

<b>Faculty</b>	Natural Sciences		
<b>Home Department</b>	Physics and Astronomy		
<b>Module Topic</b>	Modern Physics, Heat and Mechanics		
<b>Generic Module Name</b>	Physics 151		
<b>Alpha-numeric Code</b>	<b>PHY151</b>		
<b>NQF Level</b>	5		
<b>NQF Credit Value</b>	15		
<b>Duration</b>	Year		
<b>Proposed semester to be offered</b>	Both Semesters		
<b>Programmes in which the module will be offered</b>	BSc (Applied Geology) (3011), BSc (Chemical Sciences)(3019), BSc (Computer Science)(3023), BSc (Mathematical and Statistical Sciences)(3031), BSc (Physical Science)(3120)		
<b>Year level</b>	1		
<b>Main Outcomes</b>	<p>On completion of this module students should be able to:</p> <ul style="list-style-type: none"> <li>• Demonstrate an understanding of the nature of science.</li> <li>• Demonstrate an understanding of the social, ethical and environmental dimensions of science.</li> <li>• Apply modern physics and heat principles to solve problems.</li> <li>• Apply introductory kinematics and dynamics principles to solve problems.</li> <li>• Apply mechanics theory to everyday life situations.</li> <li>• Work in a laboratory environment and record, represent and interpret data.</li> <li>• Access science texts and communicate in a variety of forms: laboratory report, essay, poster presentation.</li> </ul>		
<b>Main Content</b>	<ul style="list-style-type: none"> <li>• The nature of the atom, Atomic spectra, the Bohr model of the atom and basic concepts of quantum mechanics.</li> <li>• Types of radiation, radioactive decay, decay schemes and C-14 dating.</li> <li>• Nuclear fission, nuclear reactors and fusion.</li> <li>• Concepts of temperature and heat, specific heat and thermal expansion.</li> <li>• Heat transfer by conduction, convection and radiation and applications</li> <li>• Introduction to vectors and mathematics skills required for mechanics</li> <li>• Kinematics: Motion in one dimension and in a plane</li> <li>• Dynamics: Newton's laws of motion and their applications</li> <li>• Application of Newton's laws: Translational equilibrium, circular motion, gravitational forces and fields, satellite motion.</li> <li>• Work and energy</li> <li>• Impulse and momentum</li> <li>• Rotational Equilibrium</li> </ul>		
<b>Pre-requisite modules</b>	None		
<b>Co-requisite modules</b>	MAM151		
<b>Prohibited module Combination</b>	PHY113, PHY118, PHY 111		
<b>Breakdown of Learning Time</b>	<b>Hours</b>	<b>Timetable Requirement per week</b>	<b>Other teaching modes that does not require time-table</b>
<i>Contact with lecturer / tutor:</i>	84	<i>Lectures p.w.</i>	3

<i>Assignments &amp; tasks:</i>	0	<i>Practicals p.w.</i>	3	
<i>Practicals:</i>	84	<i>Tutorials p.w.</i>	1	
<i>Tutorials:</i>	28			
<i>Assessments::</i>	18			
<i>Selfstudy:</i>	86			
<i>Other:</i>	0			
<b>Total Learning Time</b>	<b>300</b>			
<b>Methods of Student Assessment</b>	Continuous Assessment (CA): 60% Final Assessment (FA): 40%			
<b>Assessment Module type</b>	Continuous and Final Assessment (CFA)			