



Faculty of Medicine  
School of Medical Sciences

DEPARTMENT OF PHARMACOLOGY

# PHAR 3251

# Clinical and Experimental Pharmacology

COURSE OUTLINE

Term 1, 2020

CRICOS Provider Code: 00098G

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Please read this outline in conjunction with the following pages on the

[School of Medical Sciences website:](#)

- [Advice for Students](#)
- [Learning Resources](#)

(or see "STUDENTS" tab at [medicallsciences.med.unsw.edu.au](http://medicallsciences.med.unsw.edu.au) )

## PHAR3251 COURSE INFORMATION

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Clinical & Experimental Pharmacology (PHAR3251) is a 3<sup>rd</sup> year Science Course worth Six Units of Credit (6 UOC). The course is required as part of a major study plan in Pharmacology for the Bachelor of Science or Bachelor of Medical Sciences. The course will build 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 PHAR3251 course deals with the pharmacology of different drug classes, with an emphasis on the mode of drug action. Effects of drugs on the major organ systems will be covered, focusing on the cardiovascular, renal and endocrine systems, as well as chemotherapy. Students will be introduced to emerging therapeutic strategies based on advances in understanding cellular physiology and drug action. The practicals will cover basic pharmacological methods from both clinical and experimental standpoints.

## OBJECTIVES OF THE COURSE

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

- a) provide both 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.

## COURSE CONVENER and LECTURERS:

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Course Convener: Dr. Matthew Perry

[m.d.perry@unsw.edu.au](mailto:m.d.perry@unsw.edu.au)

Wallace Wurth Building, level 3E, phone: 9385 1336

Co-Convener: Dr Trudie Binder

[w.binder@unsw.edu.au](mailto:w.binder@unsw.edu.au)

Wallace Wurth Building, level 3E, phone: 9385 8737

Students wishing to see the course staff should make an appointment via email as our offices are not readily accessible. We will organize to meet you in a convenient location elsewhere in the building.

Lecturers in this course:

Dr Matthew Perry [m.d.perry@unsw.edu.au](mailto:m.d.perry@unsw.edu.au)

Dr Trudie Binder [w.binder@unsw.edu.au](mailto:w.binder@unsw.edu.au)

Prof Margaret Morris [m.morris@unsw.edu.au](mailto:m.morris@unsw.edu.au)

Dr Ross Grant [r.grant@unsw.edu.au](mailto:r.grant@unsw.edu.au)

Dr Greg Smith [g.smith@unsw.edu.au](mailto:g.smith@unsw.edu.au)

Prof Nigel Turner [n.turner@unsw.edu.au](mailto:n.turner@unsw.edu.au)

A/Prof Jeff Holst [j.holst@unsw.edu.au](mailto:j.holst@unsw.edu.au)

Dr David Jacques [d.jacques@unsw.edu.au](mailto:d.jacques@unsw.edu.au)

## **COURSE STRUCTURE and TEACHING STRATEGIES**

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This is a 6-unit course and consists of:

- 2 lectures per week
- practical/tutorial sessions of up to 4 hours per week
- Online actives

Students are expected to attend all scheduled activities for their full duration. Students are reminded that UNSW recommends that a 6 units-of-credit course should involve about 150-180 hrs of study and learning activities. The formal learning activities are approximately 60 hours throughout the term and students are expected (and strongly recommended) to do at least 90 hours of additional study including online activities.

Lectures will provide you with the concepts and theory essential for understanding the mechanism of action and clinical effects of drug classes. For each disease the pathological process will be outlined in the lecture and the relevant drug targets in the disease process identified and current pharmacological treatments will be described. While lectures will focus on the mechanism of action and adverse effects of drugs currently in use, potential new therapies, drug targets and areas requiring further research for more effective therapies, will be identified and discussed.

To assist in the development of research and analytical skills practical classes and tutorials will be held. These classes and tutorials allow students to engage in a more interactive form of learning than is possible in the lectures. The skills you will learn in practical classes are relevant to your development as professional scientists. The *practicals and tutorials* are provided to support lecture material and practise analytical skills and to help you to develop graduate attributes A, C, D & E. You will be required to submit a written report for one of the practical sessions.

