

COURSE OFFERED
B.Sc PHYSICS - MODEL II(APPLIED ELECTRONICS)

PROGRAMME OUTCOMES

PO1	<ul style="list-style-type: none">• Apply domain-based knowledge to real life situation.
PO2	<ul style="list-style-type: none">• Acquire strong communication skill to function effectively in diverse social atmosphere
PO3	<ul style="list-style-type: none">• Adopt environmental values to enable sustainable living in the world.

PROGRAMME SPECIFIC OUTCOMES

PSO1	<ul style="list-style-type: none">• Understand the basic concepts, fundamental principles and scientific theories related to scientific phenomena.
PSO2	<ul style="list-style-type: none">• Analyze the physical problems and develop optimal solutions using theory and program.
PSO3	<ul style="list-style-type: none">• To develop skills in doing programming and practical experiments.

COURSE OUTCOMES

Course Name and Code	COURSE OUTCOME STATEMENT
<p style="text-align: center;">SEMESTER 1 <i>PH1CRT01</i> METHODOLOGY AND PERSPECTIVE OF PHYSICS</p>	<p>CO1 :To understand the contributions of eminent physicists - Newton, Einstein, C. V. Raman, Edison in the development of physics in its historical and cultural context.</p> <p>CO2 :To apply the basic concepts of number system ,binary numbers and mathematical operations and to understand the different types of errors and analyse the data</p> <p>CO3 : To acquire the knowledge about the basic concepts of vector calculus.</p>
<p style="text-align: center;">SEMESTER 2 <i>PH2CRT02</i> MECHANICS AND PROPERTIES OF MATTER</p>	<p>CO1 : To acquire the knowledge about oscillations, examples and applications.</p> <p>CO2: To apply the basic concepts of rotational mechanics to different physical systems.</p> <p>CO3 :To study the basic ideas of elasticity and apply the theory to practical systems</p>
<p style="text-align: center;">SEMESTER 3 <i>PH3CRT03</i> OPTICS ,LASERS AND FIBER OPTICS</p>	<p>CO1 : To develop basic knowledge of the physics behind interference, diffraction and polarization.</p> <p>CO2 : To Understand the principle of operation of laser and the light propagation in optical fibres.</p> <p>CO3 :Be able to outline the important applications of lasers and optical fibres in the modern society.</p>
<p style="text-align: center;">SEMESTER 4 <i>PH4CRT04</i> SEMICONDUCTOR PHYSICS</p>	<p>CO1 : Be able to understand the current-voltage characteristics of a P-N junction diode, Zener diode and bipolar junction transistor, their constructions using different circuit configurations and analyze its operations and working in different electronic circuits.</p> <p>CO2 : To understand the basic concepts of transistor , transistor biasing and amplification.</p> <p>CO3 : Be able to design and construct transistor amplifier, and evaluate its gain, input and output resistances, frequency response and bandwidth.</p> <p>CO4 : Help to identify types of modulation, and also understand the concept of Op amp.</p>
<p style="text-align: center;">SEMESTER 5 <i>PH5CRT05</i> ELECTRICITY AND ELECTRODYNAMICS</p>	<p>CO1 : Be able to solve electrodynamics problems using the fundamental equations through advanced mathematical steps tools like vector calculus.</p> <p>CO2 : Study in depth the alternating current response of RC, LC, LR and LCR series circuits, which is essential in understanding the working of electronic circuits.</p>

	CO3 : Be able to understand the concept of electromagnetic waves , and applications.
SEMESTER 5 <i>PH5CRT06</i> CLASSICAL AND QUANTUM MECHANICS	CO1: Acquire the knowledge about the concepts of Newtonian mechanics, Langrangian dynamics, Hamiltonian mechanics, Lorentz transformations . CO2 : understanding the limitations of classical physics , and the mathematical foundations of quantum mechanics. CO3 : Be able to solve the Schrödinger equations , Dual nature of particles , uncertainty principle etc.
SEMESTER 5 <i>PH5CRT07</i> DIGITAL ELECTRONICS AND PROGRAMMING	CO1 : Understand different number systems as well as the arithmetic operations, digital codes, logic gates, Boolean laws, D' Morgan's theorem CO2 :Analyze, Design and implement combinational logic gate circuits. CO3 : Be able to explain Boolean expressions for different logic gate circuits and simplify various Boolean expressions for different inputs using the Boolean algebra . CO4 : Have deep knowledge in the C++ programming language. CO5 : Develop programming skills for solving problems in Physics using C++.
SEMESTER 5 <i>PH5CRT08</i> ENVIORNMENTAL PHYSICS AND HUMAN RIGHTS	CO1 : To gain knowledge in various energy sources CO2 :To gain knowledge on environmental pollution CO3 : To understand the different environmental issues and the management CO4 : To understand ecosystem, Biodiversity and its conservations, solar energy .
SEMESTER 5 OPEN COURSE <i>PH5OPT02</i> PHYSICS IN DAILY LIFE	CO1: Explain physics related phenomenon using basic physics principles . CO2 : To understand the basic concets of temperature and temperature scales. CO3 : To Acquire the knowledge about waves,lasers etc CO4 : Learn about the basis of solar system, satellites .
SEMESTER 6 <i>PH6CRT09</i> THERMAL AND STATISTICAL PHYSICS	CO1 : Develop skills in the problem solving using the concepts of heat and thermodynamics. CO2: Introduce applications of thermodynamics to heat engines such as Carnot engine, Otto engine and Diesel engine and the principle of refrigerator. CO3: Develop an appreciation of the concepts of order, disorder and entropy and an understanding of the heat as an energy. CO4 : It give an important ideas of statistical mechanics.

