UG Electronics PO, PSO & CO

B.Sc (ELECTRONICS)	
PROGRAMME OUTCOME	➢ This program provides basic knowledge in mathematics, science and technology pertaining to electronics field. ➢ Ability to Identify, formulate and solve complex problems and interpret Data. ➢ Ability to design a System to meet user demand with in pragmatic constraints such as Economic, Environmental, Social, Manufacturability, and Sustainability. ➢ Gains perceptive of ethical and professional responsibility. ➢ Train the candidate to communicate technically effective in solving technical research and development issues. ➢ Ability to work effectively as an individual, and as a member or leader in diverse teams, or in multidisciplinary domain. ➢ Encourage graduates to become good human beings and responsible citizens for the overall welfare of the society.
PROGRAMME SPECIFIC OUTCOME	➢ To implant the capacity to apply the concepts of Electronics in the design, development and implementation of application oriented real time systems. ➢ An ability to solve complex problems in the domain of Electronics using updated hardware and software tools, along with analytical and managerial skills to arrive at cost effective and optimum solutions, either independently or as a team. ➢ Ability to acquire social and environmental awareness with ethical responsibilities to have a successful career in real-world

	applications.
COURSE OUTCOMES	
EL-101T and EL-101P BASIC ELECTRONICS	➢ Understand the current voltage characteristics of semiconductor devices ➢ Analyze dc and ac response of passive components ➢ Design and analyze of electronic circuits ➢ Evaluate frequency response to understand behaviour of Electronic circuits
EL-201T and El-201P ELECTRONIC CIRCUITS AND SPECIAL PURPOSE DEVICES	➢ Know about the multistage amplifier using BJT and FET in various configuration to determine frequency response and concept of voltage gain. ➢ Knows different power amplifier circuits, their design and use in electronics and communication circuits. ➢ Know the concept of feedback amplifier and their characteristics. ➢ Design and build different oscillator circuits for various frequencies.
EL-301T and EL-301P LINEAR INTEGRATED CIRCUITS AND 'C' PROGRAMMING	➢ Understand the fundamentals and areas of applications for the integrated circuits. ➢ Demonstrate the ability to design practical circuits that perform the desired operations. ➢ Understand the differences between theoretical and practical results in integrated circuits. ➢ Select the appropriate integrated circuit modules to build a given application. ➢ Accomplishes the programming ability in C for embedded systems.

EL-401T and EL-401P **DIGITAL ELECTRONICS AND VERILOG**	➢ Understands the difference between combinational and sequential logic circuits. ➢ Design and build the digital circuits by simplification of Boolean expressions. ➢ Explores the functionality of the digital circuits practically by coding the design using Verilog-HDL.
EL-501T and EL-501P **COMMUNICATION-I**	➢ Understand different blocks in communication system and how noise affects communication using different parameters. ➢ Distinguish between different amplitude modulation schemes with their advantages, disadvantages and applications. ➢ Analyze generation and detection of FM signal and comparison between amplitude and angle modulation schemes. ➢ Analyze generation and detection of FM signal and comparison between amplitude and angle modulation schemes. ➢ Sample analog signal and recover original signal without any distortion. ➢ Analyze the radiation mechanisms of antennas. ➢ Demonstrate knowledge of antennas in communication systems. Ability to discriminate between antennas on the basis of their electrical performance. ➢ Discriminate various antennas on the basis of their electrical performance. ➢ Understand the fundamental concepts of television transmitter and receiver systems, the transmission of video signals and importance of television standards to effectively work with broadcasting applications.

	➢ Understand different colour television systems used worldwide and its compatibility.
EL-502T and EL-502P MICROPROSSESOR andELECTRONIC INSTRUMENTATION	➢ To understand the basic architecture of 8-bit microprocessors. ➢ Able to write programs on 8085 microprocessor based systems. ➢ Identify the addressing modes of an instruction. ➢ Develop programming skills in assembly language. ➢ identifies different sensors and its applications ➢ knows the requirements of biomedical transducers and other essential functional blocks for applications namely, EEG, ECG and EMG.
EL-601T and EL-601P COMMUNICATION-II	➢ Understand the basics of information theory, source coding techniques and calculate Entropy of source. ➢ Describe and determine the performance of different error control coding schemes for the reliable transmission of digital representation of signals and information over the channel. ➢ Describes the basics of satellite communication and use of satellite system for the benefit of society. ➢ Explain and analyzes link budget of satellite signal for proper communication. ➢ List and compare personal area network (PAN) technologies such as Zigbee, Bluetooth etc. ➢ Know modern multiple access schemes, the concept of frequency reuse, channel