## **APPROACH TO LEARNING AND TEACHING**

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The learning and teaching philosophy underpinning this course is centred on student learning and aims to create an environment, which interests, challenges, and enthuses students. The teaching is designed to be relevant and engaging in order to prepare students for future careers in Pharmacology.

Although the primary source of information for this course is the lecture material, effective learning can be enhanced through self-directed use of other resources such as textbooks and Web based sources. Your practical classes will be directly related to the lectures and it is essential to prepare for practical classes before attendance. It is up to you to ensure you perform well in each part of the course; preparing for classes; completing assignments; studying for exams and seeking assistance to clarify your understanding.

## **TEXTBOOK AND READING LIST**

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Recommended Primary Texts:

- Ritter, Flower, Henderson, Loke, and Rang; Rang and Dale's Pharmacology 9th ed. Endinburgh: Elsevier, 2020
- Brunton and Hilal-Dandan; Goodman & Gilman's Manual of Pharmacology and Therapeutics 2nd ed. McGraw-Hill, 2014

These textbooks will be available at the UNSW bookshop. They are also available in print and online formats from the library.

Links to additional sources to supplement the material covered in the lectures will be placed on the lecture pages on Moodle.

## STUDENT LEARNING OUTCOMES

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PHAR3251 will develop those attributes that the Faculty of Science and the Department of Pharmacology has identified as important for a Pharmacology Science Graduate to attain. These include; skills, qualities, understanding and attitudes that promote lifelong learning that students should acquire during their university experience.

### Pharmacology Learning Outcomes:

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- Demonstrate an understanding of how drugs/therapeutics are developed, work and are used safely
- Critically analyse, interpret and effectively communicate pharmacology data and literature
- Design and/or execute experiments or other activities to address pharmacological scenarios

### Graduate Learning Outcomes:

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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.

See also: [UNSW Graduate Outcomes](#)

## ASSESSMENT PROCEDURES

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Assessment:	Date due	% final mark
Progress exam (50 min duration)	23/03/2020	15%
Practical report (1500 words)	08/04/2020	15%
Student Poster presentation	20/04/2020	15%
End of session examination (2 hours duration)	TBA	55%
Formative assessment (online MCQs)	13/03/2020	0%

Written assessment tasks must be submitted electronically via Moodle, through Turnitin. **A penalty will apply for late submissions (10% per day).**

### Progress examination

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The progress exam will be held during the session in week 6 on the 23rd of March at 9 am. This exam will give you feedback on how you are succeeding in the course. The progress examination and end of session examination will test not only your knowledge of drugs used to treat major classes of disease but also your ability to apply the knowledge you have acquired from multiple lectures to identifying areas of research on appropriate drug targets. This examination 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, practical classes and tutorials. Material covered prior to the progress exam may be again examined in the final exam. The progress exam will address graduate learning outcomes 1 and 2.

## **Practical Report**

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The practical report will be written individually using class data generated and analysed in the practical classes. You will be given instruction on how to prepare your report for submission.

This assessment task will address graduate learning outcomes 1, 2, 3 and 4.

A PDF version of the laboratory report must be submitted via Moodle through Turnitin, before 10 am, Wednesday the 8th of April. There will be a "10% mark deduction per day penalty" for late submission unless the course co-ordinator has approved special consideration. Information for the practical report (structure, marking criteria etc.) will be posted on Moodle.

## **Student poster presentation**

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Students will work in teams of four to research their topic for presentation as a scientific poster. The poster will be displayed during a poster presentation and viewing session on the 20th of April. 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.

The poster presentation will be graded on scientific content, visual communication and verbal presentation by two academic/research reviewers or staff. Poster titles (topics) will be made available during week 2. 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 (Graduate learning outcomes 1, 2, 3 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.

## **Final Exam**

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The final examination will be held during the official examination period and will consist of 20 multiple choice questions and 10 short answer questions.

Final exam period for Term 1, 2020 is Sat 2 May to Friday 15 May 2020.

Supplementary exam period for Term 1, 2020 is Mon 25 May to Fri 29 May 2020.

## **Formative assessment**

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The formative assessment is in the form of online multiple-choice questions (MCQs) which has been created to help you revise before the progress examination and become familiar with the MCQ format. You will receive assessment results and feedback immediately once the task is completed and questions will cover material during the first 4 weeks of the course. The online MCQ's will address graduate learning outcomes 1 and 2, as well as providing you feedback on how you are progressing in the course.

