CH411-15 Advanced Chemical Biology

24/25

Department
Chemistry
Level
Undergraduate Level 4
Module leader
Tim Bugg
Credit value
15
Module duration
10 weeks
Assessment
20% coursework, 80% exam
Study location
University of Warwick main campus, Coventry

Description

Introductory description

N/A

Module web page

Module aims

The aim of the module is to describe advances in modern Chemical Biology research, that utilise molecular biology techniques. These techniques will be described in the first part of the module, and examples from the literature described in the second half.

The module also aims to develop transferable skills. The module will have 20% assessed work, comprising a short written presentation on a literature research topic.

Outline syllabus

This is an indicative module outline only to give an indication of the sort of topics that may be covered. Actual sessions held may differ.

Lectures 1-6 Introduction to molecular biology for Chemical Biology. These lectures will introduce practical techniques in molecular biology such as DNA plasmids, transformation, gene cloning,

polymerase chain reaction, inducible promoters for gene expression, use of fusion proteins for recombinant protein production, site-directed mutagenesis, gene knockouts, and DNA sequencing technologies.

Lectures 7-12 Modern Topics in Chemical Biology. These lectures will cover current Chemical Biology topics from the scientific literature that make use of molecular biology methods. Examples will include applications of site-directed mutagenesis to study protein/enzyme function; protein engineering using site-directed mutagenesis and directed evolution; in vitro selection of RNA; synthetic biology applications such as pathway engineering, engineering of natural product biosynthesis.

Learning outcomes

By the end of the module, students should be able to:

- Describe and present current advances in Chemical Biology research.
- Make an effective written presentation on a topic in current Chemical Biology research.

Indicative reading list

Protein Engineering, Methods in Enzymology vol 388, eds J. Noel, D. Robertson

Research element

e.g. essay, dissertation, individual or group research, research skills activity, etc.

Subject specific skills

Problem solving
Written communication
Information literacy and research skills

Transferable skills

Problem solving
Written communication
Information literacy and research skills

Study

Study time

Type	Required
Lectures	12 sessions of 1 hour (8%)
Supervised practical classes	4 sessions of 1 hour (3%)
Private study	134 hours (89%)
Total	150 hours

Private study description

104 hr student self study
30 hr preparation for short written presentation

Costs

No further costs have been identified for this module.

Assessment

You do not need to pass all assessment components to pass the module.

Students can register for this module without taking any assessment.

Assessment group D3

	Weighting	Study time	Eligible for self-certification
Written presentation	20%		Yes (extension)
1 page written presentation of a literature Chemical Biology topic			
In-person Examination	80%		No

- Answerbook Pink (12 page)
- Graph paper
- Periodic Tables
- Students may use a calculator

Feedback on assessment

Short written presentation is double-marked by two members of academic staff, written feedback provided within 20 days. Cohort level examination feedback provided via Moodle.

Past exam papers for CH411

Availability

Courses

This module is Optional for:

- Year 1 of TCHA-F1PB MSc in Chemistry with Scientific Writing
- Year 1 of TCHA-F1PE Postgraduate Taught Scientific Research and Communication
- UCHA-F110 Undergraduate Master of Chemistry (with Industrial Placement)
    - Year 4 of F110 MChem Chemistry (with Industrial Placement)
    - Year 4 of F112 MChem Chemistry with Medicinal Chemistry with Industrial Placement
- Year 5 of UCHA-F107 Undergraduate Master of Chemistry (with Intercalated Year)
- UCHA-F109 Undergraduate Master of Chemistry (with International Placement)
    - Year 4 of F109 MChem Chemistry (with International Placement)
    - Year 4 of F111 MChem Chemistry with Medicinal Chemistry (with International Placement)
- UCHA-4M Undergraduate Master of Chemistry Variants
    - Year 4 of F105 Chemistry
    - Year 4 of F110 MChem Chemistry (with Industrial Placement)
    - Year 4 of F109 MChem Chemistry (with International Placement)
    - Year 4 of F126 MChem Chemistry with Med Chem (with Prof Exp)
    - Year 4 of F125 MChem Chemistry with Medicinal Chemistry
    - Year 4 of F106 MChem Chemistry with Professional Experience
- Year 5 of UCHA-F127 Undergraduate Master of Chemistry with Medicinal Chemistry(with Intercalated Year)