**B.Sc. Non-Medical**

**Physics**

|  |  |  |
| --- | --- | --- |
| **Semester** | **Subject Name**  **and Code** | **Course Outcomes** |
| **SEM-1** | ***Mechanics*** | CO-1. Mechanics of single And system of particles.  CO-2. Conservation of Linear and angular momentum, and their use in real-life problems.  CO-3. Lagrangian equation of motion and using this equation. We can get complete information of particles i.e. position, velocity and acceleration.  CO-4. Rotation of rigid body and parameter associated with it. Understanding of rotational motion of the rigid body. |
| ***Electricity, Magnetism and Electromagneti c Theory*** | CO-1. Basics of electromagnetics.  CO-2. Electrostatic field and Gauss Law , its application to find out the electric field for different configuration of charge  CO-3. Magneto-statics and different laws, domain theory, cycle of magnetization, Hysteresis loop of different materials, classification of magnetic materials.  **CO-4.** Electromagnetic theory, Maxwell equation, and electromagnetic waves , their application in ICT. |
| **SEM-2** | ***Properties of Matter, Kinetic***  ***Theory and Relativity*** | CO-1. Elasticity Hooke’s law and application of these laws to find out the strength of material used for different application  CO-2. Kinetic theory of gases. Its application in our daily life. “We can understand the whole thermodynamics in a kitchen”  CO-3. Theory of relativity, Galilean and Lorentz transformation, their application to justify space contraction, time dilation, velocity addition theorem, mass dilation etc. |
| ***Electromagnetic Induction and Electronic Devices*** | CO-1. DC transient (voltage and current equation of RL, RC and RLC ckt)  CO-2. AC transient (voltage and current equation of RL, RC and RLC ckt)  CO-3. Basics of semiconductor and semiconductor devices  i.e. solar cell photo diode LED  CO-4. Application of Diodes : rectifier, Zener Diode, I-V characteristics and application in voltage regulation  CO-5. Basics of transistors and cathode ray oscilloscope CO-6. Application of transistor as an amplifier And  application positive feedback to generate sinusoidal signal (Oscillator) |

|  |  |  |
| --- | --- | --- |
| **SEM-3** | ***Computer Programming and Thermodynamics*** | CO-1. Understand the basic concepts of Thermodynamics and Thermodynamical Variable.  CO-2. Different Laws and its application (Carnot Cycle). CO-3. Draw and understand the flow Chart and its  Interpretation.  CO-4. Understand conversion :Binary to digital conversion. IF ,DO Loop .Applications of Claperyon Equation, Maxwell Function (F,H,G,U)and Relation |
| ***Waves and Optics*** | CO-1. The concept of Transverse and Longitudenal Waves. CO-2. Concept of Fourier series and transforms.  CO-3. Aberrations in lenses and their removal.  Interference by division of wavefront |
| **SEM-4** | ***Statistical Mechanics*** | CO-1. Understand the basic concepts of Thermodynamics and Probability  CO-2. Different aspects of Statistics to understand Thermodynamical System.  CO-3. Understand the different Quantum mechanics on particles and its Interpretation.  CO-4. Understand Fermi gas, Photon gas, Boson gas and zero point energy.  CO-5. Applications of STASTICS to develop Radiation Law and Specific Heat (metal)Relation. |
| ***Waves and Optics*** | CO-1. Interference by Division of Amplitude: Colour of thin, films, wedge shaped film, Newton’s rings.  CO-2. Interferometers: Michelson’s interferometer and its application to (I) Standardisation of a meter (II) determination of wave length.  CO-3. Fresnel’s Diffraction: Fresnel’s half period zones, zone plate, diffraction at a straight edge, rectangular slit and circular aperture.  CO-4. Fraunhoffer diffraction : One slit diffraction, Two slit diffraction N-slit diffraction, Plane transmission granting spectrum, Dispersive power of a grating , Limit of resolution, Rayleigh’s criterion, resolving power of telescope and a grating.  CO-5. Polarization: Polarisation and Double Refraction : Polarisation by reflection, Polarisation by scattering, Malus law, Phenomenon of double refraction,  CO-6. Huygen’s wave theory of double refraction (Normal and oblique incidence),  CO-7. Analysis of Palorised light : Nicol prism, Quarter wave  plate and half wave plate, production and detection of (i) |

|  |  |  |
| --- | --- | --- |
|  |  | Plane polarized light (ii) Circularly polarized light and (iii)Elliptically polarized light,  CO-8. Optical activity, Fresnel’s theory of rotation, Specific rotation, Polarimeters (half shade and Biquartz). |
| **Sem 5** | ***Solid State Physics*** | CO-1. Understand different types of lattices. CO-2. Crystal structures of different materials  CO-3. Understand the x ray diffraction and different experimental methods of it  CO-4. Understand Reciprocal lattice of different lattices.Know about Specific heat of solids |
|  | ***Quantum Mechanics*** | CO-1. Understand Photoelectric effect, Compton effect. CO-2. Understand about concept of wave duality.  Understand about wave function and its significance. Understand particle potential energy at different positions in Lattice |
| **SEM 6** | ***Atomic , Molecular and Laser Physics*** | CO-1. Understand atomic model and different atomic spectra.  CO-2. Understand effects of Magnetic and Electric field on spectra.  CO-3. Understand molecular spectra.  CO-4. Understand basics of LASER ,its construction and working .Know about application of LASER |
| ***Nuclear Physics*** | CO-1. Understand basic properties of Nucleus.  CO-2. Know about construction of mass spectrograph and its working.  CO-3. Understand alpha decay, beta decay, gamma particle. CO-4. Understand nuclear reactions and conservation laws. CO-5. Know about Nuclear reactors. |