## **COURSE EVALUATION AND DEVELOPMENT**

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Each year feedback is sought from students about the courses offered in the Department of Pharmacology and continual improvements are made based on this feedback. The UNSW MyExperience survey is the way in which student feedback is evaluated and significant changes to the course will be communicated to subsequent cohorts of students. Also, a staff-student liaison group will be set up and students will be invited to become class representatives to seek feedback from their colleagues and meet with academic staff to discuss any issues that arise. Based on feedback given in these meetings changes will be implemented during the course and for future years.

We appreciate student feedback because we are always looking for ways to improve your learning experience in this course. Below is a summary of the feedback from the previous student cohort in this course and our response to how we improved this year's course delivery.

In 2019, Students told us that they liked the teaching structure of PHAR3251. Students

commented that the course content was interesting and enjoyable, that they appreciated the clinical focus, and that they thought there was a broad range of topics presented in enough detail to be informative but not overwhelming. Students also commented that they liked the case studies presented in lectures and tutorials.

When asked about what could be improved on the course, the most frequent responses were regarding allowing more time between the mid-session exam and the Lab report submission. We have now moved the lab report submission to week 8, which is 16 days after the progress exam on week 6. The Poster presentations will remain on week 10. Another comment was that the mid-session test feedback tutorial was not helpful, so this feedback for the progress exam will now be provided online in week 7. Also, some students felt that having tutorials on a topic immediately after the relevant lecture did not provide them enough time to properly digest the content, so where possible we have now moved the tutorials to one or two weeks after the relevant lecture. Finally, students thought that in some lectures there were too many drugs discussed, with insufficient detail regarding the mechanism of adverse effects. Where possible we have reduced the number of drugs discussed or focussed on core first line drugs and have provided more details regarding adverse effects of drugs.

## GENERAL INFORMATION

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The Department of Pharmacology is part of the School of Medical Sciences and is within the Faculty of Medicine. It is located in the Wallace Wurth building. General inquiries can be made online via UNSW Student Portal Web Forms: <http://unsw.to/webforms>.

**Professor Margaret Morris** is Head of Department and appointments to meet with her may be made via email ([m.morris@unsw.edu.au](mailto:m.morris@unsw.edu.au)).

**There is an honours program conducted by the School.** The Honours program is coordinated by Dr Cristan Herbert ([c.herbert@unsw.edu.au](mailto:c.herbert@unsw.edu.au)), Ph: 9385 8679. Any students considering an Honours year should discuss the requirements with the coordinator.

### **Postgraduate degrees**

The Department of Pharmacology offers students the opportunity to enter the following graduate programs:

**Course Work Masters:** Masters in Pharmaceutical Medicine. For more information contact Dr Orin Chisholm ([o.chisholm@unsw.edu.au](mailto:o.chisholm@unsw.edu.au) )

**Research Masters:** In Pharmacology. Contact the post-graduate co-ordinators A/Prof Pascal Carrive ([p.carrive@unsw.edu.au](mailto:p.carrive@unsw.edu.au)) and Dr Nicole Jones ([n.jones@unsw.edu.au](mailto:n.jones@unsw.edu.au))

**Doctorate (Ph.D):** In Pharmacology. Contact the post-graduate co-ordinators A/Prof Pascal Carrive ([p.carrive@unsw.edu.au](mailto:p.carrive@unsw.edu.au)) and Dr Nicole Jones ([n.jones@unsw.edu.au](mailto:n.jones@unsw.edu.au)).

## Attendance Requirements

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For details on the Policy on Class Attendance and Absence see [Advice for Students](#) and the [Policy on Class Attendance and Absence](#).

Attendance at practical and tutorial classes will be recorded on the class roll at the start of each class. Arrival more than 15 minutes after the start of the class will be recorded as non-attendance. It is your responsibility to ensure that the demonstrator records your attendance and no discussions will be entered into after the completion of the class.

## Practical Classes

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The practical class is an opportunity for students to develop graduate learning outcomes 3 and 4. Students are required to behave in an ethical, socially responsible and professional manner within the practical class.

