

Faculty	Natural Sciences		
Home Department	Physics and Astronomy		
Module Topic	Mechanics, Modern Physics and Thermodynamics		
Generic Module Name	Physics 116		
Alpha-numeric Code	PHY116		
NQF Level	15		
NQF Credit Value	5		
Duration	Semester		
Proposed semester to be offered	First Semester		
Programmes in which the module will be offered	BSc (Applied Geology) (3214); BSc (Biotechnology) (3211); BSc (Computer Science) (3211); BSc (Environmental & Water Science) (3331); BSc (Mathematical & Statistical Sciences) (3227)		
Year level	1		
Main Outcomes	<p>On completion of this module students should be able to:</p> <ul style="list-style-type: none"> • Understand and apply the scientific approach to problem solving. • Understand various technologies by applying the basic ideas of modern physics and thermodynamics. • A knowledge and understanding of basic ideas relating to elementary mechanics. • Understanding the role of elementary mechanics in everyday life. • Be able to work in a laboratory environment and record, represent and interpret data. 		
Main Content	<ul style="list-style-type: none"> • Ideas and terminology of science as well as the impact of science on our world using a conceptual exploration platform, focusing on the atomic nature of matter. • The nature of the atom, Atomic spectra, the Bohr model of the atom and basic concepts of quantum mechanics. • Types of radiation, radioactive decay, decay schemes and c-14 dating. • Nuclear Fission, nuclear reactors and fusion. • Concepts of temperature and heat, specific heat and thermal expansion. • Heat transfer by conduction, convection and radiation and applications. • Linear and non-linear motion including acceleration, free fall and projectile motion. • Newton's three laws of motion. • Momentum, impulse and collisions. • Work, power, potential and kinetic energy, conservation of energy and applications • Rotational inertia, torque, center of mass and angular momentum. 		
Pre-requisite modules	None		
Co-requisite modules	None		
Prohibited module Combination	PHY113, PHY118		
Breakdown of Learning Time	Hours	Timetable Requirement per week	Other teaching modes that does not require time-table
<i>Contact with lecturer / tutor:</i>	42	<i>Lectures p.w.</i>	3

<i>Assignments & tasks:</i>	0	<i>Practicals p.w.</i>	3	
<i>Practicals:</i>	42	<i>Tutorials p.w.</i>	1	
<i>Tutorials:</i>	14			
<i>Tests & Examinations:</i>	9			
<i>Selfstudy:</i>	43			
<i>Other:</i>	0			
Total Learning Time	150			
Methods of Student Assessment	Continuous Assessment (CA): 60% Final Assessment (FA): 40%			
Assessment Module type	Continuous and Final Assessment (CFA)			