

<b>PHY 1001</b>	<b>Engineering Physics</b>	<b>L,T,P</b>	<b>4</b>
<b>Objective</b> Engineering Physics is a course for the students to <ul style="list-style-type: none"> <li>• learn the basics of physics for engineering</li> <li>• apply them to explore natural phenomenon,</li> <li>• Learn experimentation and contemporary issues.</li> </ul> The course will train the students to understand and investigate the real world scientific phenomena.			
<b>Expected outcome</b> <ul style="list-style-type: none"> <li>• To understand the fundamental laws of physics and apply natural sciences.</li> <li>• To know the concepts and phenomena in the fields of lasers, nano-science, optical fibers and semiconductor.</li> <li>• To improve problem solving skills by conceptual approach</li> <li>• To explore the theories of physics to intuitive concepts.</li> </ul>			
<b>Unit</b>	<b>Topics</b>	<b>Lec</b>	<b>SLO</b>
<b>1</b>	<b>Mechanics</b> Newton's laws, Applying Newton's law, Frames of Reference- inertial frame of reference and non-inertial frame of reference, Fundamental Forces and Friction, Gravity, Work and energy, conservation laws, Pseudo forces, rigid body dynamics, Torque and Angular momentum, Impulse, Fixed axis rotation, Dynamics of fixed axis rotation– Problem solving.	9	a,b,e
<b>2</b>	<b>Quantum Physics:</b> Failure of classical mechanics, Planck's law (qualitative), quantum concept, de Broglie waves and properties, Heisenberg Uncertainty Principle, Wave function, and Schrodinger equation (time dependent & independent), Operators- energy and momentum operators, Particle in a 1-D box (Eigen Value and Eigen Function), Tunneling Effect (Qualitative), Scanning Tunneling Microscope, Problem solving.	9	a,b
<b>3</b>	<b>Nanophysics:</b> Introduction- atom-molecule-solid, Nano-materials, Moore's law, Properties of Nano-materials, Quantum confinement, Quantum well, wire & dot, Carbon Nano-tubes, Applications of nanotechnology in industry, Problem solving.	6	a,b,j
<b>4</b>	<b>Laser :</b> Laser Characteristics, Einstein Coefficient & its significance, Population inversion, Two, three & four level	8	