

Faculty	Natural Sciences			
Home Department	Physics and Astronomy			
Module Topic	Modern Physics, Waves and Thermodynamics			
Generic Module Name	Physics 212			
Alpha-numeric Code	PHY212			
NQF Level	6			
NQF Credit Value	20			
Duration	Semester			
Proposed semester to be offered	First Semester			
Programmes in which the module will be offered	BSc (Physical Science) (3233,3120); BSc (Chemical Sciences) (3220,3019); BSc (Computer Science) (3221,30230); BSc (Mathematics and Statistical Sciences) (3227,3031)			
Year level	2			
Main Outcomes	<p>On completion of this module students should be able to:</p> <ul style="list-style-type: none"> • Use crucial concepts to solve problems in modern physics, interference, diffraction, and thermodynamics. • Demonstrate practical laboratory skills. • Implement simple numerical computational algorithms to solve physics problems on the computer. • Demonstrate writing and presentation skills. • Explain the progression and nature of science in relation to modern physics. 			
Main Content	<ul style="list-style-type: none"> • Temperature and ideal gases; heat flow and First Law of Thermodynamics; Second Law of Thermodynamics, heat engine, entropy. • Wave physics, including interference and diffraction. • Basic modern physics, including relativity, wave-particle duality, photo-electric effect, blackbody radiation, line spectra, foundations of modern quantum mechanics. • Basic computational physics. • Laboratory experiments. 			
Pre-requisite modules	PHY11 and PHY121 or PHY 151 and PHY152 MAT105 or (MAM151 and MAM152) or MAT103			
Co-requisite modules	MAT211 or MAT104			
Prohibited module Combination	None			
Breakdown of Learning Time	Hours	Timetable Requirement per week		Other teaching modes that does not require time-table
<i>Contact with lecturer / tutor:</i>	56	<i>Lectures p.w.</i>	3	
<i>Assignments & tasks:</i>	42	<i>Practicals p.w.</i>	4	
<i>Practicals:</i>	6	<i>Tutorials p.w.</i>	1	
<i>Experimental:</i>	24			
<i>Tests & Examinations:</i>	6			
<i>Selfstudy:</i>	57			
<i>Other:</i>	15			
Total Learning Time	200			
Methods of Student Assessment	Continuous Assessment (CA): 60% Final Assessment (FA): 40%			
Assessment Module type	Continuous and Final Assessment (CFA)			