

# PHAR3251

## Clinical & Experimental Pharmacology

Course Outline  
Term 1, 2023

School of Biomedical Sciences  
Faculty of Medicine & Health

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# 1. Staff

Position	Name	Email	Consultation times and locations	Contact Details
Course Convenor	Dr Matt Perry Marty Le Nedelec	<a href="mailto:clinicalpharm@unsw.edu.au">clinicalpharm@unsw.edu.au</a>	By appointment	+61 2 9385 1336 +61 2 9065 2949
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Tutors	TBD			

## 2. Course information

Units of credit: 6

Pre-requisite(s): PHAR2011. Highly recommended PHSL2201 and BIOC 2101 or BIOC2181 or BIOC2201.

Teaching times and locations: <https://timetable.unsw.edu.au/2023/PHAR3251.html>

### 2.1 Course summary

Clinical & Experimental Pharmacology (PHAR3251) is a 3rd year Science Course worth six Units of Credit (6 UOC). The course is usually undertaken as part of a major in Pharmacology for the Bachelor of Science (Adv.) or Bachelor of Medical Sciences or as part of the Bachelor of Medicinal Chemistry. The course builds on the information you have gained in Pharmacology (PHAR2011) and Physiology (PHSL2101). Students are also highly recommended to take PHSL2201 as well as Biochemistry (BIOC2101/2181) and Molecular Biology (2201/2291) or Chemistry (2021/2041).

The clinical and experimental pharmacology (PHAR3251) course deals with the pharmacology of different drug classes, with an emphasis on the mode of drug action and adverse drug effects. Effects of drugs on the major organ systems will be covered, focusing on the cardiovascular and endocrine systems, as well as anti-cancer therapies. You will be introduced to emerging therapeutic strategies based on advances in our understanding of cellular physiology and drug action. The practicals will cover basic pharmacological methods from both clinical and experimental standpoints.

## 2.2 Course aims

Building on basic pharmacology skills learned in PHAR2011, the objectives of this course are to:

- a) develop knowledge and conceptual understanding of the use and action of various classes of drugs in the treatment of different human diseases
- b) introduce and develop an understanding of the use of selected formulae to predict drug concentration in, and clearance from, the human body
- c) develop an appreciation of the need for further research to identify new drug targets for more effective therapies.

## 2.3 Course learning outcomes (CLO)

At the successful completion of this course you (the student) should be able to:

1. Demonstrate an understanding of the clinical application of a range of drug classes.
2. Describe the mechanism of action of specified drug classes used to treat the major types of disease.
3. Accurately perform experiments, record data, draw conclusions from experimental data and write up a scientific report.
4. Demonstrate their ability to work in teams and communicate scientific information effectively to a variety of audiences and in a variety of formats.

## 2.4 Relationship between course and program learning outcomes and assessments

Course Learning Outcome (CLO)	LO Statement	Related Tasks & Assessment
CLO 1	Demonstrate an understanding of the clinical application of a range of drug classes.	Mid-term progress test, Written scientific report, Group project poster presentations, Final examination
CLO 2	Describe the mechanism of action of specified drug classes used to treat the major types of disease.	Mid-term progress test, Written scientific report, Group project poster presentations, Final examination
CLO 3	Accurately perform experiments, record data, draw conclusions from experimental data and write up a scientific report.	Written Scientific report
CLO 4	Demonstrate their ability to work in teams and communicate scientific information effectively to a variety of audiences and in a variety of formats.	Written scientific report, Group project poster presentations

## 3. Strategies and approaches to learning

### 3.1 Learning and teaching activities

The learning and teaching philosophy underpinning this course is centred on student learning and aims to create an environment, which interests, challenges, and enthuses you, the students. The teaching is designed to be relevant and engaging in order to prepare you for future careers in pharmacology or related disciplines. The primary source of information for this course is the lecture material, with the Q & A sessions, collaborative learning sessions, practical classes and online material directly complementing and supporting the lecture material. Additionally, effective learning can also be enhanced through self-directed use of other resources such as textbooks, literature references and web-based sources.

Learning activities occur on the following days and times:

**Lectures:** 2 topics per week. Lectures will be pre-recorded and available online prior to the week scheduled.

**Collaborative learning sessions:** One collaborative learning session per week, delivered face to face on Tuesdays at either 3 - 4 pm or 4 - 5 pm (depending on the group).

