

Module Code:	SCI425
---------------------	--------

Module Title:	Organic and Biochemistry
----------------------	--------------------------

Level:	4	Credit Value:	20
---------------	---	----------------------	----

Cost Centre(s):	GAFS	JACS3 code:	F100
------------------------	------	--------------------	------

School:	Applied Science, Computing & Engineering	Module Leader:	Dr Amiya Chaudhry
----------------	---	-----------------------	-------------------

Scheduled learning and teaching hours	36
Guided independent study	164
Placement	0 hrs
Module duration (total hours)	200 hrs

Programme(s) in which to be offered (not including exit awards)	Core	Option
BSc (Hons) Chemistry	✓	<input type="checkbox"/>

Pre-requisites
None

Office use only

Initial approval: March 18 – validation of BSc Chemistry

Version no: 1

With effect from: Sept 18

Date and details of revision:

Version no:

Module Aims

Organic and Biochemistry will introduce students to the key concepts of organic and biochemistry at level 4 and develop skills in applying theoretical principles to a variety of problems related to the subject matter of the module. The first half of the module will explore organic chemistry with an emphasis on bonding, molecular structure and simple reaction mechanisms. The second half of the module is concerned with biochemistry, focusing on the chemistry of important biological building blocks – proteins, lipids and carbohydrates.

Intended Learning Outcomes

Key skills for employability

KS1	Written, oral and media communication skills
KS2	Leadership, team working and networking skills
KS3	Opportunity, creativity and problem solving skills
KS4	Information technology skills and digital literacy
KS5	Information management skills
KS6	Research skills
KS7	Intercultural and sustainability skills
KS8	Career management skills
KS9	Learning to learn (managing personal and professional development, self-management)
KS10	Numeracy

At the end of this module, students will be able to

Key Skills

		Key Skills	
1	Demonstrate a working knowledge of the structure and functionality of organic molecules and use these concepts to determine possible products from unknown reactions.	KS3	KS6
2	Demonstrate a working knowledge of the structure, functionality and analysis of lipids, proteins and carbohydrates.	KS4	KS6
3	Carry out practical work, interpret data and relate the results to the theory covered.	KS3	KS10
		KS5	KS1

Transferable skills and other attributes

- data interpretation
- working in a team

Derogations

None

Assessment:

Indicative Assessment Tasks:

Assessment (1): An in-class test testing learning outcomes 1 and 2 consisting of short answered problems.

Assessment (2): Laboratory reports

Assessment number	Learning Outcomes to be met	Type of assessment	Weighting (%)	Duration (if exam)	Word count (or equivalent if appropriate)
1	1-4	In-class test	60	2 hour	
2	5	Coursework	40		1600

Learning and Teaching Strategies:

Taught content will be delivered by lectures from course tutors. Laboratory sessions will be employed to support taught material.

Practical chemistry will be delivered through pre laboratory e-learning; pre-lab skills lectures, and supporting demonstrations.

Syllabus outline:

This module will introduce you to the key concepts of structure and reactivity in organic chemistry and biochemistry.

Key concepts in organic chemistry:

- The nature of organic compounds.
- Functional groups.
- Reaction mechanisms.
- Application of spectroscopic techniques for the determination of molecular structure.
- Set up glassware and apparatus to conduct experiments in organic chemistry.
- Interpret data to characterise organic compounds.
- Present the results of a practical investigation in a concise manner.

Fundamentals of biochemistry:

- Carbohydrate Chemistry
- Structure-function relationships of bio macromolecules: proteins, lipids and polysaccharides
- Laboratory determination of protein, lipids and carbohydrates

Indicative Bibliography:**Essential reading**

Clayden, J., Greeves, N. and Warren, S. (2012), *Organic Chemistry*. 2nd ed. Oxford: Oxford University Press.

Brown, T.A. (2017), *Biochemistry*. Banbury: Scion Publishing Limited

Other indicative reading

Housecroft, C.E. and Constable, E.C. (2010), *Chemistry: An Introduction to Organic, Inorganic and Physical Chemistry*. 4th ed, Prentice Hall.

Journals, accessible via Science Direct:

Bioorganic Chemistry

Bioorganic and Medicinal Chemistry

Bioorganic and Medicinal Chemistry Letters