SEMESTER 6 <i>PH6CRT10</i> RELATIVITY AND SPECTROSCOPY	CO1 : To acquire the knowledge about the atomic spectra, principle of ESR and NMR . Rotational, vibrational, electronic and Raman Spectra of molecules. CO2 : Fine structure of hydrogen, effects of spin-orbit interaction, atomic spectra. CO3: To understand the special theory of relativity and time dilation etc. CO4 : Understand the effect of external fields to spectra like zeeman effect ,anomalous Zeeman effect,
SEMESTER 6 <i>PH6CRT11</i> NUCLEAR , PARTICLE PHYSICS AND ASTROPHYSICS	CO1 : Understand and explain the general properties of nuclei, nuclear structure and nuclear models. CO2: Understand the basic knowledge of elementary particles CO3: Account for the nuclear fission and fusion processes.
SEMESTER 6 <i>PH6CRT12</i> SOLID STATE PHYSICS	CO1 : To explain the fundamental features of crystalline solids, metallic conduction through free electron model, Properties of insulators and semiconductors, band theory of solids, dielectric and magnetic properties of materials. CO2 : To acquire the knowledge about the basic of solid state physics such as Miller indices, reciprocal lattice, Brillouin Zones, Bragg’s law, Fermi surface, Hall effect, magneto resistance, AC conductivity, Bloch theorem, Kronig-Penney model, Langevin theory, Clausius Mosotti Equation. CO3: Understand the relation between conductors ,insulators and superconductivity. CO4: To understand the basic concepts of force between atoms and bonding between molecules.
SEMESTER 6 CHOICE BASED COURSE <i>PH6CBT02</i> MATERIAL SCIENCE	CO1 : Understand the types of imperfections and diffusion mechanisms in solids CO2: Describe crystalline and non crystalline materials CO3: To understand the principles and characterization techniques. CO4: To explain the basis of nanomaterials and applications.
Complementary physics for mathematics semester 1 <i>PH1CMT01</i> Properties of matter and error analysis	CO1: To describe the different types of errors. CO2:To understand the basic concepts of elasticity and different types strain etc. CO3: To provide the knowledge about different types of flows, theorems .
Semester 2 <i>PH2CMT01</i> Mechanics and astrophysics	CO1: To learn the fundamentals of harmonic oscillators, including damped and forced oscillators CO2:: Describe the evolution and death of stars CO3: To understand the basic concepts of gravitational force and different types of pendulum.
Semester 3 <i>PH3CMT01</i> Modern physics and electronics	CO1: To describe the wave function and derive schrodinger equation . CO2:To interpret the characteristics of a transistor in CB and CE modes. CO3: To verify the truth tables of basic logic gates and universal gates. CO4: To understand the properties of nucleus.
Semester 4	CO1:To analyse the different types of polarized light.