**Laboratory practicals:** One laboratory practical each week to be held face to face on Thursdays 10 am – 1 pm. The practicals are a core part of your learning experience in the sciences.

**Q & A sessions:** Online on Wednesdays 3 – 4 pm.

**Mid-session progress test:** Week 5 (covers content from weeks 1-4) and will be held within the Q & A session of week 5.

Information regarding weekly activities will be available via the interactive timetable on Moodle and in weekly announcements via Moodle.

### 3.2 Expectations of students

Students are reminded that UNSW recommends that a 6 units-of-credit course should involve about 150 hours of study and learning activities. The formal learning activities total approximately 62 hours throughout the term and students are expected (and strongly recommended) to do at least the same number of hours of additional study.

Lectures will provide you with the concepts and theory essential for an understanding of pharmacology. To assist in the development of applied pharmacology skills, collaborative learning sessions and laboratory practical classes will be held face to face. These classes allow you to engage in a more interactive form of learning than is possible in lectures. It is up to you to ensure you perform well in each part of the course by preparing for classes, actively engaging in face to face and online classes, completing assignments, studying for exams, and seeking assistance to clarify understanding. Past exam questions are provided to assist you in preparing for examinations.

If you wish to contact the course convenors or staff, you can do so by e-mail or Microsoft Teams, using the details provided in section 1 of this document and on the course Moodle page. We are committed to providing the best experience and outcome for all students and will therefore endeavour to respond to e-mails as soon as possible, but please consider the following:

- Standard work hours are Monday to Friday from 8 am to 6 pm. E-mail correspondence received outside of this time may be dealt with from the next working day.
- All digital correspondence, including e-mail, Teams messages, and messages on discussion forums should be respectful, courteous, and polite.
- All staff and students have busy schedules and multiple commitments, so while staff will endeavour to answer e-mail correspondence as quickly as possible, please apply appropriate expectations in this regard (i.e. 48 hours on a workday).

To help us improve the course, please consider providing us with feedback by acting as a student liaison, and/or by completing the MyExperience survey later in the term.

## 4. Course schedule and structure

This course consists of 62 hours of class contact hours. You are expected to take an additional 90 hours of non-class contact hours to complete assessments, readings and exam preparation.

Week [Date/Session]	Topic [Module]	Activity [Learning opportunity]	Related CLO
<b>Week 1</b>	Clinical Pharmacology Pharmacokinetics 1 Clinical case studies General & Pharmacokinetics Scientific communication	Lecture Lecture Collaborative learning session Q & A Laboratory practical	CL01, CL02, CL03, CL04
<b>Week 2</b>	Pharmacokinetics 2 Non-targeted anti-cancer therapies Pharmacokinetics Pharmacokinetics Pharmacokinetics	Lecture Lecture Collaborative learning session Q & A Laboratory practical	CL01, CL02, CL03, CL04
<b>Week 3</b>	Targeted anti-cancer therapies Emerging anti-cancer therapies Cancer Cancer Targeted vs non-targeted cancer therapies	Lecture Lecture Collaborative learning session Q & A Laboratory practical	CL01, CL02, CL03, CL04
<b>Week 4</b>	Reproductive drugs Anti-viral drugs Reproductive drugs Reproductive drugs Cancer therapy data analysis & how to write a scientific report	Lecture Lecture Collaborative learning session Q & A Laboratory practical	CL01, CL02, CL03, CL04
<b>Week 5</b>	Antibiotics Anti-viral drugs & antibiotics Poster feedback Mid-term progress test	Lecture Collaborative learning session Laboratory practical Assessment (in Q & A session)	CL01, CL02, CL03, CL04

<b>Week 7</b>	Respiratory drugs Anti-hypertensive drugs Cardiovascular drugs 1 Antibiotics / CV drugs Antibiotics	Lecture Lecture Collaborative learning session Q & A Laboratory practical	CL01, CL02, CL03, CL04
<b>Week 8</b>	Heart Failure Lipid lowering drugs Cardiovascular drugs 2 Cardiovascular drugs Beta-adrenoceptor antagonists	Lecture Lecture Collaborative learning session Q & A Laboratory practical	CL01, CL02, CL03, CL04
<b>Week 9</b>	Anti-thrombotic drugs Diabetes Endocrine drugs Diabetes Diuretic drugs	Lecture Lecture Collaborative learning session Q & A Laboratory practical	CL01, CL02, CL03, CL04
<b>Week 10</b>	Obesity Thyroid and Bone Experimental pharmacology Obesity / Thyroid & Bone Poster presentations	Lecture Lecture Collaborative learning session Q & A Laboratory practical	CL01, CL02, CL03, CL04

