

APPROVED

## CHEO6001: Organic Chemistry Fundamental

## Module Details

Module Code:	CHEO6001
Title:	Organic Chemistry Fundamental <b>APPROVED</b>
Long Title:	Organic Chemistry Fundamentals
NFQ Level:	Fundamental
Valid From:	Semester 2 - 2023/24 ( January 2024 )
Duration:	1 Semester
Credits:	5
Field of Study:	4423 - Organic Chemistry
Module Delivered in:	<a href="#">9 programme(s)</a>
Module Description:	This module introduces students to organic chemistry, the chemistry of carbon containing molecules, the nomenclature and classification of organic compounds, fundamental reaction types and mechanisms, and some applications

Learning Outcomes	
On successful completion of this module the learner will be able to:	
#	Learning Outcome Description
LO1	Classify and systematically name simple organic compounds.
LO2	Depict, interrelate and distinguish between different isomers and structural representations of organic molecules.
LO3	Identify, describe and explain the factors that impact the physical properties of organic molecules.
LO4	Propose, describe and depict fundamental reactions of organic molecules.
LO5	Identify and select suitable reagents to effect fundamental functional group transformations in organic chemistry.
LO6	Perform experimental procedures for synthesis, purification, and characterisation of some organic compounds.
Dependencies	
Module Recommendations	
19862	CHEO6001 Organic Chemistry Fundamental
Incompatible Modules	
No incompatible modules listed	
Co-requisite Modules	
No Co-requisite modules listed	
Requirements	
No requirements listed	

Indicative Content
<b>Introduction to Organic Chemistry</b> Elemental analysis, empirical and molecular formulae. Introduction to hybridisation of carbon, sigma and pi bonds. Physical properties of organic compounds.
<b>Saturated and Unsaturated Hydrocarbons</b> Alkanes and cycloalkanes. I.U.P.A.C. nomenclature. Synthesis and reaction of haloalkanes. Alkenes, isomerism, cis/trans notation. Electrophilic addition reactions, carbocations, Markovnikov and anti Markovnikov addition, Saytzeff and Hoffman products. Alkynes.
<b>Introduction to Functional Groups</b> Identification of functional groups: Alcohols, ethers, amines, aldehydes, ketones, amides, esters, carboxylic acids. Examples of characteristic reactions: oxidation, reduction, elimination, addition, substitution, hydrolysis.
<b>Introduction to Aromaticity</b> Structure and stability of benzene, Hückel Rule. Examples of heterocyclic aromatic compounds.
<b>Practical Programme</b> Introduction to laboratory techniques in organic chemistry, synthesis and characterisation of organic compounds.

## Module Content &amp; Assessment

Assessment Breakdown	%
Coursework	100.00%

## Assessments

Coursework			
Assessment Type	Multiple Choice Questions	% of Total Mark	16
Timing	Week 7	Learning Outcomes	1,2,3
<b>Assessment Description</b> A combination of on-line and in-class exams will be held on week 3 (online 3%), week 5 (on-line 3%) and week 7 (in-class 10%).			
Assessment Type	Practical/Skills Evaluation	% of Total Mark	30
Timing	Every Week	Learning Outcomes	4,6
<b>Assessment Description</b> Performance of practicals and submission of reports and calculations			
Assessment Type	Other	% of Total Mark	54
Timing	n/a	Learning Outcomes	1,2,3,4,5,6
<b>Assessment Description</b> 12 x 2% on line assessments across the semester (Weeks 5 - 11). 1 x 10% on line assessment (Week 12). 1 x 20% on line assessment (Week 13).  These assessments will consist of a variety of question styles including but not restricted to MCQ, multiple answer questions, short answer questions, fill in the blank questions, drag and drop questions, matching questions, ranking questions, categorizing questions, file upload questions and so forth, chosen to best elicit attainment of the different learning outcomes and develop student learning on specific topics.			
No End of Module Formal Examination			
Reassessment Requirement			

**Repeat examination**

Reassessment of this module will consist of a repeat examination. It is possible that there will also be a requirement to be reassessed in a coursework element.

## Module Workload

Workload: Full Time					
Workload Type	Contact Type	Workload Description	Frequency	Average Weekly Learner Workload	Hours
Lecture	Contact	Delivery of theory and related calculations	Every Week	3.00	3
Lab	Contact	Development of practical skills	Every Week	2.00	2
Independent & Directed Learning (Non-contact)	Non Contact	Personal study	Every Week	2.00	2
Total Hours					7.00
Total Weekly Learner Workload					7.00
Total Weekly Contact Hours					5.00

Workload: Part Time					
Workload Type	Contact Type	Workload Description	Frequency	Average Weekly Learner Workload	Hours
Lecture	Contact	Delivery of theory and related calculations	Every Week	3.00	3
Lab	Contact	Development of practical skills	Every Week	2.00	2
Independent & Directed Learning (Non-contact)	Non Contact	Personal Study	Every Week	2.00	2
Total Hours					7.00
Total Weekly Learner Workload					7.00
Total Weekly Contact Hours					5.00

## Module Resources

### Recommended Book Resources

John E. McMurry. (2015), Organic Chemistry, 9th Edition. Cengage Learning, p.1512, [ISBN: 9781305080485].  
 Freemantle MH. (1995), Chemistry in Action, Macmillan, [ISBN: 9781861527127].

### Supplementary Book Resources

Ege S. (2004), Organic Chemistry Structure and Reactivity, Houghan Mifflin, [ISBN: 0618318097].  
 Morrison RT Boyd RN. (2000), Organic Chemistry, Prentice Hall, [ISBN: 0136438911].

This module does not have any article/paper resources

This module does not have any other resources

## Module Delivered in

Programme Code	Programme	Semester	Delivery
CR_ECPEN_8	<a href="#">Bachelor of Engineering (Honours) in Chemical and Biopharmaceutical Engineering</a>	-1	Elective
CR_ECPEN_8	<a href="#">Bachelor of Engineering (Honours) in Chemical and Biopharmaceutical Engineering</a>	-1	Mandatory
CR_SCHQA_8	<a href="#">Bachelor of Science (Honours) in Analytical Chemistry with Quality Assurance</a>	-1	Mandatory
CR_SESST_8	<a href="#">Bachelor of Science (Honours) in Environmental Science and Sustainable Technology</a>	-1	Mandatory
CR_SCHEM_7	<a href="#">Bachelor of Science in Analytical and Pharmaceutical Chemistry</a>	-1	Mandatory
CR_ECBPO_6	<a href="#">Certificate in Chemical and Biopharmaceutical Process Operations</a>	-1	Mandatory
CR_SCHEM_6	<a href="#">Higher Certificate in Science in Chemistry</a>	-1	Mandatory
CR_SOMNI_7	<a href="#">Physical Sciences (Common Entry)</a>	-1	Group Elective 2
CR_SOMNI_8	<a href="#">Physical Sciences (Common Entry)</a>	-1	Group Elective 2