



## UNSW Course Outline

# CHEM1151 Introductory Medicinal Chemistry - 2024

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## General Course Information

Course Code : CHEM1151

Year : 2024

Term : Term 1

Teaching Period : T1

Is a multi-term course? : No

Faculty : Faculty of Science

Academic Unit : School of Chemistry

Delivery Mode : In Person

Delivery Format : Standard

Delivery Location : Kensington

Campus : Sydney

Study Level : Undergraduate

Units of Credit : 6

### Useful Links

[Handbook Class Timetable](#)

## Course Details & Outcomes

### Course Description

This course will provide students with an understanding of what medicinal chemistry is and how it is carried out. Topics covered in this course include a general overview of medicinal chemistry, the drug discovery process, and development of antimicrobial agents. The interdisciplinary

process of how pharmaceutical drugs are designed and developed will also be introduced.

The course is based on a series of lectures, tutorials, workshops and colloquia given by academic staff plus visiting specialists, on topics of relevance to medicinal chemistry. Students will have the opportunity to visit some of the biomedical facilities located on the UNSW campus.

The course is only available to students enrolled in medicinal chemistry-related programs (3999 and 4755) and are usually in their first year of study. This course cannot be used as a general education course.

Note: Assumed knowledge equivalent to year 12 chemistry.

## Course Aims

The aim of this course is to provide Bachelor of Medicinal Chemistry (program 3999 and 4755) students with a broad appreciation of what medicinal chemistry is, how it is used in the discovery and design of drugs, and the underlying fundamental science on which it is based. This course introduces the connection between chemistry, biology, pharmacology and medicine in the perspective of drug discovery and development. This course provides the foundation for later year medicinal chemistry related courses.

# Course Learning Outcomes

Course Learning Outcomes
CL01 : Describe the process by which new therapeutic drugs are discovered and developed.
CL02 : Describe the role of a medicinal chemist in the development of new therapeutic drugs.
CL03 : Justify the utility of medicinal chemistry in helping to solve problems in daily life, science and society.
CL04 : Effectively work in a team to locate and evaluate scientific literature on a given topic.
CL05 : Effectively communicate scientific information in written and oral formats.

Course Learning Outcomes	Assessment Item
CL01 : Describe the process by which new therapeutic drugs are discovered and developed.	<ul style="list-style-type: none"><li>• Mid-session test</li><li>• Research project reports</li><li>• Research project seminars</li><li>• Final examination</li></ul>
CL02 : Describe the role of a medicinal chemist in the development of new therapeutic drugs.	<ul style="list-style-type: none"><li>• Mid-session test</li><li>• Research project reports</li><li>• Research project seminars</li><li>• Final examination</li></ul>
CL03 : Justify the utility of medicinal chemistry in helping to solve problems in daily life, science and society.	<ul style="list-style-type: none"><li>• Mid-session test</li><li>• Research project reports</li><li>• Research project seminars</li><li>• Final examination</li></ul>
CL04 : Effectively work in a team to locate and evaluate scientific literature on a given topic.	<ul style="list-style-type: none"><li>• Research project reports</li><li>• Research project seminars</li></ul>
CL05 : Effectively communicate scientific information in written and oral formats.	<ul style="list-style-type: none"><li>• Mid-session test</li><li>• Final examination</li><li>• Research project reports</li><li>• Research project seminars</li></ul>

## Learning and Teaching Technologies

Moodle - Learning Management System

## Learning and Teaching in this course

Each week, you will do the following activities:

- **3 x lectures** (1 x 2 h and 2 x 1 h each). You will need to take your own notes. These lectures will also include a variety of tutorial-style practice problems.
- **1 x workshop** (3 h). You will be randomly assigned into pairs, three times during the Term. For each of the resulting three 3-week blocks, you will spend the first two workshops preparing an

oral presentation and a written report with your partner. In the third workshop, you will present your oral presentation to the class.

# Assessments

## Assessment Structure

Assessment Item	Weight	Relevant Dates
Mid-session test Assessment Format: Individual	20%	
Research project reports Assessment Format: Group	20%	
Research project seminars Assessment Format: Individual	20%	
Final examination Assessment Format: Individual	40%	

## Assessment Details

### Mid-session test

#### Assessment Overview

The mid-term test typically takes place in Week 5. It will be conducted in person and under exam conditions. Detailed guidelines will be supplied at the beginning of term.

The mid-term test is designed to review your ability to use lecture and tutorial material in problem-solving. The test is typically 50 minutes. It consists of a mixture of multi-choice and written-answer questions. You will enter your answers directly into the test booklet.

Feedback is available through inquiry with the course convenor.

Hurdle requirement: a minimum mark of 35% (weight-averaged) for the mid-session test and final exam is required to pass the course.

#### Course Learning Outcomes

- CL01 : Describe the process by which new therapeutic drugs are discovered and developed.
- CL02 : Describe the role of a medicinal chemist in the development of new therapeutic drugs.
- CL03 : Justify the utility of medicinal chemistry in helping to solve problems in daily life, science and society.
- CL05 : Effectively communicate scientific information in written and oral formats.