<i>PH4CMT01</i> Optics and electricity	CO2: To understand the laser action phenomena, properties of laser. CO3: To analyze the behavior of ac/dc circuits based on L,C,R.
Complementary physics for chemistry Semester 1 <i>PH1CMT02</i> Properties of matters and thermodynamics	CO1: To understand the laws of thermodynamics and identify its outcomes. CO2: To understand the basis of mechanics. CO3: To understand the surface tension and surface energy.
Semester 2 <i>PH2CMT02</i> MECHANICS AND SUPERCONDUCTIVITY	CO1: To describe the conservation of momentum, force, linear momentum, angular momentum. CO2: To understand the different types of superconductors, and also about Meissner effect. CO3: To understand the basic concepts of rotational mechanics.
SEMESTER 3 <i>PH3CMT02</i> MODERN PHYSICS AND MAGNETISM	CO1: To analyse the different kinds of magnetic materials CO2: To understand the basic concept of semiconductor diode and rectifiers. CO3: To describe the basic radioactivity and half-life period. CO4: To learn about Heisenberg uncertainty principle, photoelectric effect.
SEMESTER 4 <i>PH4CMT02</i> OPTICS AND SOLID STATE PHYSICS	CO1: To explain the phenomenon of diffraction and interference of light. CO2: To understand the different kinds of polarization and its effect on dielectric constant. CO3: To learn about crystalline, amorphous solids and also calculate packing factor. CO4: To provide the knowledge about laser and laser action.
Vocational courses Semester-I <i>AE1VOT01</i> PRINCIPLES OF ELECTRONIC COMPONENTS	CO1: To gain the basic ideas of electronic devices. CO2: To give the basic ideas of switches, types of switches, contact actions and also provide the concept of LCD and LED.
Semester-I <i>AE1VOT02</i> ELECTRONIC APPLICATIONS	CO1: To learn about measuring instruments such as multimeter etc. CO2: To provide the knowledge about tuning circuit and different types of filters.
Semester-II <i>AE2VOT03</i> BASICS OF POWER ELECTRONICS	CO1: To understand the working of JFET, MOSFET. CO2: To explain the concept of FET amplifiers.
Semester-II <i>AE2VOT04</i> POWER ELECTRONICS	CO1: To provide the basic ideas of thyristor. CO2: To give the information about uni-junction transistors and silicon controlled switches. CO3: To understand the ideas about controlled rectifiers.
Semester-III <i>AV3VOT05</i> MICRO PROCESSOR AND INTERFACING DEVICES	CO1: To understand concepts of 8085. CO2: To explain the concept of interrupts in microprocessor and interface between microprocessor.
Semester-III <i>AE3VOT06</i> COMMUNICATION ELECTRONICS	CO1: To understand the basic communication system. CO2: To introduce the various modulation and demodulation techniques.

Semester-IV <i>AE4VOT07</i> LINEAR INTEGRATED CIRCUITS	CO1: To analyze and design the various op-amp circuit. CO2: To understand the comparator, integrator and differentiator.
Semester-IV <i>AE4VOT08</i> APPLICATIONS OF MICROPROCESSORS	CO1: To apply the programming instructions to perform simple programs using microprocessor. CO2 : To have a thorough knowledge about the basic concepts of 8051 microcontroller.
PHYSICS PRACTICAL SEM (1 &2) <i>PH2CRP01</i> Mechanics and Properties of Matter	<ul style="list-style-type: none"> • Develop the ability to collaborate with peers in a scientific / lab environment. • Develop and apply a conceptual and quantitative understanding to solve physics problems relating to mechanics.
SEM (3&4) <i>PH4CRP02</i> Optics and Semiconductor Physics	<ul style="list-style-type: none"> • Students would gain practical knowledge of basic electronic circuits and components by performing experiments in laboratory the experiments include: LCR, Transistors, Amplifiers, and Oscillators. • Able to know about practical knowledge by performing various experiments of Electronics, Optics and Radiation.
SEM (5&6) <i>PH6CRP03</i> Electricity, Magnetism and LASER	<ul style="list-style-type: none"> • Demonstrate ability to collect process and analyze scientific data relating to electricity and magnetism. • Display critical thinking skills in applying physics knowledge in the experimental process involving electricity and magnetism.
SEM(5&6) <i>PH6CRP04</i> Digital Electronics	<ul style="list-style-type: none"> • Able to know various Digital electronics courses. • students to learn basics of digital electronics and wide applications in computing ,communication systems.
SEM(5&6) <i>PH6CRP05</i> Thermal Physics, Spectroscopy and C++ Programming	<ul style="list-style-type: none"> • students learn about basic knowledge of computers their applications in solving common and scientific problems, the course include scientific programming language etc • students able to understand the basic physics of heat and temperature and their relation with energy, work, radiation and matter.
SEM(5&6) <i>PH6CRP06</i> Acoustics, Photonics and Advanced Semiconductor Physics	<ul style="list-style-type: none"> • Understand and apply physical principles and laws that describe phenomena related to acoustic , electromagnetism and optics. • Students would learn about electronic circuits such as Amplifiers and Oscillators.
COMPLEMENTARY PHYSICS PRACTICAL SEMESTER 1&2 (First Year) <i>PH2CRP01</i>	<ul style="list-style-type: none"> • Develop and apply a conceptual and quantitative understanding to solve physics problems relating to mechanics. • Develop the ability to collaborate with peers in a scientific / lab environment.

<p>SEMESTER 3&4 (Second Year) <i>PH4CRP02</i></p>	<ul style="list-style-type: none">• Understand and apply basic concepts of electricity and apply the knowledge of electricity to simple circuits.• Able to learn about optical phenomena such as interference, diffraction and dispersion and do experiments related to optical devices: Prism, grating, spectrometers
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