

Course Outcomes of B.Sc./ B.Sc. (Honours)/ B.Sc. (Honours) with Research

Subject: FYUGP Physics

Semester	Course Category	Paper Code and Course Name	Outcomes
1 st	Major/Minor	PHY0100104 Mathematical Physics & Mechanics	<p>This course will enable the students to:</p> <p>CO1: Understand how to compute in the calculus of vectors which plays a central role in laws of physics.</p> <p>CO2: Apply vector calculus in curved spaces which play major role in relativity.</p> <p>CO3: Learn the powerful method of computation through Dirac delta function which often appears in complex problems of physics.</p> <p>CO4: Understand and apply the concepts of dynamics of particles, energy, oscillation and basic properties of matter in various problems of physics, technology and engineering.</p> <p>CO5: Determine various physical quantities of mechanics that will help them understand important principles related to the subject.</p>
2 nd	Major/Minor	PHY0200104 Mathematical Physics & Electricity and Magnetism	<p>This course will enable the students to:</p> <p>CO1: Understand methods of solving various differential equations appearing in physics.</p> <p>CO2: It will give an idea of how to study evolution of a physical system.</p> <p>CO3: Through matrix algebra students will be able to compute various matrix operations which are required for solving physical problems.</p> <p>CO4: Understand electric field and magnetic fields in matter, dielectric properties of matter, magnetic properties of matter, application of Kirchhoff's law in different circuits, and application of network theorem in different circuits.</p> <p>CO5: Get accustomed to using multimeters and potentiometers.</p>

			<p>CO6: Determine some of the important physical quantities related to electricity and magnetism for a better understanding of the topic.</p>
3 rd	Major/Minor	<p>PHY0300104</p> <p>Wave and Optics</p>	<p>This course will enable the students to:</p> <p>CO1: Understand Simple Harmonic Oscillation and superposition principle.</p> <p>CO2: Understand the classical wave equation in transvers and longitudinal waves and solutions of few physical systems on its basis.</p> <p>CO3: Understand the concept of normal modes in transvers and longitudinal waves.</p> <p>CO4: Understand the interference as superposition of waves from coherent sources and also understand the basic principle of Young's double slit experiment, Fresnel's Biprism, Newton's Rings, Michelson interferometer etc.</p> <p>CO5: Understand the basic concept of diffraction, Fresnel and Fraunhofer diffraction from a slit.</p> <p>CO6: Understand the concept of polarisation of light, the production and detection of polarized light.</p> <p>CO7: Understand working principle of prism, biprism, spectrometer, Newton's ring apparatus, grating, CRO, sodium and mercury light sources etc.</p>
4 th	Major/Minor	<p>PHY0400104</p> <p>Classical Mechanics</p>	<p>This course will enable the students to:</p> <p>CO1: Apply the laws of classical dynamics to physical problems of motion of particles, systems of particles and fluids in various fields of physics and natural science as a whole.</p> <p>CO2: Have the overview of Newton's Laws of Motion, Special Theory of Relativity by 4-vector approach and fluids. Students will also have the understanding of the Lagrangian and Hamiltonian of a system.</p> <p>CO3: Get the exposure of the idea of how space and time play role in dynamics of matter.</p>
		<p>PHY0400204</p> <p>Quantum Mechanics I</p>	<p>This course will enable the students to:</p> <p>CO1: Learn physical and mathematical fundamentals of Quantum physics, and various topics in it.</p> <p>CO2: Understand the principles in quantum mechanics, such as the Schrödinger equation, the wave function, the</p>

			<p>uncertainty principle, stationary and non-stationary states, time evolution of solutions, as well as the relation between quantum mechanics and linear algebra.</p> <p>CO3: Use the concepts in various branches of physics, like condensed matter physics, lasers, quantum statistics, atomic and molecular physics, particle physics, astrophysics and optics etc.</p>
		<p>PHY0400304</p> <p>Analog electronics</p>	<p>This course will enable the students to:</p> <p>CO1: Understand the physics of semiconductor p-n junction and devices such as rectifier diodes, Zener diode, photodiode, etc.</p> <p>CO2: Understand the basics of bipolar junction transistors, transistor biasing, and stabilization circuits.</p> <p>CO3: Understand the concept of feedback in amplifiers and the oscillator circuits.</p> <p>CO4: Have an understanding of operational amplifiers and their applications.</p>
		<p>PHY0400404</p> <p>Mathematical Physics</p>	<p>This course will enable the students to:</p> <p>CO1: Get equipped with the techniques related to solving partial differential equations using separation of variables method, application of Fourier series analysis.</p> <p>CO2: Solve complex integrations, deal with tensors and probability distributions which are relevant while dealing with wave mechanics, electrodynamics, quantum mechanics, theory of relativity and experimental physics.</p>