DEPARTMENT OF PHYSICS
U.G.

DEPARTMENT OF PHYSICS-UG

Programme Code: P **Programme Name: B.Sc. Physics**

Programme Outcomes

1. Understand the fundamental laws and principles of various areas of Physics. (Global)
2. Learn the theoretical knowledge of Physics principles and mathematical tools to solve practical problems. (Global)
3. Executing series of experiments or computations and to handle specialized equipments. (National)
4. Understand the role of Physics in society and the background to consider ethical, legal and responsibilities. (National)
5. Ability to pursue Science career, Successfully. (Global)

Programme Specific Outcomes

1. Acquire Knowledge and to Understand the academic field of Physics and applications of Basic Physics. (National)
2. Apply Mathematical techniques with emphasis on applications of Physics. (Global)
3. Develop knowledge and skills such as a practical approach to solve problems, the ability to reasoning out and to communicate complex ideas. (National)
4. Assist in the creation of an effective project plan. (National)
5. Personal skills such as the ability to work both independently and in a group. (National)

Course Outcomes

Upon completion of the course, the students will be able to

SEMESTER - I

Subject Code: 17P11
Course Name: MECHANICS, PROPERTIES OF MATTER AND SOUND (Global)

Upon completion of the course, the students will be able to

1. Study the conservative laws and conservative forces angular momentum and types of collision.
2. Learn the fluid motion, determine the coefficient of viscosity by different methods.
3. Understand simple harmonic motion and the types of sound waves and also the acoustic properties.

Subject Code: 17SEP11
Course Name: BASIC ELECTRONICS (Global)

Upon completion of the course, the students will be able to

1. Know the fundamentals of Passive components.
2. Gain the knowledge about the functions and working of Transistors.
3. Learn about the fundamentals of semiconductors.

Subject Code: 17SEP12
Course Name: DIGITAL ELECTRONICS (Global)

Upon completion of the course, the students will be able to

1. Understand the fundamentals of code and number system.
2. Able to solve problems in digital electronics using K-map.
3. Develop skill to build and troubleshoot digital circuits.

Subject Code: 17NMP1
Course Name: ENERGY PHYSICS (National)
Upon completion of the course, the students will be able to

1. Obtain qualitative ideas about fundamentals of energy.
2. Get an idea about basic principle of solar energy, wind energy and biomass energy.
3. Know about other non-conventional energy sources like Ocean Thermal Energy Resources, Wind energy and Chemical energy resources.

SEMESTER - II

Subject Code: 17P21
Course Name: HEAT AND THERMODYNAMICS (Global)

Upon completion of the course, the students will be able to

1. Understand the specific heat capacity of gas and different theories on specific heat capacity
2. Know the heat transmission through different experiments
3. Learn the postulates of kinetic theory of gases and theorem of equipartition of energy

Subject Code: 17P2P
Course Name: MAJOR PRACTICAL I (Global)

Upon completion of the course, the students will be able to

1. Examine the young's modulus of different materials.
2. Calculate gravitational constant at different places.
3. Calibrate voltmeter and ammeter of different ranges.

Subject Code: 17SEP21
Course Name: ELECTRONIC INSTRUMENTATION (Global)

Upon completion of the course, the students will be able to

1. Identify the various parameters that are measurable in Electronic Instrumentation.
2. Practice the construction of testing and measuring set up for electronic systems.
3. Analyze the performance of the characteristics of each instrument.

Subject Code: 17SEP22
Course Name: ELECTRICITY (Global)

Upon completion of the course, the students will be able to

1. Understand the electrostatics and current electricity.
2. Gain the knowledge of electric current, resistance and capacitance in terms of electric field and electric potential and demonstrate the working of capacitors.
3. Acquainted with the dielectric properties, magnetic properties of materials and the phenomenon of electromagnetic induction.

Subject Code: 17NMP2
Course Name: ASTROPHYSICS (National)

Upon completion of the course, the students will be able to

1. Assess the design of physical nature of path and the surface of the structure of moon.
2. Apply various optical instrument and explore the observation of the universe
3. Learn the age and origin of the solar system and illustrate the differences between earth and other planets in the solar system.