#### Hurdle rules

A minimum mark of 35% (weight-averaged) for the mid-session test and final exam is required to

pass the course.

## Research project reports

### Assessment Overview

You will submit 2-to-3 pages of written reports on each of three allocated current topics in Medicinal Chemistry which include drug discovery, techniques in medicinal chemistry and drug delivery. In the written report you will summarise your findings relevant to the topic. You are expected to read through literature to search for required information.

An assessment guide and marking rubric will be provided in week 1 with further details and expectations. You will be provided the allocated topics in weeks 1, 5 and 8 with the submission deadline in weeks 3, 7 and 10.

Each report is worth equal marks and both you and your partner will receive the same mark.

Feedback will be provided through written comments.

### Course Learning Outcomes

- CL01 : Describe the process by which new therapeutic drugs are discovered and developed.
- CL02 : Describe the role of a medicinal chemist in the development of new therapeutic drugs.
- CL03 : Justify the utility of medicinal chemistry in helping to solve problems in daily life, science and society.
- CL04 : Effectively work in a team to locate and evaluate scientific literature on a given topic.
- CL05 : Effectively communicate scientific information in written and oral formats.

## Research project seminars

### Assessment Overview

You will deliver a 3-minute presentation on a current topic in Medicinal Chemistry individually during the regular timetabled workshop in weeks 3, 7 and 10.

This assessment is designed for you to present your contribution to each of the research project reports. An assessment guide and marking rubric will be provided in week 1 with further details and expectations. You will be provided a topic in weeks 1, 5 and 8. For each presentation, you will prepare your individual PowerPoint slides. Your presentation will be marked individually by the academic staff members in attendance. Each presentation is worth equal marks and the average of the 3 marks contributes to 20% of the course.

Feedback will be provided through written comments on the presentation.

### Course Learning Outcomes

- CL01 : Describe the process by which new therapeutic drugs are discovered and developed.
- CL02 : Describe the role of a medicinal chemist in the development of new therapeutic drugs.
- CL03 : Justify the utility of medicinal chemistry in helping to solve problems in daily life, science and society.
- CL04 : Effectively work in a team to locate and evaluate scientific literature on a given topic.
- CL05 : Effectively communicate scientific information in written and oral formats.

### Assessment information

Rubrics for the oral and written workshop presentations will be made available on Moodle.

## **Final examination**

### Assessment Overview

The final exam is designed to assess your learning and problem-solving skills on “the Drug Discovery Process” and “Antimicrobial Agents” topics including material from lectures, tutorials and workshops. The final exam is 2 hours in duration and consists of multiple-choice and short answer questions. The details will be confirmed during the course. The examination will occur during the official university examination period. Feedback is available through inquiry with the course convenor.

Hurdle requirement: a minimum mark of 35% (weight-averaged) for the mid-session test and final exam is required to pass the course.

### Course Learning Outcomes

- CL01 : Describe the process by which new therapeutic drugs are discovered and developed.
- CL02 : Describe the role of a medicinal chemist in the development of new therapeutic drugs.
- CL03 : Justify the utility of medicinal chemistry in helping to solve problems in daily life, science and society.
- CL05 : Effectively communicate scientific information in written and oral formats.

### Hurdle rules

A minimum mark of 35% (weight-averaged) for the mid-session test and final exam is required to pass the course.

## **General Assessment Information**

### Grading Basis

Standard

## Requirements to pass course

In order to pass this course, you must achieve ALL of the following:

- An overall course mark of 50 or above;
- A minimum mark of 35% (weight-averaged) for the mid-session test and final exam;
- A minimum of 80% attendance for the workshops;
- Completion of all workshop assessments.

Failure to satisfy all of these criteria could result in either a FL or UF (Unsatisfactory Fail) grade being awarded, or further assessment being offered at the sole discretion of the course coordinator. You must ensure your availability to attend any supplementary examination that will usually be offered in the week suggested by UNSW; inability or failure to attend a supplementary examination may lead to a FL or UF (Unsatisfactory Fail) grade being confirmed.

## Course Schedule

Teaching Week/Module	Activity Type	Content
Week 1 : 12 February - 18 February	Lecture	Structure and Bonding in Organic molecules
	Workshop	
	Assessment	Workshop topic 1 issued
Week 2 : 19 February - 25 February	Lecture	Structure and Bonding in Organic molecules
	Workshop	
Week 3 : 26 February - 3 March	Lecture	Structure and Bonding in Organic molecules
	Workshop	
	Assessment	Workshop topic 1 presentation and report submission
Week 4 : 4 March - 10 March	Lecture	The drug discovery process
	Workshop	
	Assessment	Workshop topic 2 issued
Week 5 : 11 March - 17 March	Lecture	The drug discovery process
	Workshop	
	Assessment	Mid-session test
Week 6 : 18 March - 24 March	Other	Flexibility week. No classes.
Week 7 : 25 March - 31 March	Lecture	The drug discovery process
	Workshop	
	Assessment	Workshop topic 2 presentation and report submission
Week 8 : 1 April - 7 April	Lecture	Macromolecular Therapeutics
	Workshop	
	Assessment	Workshop topic 3 issued
Week 9 : 8 April - 14 April	Lecture	Macromolecular Therapeutics
	Workshop	
Week 10 : 15 April - 21 April	Lecture	Macromolecular Therapeutics
	Workshop	
	Assessment	Workshop topic 3 presentation and report submission

## Attendance Requirements

Students are strongly encouraged to attend all classes and review lecture recordings.

