



## **BSc Electronics**

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- **Programme Outcome(PO)**
- **Programme Specific Outcome (PSO)**
- **Course Outcome (CO)**

## PROGRAMME OUTCOMES (PO)

The programme is designed with the intension that the graduate will be able to accomplish the following programme outcomes at the completion of the FDP in Physics

NO.	PROGRAMME OUTCOMES
<b>PO – 1</b>	<b>CRITICAL THINKING:</b> - Instill an attitude of being inquisitive, develop a capacity to become an active learner through self-governing and reflective thinking in order to identify and analyze the logic connections between theory and its applications
<b>PO – 2</b>	<b>EFFECTIVE COMMUNICATION:</b> - Competent proficiency in communication to deliver the acquired knowledge, problem solving skills, analyzing capacity formally or informally to a spectrum of spectators.
<b>PO – 3</b>	<b>SKILL DEVELOPMENT:</b> - Practical oriented and problem-solving approach provide opportunity to develop knowledge and skills to the best of their potential.
<b>PO – 4</b>	<b>INDIVIDUAL AND TEAM WORK:</b> Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
<b>PO – 5</b>	<b>DIGITAL COMPETENCE:</b> Ability to use techniques, skills and modern information technology tools at their study and work place.
<b>PO – 6</b>	<b>SOCIAL ACUITY AND OBLIGATION:</b> - Impart perception about social issues, human values, foster scientific temper, practice inclusiveness for the betterment of the society and disseminate scientific knowledge in appropriate situation.
<b>PO – 7</b>	<b>ENVIRONMENTAL AWARENESS:</b> - Discern the environmental issues and involves in promoting ethics and attitudes that endorse coexistence and sustainable living with reduced, minimal, or no damage upon ecosystems
<b>PO – 8</b>	<b>MULTIDISCIPLINARY APPROACH:</b> -Interdisciplinary and multidisciplinary approaches permit to gain a solid foundation in various disciplines of science and provide a basis for higher studies and research
<b>PO – 9</b>	<b>SUSTAINABLE LEARNING:</b> - make the students to realize that acquiring knowledge and skills suitable for their professional developments is a never-ending process
<b>PO – 10</b>	<b>ETHICAL STANDARDS:</b> - Inspire the students to recognize values such as justice, equity, trust, kindness and to develop a commitment and upholding standards of ethical behavior in all walks of life.

## **PROGRAM SPECIFIC OUTCOME**

The following program outcomes have been identified for B.Sc Electronics

PSO1	Ability to apply knowledge of mathematics & science in solving electronics related Problems
PSO2	Ability to design and conduct electronics experiments, as well as to analyze and interpret data
PSO3	Ability to design and manage electronic systems or processes that conforms to a given specification within ethical and economic constraints
PSO4	Ability to identify, formulate, solve, and analyze the problems in various disciplines of electronics.
PSO5	Ability to function as a member of a multidisciplinary team with sense of ethics, integrity and social responsibility
PSO6	Ability to communicate effectively in term of oral and written communication skills
PSO7	Recognize the need for and be able to engage in lifelong learning.
PSO8	Ability to use techniques, skills, and modern technological/scientific/engineering software/tools for professional practices

### **Attributes for preparing the Course outcomes**

SI No	Cognitive Level (CL)
1	Remembering (R)
2	Understanding (U)
3	Applying (Ap)
4	Analysing (An)
5	Evaluating (E)
6	Creating (Cr)

SI No	Knowledge Dimension (KD)
1	Factual Knowledge (F)
2	Conceptual Knowledge (C)
3	Procedural Knowledge (P)
4	Metacognitive Knowledge (M)

## COURSE OUTCOME

### EX 1141: ENVIRONMENTAL STUDIES

SI No:	DESCRIPTION	COGNITIVE LEVEL
CO 1	Gain knowledge about environment and ecosystem.	R
CO 2	Students will learn about natural resource, its importance and environmental impacts of human activities on natural resource.	U
CO 3	Gain knowledge about the conservation of biodiversity and its importance.	U
CO 4	Aware students about problems of environmental pollution, its impact on human and ecosystem and control measures.	U
CO 5	Students will learn about social issues and the environment and also increase in population growth and its impact on environment	U

### MODULE I

### EX 1142 BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

SI No:	DESCRIPTION	COGNITIVE LEVEL
CO 1	Study circuits in a systematic manner suitable for analysis and design	U
CO 2	Analyze the electric circuit using KCL and KVL	An
CO 3	Understand fundamental laws governing Magnetism, Electro Magnetic induction, AC generation	U
CO 4	Evaluate rms value, average value of different waveforms	E
CO 5	Understand the concept of band gap, working of different semiconductor diodes.	U

