

University of the West of Scotland

Module Descriptor

Session: 2024/25

Title of Module: Organic Chemistry 3			
Code: CHEM09004	SCQF Level: 9 (Scottish Credit and Qualifications Framework)	Credit Points: 20	ECTS: 10 (European Credit Transfer Scheme)
School:	School of Computing, Engineering and Physical Sciences		
Module Co-ordinator:	Ciaran T Ewins		
Summary of Module			
<p>The first section of the module will deals with the important reactions; nucleophilic substitution reactions (S_N1 and S_N2), alkene forming elimination reactions ($E1$ and $E2$ and $E1_{cb}$), formation and hydrolysis of esters.</p> <p>There is a study of carbanions and enolate ions and their characteristic reactions such as Adol and Claisen reactions and their importance in organic synthesis. The section on carbanions is then extended to include the synthetic importance of acetoacetic ester and diethyl malonate as well as Michael additions. The concept of the use of protecting and blocking groups in organic chemistry will then be introduced with particular application to the synthesis of peptides.</p> <p>Structure and properties of man-made and naturally occurring polymers including common addition and condensation polymers, carbohydrates and proteins.</p> <p>Stereochemistry and synthesis of heterocycles will be introduced.</p> <p>Applications of spectroscopy and computer modelling in organic chemistry will be introduced. Those who complete this module will have developed competencies in report writing, working to deadlines. There is a lab programme which includes the aldol condensation, pyrrole and coumarin synthesis formation and a green Wittig reaction. The important organic chemistry techniques of purification, chromatography and spectroscopy are used extensively in these labs.</p>			

Module Delivery Method					
Face-To-Face	Blended	Fully Online	HybridC	Hybrid 0	Work-Based Learning
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
See Guidance Note for details.					

Campus(es) for Module Delivery
The module will normally be offered on the following campuses / or by Distance/Online Learning: (Provided viable student numbers permit) (tick as appropriate)

Paisley:	Ayr:	Dumfries:	Lanarkshire:	London:	Distance/Online Learning:	Other:
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Add name

Term(s) for Module Delivery					
(Provided viable student numbers permit).					
Term 1	<input type="checkbox"/>	Term 2	<input checked="" type="checkbox"/>	Term 3	<input type="checkbox"/>

Learning Outcomes: (maximum of 5 statements) These should take cognisance of the SCQF level descriptors and be at the appropriate level for the module. At the end of this module the student will be able to:	
L1	Demonstrate competence in applying the key principles and theories relating to stereochemistry and mechanisms of organic chemical reactions
L2	Display a critical understanding of the use of carbanions in organic synthesis
L3	Display a detailed knowledge of man-made and natural polymers.
L4	Display a detailed knowledge of the use of spectroscopy in substance identification
L5	Describe common organic chemistry laboratory procedures
Employability Skills and Personal Development Planning (PDP) Skills	
SCQF Headings	During completion of this module, there will be an opportunity to achieve core skills in:
Knowledge and Understanding (K and U)	SCQF Level 9 Students should demonstrate a broad and integrated knowledge of general organic mechanisms, carbanions and their applications in organic synthesis, the importance of protecting and blocking groups, and the chemistry of selected heterocyclic molecules. They should also demonstrate a critical knowledge of the underlying principals and concepts behind these topics.
Practice: Applied Knowledge and Understanding	SCQF Level 9 Students should be able to describe a selection of principal skills and practices in the chemical laboratory in order to carry out a series of laboratory investigations
Generic Cognitive skills	SCQF Level Choose an item. Use the concepts and information provided to analyse problems in organic synthesis

Communication, ICT and Numeracy Skills	SCQF Level 9 Students should be able to use a range of IT skills to retrieve and present in written form information from scientific data bases to support their studies. Students should be able to demonstrate the use of specialist Chemical software.	
Autonomy, Accountability and Working with others	SCQF Level 7 Students exercise autonomy and initiative in using IT skills in the production of coursework	
Pre-requisites:	Before undertaking this module the student should have undertaken the following:	
	Module Code: Chem08002	Module Title: Organic Chemistry 2
	Other:	Or equivalent
Co-requisites	Module Code:	Module Title:

*Indicates that module descriptor is not published.