Exam Period: 28 April – 11 May

Supplementary Exam Period: 22 May – 26 May 2023

## 5. Assessment

### 5.1 Assessment tasks

Assessment task	Length	Weight (%)	Mark	Due date and time
<b>Assessment 1:</b> Mid-term progress test		15	50	15/03/2023
<b>Assessment 2:</b> Scientific report	2000 words	15	100	Wed 29/03/2023, 11.59 pm
<b>Assessment 3:</b> Group project poster presentations		15	100	Thurs 20/04/2023, 10 am to 1 pm
<b>Assessment 4:</b> Final exam		55	100	TBD

Written assessment tasks must be submitted electronically via Moodle, through Turnitin. A penalty will apply for late submissions (please see section 5.3 in this document).

#### **Mid-term progress test:**

The mid-term progress test will be held online in week 5, on 15<sup>th</sup> of March 2023 at 3 - 4 pm. This progress test will provide you feedback on how you are succeeding in the course. The progress test and end of session examination will test not only your knowledge of drugs used to treat important diseases but also your ability to apply the knowledge you have acquired from multiple lectures to identifying areas of research on appropriate drug targets. The test will be in the form of multiple-choice questions and short answer questions. The questions will be based on the material covered in the lectures, online content, practical classes and collaborative learning sessions. Material covered prior to the progress test may be examined again in the final exam. The mid-term test will address course learning outcomes 1 and 2.

#### **Written scientific report:**

The written scientific report assignment will be introduced and discussed in the practical class in week 1. The scientific report will be written individually, using class data generated and analysed in the practical classes in weeks 3 and 4. You will be given instruction on how to prepare your report for submission via Moodle, as well as in the practical class in week 4. This assessment task will address course learning outcomes 1, 2, and 3. A PDF version of the scientific report must be submitted via Moodle, through Turnitin, before 11.59 pm on Wednesday 29<sup>th</sup> of March 2023 (week 7). There will be a penalty for late submission (please see section 5.3 in this document) unless you have received approval for special consideration. Information for the scientific report, including the structure and marking criteria, will be available via Moodle.

#### **Group project - poster presentation:**

You will work in teams (of approximately four students) to research a topic for presentation as a scientific poster. All members of the group are required to contribute to this task. Each group will need

to research the topic and search for relevant information based on the latest scientific literature. The poster will be displayed face to face during a poster presentation and viewing session on Thursday 20<sup>th</sup> of April 2023 from 10 am to 1 pm. You will be expected to answer questions relating to the topic both individually and as a group. All members of the group will be required to participate in the presentation. Team members will also provide an assessment of each member's contribution to the team, this will be used to moderate each individual's grade based on contribution. The poster presentation will be graded on scientific content, visual communication and verbal presentation by two academic staff. Poster titles (topics) will be assigned in week 1. This assessment task will allow you to develop your research, information literacy, communication and time management skills, as well as allowing you to demonstrate your ability to work in a team and collaborate successfully (course learning outcomes 1, 2, and 4). Information for the poster presentation (topic titles, marking criteria etc.) will be posted on Moodle. An information session on 'Scientific communication: posters' will occur during the practical class in week 1, and a poster feedback session that will allow groups to ask questions and receive feedback on their poster drafts will occur during the practical class in week 5.

### **Final Exam:**

The final examination will be held during the official final examination period for Term 1 (2023) from Friday, 28<sup>th</sup> of April to Thursday, 11<sup>th</sup> of May 2023. The final exam will consist of multiple-choice questions and short answer questions.

### **Formative assessment:**

The formative assessment is in the form of online questions, which are created to help you revise before the mid-term progress test. You will receive assessment results and feedback immediately once the task is completed and questions will cover material during the first four weeks of the course. The online questions will address graduate learning outcomes 1 and 2, as well as providing you feedback on how you are progressing in the course.