### EX 1143: ELECTRICAL and ELECTRONICS WORKSHOP

SI No:	DESCRIPTION	COGNITIVE LEVEL
CO 1	Verify the network theorems and operation of typical electrical circuits	Ap
CO 2	Choose the appropriate equipment for measuring electrical quantities and verify the same for different circuits.	U
CO 3	Prepare the technical report on the experiments carried.	Ap

### EX 1144: DIGITAL ELECTRONICS LAB

SI No:	DESCRIPTION	COGNITIVE LEVEL
CO 1	Verify the truth tables of different digital circuits	An
CO 2	Choose the appropriate equipment for measuring electrical quantities and verify the same for different circuits.	U
CO3	Design simple digital circuits	Cr
CO 4	Prepare the technical report on the experiments carried.	Ap

### EX1131: DIGITAL ELECTRONICS

SI No:	DESCRIPTION	COGNITIVE LEVEL
CO1	Understand and represent numbers in powers of base and converting one from the other, carry out arithmetic operations	U
CO2	Understand basic logic gates, concepts of Boolean algebra and techniques to reduce/simplify Boolean expressions	U
CO3	Analyze and design combinatorial as well as sequential circuits	An, Ap
CO 4	Familiarize different logic ICs	U

### EX1241: SOLID STATE ELECTRONICS

SI No:	DESCRIPTION	COGNITIVE LEVEL
CO1	Remember symbols of various electronic devices	R
CO1	Describe the behavior of semiconductor materials	U
CO2	Reproduce the I-V characteristics of diode/BJT/MOSFET devices	An
CO3	Apply standard device models to explain/calculate critical internal parameters of semiconductor devices	Ap
CO 4	Understand the behavior and characteristics of power devices such as SCR/UJT etc.	U

### EX1242: NETWORK ANALYSIS

SI No:	DESCRIPTION	COGNITIVE LEVEL
CO 1	Analyze the electric circuit using network theorems	An
CO 2	Determine Transient and steady state response for RL,RC and RLC circuits	Ap
CO 3	Understand time domain, complex frequency, poles and zeros.	An
CO 4	Determine the stability	Ap
CO 5	Understand the two-port network parameters with an ability to find out two-port network parameters	U

### EX1244: C PROGRAMMING LAB

SI No:	DESCRIPTION	COGNITIVE LEVEL
CO 1	Write code in C language for arithmetic and logical problems	U, An
CO 2	Implement conditional branching, iteration and recursion.	Ap
CO3	Use concept of modular programming by writing functions and using them to form a complete program	Ap
CO 4	Prepare the technical report on the experiments carried.	Cr

### EX1231: PROGRAMMING IN C

SI No:	DESCRIPTION	COGNITIVE LEVEL
CO 1	Write code in C language for arithmetic and logical problems	U, An
CO 2	Implement conditional branching, iteration and recursion.	Ap
CO3	Use concept of modular programming by writing functions and using them to form a complete program	Ap
CO 4	Understand the concept of arrays, pointers and structures and use them to develop algorithms and programs for implementing searching and sorting	U, Ap

### EX1342: COMMUNICATION ENGINEERING

SI No:	DESCRIPTION	COGNITIVE LEVEL
CO 1	Understand the requirements and the protocols employed in the fundamental components in a communication network.	U

CO 2	Determine the suitability of a particular communication system to a given problem	An
CO3	Describe the concept of "noise" in analog and digital communication systems	A
CO 4	Understand the concept of different telephone systems	U



### EX1343: MICROPROCESSOR & INTERFACING

SI Number	DESCRIPTION	COGNITIVE LEVEL
CO1	Understand the Architecture of 8085 Microprocessor	U
CO2	Familiarize 8085 instruction set and construct 8085 assembly language program	U
CO3	Analyze the time of Execution and performance of the 8085 processor	An
CO4	Evaluate the performance of 8085 using 8255	E
CO5	Analyse the Data transfer through 8237&8259&8251	An
CO6	Understand the architecture of 8086	U

### EX 1332: COMPUTER ORGANIZATION

SI No:	DESCRIPTION	COGNITIVE LEVEL
CO1	Recall the basic structure of Computers.	R
CO2	Explain Multibus Organization.	U
CO3	Understand the concepts of Memory Structure.	U
CO4	Understand the concepts of optical storage devices.	U
CO 5	Explain the concept of Operating Systems.	U
CO 6	About computers in the corporate world.	U

