UNIVERSITY of BRADFORD

Module Descriptor

Organic Chemistry 1

Module Code:	CFS4023-B
Academic Year:	2018-19
Credit Rating:	20
School:	School of Chemistry and Biosciences
Subject Area:	Chemistry and Forensic Science (ceases 2016)
FHEQ Level:	FHEQ Level 4

Pre-requisites:

Co-requisites:

Contact Hours

Type	Hours
Lectures	40
Tutorials	6
Directed Study	154

Availability Periods

Occurrence	Location/Period
BDA	University of Bradford / Academic Year (Sept - May)

Module Aims

This module will introduce you to undergraduate level organic chemistry. Organic chemistry has its own language, and way of presenting information. By the end of this module you will be confident in using the language of organic chemistry to discuss the path of simple reactions. Through lectures, workshops and tutorial sessions you will develop your understanding and appreciation of organic chemistry.

Outline Syllabus

The language of organic chemistry: Drawing organic compounds, Functional groups, nomenclature, isomerism, assigning R and S stereochemistry, simple conformational analysis.

Mechanism: Hybridisation and curly arrows, electrophiles, radicals and nucleophiles, reactive intermediates and transition states, electron distributions-inductive, resonance and hypercojugation effects, strength of nucleophiles and electrophiles, carbocation stabilities rearrangements, pKa.
Analytical tools for organic chemistry: Revision of 1H and 13C NMR, introduction to mass spectrometry and IR.
Introduction to reactions - classification of reactions and reaction selectivity: Acid-base reactions, polar addition and polar substitution, radical reactions and pericyclic reactions. Substitution and elimination, structure of haloalkanes, halogenation. The concepts of chemo, regio and stereoselectivity.
Nucleophilic substitution and elimination: Leaving groups and the relation to pKa, the course of the SN1 and SN2 reactions, stereochemical implications of the SN1 and SN2 reactions. Elimination reaction mechanisms E1 and E2, Saytzev versus Hoffman.
Alkenes and alkynes: Electrophilic addition, Radical addition, Epoxidation and simple pericyclic reaction.

Module Learning Outcomes

On successful completion of this module, students will be able to...

1 Present accurate drawings of organic molecules, & name them systematically.

2 Rationalise that any given molecule can have several isomers & be able to assign these isomers.

3 Interpret the reactivity of molecules and intermediates based on their electronic properties.

4 Rationalise the outcome of SN1, SN2, E1 and E2 reactions.

5 Propose a fully annotated mechanism for simple organic reactions.

6 Propose starting materials, reaction conditions and products for several representative organic reactions.

7 Discuss the chemistry of alkenes.

8 Converse using the language of organic chemistry.

9 Interpret data and propose chemical structures based on 1H, 13C, IR and MS data.

10 Develop problem solving skills.

11 Work in a group to analyse data.

Learning, Teaching and Assessment Strategy

Lectures will deliver core content; providing you with the opportunity to acquire the information to enhance your knowledge and understanding of basic undergraduate-level organic chemistry. This will be complemented by seminars, group discussions and tutorials to allow you to apply this learning to specific exemplar problems.
In semester 1, you will work in a group to analyse spectroscopic data.
Directed study provides you with the opportunity to undertake guided reading and to develop their own portfolio of learning to enhance transferable skills and knowledge relating

to evaluation of own role and subject provision.
The VLE will be used to provide access to online resources, lecture notes and external links to websites of interest.
Assessment 1: A coursework exercise will cover LO's 9, 10 and 11.
Assessment 2: A classroom test in January will cover LO's 1, 2 and 3.
Assessment 3: Summative examination in May to cover the whole module, apart from LO 11.

Mode of Assessment

Type	Method	Description	Length	Weighting	Final Assess'
Summative	Examination - closed book	Summative assessment: closed book examination	2 hours	50%	Yes
Summative	Coursework	In-class problem solving exercise		20%	No
Summative	Classroom test	Worksheets	1 hour	10%	No
Summative	Classroom test	Closed book classroom test	1 hour	20%	No

Legacy Code (if applicable)

CT-1016L

Reading List

To view Reading List, please go to **rebus:list**.