### **Further information**

UNSW grading system: <https://student.unsw.edu.au/grades>

UNSW assessment policy: <https://student.unsw.edu.au/assessment>

## **5.2 Assessment criteria and standards**

Practice test and exam questions will be made available to you via Moodle, as well as during the collaborative learning sessions and the Q & A sessions.

Details regarding the assessment tasks, including the group project, will be provided to you during the first laboratory practical session in week 1, as well as being available on the course Moodle page. A detailed marking rubric for the group project and the written scientific report will be provided to you via the course Moodle page.

## 5.3 Submission of assessment tasks

### Late Submission

UNSW has standard late submission penalties as outlined in the UNSW Assessment Implementation Procedure, with no permitted variation. All late assignments (unless extension or exemption previously agreed) will be penalised by 5% of the maximum mark per day (including Saturday, Sunday and public holidays). For example, if an assessment task is worth 30 marks, then 1.5 marks will be lost per day (5% of 30) for each day it is late. So, if the grade earned is 24/30 and the task is two days late the student receives a grade of 24 – 3 marks = 21 marks.

Late submissions will be penalized at 5% per day capped at five days (120 hours). Students will not be permitted to submit their assessments after this date.

### Special Consideration

If you experience a short-term event beyond your control (exceptional circumstances) that impacts your performance in a particular assessment task, you can apply for Special Considerations.

You must apply for Special Consideration **before** the start of your exam or due date for your assessment, except where your circumstances of illness or misadventure stop you from doing so.

If your circumstances stop you from applying before your exam or assessment due date, you must **apply within 3 working days** of the assessment, or the period covered by your supporting documentation.

More information can be found on the [Special Consideration website](#).

## 5.4. Feedback on assessment

Assessment 1: Mid-term progress test. Individual marks are provided via Moodle once the tests have been graded. Cohort feedback is provided in the form of a post or podcast via the course Moodle page in week 7.

Assessment 2: Scientific report. Individual feedback for the written scientific reports will be available via Moodle once the reports have been graded (by week 10).

Assessment 3: Group Project. Feedback will be provided via a rubric and written comment for final submission, available through Moodle. Peer feedback will be submitted via an online form and the individual grades providing feedback will be available via Moodle.

Assessment 4: Final examination. Cohort feedback is provided once the exams are completed in the form of a post in Moodle.

## 6. Academic integrity, referencing 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.<sup>1</sup> 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 and **plagiarism** can be located at:

- The Current Students site <https://student.unsw.edu.au/plagiarism>, and
- The ELISE training site <https://subjectguides.library.unsw.edu.au/elise>
- The Conduct and Integrity Unit provides further resources to assist you to understand your conduct obligations as a student: <https://student.unsw.edu.au/conduct>.

## 7. Readings and resources

Katzung GG. Basic & Clinical Pharmacology. 15<sup>th</sup> Edition (2021); New York: McGraw-Hill.

Brunton LL, Hilal-Dandan R, Knollmann BC. Goodman and Gilman's the Pharmacological Basis of Therapeutics. 13<sup>th</sup> Edition (2018). New York: McGraw-Hill Medical.

## 8. Administrative matters

Student enquiries should be submitted via student portal <https://portal.insight.unsw.edu.au/web-forms/>

## 9. Additional support for students

- The Current Students Gateway: <https://student.unsw.edu.au/>
- Academic Skills and Support: <https://student.unsw.edu.au/academic-skills>
- Student Wellbeing and Health <https://www.student.unsw.edu.au/wellbeing>
- UNSW IT Service Centre: <https://www.myit.unsw.edu.au/services/students>
- UNSW Student Life Hub: <https://student.unsw.edu.au/hub#main-content>
- Student Support and Development: <https://student.unsw.edu.au/support>
- IT, eLearning and Apps: <https://student.unsw.edu.au/elearning>
- Student Support and Success Advisors: <https://student.unsw.edu.au/advisors>
- Equitable Learning Services (Formerly Disability Support Unit): <https://student.unsw.edu.au/els>
- Transitioning to Online Learning <https://www.covid19studyonline.unsw.edu.au/>
- Guide to Online Study <https://student.unsw.edu.au/online-study>

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<sup>1</sup> International Center for Academic Integrity, 'The Fundamental Values of Academic Integrity', T. Fishman (ed), Clemson University, 2013.