SEMESTER - III

Subject Code: 17P31
Course Name: ELECTRO MAGNETISM (Global)

Upon completion of the course, the students will be able to

1. Analyze the magnetic effects of electric current and demonstrate the associated concepts with Ballistic Galvanometer
2. Acquire knowledge of Gauss laws and solve the electric field for various geometric objects.
3. Exhibit the Knowledge in the basic concept of electromagnetic induction.

SEMESTER - IV

Subject Code: 17P41
Course Name: OPTICS (Global)

Upon completion of the course, the students will be able to

1. Analyse and understand the theory and experimental part of diffraction by the theory and experiment of interference using Fresnel's biprism, Newton's ring and Michelson's Interferometer.
2. Learn the knowledge on the Fresnel's and Fraunh offer diffraction .
3. Understand the basic concepts of Lasers.

Subject Code: 17P4P
Course Name: MAJOR PRACTICAL II (Global)

Upon completion of the course, the students will be able to

1. Analyze the operation and application of various bridges used in d.c and a.c circuit
2. Explore themselves to understand the different bridges and to find the self inductance of the coil.
3. Learn the charge and current sensitivity by using Spot Galvanometer.

SEMESTER - V

Subject Code: 17P51
Course Name: ATOMIC AND NUCLEAR PHYSICS (Global)

Upon completion of the course, the students will be able to

1. Familiarize about the atomic structure and various atom models.
2. Gain knowledge about Elementary particle Physics and nuclear models.
3. Study the different types of particle accelerators and detectors.

Subject Code: 17P52
Course Name: PROGRAMMING WITH C++ (National)

Upon completion of the course, the students will be able to

1. Obtain the fundamental concept of Object oriented language.
2. Gain the knowledge about Tokens, Expressions and Control Structures and various types of function.
3. Learn the knowledge on the Classes, Objects, Constructors and Destructors.

Subject Code: 17PE5A
Course Name: ELECTRONICS (Global)

Upon completion of the course, the students will be able to

1. Illustrate about diodes, transistor and FET amplifiers.
2. Learn the concepts of Op-amp and Oscillators.
3. Understand the digital sequential circuits, counter and converters.

Subject Code: 17PE5B
Course Name: NUMERICAL METHODS (Global)

Upon completion of the course, the students will be able to

1. Solve the numerical solutions of algebraic and transcendental equations.
2. Learn about various interpolating and extrapolating methods. Solve initial and boundary value problems in differential equations using numerical methods.
3. Helpful for appearing Mathematical competitive examinations.

Subject Code: 17SEP51
Course Name: FIBRE OPTIC COMMUNICATION (National)

Upon completion of the course, the students will be able to

1. Learn the principle and structure of optical fibres.
2. Apply the fundamental principles of optics and light wave to design optical fibre communication systems.
3. Understand the different Multiplexing system.

SEMESTER - VI

Subject Code: 17P61
Course Name: SOLID STATE PHYSICS (Global)

Upon completion of the course, the students will be able to

1. Distinguish the different types of bonding in solids.
2. Understand lattice, Unit cell and how these relate to crystal systems.
3. Analyze the theories of semiconducting material.

Subject Code: 17P62
Course Name: SPECTROSCOPY (Gloabl)

Upon completion of the course, the students will be able to

1. Learn the structure of atoms and the origin of the observed spectra.
2. Gain knowledge about the techniques of IR and Raman spectra.
3. Interpret electronic spectra of diatomic molecules.

Subject Code: 17PE6A
Course Name: THEORETICAL PHYSICS (Global)

Upon completion of the course, the students will be able to

1. Understand the basic significance of Classical mechanics.
2. Gain the knowledge about Quantum statistics.
3. Analyse the basic functions of wave mechanics and relativity.

