

Module Title:	Physical Sciences
Language of Instruction:	English
Credits:	10
NFQ Level:	6
Module Delivered In	4 programme(s)
Teaching & Learning Strategies:	This module will be taught in two theory classes of one hour duration in both components per week. One 2 hour practical per week (alternating between physics and chemistry)
Module Aim:	The aim of this module is to provide the student with an introduction to the principles of physics and chemistry and to develop practical laboratory skills in both.
Learning Outcomes	
<i>On successful completion of this module the learner should be able to:</i>	
LO1	Demonstrate a theoretical knowledge and understanding of physics and chemistry as applied to health science/physiology.
LO2	Apply scientific procedures, including recording and analysing experimental data.
LO3	Demonstrate an ability to work independently in a laboratory or as part of a team.
LO4	Apply the appropriate safety procedures in the laboratory
Pre-requisite learning	
Module Recommendations <i>This is prior learning (or a practical skill) that is recommended before enrolment in this module.</i>	
No recommendations listed	
Incompatible Modules <i>These are modules which have learning outcomes that are too similar to the learning outcomes of this module.</i>	
No incompatible modules listed	
Co-requisite Modules	
No Co-requisite modules listed	
Requirements <i>This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.</i>	
No requirements listed	

Module Content & Assessment

Indicative Content
Theory Section A: Introduction The scope of chemistry & brief history of its development. States of matter and observation of change.
Theory Section A: Atomic Theory & Electronic Structure Atomic Theory & Electronic Structure
Theory Section A: Bonding & Structure Chemical Equations and Experimental Calculations
Theory Section A: Chemical Kinetics Value. Order of reaction and rate constants.
Theory Section A: Properties of Liquids and Solutions Properties of Liquids and Solutions:
Theory Section A: Acids, Bases and Electrolysis Acids, Bases and Electrolysis.
Theory Section A: Organic Chemistry Introduction to chemistry of carbon compounds. IUPAC Nomenclature for alkanes, alkenes, alcohols, aldehydes, carboxylic acids, esters and amines. Brief introduction to the structures of proteins, steroids, analgesics and their uses.
Theory Section B: Physical standards and units Physical standards and units. Errors.
Theory Section B: Mechanics Velocity, acceleration, force.
Theory Section B: Linear kinetics friction Linear kinetics friction, heat .Temperature.
Theory Section B: Work, energy and power Work, energy and power, momentum. Simple machines, efficiency. Gases.
Theory Section B: Light Light, lenses, fibre optics in medicine waves.
Theory Section B: Electricity Electricity, Ohm's law, electrical safety.
Theory Section B: Atomic and Nuclear physics Radioisotopes, biological effects of radiation, safety levels, x-rays
PRACTICALS The practical component will • allow students to develop the required technical competencies, attitudes and behaviours • develop problem solving abilities and group skills • Acid-Base, Redox, Precipitation and Complexometric Titrations • pH measurements and buffer solutions • UV-Vis analysis and flame emission analysis of various analytes • Chromatography and other organic techniques • Mechanics (as per 1st year manual) • Heat (as per 1st year manual) • Light (as per 1st year manual) • Electricity (as per 1st year manual)

Assessment Breakdown	%
Continuous Assessment	10.00%
Practical	40.00%
End of Module Formal Examination	50.00%

Special Regulation
Students must achieve a minimum grade (35%) in both the practical/CA and final examination.

Continuous Assessment				
Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Other	CA exams	1	10.00	n/a

No Project

Practical				
Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Practical/Skills Evaluation	Practical Log Book	2,3,4	40.00	Sem 1 End

End of Module Formal Examination				
<i>Assessment Type</i>	<i>Assessment Description</i>	<i>Outcome addressed</i>	<i>% of total</i>	<i>Assessment Date</i>
Formal Exam	Written Exam	1	50.00	End-of-Semester

ITCarlow reserves the right to alter the nature and timings of assessment

Module Workload

Workload: Full Time		
<i>Workload Type</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>
Lecture	30 Weeks per Stage	4.00
Laboratory	30 Weeks per Stage	2.00
Estimated Learner Hours	30 Weeks per Stage	2.00
	Total Hours	240.00

Module Delivered In

Programme Code	Programme	Semester	Delivery
CW_SASPS_B	<u>Bachelor of Science (Honours) in Sport and Exercise Science</u>	1	Mandatory
CW_SASRA_B	<u>Bachelor of Science (Honours) in Sports Rehabilitation and Athletic Therapy</u>	1	Mandatory
CW_SASAC_B	<u>Bachelor of Science (Honours) in Strength and Conditioning</u>	1	Mandatory
CW_SAPHS_C	<u>Higher Certificate in Science in Physiology and Health Science</u>	1	Mandatory