### EX 1441: APPLIED ELECTROMAGNETIC THEORY

SI No:	DESCRIPTION	COGNITIVE LEVEL
CO1	Understand the fundamentals of Electrostatics and Magnetostatics hence get the insight of the characteristics of materials and their interactions with electric and magnetic fields	U
CO2	Understand the application of Vector Differential and Integral operators in Electromagnetic Theory.	U
CO3	Interpret Maxwell's equations in differential and integral forms, both in time and frequency domains.	Ap
CO4	Describe the complex $\epsilon$ , $\mu$ , and $\sigma$ , plane waves	U, An
CO 5	Understand the concept of TE, TM, TEM waves	U

### EX1442: LINEAR INTEGRATED CIRCUITS

SI No:	DESCRIPTION	COGNITIVE LEVEL
CO1	Infer the DC and AC characteristics of operational amplifiers and its effect on output and their compensation techniques.	U,Ap
CO2	Elucidate and design the linear and non linear applications of an op-amp and special application ICs.	U, Ap, An
CO3	Explain and compare the working of multi vibrators using special application IC 555 and general purpose op-amp.	Ap, An
CO4	Understand the concept of voltage regulators and design a simple regulator circuits using special IC's	U, Ap
CO 5	Understand the concept of active filters, analyze its frequency response and design of simple first order butterworth filters	U, An, Ap

### EX 1443: ELECTRONIC INSTRUMENTATION

SI No:	DESCRIPTION	COGNITIVE LEVEL
CO1	Describe the working principle of different measuring instruments	U
CO2	Choose appropriate measuring instruments for measuring various parameters in their laboratory courses	Ap
CO3	Correlate the significance of different measuring instruments, recorders and Oscilloscopes	An

### EX1444. MICROCONTROLLERS AND APPLICATIONS

SI No	Description	Cognitive Level
CO1	Understand the architecture of 8051 microcontroller	U
CO2	Familiarize the instruction set and construct assembly language program	U & Cr
CO3	Analyze the performance of peripheral Devices interfacing with 8051	An
CO4	Understand the architecture of PIC16F877A architecture	U
CO5	Analyze the serial communication using USART,SPI, I2C	An
CO6	Evaluate the performance of LED, Switch, LCD,Stepper motor using PIC16F877	E

**EX 1545: COMMUNICATION LAB**

- CO1: Understand basic elements of a communication system.
- CO2: Analyze the baseband signals in time domain and in frequency domain.
- CO3: Build understanding of various analog and digital modulation and demodulation techniques.
- CO4: Prepare the technical report on the experiments carried.

**EX1551.1: ENTERTAINMENT ELECTRONICS TECHNOLOGY**

- CO1: Understand basic elements of a recording and reproduction system.
- CO2: Understand and explain the concept of different types of speakers.
- CO3: Understand and explain Television standards
- CO4: Understand and explain various electronic gadgets.

**EX1551.2: INTRODUCTION TO MOBILE COMMUNICATION**

- CO1: Illustrate about different communication standards.
- CO2: Describe different radio transmission techniques.
- CO3: Understand a basic cellular system
- CO4: Describe the concept of GSM
- CO5: Describe various traffic routing techniques

**EX 1641: OPTICAL COMMUNICATION**

SI No:	DESCRIPTION	COGNITIVE LEVEL
CO1	Recollection of basic principles of optics transmitting light on a fiber. Classification of Optical Fibers.	R
CO2	Understand the Signal Degradation In Optical Fibers.	U
CO3	Understand the Optic Fiber Couplers ,Splicing Techniques and Optic fiber Connectors.	U
CO4	Understanding Optical sources and Detectors.	U

**EX 1642: BIOMEDICAL ENGINEERING**

SI No:	DESCRIPTION	COGNITIVE LEVEL
CO1	Understand the basic knowledge of physiology.	U
CO2	Explore the occurrence of potential and operation of cardiovascular measurements.	U, An
CO3	Understand the basic knowledge on respiratory and pulmonary measurements.	U
CO4	Describe the methods used for monitoring the patients.	U, An

### **EX1643: NANOELECTRONICS**

- CO1: Describe the principles of nanoelectronics and the processes involved in making nano components and material.
- CO2: Explain the advantages of the nano-materials and appropriate use in solving practical problems.
- CO3: Explain the various aspects of nano-technology and the processes involved in making nano components and material.
- CO4: Understand and analyze various techniques for characterizing nanomaterials.

### **EX 1651.1 INTERNET OF THINGS AND APPLICATIONS**

- CO1: Describe the operation principles IoT
- CO2: Familiarize with Applications of IoT
- CO3: Design an Application of IoT in the daily life

### **EX1651.2: MICROWAVE ENGINEERING**

CO1	Understand Microwave frequency band and transmission line used in microwave communication	U
CO2	Apply Waveguide theory and Analyze the wave pattern	Ap
CO3	Understand the operation of various microwave devices	U
CO4	Analyze the working of various Microwave amplifier and oscillator	An
CO5	Understand the working of microwave solid state devices	U