Learning and Teaching	
In line with current learning and teaching principles, a 20-credit module includes 200 learning hours, normally including a minimum of 36 contact hours and maximum of 48 contact hours.	
Learning Activities During completion of this module, the learning activities undertaken to achieve the module learning outcomes are stated below:	Student Learning Hours (Normally totalling 200 hours): (Note: Learning hours include both contact hours and hours spent on other learning activities)
Lecture/Core Content Delivery	12
Tutorial/Synchronous Support Activity	12
Laboratory/Practical Demonstration/Workshop	24
	Hours Total
**Indicative Resources: (eg. Core text, journals, internet access)	

The following materials form essential underpinning for the module content and ultimately for the learning outcomes:

Organic Chemistry 9th Edition, John McMurray (2015), Brooks/Cole ISBN-13:978-1305080485
An Introduction to Drug Synthesis, G. L. Patrick (2015), Oxford University Press, ISBN-978-019-870843-8

(*N.B. Although reading lists should include current publications, students are advised (particularly for material marked with an asterisk*) to wait until the start of session for confirmation of the most up-to-date material)

Attendance and Engagement Requirements

In line with the [Student Attendance and Engagement Procedure](#): Students are academically engaged if they are regularly attending and participating in timetabled on-campus and online teaching sessions, asynchronous online learning activities, course-related learning resources, and complete assessments and submit these on time.

For the purposes of this module, academic engagement equates to the following:

Students are expected to attend all classes. Submit coursework and engage regularly with the VLE.

Equality and Diversity

The University's Equality, Diversity and Human Rights Procedure can be accessed at the following link: [UWS Equality, Diversity and Human Rights Code](#).

Please ensure any specific requirements are detailed in this section. Module Co-ordinators should consider the accessibility of their module for groups with protected characteristics..

(N.B. Every effort will be made by the University to accommodate any equality and diversity issues brought to the attention of the School)

Supplemental Information

Divisional Programme Board	Physical Sciences
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Assessment Results (Pass/Fail)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
School Assessment Board	Physical Sciences
Moderator	Dr Callum McHugh
External Examiner	M Symes
Accreditation Details	This module is accredited by the Royal Society of Chemistry (RSC) as part of the BSc (Hons) Chemistry Programme.
Changes/Version Number	2.19 Module summary updated Module Delivery: From Hybrid-C to Face-to-Face Assessment: Change from “unseen open book” to Class test. Indicative Resources: Updated

Assessment: (also refer to Assessment Outcomes Grids below)
Assessment is based on the following: class test (unseen) worth 50% of the mark and coursework assessment worth 50% of the mark
The continuous assessment component in this module will consist of the following elements: (i) class tests worth 20% of the final mark, and (ii) laboratory reports worth 30% of the final mark.
(N.B. (i) Assessment Outcomes Grids for the module (one for each component) can be found below which clearly demonstrate how the learning outcomes of the module will be assessed. (ii) An indicative schedule listing approximate times within the academic calendar when assessment is likely to feature will be provided within the Student Module Handbook.)

Assessment Outcome Grids (See Guidance Note)

Component 1							
Assessment Type (Footnote B.)	Learning Outcome (1)	Learning Outcome (2)	Learning Outcome (3)	Learning Outcome (4)	Learning Outcome (5)	Weighting (%) of Assessment Element	Timetabled Contact Hours
Unseen closed book exam	✓	✓	✓			50	4

Component 2							
Assessment Type (Footnote B.)	Learning Outcome (1)	Learning Outcome (2)	Learning Outcome (3)	Learning Outcome (4)	Learning Outcome (5)	Weighting (%) of Assessment Element	Timetabled Contact Hours
Class Test	✓	✓	✓	✓		20	2
Report of Practical Work				✓	✓	30	0
Combined Total for All Components						100%	4 hours