## Course Resources

### Prescribed Resources

Textbooks:

- "Molecules and Medicine" by Corey, Czado and Kurti
- "Chemistry 5e w/ Interactive E-Text" by Blackman Allan

### Recommended Resources

Textbook:

- "An introduction to medicinal chemistry" Graham L. Patrick

## Course Evaluation and Development

Your feedback matters! We've used your feedback to make improvements.

Previous students told us that (i) the workshops were very interesting and relevant to the course, however they would like the instructions to be made more clearer and expectations on the depth of knowledge; and (ii) they would like more resources on final exam e.g. practice questions.

We have responded to this feedback by: (i) providing more detailed instructions on Moodle and announcements which spell out more clearly the type of information required for workshops; and (ii) providing extra final exam practice questions.

## Staff Details

Position	Name	Email	Location	Phone	Availability	Equitable Learning Services Contact	Primary Contact
Convenor	Naresh Kumar		SEB 733	+61293854698	By appointment	Yes	Yes
Lecturer	Jason Harper		Dalton 223		By appointment	No	No
	Luke Hunter		Dalton 221		By appointment	No	No



# Other Useful Information

## Academic Information

Upon your enrolment at UNSW, you share responsibility with us for maintaining a safe, harmonious and tolerant University environment.

You are required to:

- Comply with the University's conditions of enrolment.
- Act responsibly, ethically, safely and with integrity.
- Observe standards of equity and respect in dealing with every member of the UNSW community.
- Engage in lawful behaviour.
- Use and care for University resources in a responsible and appropriate manner.
- Maintain the University's reputation and good standing.

For more information, visit the [UNSW Student Code of Conduct Website](#).

## Academic Honesty and Plagiarism

**Referencing** is a way of acknowledging the sources of information that you use to research your assignments. You need to provide a reference whenever you draw on someone else's words, ideas or research. Not referencing other people's work can constitute plagiarism.

Further information about referencing styles can be located at <https://student.unsw.edu.au/referencing>

**Academic integrity** is fundamental to success at university. Academic integrity can be defined as a commitment to six fundamental values in academic pursuits: honesty, trust, fairness, respect, responsibility and courage. At UNSW, this means that your work must be your own, and others' ideas should be appropriately acknowledged. If you don't follow these rules, plagiarism may be detected in your work.

Further information about academic integrity, plagiarism and the use of AI in assessments can be located at:

- The [Current Students site](#),
- The [ELISE training site](#), and
- The [Use of AI for assessments](#) site.

The Student Conduct and Integrity Unit provides further resources to assist you to understand your conduct obligations as a student: <https://student.unsw.edu.au/conduct>

## Submission of Assessment Tasks

### Penalty for Late Submissions

UNSW has a standard late submission penalty of:

- 5% per day,
- for all assessments where a penalty applies,
- capped at five days (120 hours) from the assessment deadline, after which a student cannot submit an assessment, and
- no permitted variation.

***Any variations to the above will be explicitly stated in the Course Outline for a given course or assessment task.***

Students are expected to manage their time to meet deadlines and to request extensions as early as possible before the deadline.

### Special Consideration

If circumstances prevent you from attending/completing an assessment task, you must officially apply for special consideration, usually within 3 days of the sitting date/due date. You can apply by logging onto myUNSW and following the link in the My Student Profile Tab. Medical documentation or other documentation explaining your absence must be submitted with your application. Once your application has been assessed, you will be contacted via your student email address to be advised of the official outcome and any actions that need to be taken from there. For more information about special consideration, please visit: <https://student.unsw.edu.au/special-consideration>

**Important note:** UNSW has a “fit to sit/submit” rule, which means that if you sit an exam or submit a piece of assessment, you are declaring yourself fit to do so and cannot later apply for Special Consideration. This is to ensure that if you feel unwell or are faced with significant circumstances beyond your control that affect your ability to study, you do not sit an examination or submit an assessment that does not reflect your best performance. Instead, you should apply for Special Consideration as soon as you realise you are not well enough or are otherwise unable to sit or submit an assessment.

### Faculty-specific Information

#### Additional support for students

- [The Current Students Gateway](#)
- [Student Support](#)
- [Academic Skills and Support](#)
- [Student Wellbeing, Health and Safety](#)
- [Equitable Learning Services](#)
- [UNSW IT Service Centre](#)
- Science EDI Student [Initiatives](#), [Offerings](#) and [Guidelines](#)

## School Contact Information

Level 1, Dalton Building (F12)

W: [www.chemistry.unsw.edu.au](http://www.chemistry.unsw.edu.au)

Also see: ***Contacts and Support*** section of the course Moodle page (where applicable)