

# CH401-60 Research Project & Methodology

**20/21**

**Department**

Chemistry

**Level**

Undergraduate Level 4

**Module leader**

Mark Barrow

**Credit value**

60

**Module duration**

20 weeks

**Assessment**

63% coursework, 37% exam

**Study location**

University of Warwick main campus, Coventry

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## Description

### Introductory description

N/A

[Module web page](#)

### Module aims

The module is designed to develop student research skills, through an extended project in an area of chemistry involving synthesis, measurement science, computational chemistry or a combination thereof. Students will become aware of research methodology and the elements of research, including appraising the literature, designing novel experiments (practical or computational), assessing results and drawing conclusions that they will be able to set against the current field. This module will allow students to be original in their application of knowledge to the solution of new, research-led problems.

The philosophy of the MChem degree is to provide a student experience and training which is close to that experienced by research students taking a Higher Degree. The Research Project and Methodology module is thus a key component of the fourth year of the course, since it provides

students with the opportunity to carry out a research project under the supervision of an academic, usually within the academic's research group. Students are given guidance from the supervisor, and have the opportunity to design and plan their own research work and assess the safety implications of their proposed research.

Students are assigned two academic markers from the outset. One of these is assigned as the principal marker and provides the student with a contact (in addition to the Personal Tutor), with whom they can discuss the direction of the project and any difficulties that might arise.

Students will be expected to present an 8,500 word report which should be at the standard of a research paper. The literature review part of the report is reviewed by the supervisor at the beginning of Term 2. They will also present their work in the form of a short 30 minute interview to a panel of academics. Work is also presented as an oral presentation that is assessed during a session held for the entire year group. During this session, students face questions from their peers and academics. These activities will allow students to develop presentation and communication skills.

Students will also be required to attend a specified number of Department RSC seminars in order to develop their awareness of current research in their field.

## **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.

### **Research project**

3 days (each of 6 hours) per week in a research laboratory for nineteen weeks, carrying out research on a specialised topic under the direction of an academic supervisor and their team.

### **Presentations**

Presentation of the research project in an oral examination and oral presentation.

## **Learning outcomes**

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

- Complete individual COSHH assessments for a diverse range of experiments
- Understand and be aware of current research and problems relating to the area of the research project.
- To be able to critically evaluate the literature and identify the most important body of work.
- Develop research methodology skills by planning experiments (practical and computational), and carrying out appropriate analyses.
- Present to peers a critical evaluation of their research work and to be able to defend their work to an audience of peers.
- Write a high quality report at research level including an appraisal of the literature, experimental methods, results and discussion, conclusions

## **Indicative reading list**

Students are directed to primary and secondary literature according to their research area. They are also given access to previous MChem and PhD theses by the academic supervisor.

## Research element

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

## Subject specific skills

Organisation and time management  
Independence and initiative  
Information literacy and research skills

## Transferable skills

Organisation and time management  
Independence and initiative  
Information literacy and research skills

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## Study

### Study time

Type	Required
Lectures	3 sessions of 1 hour (0%)
Practical classes	57 sessions of 6 hours (57%)
Other activity	1 hour (0%)
Private study	254 hours (42%)
Total	600 hours

### Private study description

Student centred learning and assessed work preparation

### Other activity description

3hrs introductory and safety lectures  
1hr library skills session

## Costs

No further costs have been identified for this module.

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## 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 D

	<b>Weighting</b>	<b>Study time</b>	<b>Eligible for self-certification</b>
Written Report	45%		Yes (extension)
Practical Work Assessment by Supervisor	10%		Yes (extension)
Oral Presentation	8%		Yes (extension)
7.5%			
Oral presentation	37%		Yes (extension)
37.5%			

### Feedback on assessment

Formative and Summative Feedback on assessed work and draft introduction, plus regular supervisor and first marker meetings throughout the year.

[Past exam papers for CH401](#)

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## Availability

### Pre-requisites

To take this module, you must have passed:

- Any of
  - [CH3E9-15 Advanced Organic Chemistry and Laboratory](#)
  - [CH3F0-15 Advanced Inorganic Chemistry and Laboratory](#)
  - [CH3F1-15 Advanced Physical Chemistry and Laboratory](#)
  - [CH3F3-30 Advanced Chemistry \(Organic, Inorganic and Physical\)](#)

## Courses

This module is Core for:

- 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)