COURSE OUTCOMES

S.No.	Semester	Course Code	Course Name	Course Outcome
1	I	ELECC -01	Engineering Mathematics	✓ To apply various techniques to solve homogenous and non-homogenous differential equations to describe various physical phenomena. ✓ To apply partial differential techniques to solve physical scientific problems. ✓ To implement transform techniques to design electronic circuits and solve differential and integral equations.
2		ELECC-02	Solid State Electronics	✓ Basic physics of semiconductor devices, including the importance of electrons and holes, charge density, and charge transport mechanisms. ✓ Understanding the physics of junctions and related phenomena. ✓ Understanding the operation of solid-state devices is key to comprehending the internal workings of basic solid-state electronic devices, which are the building blocks of modern electronics. ✓ Understanding the behaviour of electrons and learn about the behaviour of electrons in a potential well and in a periodic structure. ✓ Understanding the operation of transistors and learning about the operation of bipolar junction transistors (BJTs) and MOSFETs.
3		ELECC-03	Fundamentals of ComputerProgramming	✓ Implement the algorithms and flowcharts for solving Mathematical and Engineering problems. ✓ Demonstrate an understanding of computer programming language concepts with development of C program.

				✓ Design and develop C programs, analyzes, and interprets the concept of pointers, declarations, initialization, operations on pointers and their usage. Able to define data types and use them in simple data processing applications also learner must be able to use the concept of array and structures. ✓ Define union and enumeration user defined data types. Develop confidence of self learning ability needed for different Computer language.
5	II	ELECC-05	Consumer Electronics and Environmental Impacts	✓ List technical specification of electronics Audio / Video systems. ✓ Understand the working of microphones and speakers and their application in Audio systems. ✓ Understand the basic functions of consumer electronic goods like cell phones and ATMs. ✓ Troubleshoot consumer electronic products like TVs, Washing machines , and ACs.
6		ELECC-06	Microprocessor and Microcontroller	✓ Identify a detailed s/w & h/w structure of the Microprocessor. ✓ Illustrate how the different peripherals (8255, 8253 etc.) are interfaced with Microprocessor. ✓ Distinguish and analyze the properties of Microprocessors & Microcontrollers. ✓ Analyze the data transfer information through serial & parallel ports. ✓ Understand the features of microcontrollers and their application to real-time systems. ✓ Analyze embedded systems based on AVR microcontroller.
7		ELECC-07	Advance Analog and Digital Electronics	✓ Understand the concepts from earlier courses in semiconductor devices, analog circuits, and digital circuits. ✓ Analyzing and designing the circuits design of complex CMOS integrated circuits, including op-amps and current mirrors.

				✓ Optimize analog circuits for performance characteristics like gain, phase margin, and frequency response. They can also optimize digital circuits for minimum propagation delay and fan-out. ✓ Students learn about basic logic gates, such as AND, OR, NOT, XOR, and XNOR. ✓ Students learn to apply Boolean algebra to simplify Boolean functions and construct circuits. ✓ Students learn about basic sequential logic components, such as SR Latch, D Flip-Flop, and JK Flip-Flop
8		ELECC-08	Signals and Systems	✓ To understand the mathematical description and representation of both continuous-time and discrete-time signals and systems and their properties. ✓ The fundamental input-output relationship for LTI systems and the concept of correlation of energy and power signals will be discussed. ✓ To learn about a sampling of continuous-time and discrete-time lowpass and bandpass signals. ✓ To discuss the block diagram representation of a system and methods of realization of a given system H (z) through different realization structures. ✓ Students will be able to correlate the Laplace and Z-transforms of sample signals and understand the mapping of the s-plane into the z-plane.
9	III	ELECC-10	Control Theory and Instrumentation	✓ Translate physical phenomena into corresponding mathematical descriptions and application of appropriate tools to analyze the behavior of systems. ✓ Deploy graphical tools to analyze and design control systems in the time domain. ✓ Understands that the frequency domain is a complementary point of view and learns to design control systems in the frequency domain. ✓ Implement a modern Data Acquisition system.
10		ELECC-11	Electronic Communication System	✓ Understand basic Elements of communication systems such as amplitude, frequency, and Phase modulations & demodulations, Radio transmission & reception and noise.

				✓ Analyze noise performance in modulation systems, calculation of total power and bandwidth. ✓ Maintain standards while designing radio transmitters and receivers. ✓ Solve problems pertaining to modulation schemes, transmitters and receivers considering noise effects. ✓ Apply appropriate techniques for modulation schemes understanding power and bandwidth limitations
11		ELECC-12	Electromagnetics and Radiating Systems	✓ Derive and discuss the Maxwell's equations. ✓ Be expected to be familiar with Electromagnetic wave propagation and wave polarization ✓ Classify the Guided Wave solutions -TE, TM, and TEM, analyse and design rectangular waveguides and understand the propagation of electromagnetic waves. ✓ Analyze the transmission lines and their parameters using the Smith Chart. ✓ Apply the knowledge to understand various planar transmission lines. ✓ Select the appropriate portion of electromagnetic theory and its application to antennas. Antenna arrays and mathematically analyze the types of antenna arrays.
12		ELECC-13	Microelectronics	✓ Describe the importance of wafer fabrication process and integrated circuits and apply their applications in modern technology ✓ Describe the structure and operation of MOSFETs ✓ Describe the techniques used for VLSI fabrication and design of CMOS logic circuits, switches, and memory. ✓ Describe the techniques used to design CMOS logic circuits, switches, and memory in VLSI. ✓ Generalize the design techniques and analyze the characteristics of VLSI circuits, such as area, speed, and power dissipation.
13	IV		1. Artificial Intelligence and Robotics 2. Telecommunicatio	Nanoelectronics

		ELEEC-01	n-I 3. Embedded Systems 4. Nanoelectronics	✓ Explain the fundamental science and quantum mechanics behind nanoelectronics and the concepts of a quantum well, quantum transport, and tunneling effects. ✓ Differentiate between microelectronics and nanoelectronics. Describe the superposition of eigenfunctions and probability densities. ✓ Describe the spin-dependant electron transport in magnetic devices and calculate the energy levels of periodic structures and nanostructures. ✓ Calculate the characteristics of nanoelectronic devices and summarise the applications of nanotechnology and nanoelectronics.
14		ELEEC-02	Project Work in any branch ofElectronics	✓ Develop problem-solving skills by applying theoretical knowledge to troubleshoot and optimize electronic circuits and systems. ✓ Understand the project management principles, including timelines, resource allocation, and documentation of progress. ✓ Gain proficiency in using industry-standard tools, software, and simulation platforms relevant to the chosen branch of electronics. ✓ Enhance teamwork and communication skills by working collaboratively with peers, mentors, and industry professionals. ✓ Develop the ability to prepare detailed project reports and present findings clearly to both technical and non-technical audiences. ✓ Foster creativity in designing innovative solutions to electronic engineering/Science challenges. ✓ Be well-prepared for industry job roles or pursuing further research in academia, based on the skills and experience gained during the project.