

PHYS6011: Introduction to Physics

Module Details	
Module Code:	PHYS6011
Title:	Introduction to Physics APPROVED
Long Title:	Introduction to Physics
NFQ Level:	Fundamental
Valid From:	Semester 1 - 2019/20 (September 2019)
Duration:	1 Semester
Credits:	5
Field of Study:	4411 - Physics
Module Delivered in:	9 programme(s)
Module Description:	This module introduces the learner to the fundamental principles and applications of heat, optics, electricity and waves. The learner will record, analyse and interpret in a scientific manner measurements of physical parameters.

Learning Outcomes	
On successful completion of this module the learner will be able to:	
#	Learning Outcome Description
LO1	State and explain the physical laws and definitions of heat, optics, dc electricity and waves.
LO2	Record experimental data from routine physics experiments on relevant topics.
LO3	Analyse, interpret and report experimental data obtained while performing prescribed laboratory experiments.
LO4	Interpret and solve numerical problems in relevant physics topics based on practiced methodologies.
Dependencies	
Module Recommendations	
13447	PHYS6011 Introduction to Physics
Incompatible Modules	
None	
Co-requisite Modules	
No Co-requisite modules listed	
Requirements	
None	

Indicative Content
Introduction Introduction to units, scientific notation and the concept of energy.
Heat Heat and temperature, temperature scales. Specific heat capacity, latent heat. Evaporation. Linear expansion. Methods of heat transfer - conduction, convection and radiation.
Optics Reflection, refraction, Snell's law, total internal reflection, applications. Image formation in mirrors and lenses. Optical instruments.
Waves Displacement, amplitude, intensity, wavelength, frequency, phase. The wave equation. Transverse and longitudinal waves. Resonance. Frequency ranges of sound. Decibel scale. Doppler effect.
Electricity Voltage, current, resistance, Ohm's Law, resistivity. Combinations of resistors. Power. Internal resistance and emf. Applications - Wheatstone bridge, pH meter. Difference between alternating and direct current.
Laboratory Practicals Safety, measurement and graphs and a series of further laboratory practicals on relevant physics topics.

Module Content & Assessment	
Assessment Breakdown	%
Coursework	100.00%

Assessments

Coursework			
Assessment Type	Performance Evaluation	% of Total Mark	30
Timing	Every Week	Learning Outcomes	2,3
Assessment Description Weekly laboratory practicals/worksheets/reports			
Assessment Type	Short Answer Questions	% of Total Mark	30
Timing	Week 7	Learning Outcomes	1
Assessment Description Theory Assessment			
Assessment Type	Practical/Skills Evaluation	% of Total Mark	10
Timing	Week 11	Learning Outcomes	2,3,4
Assessment Description Laboratory Exam including Skills Test			
Assessment Type	Short Answer Questions	% of Total Mark	30
Timing	Week 13	Learning Outcomes	1,4
Assessment Description Theory Assessment			
No End of Module Formal Examination			
Reassessment Requirement			

Repeat examination

Reassessment of this module will consist of a repeat examination. It is possible that there will also be a requirement to be reassessed in a coursework element.

Module Workload

Workload: Full Time					
<i>Workload Type</i>	<i>Contact Type</i>	<i>Workload Description</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>	<i>Hours</i>
Lab	Contact	Physics Laboratory	Every Week	2.00	2
Lecture	Contact	Delivery of Module Content	Every Week	3.00	3
Independent & Directed Learning (Non-contact)	Non Contact	Study lecture Material	Every Week	2.00	2
Total Hours					7.00
Total Weekly Learner Workload					7.00
Total Weekly Contact Hours					5.00
Workload: Part Time					
<i>Workload Type</i>	<i>Contact Type</i>	<i>Workload Description</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>	<i>Hours</i>
Lecture	Contact	Delivery of Module Content	Every Week	2.00	2
Lab	Contact	Physics Laboratory	Every Second Week	1.00	2
Independent & Directed Learning (Non-contact)	Non Contact	Study lecture material	Every Week	3.00	3
Independent & Directed Learning (Non-contact)	Non Contact	Directed learning of module content	Every Week	1.00	1
Total Hours					8.00
Total Weekly Learner Workload					7.00
Total Weekly Contact Hours					3.00

Module Resources*Recommended Book Resources*

Cutnell and Johnson. (2015), Physics, 10th. Wiley, [ISBN: 9781118899205].

Supplementary Book Resources

Jones/Childers. (2014), Fundamentals of Physics, 10th. John Wiley & Sons, Inc., USA, [ISBN: 978-1-118-230].

This module does not have any article/paper resources

Other Resources

website, IOP Institute of Physics,
<http://www.iop.org/resources/index.html>
 website, Georgia State University. HyperPhysics,
<http://hyperphysics.phy-astr.gsu.edu/hbase/hframe.html>

Module Delivered in

Programme Code	Programme	Semester	Delivery
CR_SCHQA_8	Bachelor of Science (Honours) in Analytical Chemistry with Quality Assurance	-1	Mandatory
CR_SESST_8	Bachelor of Science (Honours) in Environmental Science and Sustainable Technology	-1	Mandatory
CR_SINEN_8	Bachelor of Science (Honours) in Instrument Engineering	-1	Mandatory
CR_SCHEM_7	Bachelor of Science in Analytical and Pharmaceutical Chemistry	-1	Mandatory
CR_SPHYS_7	Bachelor of Science in Applied Physics and Instrumentation	-1	Mandatory
CR_SPHYS_6	Higher Certificate in Science in Applied Physics and Instrumentation	-1	Mandatory
CR_SCHEM_6	Higher Certificate in Science in Chemistry	-1	Mandatory
CR_SOMNI_7	Physical Sciences (Common Entry)	-1	Mandatory
CR_SOMNI_8	Physical Sciences (Common Entry)	-1	Mandatory