.3	Explain Various Source coding techniques.
ET305.4	Explain baseband transmission and band pass modulation techniques.

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Course Outcomes

ET305.5	Understand Knowledge of Channel coding techniques with error detection and correction.
	ET306 Simulation Lab
ET306.1	Use the different commands, functions required for programming in MATLAB
ET306.2	Calculate and perform various operations using MATLAB.
ET306.3	Analyze and simulate the various systems.
	ET307 Digital Signal Processing
ET307.1	Apply DFT as an analytical tool
ET307.2	Analyze LTI Systems using FFT algorithms
ET307.3	Design FIR and IIR systems
ET307.4	Construct FIR and IIR Systems
ET307.5	Explain architecture of DSP Processors

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ET307.6	Differentiate between General Purpose and DSP Processors
	ET308 VLSI Design
ET308.1	Implement & Demonstrate HDL codes of digital designs using FPGA/ CPLD based technology.
ET308.2	Explain the difference between VHDL and Verilog HDL.
ET308.3	Model combinational circuits like Adder, Subtractor, Decoder, encoder, multiplexer, parity generator, Parity checker, comparator using different styles of modeling in VHDL&/or Verilog and implement in FPGA/ CPLD using suitable EDA tool.
ET308.4	Construct FSM, Model sequential logic circuits like counter & sequence detector and simulate it for functional verification.
ET308.5	Describe the features & internal architectures of CPLD (XC 9572) & Spartan III E FPGA (XC3S500E).
	ET309 Microprocessors and Microcontrollers
ET309.1	Explain the architecture of 8085 & write programs in assembly language for 8085.
ET309.2	Demonstrate interfacing of RAM,ROM, 8255, ADC, DAC, Keyboard, 7-seg display, stepper motor to 8085.

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Course Outcomes

ET309.3	Explain architecture of 8051 & write programs in assembly language for 8051.
ET309.4	Explain on chip hardware features like I/O ports,Timers,Interrupts, Serial communication.
ET309.5	Demonstrate Interfacing of RAM, ROM and peripherals like ADC ,DAC,LCD, LM 35,stepper motor with 8051.
ET309.6	Write Embedded C program for 8051.
	ET310 Optical Communication and Network
ET310.1	Elaborate the basic optical communication along with the simulation and modeling tools.
ET310.2	Differentiate the different types of optical fiber structures and light propagating mechanisms.
ET310.3	Acquire knowledge of signal degradation mechanism in optical fiber.
ET310.4	Understand the construction of and working of optical sources and detectors.
ET310.5	Describe the optical receiver operation, WDM and optical network in detail.
	ET311 Industrial Management

Course Outcomes

ET311.1	Demonstrate that how a person is get selected in a company, how the performance of employee is evaluated.
ET311.2	Analyse the methods of performance appraisal and find the best out of them.
ET311.3	Define both marketing and selling concept.
ET311.4	Understand the techniques used for selling the product.
	ET312 Electronic System Design
ET312.1	Understand and design simple electronics systems
ET312.2	Apply the knowledge of sensors in designing different electronics systems.
ET312.3	Perform and design electronics systems based on microcontrollers.
ET312.4	Use these skills to implement mini projects.
ET312.5	Understand and design simple electronics systems.

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Course Outcomes

ET401 Satellite Communication	
ET401.1	Identify Orbital aspects involved in satellite communication
ET401.2	Formulate Power budget calculation
ET401.3	State Satellite system and services provided
ET401.4	Analyze the performance of satellite communication system
ET402 Embedded Systems	
ET402.1	Define embedded systems and state its characteristics
ET402.2	Describe the Architecture of PIC and ARM core
ET402.3	Build programs in assembly language for ARM core
ET402.4	Apply knowledge of PIC and ARM to develop embedded system designs
ET402.5	Explain concepts of RTOS
ET403 Computer Communication Networks	
ET403.1	Describe and differentiate types of networks such as LAN, WAN, MAN and network topologies like star, bus, ring etc. Explain and distinguish between OSI and TCP/IP reference model.

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Course Outcomes

ET403.2	Summarizes guided & unguided transmission media and different networking devices used at physical layer.
ET403.3	Explain error detection &correction mechanisms and frame formats at data link layer.
ET403.4	Explain various routing algorithms like shortest path, distance vector, link state etc and congestion control algorithms viz. leaky bucket, token bucket used at network layer.
ET403.5	Illustrate different TCP/IP protocols like IP,ARP,RARP,TCP,UDP etc.
ET403.6	Demonstrate the network Security Mechanisms.

	ET404 RF & Microwave Engineering
ET404.1	Explain the different types modes propagation in waveguides
ET404.2	Select the appropriate component for various applications.
ET404.3	Measure the various microwave parameters.
ET404.4	Explain the different microwave Hazards.
ET404.5	Demonstrate the application of Microwave Engineering to various field
	ET405 Elective-I (ET405A Robotics)
ET405A .1	Student can understand basics concept of industrial atomization & Robotic technology

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Course Outcomes

ET 405A. 2	Students can able to select different sensors, electronics systems for Robot
ET 405A .3	Student can develop software for particular robotic applications
ET 405A. 4	Students will understand robot applications & develop robot for particular applications

	ET408 Video Engineering
ET408.1	Identify picture and sound transmission and reception.
ET408.2	Interpret color composite video signal.
ET408.3	Describe principle of digital TV system.
ET408.4	Demonstrate high definition television system.
ET408.5	Initiate advanced TV system like LCD, plasma, LED, CCTV, etc.
	ET409 Digital Image Processing
ET409.1	To state the fundamental steps involved in Digital Image Processing.
ET409.2	Select the appropriate image transforms and filtering techniques on an image.

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Course Outcomes

ET409.3	Apply and analyze image enhancement techniques.
ET409.4	Demonstrate an application based on image processing.
ET409.5	Perform operations on color image processing.

	ET410 Wireless and Mobile Commnication
ET410.1	List basic fundamentals of wireless communication
ET410.2	Analyze large & small scale radio wave propagation
ET410.3	Apply multiple access techniques to mobile communication.
ET410.4	Create mobile network.
	ET411 Elective-II (ET411C-Remote Sensing and GPS)
ET4111C.1	Explain concepts, methodologies and applications of Remote Sensing Technology.
ET4111C.2	Build the candidates for National and Global Employability
ET4111C.3	Adapt skills in handling instruments, tools, techniques and modeling while using Remote Sensing Technology

ET4111C.4	Build the candidate with confidence and leadership qualities

Prepared By :	**Checked By:**	**Approved By :**
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