Subject Code: 17PE6B
Course Name: COURSE NAME: APPLICATIONS OF ELECTRONIC DEVICES AND INSTRUMENTATION (Global)

Upon completion of the course, the students will be able to

1. Illustrate basic meters such as ammeter and voltmeter.
2. Know the different types of recorders.
3. Differentiate IC and discrete components.

Subject Code: 17P61P
Course Name: MAJOR PHYSICS PRACTICAL III (Global)

Upon completion of the course, the students will be able to

1. Construct experiments on optics and electricity and illustrate the related theoretical concepts.
2. Compute observed values and compare with standards.
3. Examine the measurements to draw valid conclusions and work co-operatively in a small group environment.

Subject Code: 17P62P
Course Name: MAJOR PHYSICS PRACTICAL IV (Global)

Upon completion of the course, the students will be able to

1. Understand and examine the structure of various number systems ,De-morgan's law, Boolean algebra and its application on digital design.
2. Generate different wave shapes using multi vibrator and oscillator circuits.
3. Knowledge in handling modern electronics practical equipments.

Subject Code: 17PPR6
Course Name: PROJECT (National)

Upon completion of the course, the students will be able to

1. Learn problems formulate hypothesis, test, analyse, interpret and draw conclusions from data.
2. Identify relevant assumptions, formulate coherent arguments.
3. Act together as a group and work efficiently as a member of a team.

Subject Code: 17SEP61
Course Name: INTRODUCTION TO MICROCONTROLLERS 8051 (Global)

Upon completion of the course, the students will be able to

1. Understand the architecture of pin description connection & memory organization in 8051 Microcontroller.
2. Enumerate the concept of input and output ports in 8051
3. Thorough knowledge in the assembly language programming tools

Subject Code: 17AP1
Course Name: MECHANICS, PROPERTIES OF MATTER AND SOUND (Global)

Upon completion of the course, the students will be able to

1. Gain the knowledge about basics of properties of matter.
2. Learn the fundamentals of harmonic oscillator model, including damped and forced oscillators.
3. Understand the Laws of Gravitation, Viscosity and Elasticity.

Subject Code: 17AP2
Course Name: THERMAL PHYSICS (Global)

Upon completion of the course, the students will be able to

1. Understand thermal expansion of solids and calculate the linear expansion of solids.
2. Learn the transfer of energy by conduction and convection.
3. Apply the various thermodynamics laws to the real system.

Subject Code: 17AP2P
Course Name: ALLIED PHYSICS PRACTICAL I (Global)

Upon completion of the course, the students will be able to

1. Learning the concept of moduli of elasticity in a series of experiments.
2. Understand the use of potentiometer for the calibration of electrical meters.
3. Gain the knowledge about the principles of laws of vibration through various experimental procedure.

Subject Code: 17AP3
Course Name: ELECTRICITY AND ELECTRONICS (Global)

Upon completion of the course, the students will be able to

1. Understand the value of resistance of resistor, inductance of inductor and capacitance of capacitor using colour code method.
2. Apply the knowledge of semiconductors to illustrate the function of basic electronic devices
3. Design various circuits using Op-Amp 741 and design logic gates.

Subject Code: 17AP4
Course Name: OPTICS (Global)

Upon completion of the course, the students will be able to

1. Illustrate the concept of dispersion, aberration in prism and light propagation in optical fibers.
2. Explore the theoretical and practical ideas of Interference, Diffraction & Polarization.
3. Comprehend the resolution of optical instruments and analyze the spectroscopy of prism and grating

Subject Code: 17AP4P
Course Name: ALLIED PHYSICS PRACTICAL II (Global)

Upon completion of the course, the students will be able to

1. Understand the concept of logic gate circuits.
2. Gain the knowledge about the applications of Op amp using adder and subtractor circuits
3. Focus on the spectrometer experiment using prism and grating

Subject Code: 19PC1
Course Name: SOLAR ENERGY (National)

Upon completion of the course, the students will be able to

1. Identify the renewable and non-renewable energy resources and describe their applications.
2. Classify the type of solar energy collectors and cells.
3. Gain the knowledge about devise methods for energy storage systems