	assignment strategies. ➢ Understand GSM, CDMA concepts, architecture, frame structure, system capacity and services. ➢ Understand evolution of mobile communication generations 2G, 2.5G, and 3G with their characteristics and limitations. ➢ Understand emerging technologies required for fourth generation mobile system such as SDR, MIMO etc.
EL-602T and EL-602P MICROCONTROLLERS and Project work	➢ Ability to explain the embedded system concepts and architecture of embedded systems. ➢ Describe the architecture of 8051 microcontroller and write embedded program for 8051 microcontroller. ➢ Design the interfacing for 8051 microcontroller Using C code. ➢ Demonstrate the open source RTOS and solve the design issues for the same. ➢ Ability to develop a project on RTOS application or on any electronics and communication systems.
Learning Outcomes	
➢ The B.Sc Electronics program has a consistent result of 85% of candidates completing the course effectively.	
Course Objective	

EL-101T and EL-101P BASIC ELECTRONICS	➢ DC and AC response of electronic passive components ➢ To understand operation of semiconductor devices ➢ To learn different theorems for simplification of basic linear electronics circuits. ➢ Understand basic construction, equivalent circuits and characteristics of basic electronics devices. ➢ To verify the theoretical concepts through laboratory experiments.
EL-201T and El-201P ELECTRONIC CIRCUITS AND SPECIAL PURPOSE DEVICES	➢ To understand the operation and design of single stage and multistage amplifier for a given specification. ➢ To understand the operation of Power and Tuned amplifiers, differential amplifiers. ➢ To understand the operation and design of transformer coupled various types of power amplifier circuits. ➢ To understand the effects of negative feedback on amplifier circuits. ➢ To analyze the different RC and LC oscillator circuits to determine the frequency of oscillation. ➢ To understand the operation of the various bias circuits of MOSFET and Analyze and design MOSFET bias circuits. To understand the characteristic of special purpose semiconductor devices.

EL-301T and EL-301P **LINEAR INTEGRATED CIRCUITS AND 'C' PROGRAMMING**	➢ To understand the concepts, working principles and key applications of linear integrated circuits (operational amplifier). ➢ To study Applications of operational amplifier & IC 555 ➢ To design circuits and systems for particular applications using linear integrated circuits. ➢ To study C Programming - fundamentals, operators, expressions, functions, arrays and union and structures.
EL-401T and EL-401P **DIGITAL ELECTRONICS AND VERILOG**	➢ To study Boolean algebra and Logic gates. ➢ To study combinational and sequential logic circuits. ➢ To study Verilog and implement the digital circuit using verilog- Hardware Discription Language.
EL-501T and EL-501P **COMMUNICATION-I**	➢ The fundamentals of basic communication system, types of noise affecting communication system and noise parameters. ➢ Need of modulation, modulation processes and different amplitude modulation schemes. ➢ Radiation phenomena and pattern of various antennas, various characteristics of different types of antennas. ➢ To introduce the basics of picture transmission and reception, analysis and synthesis of composite video signal, receiver and picture tubes and television camera tubes. ➢ To introduce most latest and revolutionary ideas in the field of digital TV, HDTV

EL-502T and EL-502P MICROPROSSESOR andELECTRONIC INSTRUMENTATION	➢ To learn architecture, features and instructions of 8085 microprocessor. ➢ To study the Stack operations and Microprocessor Programming. ➢ To study I/O instructions and interfacing. ➢ To learn Measurement systems, Transducers & Electronic Instrumentation. ➢ To study the functionality and applications of Bio-medical instruments.
EL-601T and EL-601P COMMUNICATION-II	➢ Aim is to identify the functions of different components in communication system. ➢ Learn about theoretical bounds on the rates of digital communication system and represent a digital signal using several modulation methods. ➢ To study different types of RADAR systems. ➢ To provide an in-depth understanding of different concepts used in a satellite communication system. ➢ To explain the tools necessary for the calculation of basic parameters in a satellite communication system. ➢ To get knowledge of every aspects of satellite communication like orbital mechanics, launching techniques, satellite link design, earth station technology and different access system towards a satellite. ➢ Introduction to planning and design of wireless networks. ➢ To study emerging technologies like Bluetooth, zigbee, Wimax. ➢ Understanding the wireless sensor network architecture and the protocol stack and WSN applications. ➢ To study the concept of Mobile radio propagation, cellular system design.

	➢ To understand mobile technologies like GSM and CDMA. ➢ To know the mobile communication evolution of 2G, 3G and 4G in detail.
EL-602T and EL-602P MICROCONTROLLERS and Project work	➢ The concepts and architecture of embedded systems. ➢ Basic of microcontroller 8051, features, instructions, addressing modes and programming in assembly level language. ➢ The concepts of microcontroller interface using programming codes in C language. ➢ Different design platforms used for an embedded systems application.