



Sri Arvind Mahila College, Patna

Accredited by NAAC with B⁺ Grade

(A Constituent Unit of Patliputra University, Patna)



4 Years Bachelor of Arts B.A. (Hons.) in Physics under CBCS

Course Outcomes (Major Courses)

S.No.	UG Semester	Course	Course Outcomes
1.	I	MJC-1 Introduction to Mathematical Physics & Classical Mechanics	CO1- Understand various mathematical techniques used in Physical Problems. Know the difference between Newtonian Mechanics and Analytic Mechanics. CO 2- Understand utility of scalars and vectors and their operations- algebraic and D-operator CO 3- Understand the concept of Pseudo force and its importance with application in real life situations. CO 4-Realize the idea of centre of Mass and Laboratory frame. CO 5- Understand the orbit of communication and Remote sensing satellite.
2.	II	MJC-2 Credit	CO 1-understand the concept of Periodic and Oscillatory motion with application of free, Damped and Forced Oscillation in Physical Situation. CO2-learn application of Lissajou Figure in different Physical Problems CO3-explore the working of various Musical Instrument. CO4-understand the Physics behind Accoustic of Building. CO5-know the technique of sound Recording and Reproduction.
3.	III	MJC-3 Thermal Physics & Thermodynamics	CO1: Comprehended the basic concepts of thermodynamics, the first and the second law of CO2: - Understand the concept of entropy and the associated theorems, the thermodynamic potentials and their physical interpretations. CO3:- Learn about Maxwell's relations and use them for solving many problems in Thermodynamics. CO4: Learn the basic aspects of kinetic theory of gases, Maxwell-Boltzmann distribution law, equipartition of energy, mean free path of molecular collisions transport phenomenon like:

			<p>viscosity, thermal conductivity, diffusion and Brownian motion.</p> <p>CO5- Get background for further studies and research in different subject areas namely condensed matter physics, chemistry, material science and life sciences.</p>
4.	III	MJC-4 Electricity & Magnetism	<p>CO1: Understand the basic concepts of electrostatics.</p> <p>CO2: Understand the dielectric and magnetic properties of matter.</p> <p>CO3: Understand the electromagnetic induction and electric circuits.</p> <p>CO4: Provides background for further studies and research in different subject areas.</p>
5.	IV	MJC-5 Mathematical Physics-II and Introduction to Computational Methods	<p>CO1: Master the basic elements of complex mathematical analysis.</p> <p>CO2: Solve differential equations that are common in physical sciences.</p> <p>CO3: Apply group theory and integral transforms to solve mathematical problems of interest in Physics.</p> <p>CO4: Understanding how to use special functions in various physics problems</p> <p>CO5: Provides background for further studies and research in different subject areas.</p>
6.	IV	MJC-6 Electrodynamics and Electromagnetism	<p>CO1: Establish and analyse four Maxwell's equations of electromagnetism.</p> <p>CO2: Understand the propagation of electromagnetic waves in vacuum, dielectrics, conductors and also in guided media and the phenomenon of reflection and refraction of plane waves at different boundaries.</p> <p>CO3: Understand the importance of energy flow (Poynting Theorem) and its usefulness.</p> <p>CO4: Get background for further studies and research in different subject areas.</p>
7.	IV	MJC-7 Optics	<p>CO1: Understand Interference as superposition of waves from coherent sources derived from same parent source.</p> <p>CO2: Demonstrate basic concepts of Diffraction: Superposition of wavelets diffracted from aperture.</p> <p>CO3: Understand Fraunhofer and Fresnel Diffraction.</p> <p>CO4: Gain experience of using various optical instruments and making finer measurements of wavelength of light using Newton's Rings experiment, Fresnel Biprism, etc.</p> <p>CO5: Get background for further studies and research in different subject areas.</p>

8.	V	MJC-8 Elements of Modern Physics	CO1: To understand the inadequacy of classical Mechanics. CO2: To understand the historical development of Quantum Concepts. CO3: To understand the behaviour of mother nature at microscopic level. CO4: To prepare background for interdisciplinary research in condensed matter / Material Science/atomic Physics/Life Science etc. CO5: To enhance employability skills as scientific officers at different research orientated centres CO6: To promote application of nuclear energy in various areas CO7: To Get background for further studies and research in different subject areas.
9.	V	MJC-9 Basic Electronics	CO1: Understand fundamental designing concepts of different types of Logic Gates, Minimization techniques etc. CO2: Design of different types of the Digital circuits, and to give the computational details for Digital Circuits. CO3: Draw characteristics of devices like PNP and NPN junction diode and truth tables of different logic gates. CO4: Understand basic elements and measurement of their values with multimeter and their characteristic study. CO5: Get background for further studies and research in different subject areas.
10.	VI	MJC-10 Analytical Mechanics & Special Theory of Relativity	CO1: Understand Physical Principle behind derivation of Lagrange and Hamiltonion Equation. CO2: Understand Canonical Transformation CO3: Analysis the Centre of mass and Laboratory frames of reference and their use in explaining elastic and inelastic collisions CO4: Understand the Planetary motions and motions of satellites using the principles of gravitation and Kepler's laws. Getting an idea of postulates of special theory of relativity and their implications. CO5: Get background for further studies and research in different subject areas.
11.	VI	MJC-11 Statistical Mechanics	CO1: Basic knowledge of thermodynamic systems. CO2: Understand the basic idea about statistical distributions. CO3: Impart the knowledge about the phase transitions and potentials. CO4: Understand the applications of statistical

			laws CO5: Get background for further studies and research in different subject
12.	VI	MJC-12 Quantum Mechanics & its Application	CO1: Learn to represent quantum states by ket vectors, physical observables as operators and their time evolution. CO2: Understand commutator brackets between observables and their properties. CO3: Learn concept of system of identical non-interacting particles: dynamics of two level systems, qubits. CO4: Get background for further studies and research in different subject
13.	VII	MJC-13 Physics of Atoms and Nuclei	CO1: To understand the idea of spectra of one and two valence electron atoms. CO2: To understand the effect of external fields on spectral lines CO3: To understand the concept of vector atom model. CO4: To understand the structure of nucleus CO5: To promote interdisciplinary research in spectroscopy and element analysis CO6: Get background for further studies and research in different subject
14.	VII	MJC-14 Research Methodology	CO1: Develop the skill of contextualization of knowledge and critical thinking CO2: Choose appropriate methods of research aims and objectives CO3: Apply ethical principle in research work. CO4: Understand the philosophy of research integrity and publication ethics.
15.	VII	MJC-15 Solid State Physics	CO1: Elucidate the concept of lattice, crystals and symmetry operations. CO2: Understand the elementary lattice dynamics and its influence on the properties of materials. CO3: Describe the main features of the physics of electrons in solids: origin of energy bands, and their influence electronic behavior. CO4: Explain the origin of the dielectric properties exhibited by solids and the concept of polarizability. CO5: Get background for further studies and research in different subject
16.	VIII	MJC-16 Physics of Laser and Molecules	CO1: To understand the working of LASER-Sources. CO2: To understand the applications of different types of LASER in day to day life. CO3: To understand the concept of formation of Molecule CO4: To understand the mechanism of spin

			<p>Resonance Spectroscopy</p> <p>CO5: To learn the working of Opto-electronic and Photonic devices</p> <p>CO6: To enhance the employability in the field of optics</p> <p>CO7: To explore research in the area of photonics</p> <p>CO8: Get background for further studies and research in different subject</p>
--	--	--	--