The pre-lab module for each practical class must be completed at least 1 hour prior to attending

each practical class. All pre-lab module questions must be completed before you will be allowed entry into the practical class. Students who do not successfully complete the module will need to do the pre-lab module in class prior to starting the experiment. This policy will be strictly enforced. At the start of each class a member of staff will check that the pre-lab is completed and record your attendance in the class roll.

The pre-lab module will inform you of any hazards in the class and safety procedures to follow to mitigate these hazards. Students must take due care with biological and hazardous material and make sure all equipment is left clean and functional. In the interests of safety, special attention should be paid to any precautionary measures recommended in the notes. If any accidents or incidents occur, they should be reported immediately to the demonstrator in charge of the class who will record the incident and recommend what further action is required.

For more details see [Advice for Students-Practical Classes](#)

### **Special Consideration**

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Please see [UNSW-Special Consideration](#) and [Student Advice-Special Consideration](#)

If you unavoidably miss the progress exam in PHAR3251, you must lodge a Special Consideration application online via myUNSW. If your request for consideration is granted an alternative assessment will be organised which may take the form of a supplementary exam or increased weighting of the final exam

### **Student Support Services**

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Details of the available student support services can be found at [Student Advice-Student support services](#).

### **Appeal Procedures**

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Details can be found at [Student-Advice-Reviews and Appeals](#)

### **Academic Integrity and Plagiarism**

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The School of Medical Sciences will not tolerate plagiarism in submitted written work. The University regards this as academic misconduct and imposes severe penalties. Evidence of plagiarism in submitted assignments, etc. will be thoroughly investigated and may be penalised by the award of a score of zero for the assessable work. Flagrant plagiarism will be directly referred to the Director of Integrity for disciplinary action under UNSW rules.

The [UNSW Student Code](#) outlines the standard of conduct expected of students with respect to their academic integrity and plagiarism.

More details of what constitutes plagiarism can be found [here](#)



**PHAR3251 CLINICAL & EXPERIMENTAL PHARMACOLOGY TIMETABLE 2020**

Wk	Week Begins Mon	Practical: WW115 Mon 11am – 2pm	Lecture 1: Mat D Mon 9-10 am	Lecture 2: CLB 3 Thurs 2-3 pm	Tutorial: Mat 227 Thurs 3-4 / 4-5 pm	Online content	Assessment
1	17/2	Scientific comms: Posters	General: Clinical Pharmacology (Matt Perry)	General: Pharmacokinetics 1 (Ross Grant)		General: Clinical Pharmacokinetics	
2	24/2	Pharmacokinetics: Dye	General: Pharmacokinetics 2 (Ross Grant)	Major organs theme: Anti-Hypertensive drugs (Matt Perry)	General: Clinical case studies		
3	2/3	Pharmacokinetics: Computer-based	Major organs theme: Heart Failure (Matt Perry)	Major organs theme: Lipid lowering drugs (Nigel Turner)	General: Pharmacokinetics		
4	9/3	Beta blockers	Major organs theme: Thrombosis (Matt Perry)	Major organs theme: Diuretic drugs (Margaret Morris)	Cardiovascular	How to write a scientific report	Online Formative Quiz
5	16/3	Diuretics	Major organs theme: Respiratory (Asthma) (Trudie Binder)	Cancer: non-targeted anti-cancer drugs (Jeff Holst)	Diuretics		
6	23/3	Data analysis	Progress Exam	Cancer: Targeted anti-cancer drugs (Jeff Holst)	Poster feedback: Group work	Mid-session Test Feedback	Progress Exam
7	30/3	Cancer therapy	Infection: Antibiotics (Trudie Binder)	Cancer: Emerging anti-cancer drugs (Jeff Holst)	Anti-cancer drugs	Antibiotics	
8	6/4	Cancer therapy analysis	Infection: Antiviral drugs (David Jaques)	Systems theme: Reproductive pharm. (Marty Le Nedelec)	Reproductive Pharmacology	Reproductive Pharmacology 2	Practical Report
9	13/4	Public holiday	Public holiday	Systems theme: Diabetes (Margaret Morris)	Endocrine		
10	20/4	Poster presentations	Systems theme: Obesity (Margaret Morris)	Systems theme: Thyroid and bone (Greg Smith)	Experimental Pharmacology		Student poster presentations