ZPHI H1103: Physical Sciences

Module Title:	Physical Sciences
Language of Instruction:	English

Credits:	10

NFQ Level:	6

Module Delivered In	No Programmes

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	
On successful completion of this module the learner should be able to:	
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 *This is prior learning (or a practical skill) that is recommended before enrolment in this module.*
No recommendations listed
Incompatible Modules *These are modules which have learning outcomes that are too similar to the learning outcomes of this module.*
No incompatible modules listed
Co-requisite Modules
No Co-requisite modules listed
Requirements *This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.*
No requirements listed

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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				
Assessment Type	*Assessment Description*	*Outcome addressed*	*% of total*	*Assessment Date*
Formal Exam	Written Exam	1	50.00	End-of-Semester

SETU Carlow Campus reserves the right to alter the nature and timings of assessment

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Module Workload

Workload: Full Time		
Workload Type	*Frequency*	*Average Weekly Learner Workload*
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