UNIVERSITY of BRADFORD

Module Descriptor

Organic Chemistry 3

Module Code:	CFS6017-B
Academic Year:	2018-19
Credit Rating:	20
School:	School of Chemistry and Biosciences
Subject Area:	Chemistry
FHEQ Level:	FHEQ Level 6
Module Leader:	Dr William Martin

Additional Tutors:

Pre-requisites:

Co-requisites:

Contact Hours

Type	Hours
Lectures	40
Tutorials	8
Directed Study	152

Availability Periods

Occurrence	Location/Period
BDA	University of Bradford / Semester 2 (Feb - May)

Module Aims

This module will broaden your appreciation of organic chemistry to consider the reactions of compounds containing second row elements (silicon, phosphorus and sulphur). You will be introduced to photochemistry and the chemistry of the excited state. This will lead to an understanding of the basis of radical chemistry and reactive intermediates. The second half of the module will focus on the mechanistic interpretation of apparently complex processes.

Outline Syllabus

Beyond carbon: Boron, silicon, phosphorous and sulfur in organic chemistry. Organometallics II, organopalladium chemistry - The Suzuki, Sonogoshira and Heck couplings. Metathesis.

Photochemistry, Jablonski diagram, triplet and singlet states, Paterno-Buchi reaction. Non-classical cations and their chemistry. Reactive intermediates, carbenes, nitrenes and radicals in organic chemistry.

Rearrangements and orbital symmetry controlled processes; constructing a set of molecular orbitals, Woodward-Hoffmann rules, pericyclic reactions, with particular emphasis on Diels-Alder reaction, frontier orbital approach to understanding pericyclic processes.

Linear free energy relationships in physical organic chemistry.
Metabolic pathways and their regulation.

Module Learning Outcomes

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

1 Evaluate the use of second row elements in synthesis.

10 Review current literature and identify the underlying science presented in a peer-reviewed research article.

11 Communicate advanced concepts using precise and detailed mechanisms and language.

12 Work collaboratively to produce a commentary.

2 Rationalise the result of palladium catalysed reactions.

3 Evaluate the use of metathesis reactions in synthetic chemistry.

4 Understand the significance of the Jablonski diagram.

5 Appreciate the role of non-classical cations.

6 Propose mechanisms involving reactive intermediates.

7 Apply orbital symmetry considerations in understanding pericyclic processes.

8 Analyse reactions in terms of linear free energy relationships.

9 Construct orbital diagrams to represent the transition state of organic reactions.

Learning, Teaching and Assessment Strategy

Lectures will deliver core content and will be complemented by seminars, group discussions and tutorials to allow students to apply this learning to specific exemplar problems.

Directed study provides students 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.

Assessment 1 will involve a group exercise. Groups will be given a synthesis paper from the literature and will be tasked with analysing the role of second row elements in the route. A commentary on the paper will then be produced by the group from this perspective. This will assess LO's 01, 11, and 12.

Assessment 2 is a final summative exam covering LO's 01, 02, 09, 10 and 11.

Mode of Assessment

Type	Method	Description	Length	Weighting	Final Assess'
Summative	Examination - closed book	Summative Assessment: Closed Book	3 hours	70%	No
Summative	Coursework	Group exercise literature review / commentary (1000 word equivalent)	0 hours	30%	No

Legacy Code (if applicable)

CT-3509D

Reading List

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