UNIVERSITY of BRADFORD

Module Descriptor

Module Details	
Module Title	Synthetic Chemistry for Medicinal Chemists
Module Code	CFS7020-B
Academic Year	2020/1
Credits	20
School	School of Chemistry and Biosciences
Subject Area	Chemistry
FHEQ Level	FHEQ Level 7
Pre-requisites	N/A
Co-requisites	N/A

Contact Hours	
Type	Hours
Tutorials	6
Lectures	34
Directed Study	160

Availability	
Occurrence	Location / Period
BDA	University of Bradford / Semester 1

Module Aims
This module will develop your knowledge of advanced organic chemistry and show you how organic synthesis is employed in the development of new drug leads. You will learn about some more advanced reactions, specifically those aimed at making molecules as single enantiomers.

Outline Syllabus

Strategies and tactics in design of synthetic routes: control, protection, activation and blocking techniques, chemical space considerations, availability of starting materials and exploitation of symmetry. Retrosynthesis revisited: Simple disconnections leading to drug like molecules - specifically heterocyclic compounds and aromatics. Alkylation of enolates and their equivalents, particularly enamines. Rearrangements as a means of constructing ring systems: Bifunctional compounds; 1,2, 1,3-, 1,4-, 1,5- and 1,6-di-CO disconnections.Molecules as single enantiomers: the chiral pool; asymmetric and diastereoselective reactions, first generation transistion metal catalysis, examples from enzyme mediated transformations, reagent control (e.g. Brown allylation), chiral auxiliaries (e.g. Evans) and organo-catalysis.Applications: constraints of the industrial scale: process development, solvents, and reaction conditions, 'green' considerations, health and safety, economics, length of route, application of synthetic chemistry: to known drug molecules and APIs with discussion of developing a library of compounds.

Learning Outcomes

Outcome Number	Description
1	Critically analyse a given synthetic route from an industrial perspective.
2	Critically evaluate retrosynthetic routes to drug-like molecules.
3	Rationalise asymmetric transformations leading to single enantiomers of molecules.
4	Evaluate synthetic routes to molecules that have made it to market.

Learning, Teaching and Assessment Strategy

N/A

Mode of Assessment

Type	Method	Description	Length	Weighting
Summative	Coursework	Worksheets	N/A	40%
Summative	Examination - Open Book	Open book exam	2 hour	60%

Reading List

To access the reading list for this module, please visit https://bradford.rl.talis.com/index.html

Please note:
This module descriptor has been published in advance of the academic year to which it applies. Every effort has been made to ensure that the information is accurate at the time of publication, but minor changes may occur given the interval between publishing and commencement of teaching. Upon commencement of the module, students will receive a handbook with further detail about the module and any changes will be discussed and/or communicated at this point.
