

<b>Module Title:</b>	Physical Sciences for Health Science
<b>Language of Instruction:</b>	English
<b>Credits:</b>	5
<b>NFQ Level:</b>	6
<b>Module Delivered In</b>	<a href="#">4 programme(s)</a>
<b>Teaching &amp; Learning Strategies:</b>	This module will be taught in two theory classes of one hour duration in both components per week. One 1.5 hour practical per week (alternating between physics and chemistry)
<b>Module Aim:</b>	The aim of this module is to explore the principles of physics and chemistry and to develop practical laboratory skills as they relate to health and sports science.
<b>Learning Outcomes</b>	
<i>On successful completion of this module the learner should be able to:</i>	
LO1	Apply theoretical knowledge and understanding of key elements of Chemistry and Physics from the perspective of health, rehab and sports sciences.
LO2	Practice scientific procedures, including recording and analysing experimental data.
LO3	Students should show competence in a laboratory setting working independently or as part of a team. Apply the appropriate safety procedures in the laboratory.
<b>Pre-requisite learning</b>	
<b>Module Recommendations</b>	
<i>This is prior learning (or a practical skill) that is recommended before enrolment in this module.</i>	
No recommendations listed	
<b>Incompatible Modules</b>	
<i>These are modules which have learning outcomes that are too similar to the learning outcomes of this module.</i>	
No incompatible modules listed	
<b>Co-requisite Modules</b>	
No Co-requisite modules listed	
<b>Requirements</b>	
<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**
**Chemistry: Introduction**

States of matter and observation of change. Discovery of the atom and electronic structure

**Chemistry: Shapes, Bonds and Naming of Chemicals**

Ionic and Covalent Bonds; Electronegativity; Shapes of Molecules and the Naming of Chemical Formulae

**Chemistry: Chemical Equations and Redox Equations**

Chemical Equations and Experimental Calculations. Oxidation and Reduction.

**Chemistry: Rates of Reactions and Chemical Equilibrium**

Properties of Liquids and Solutions: Rates of Reactions and Chemical Equilibrium.

**Chemistry: Acids, Bases and pH**

Acids, Bases and pH.

**Chemistry: 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.

**Physics: Waves**

Longitudinal and transverse. Wavelength. Frequency. Interference. Diffraction. Doppler shift. Resonance. Wave forms.

**Physics: Light**

Laws of reflection and refraction. Image formation in plane mirrors, curved mirrors and lens. Applications of curved mirror and lens. Wave nature of light. Dispersion. Polarisation. Eye sight.

**Physics: Sound**

Frequency. Speed of sound. Harmonics. Resonance. Sound intensity. Ultra sound and medical imaging.

**Physics: Electromagnetism**

Electric and magnetic forces. Electric current. Voltage. Resistivity. Resistance. Capacitors. AC and DC current. Electrical safety. Electromagnetic Spectrum.

**Physics: Radioactivity**

Radioactive decay. Biological and physical half life. Decay constant. Medical physics.

**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 • Light: refraction and reflection and image formation. • Wavelength and frequency. Speed of sound in air. • Electrical circuits.

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 CA theory and Practical, and the final exam.

**Continuous Assessment**

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Other	CA exams	1	10.00	Ongoing

No Project

**Practical**

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Practical/Skills Evaluation	Practical Log Book	2,3	40.00	Every Week

**End of Module Formal Examination**

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Formal Exam	n/a	1	50.00	End-of-Semester

**Module Workload**

<b>Workload: Full Time</b>		
<i>Workload Type</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>
Lecture	12 Weeks per Stage	4.00
Laboratory	12 Weeks per Stage	1.50
Independent Learning	15 Weeks per Stage	3.93
Total Hours		125.00

**Module Delivered In**

Programme Code	Programme	Semester	Delivery
CW_SASPS_B	<a href="#">Bachelor of Science (Honours) in Sport and Exercise Science</a>	2	Mandatory
CW_SASRA_B	<a href="#">Bachelor of Science (Honours) in Sports Rehabilitation and Athletic Therapy</a>	2	Mandatory
CW_SASAC_B	<a href="#">Bachelor of Science (Honours) in Strength and Conditioning</a>	2	Mandatory
CW_SAPHS_C	<a href="#">Higher Certificate in Science in Physiology and Health Science</a>	2	Mandatory