

ZCHE C1102: Chemistry 2

University					
Module Title:		Chemistry 2			
Language of Instruction:		English			
Credits: 10					
NFQ Level:	: 6				
Module De	livered In	6 programme(s)			
Teaching & Learning Strategies:		This module will be taught in four theory classes of 1 hour duration plus one 3 hour practical per week. To consolidate lectures and practicals, students will be required to carry out assignments and prepare a week practical report analysing their own research and results. Any course –related issue of questions that may arise will be discussed at lectures.			
Module Air	m:	To provide students with a knowledge of basic theoretical and practical chemistry principles.			
Learning O	Learning Outcomes				
On successful completion of this module the learner should be able to:					
LO1 Describe basic		c chemical terminology, facts, and principles.			

Recognise a number of chemical reactions of common organic functional groups and predict simple reaction products.

Pro-ron	uuisita	learning

LO2

LO3

LO4

LO5

LO6

Module RecommendationsThis is prior learning (or a practical skill) that is recommended before enrolment in this module.

Discuss the importance of chemistry in everyday life.

Perform practical laboratory skills in chemical and analytical procedures.

Draw, identify, classify, and discuss a wide variety of organic molecules

Compute thermochemical, electrochemical, and other relevant calculations.

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

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

No requirements listed



Module Content & Assessment

Indicative Content

Kinetic Theory of Gases. Gas laws. Ideal gas equation and applications

Thermochemistry

First law of thermodynamics. Hess's Law. Enthalpies of formation/combustion/solution/neutralisation. Foods, fuels and explosives

Reaction rates. Temperature and rate collision theory. Catalysis.

Oxidation & reduction

Oxidation - reduction reactions. Balancing oxidation - reduction equations. Redox titrations.

Electrochemical series. Electrolysis of molten NaCl. Faraday's Laws, voltaic cells, cell EMF. Fuel cells. Corrosion and prevention.

Periodic Table

The chemistry of a number of groups.

Organic chemistry (1)

Chemistry of carbon compounds. Hydrocarbons and their origins in petroleum fractions. Alkanes, alkenes, alkynes. Nomenclature. Bonding. Hybridisation.

Organic chemistry (2)

Functional groups. Alcohols, aldehyes, ketones, esters, amines, and amides. Introduction to benzene chemistry. Resonance structures. Monosubstituted benzenes. Disubstituted benzenes: ortho, meta, and para.

Nucleophiles and electrophiles. Curved arrows. Simple reactions of the alkanes, alkenes, alkynes. Simple reactions and interconversion of functional groups.

Modern materials/industrial chemistryLiquid crystals, polymers, ceramics and thin films. Use of thin films. Diamond coatings. Semi-conductors. Industrial scale productions - ammonia, nitric acid, sulphuric acid and alumina.

Chemistry and the environment

Chemistry of the troposphere. Air, water and land pollution. Hardness of water. Water softening. Catalytic converters.

Nanochemistry

Introduction to nanoscience. A basic chemical strategy for making nanomaterials.

Titrimetric analysis using oxidation/ reduction examples. Thermochemical analysis. Kinetic investigation. Electrochemical Determination. Synthesis, purification and recrystallisation of an organic compound. Qualitative organic analysis.

Assessment Breakdown		%
Continuous Assessment		20.00%
Practical		50.00%
End of Module Formal Examination		30.00%

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	
Examination	Throughout Year	1,3,4,5	20.00	n/a	

No Project

Practical					
Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date	
Practical/Skills Evaluation	Practical Log Book	2	50.00	Every Week	

End of Module Formal Examination				
Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Formal Exam	3 hour exam	1,3,4,5,6	30.00	End-of-Semester



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Module Workload

Workload: Full Time		
Workload Type	Frequency	Average Weekly Learner Workload
Lecture	12 Weeks per Stage	4.00
Practicals	12 Weeks per Stage	3.00
Independent Learning	15 Weeks per Stage	11.07
	Total Hours	250.00

Module Delivered In

Programme Code	Programme	Semester	Delivery
CW_SABTP_B	Bachelor of Science (Honours) in Biosciences with Biopharmaceuticals	2	Mandatory
CW_SABRE_B	Bachelor of Science (Honours) in Brewing and Distilling	2	Mandatory
CW_SAPHA_B	Bachelor of Science (Honours) in Pharmaceutics and Drug Formulation	2	Mandatory
CW_SAASC_D	Bachelor of Science in Analytical Science	2	Mandatory
CW_SABFQ_D	Bachelor of Science in Biosciences	2	Mandatory
CW_SASCI_C	Higher Certificate in Science in Applied Biology or Applied Chemistry	2	Mandatory