

**Requirements**This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.

No requirements listed

# ZMAT C1101: Maths and Physical Sciences for Health Science

University						
Module Title:			Maths and Physical Sciences for Health Science			
Language of Instruction:		1:	English			
Credits: 5		5				
NFQ Level:		6				
Module Deli	vered In		4 programme(s)			
Teaching & Learning Strategies:			This module will be taught in 1 maths, 2 physics and 2 chemistry lectures per week. There will be a two ho computer practical per week and a 1.5 hour laboratory practical per week (alternating between physics and chemistry).			
Module Aim:			The aim of this module is to provide the student with the fundamental principles of maths, physics and chemistry required for the health and sport sciences and to develop their practical laboratory and computational skills.			
Learning Ou	ıtcomes					
On successfu	ul completion	of th	nis module the learner should be able to:			
LO1	O1 Describe the theoretical principles of maths, physics and chemistry as applied to health and sport science.					
LO2	Apply the appropriate safety procedures in the laboratory for individual and group work.		priate safety procedures in the laboratory for individual and group work.			
LO3 Apply scientific, for health and sp			mathematical and statistical techniques and procedures for the analysing and recording of experimental data port science.			
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		listed	i			

### ZMAT C1101: Maths and **Physical Sciences for Health** Science

### **Module Content & Assessment**

#### Indicative Content

Exponents, logarithms, significant figures, pH calculations, units of measurement, dimensional analysis and manipulation of formula. Types of data. Questionnaires, surveys and sampling. Measures of central tendency and dispersion. Graphical presentation of functions and data incorporating secondary axis, logarithmic scales and variability indicators. Introduction to correlation and regression. Basic probability, diagnostic tests and the Normal Distribution. Excel and SPSS

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 Naming Chemical Compounds

### Chemistry: Chemical Equations; Redox Equations and Calculations

Chemical Equations; Experimental Calculations and Oxidation and Reduction.

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

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.

Physical standards, SI units, measurements, measurement uncertainty.

Newtons Laws of motion. Force of gravity. Centripetal force. Conservation of energy. Conservation of momentum. Collisions. Impulse. Centre of mass.

#### Physics: Pressure

Density, atmospheric pressure, pressure in fluids and solids. Youngs modulus. Elastic limit. Blood pressure

Temperature scales and thermometers. Specific heat capacity. Latent heat. Conduction, convection and radiation. Expansion of solids, liquids, gases. Gas laws and the kinetic theory of gases. Refrigeration. Perspiration.

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 • Density • Acceleration due to gravity and pendulum motion. • Hooks law and elastic limit. Computer software applications including Excel and SPSS.

Assessment Breakdown	%
Continuous Assessment	30.00%
Practical	70.00%

### Special Regulation

Students must achieve a minimum grade (35%) in both the CA and practical components of the course.

Continuous Assessment						
Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date		
Other	CA exams	1,3	30.00	n/a		

No Project

Practical					
Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date	
Practical/Skills Evaluation	Practical Log Book	2,3	70.00	n/a	

No End of Module Formal Examination



## ZMAT C1101: Maths and Physical Sciences for Health Science

# Module Workload

Workload: Full Time		
Workload Type	Frequency	Average Weekly Learner Workload
Lecture	12 Weeks per Stage	5.00
Practicals	12 Weeks per Stage	3.50
Independent Learning	15 Weeks per Stage	1.53
	Total Hours	125.00

# Module Delivered In

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