PHAR3306

Pharmacology for Optometry

Course Outline

Term 2, 2023

School of Biomedical Sciences

Faculty of Medicine & Health

Table of Contents

1. Staff

For all course related inquiries, please use course e-mail: pharmoptom@unsw.edu.au

Position	Name	Email	Consultation times and locations	Contact Details
Course Convenor	Dr Angela Finch	pharmoptom@unsw.edu.au	By email appointment	(02) 9065 1017
Course Convenor	Dr Matthew Perry	pharmoptom@unsw.edu.au	By email appointment	(02) 9385 1336
Course Convenor	Dr Johnson Liu	pharmoptom@unsw.edu.au	By email appointment	(02) 9385 9086
Lecturer	Prof Margaret Morris	m.morris@unsw.edu.au	By email appointment	Email
Lecturer	Dr Trudie Binder	w.binder@unsw.edu.au	By email appointment	Email
Lecturer	Marty Le Nedelec	m.lenedelec@unsw.edu.au	By email appointment	Email
Lecturer	A/Prof Lu Liu	lu.liu@unsw.edu.au	By email appointment	Email
Lecturer	Prof Jeff Holst	j.holst@unsw.edu.au	By email appointment	Email

2. Course information

Units of credit: 6

Pre-requisite(s): VISN2111, PHSL2101, PHSL2201

Teaching times and locations: https://timetable.unsw.edu.au/2023/PHAR3306.html

2.1 Course summary

The aim of the course is to provide vision science and clinical optometry students with a strong knowledge base in pharmacology and therapeutics that will benefit them in their future career. This will be achieved by providing the essential knowledge of the basic principles of pharmacology with an emphasis on drug action from the molecular and cellular levels to tissue, organ and whole organism levels. The course will provide an understanding of the principles of drug action (pharmacodynamics) in terms of, drug-receptor interaction, receptor theory and dose-response relationships. An introduction to

receptor-mediated signal transduction, membrane receptors and autonomic pharmacology will be covered. The handling of drugs by the body through the processes of absorption, distribution, metabolism, and excretion (pharmacokinetics) will be covered in some detail along with drug analysis and the adverse effects of drugs. In addition, the pharmacology of different drug classes that target the major organ systems will be explored.

2.2 Course aims

The aims of the course are to provide optometry students with:

- a strong knowledge base in pharmacology and therapeutics that will benefit their future career
- basic principles of drug action, pharmacokinetics, and pharmacodynamics
- the essential knowledge of the mechanisms of action, the side effects and contraindications of pharmacological agents and their therapeutic use in the treatment of disease
- ability to communicate information regarding drug action to both clinical peers and the general public

2.3 Course learning outcomes (CLO)

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

1. describe basic pharmacological concepts underlying dose response relationships, sites of absorption, distribution and excretion, as well as chemical and biological factors affecting disposition and metabolism of drugs.
2. explain drug activity through interactions with target molecules including receptors, transporters and enzymes.
3. describe the specific pharmacology of common drug classes including their mechanisms of action, indications, clinical uses, contraindications and major side effects.
4. demonstrate an understanding of the effects of drug toxicity and polypharmacy on the human body.
5. explain complex pharmacological information in formats appropriate to both clinical peers and the general public.

2.4 Relationship between course learning outcomes and assessments

Course Learning Outcome (CLO)	**LO Statement**	**Related Tasks & Assessment**
CLO 1	Describe basic pharmacological concepts underlying dose response relationships, sites of absorption, distribution and excretion, as well as chemical and biological factors affecting disposition and metabolism of drugs	Quizzes Mid-session test (1 hr duration) Group Assignment End of session exam (2 hr duration)

CLO 2	Explain drug activity through interactions with target molecules including receptors, transporters and enzymes	Quizzes Mid-session test (1 hr duration) Group Assignment End of session exam (2 hr duration)
CLO 3	Describe the specific pharmacology of common drug classes including their mechanisms of action, indications, clinical uses, contraindications and major side effects	Quizzes Mid-session test (1 hr duration) Group Assignment End of session exam (2 hr duration)
CLO 4	Demonstrate an understanding of the effects of drug toxicity and polypharmacy on the human body	Quizzes Mid-session test (1 hr duration) Group Assignment End of session exam (2 hr duration)
CLO 5	Explain complex pharmacological information in formats appropriate to both clinical peers and the general public	Mid-session test (1 hr duration) Group Assignment End of session exam (2 hr duration)

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 students. The teaching is designed to be relevant and engaging in order to prepare students for future careers in optometry or related disciplines. This is achieved through student-centred learning by the use of active learning, student collaboration and self-directed online activities. The applied pharmacology sessions will be directly related to lecture material and will present course content in a collaborative problem-based learning style. Students are encouraged to also undertake self-directed learning via other resources such as textbooks, literature references and web-based sources.

Learning activities occur on the following days and times:

Lectures: 3 topics per week. Lectures will be pre-recorded and available online prior to the week scheduled.

Applied Pharmacology Sessions: One per week. These small group applied classes will be held each Friday at 11am – 1pm.

Q&A sessions: Online on Fridays 5 - 6pm

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 50 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. The applied pharmacology sessions will allow you to engage in a more applied and interactive form of learning. 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. Example and past exam questions will be provided as part of the applied pharmacology sessions to assist you in preparing for examinations.

If you wish to contact the course convenors or staff, you can do so by e-mail, 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 50 hours of class contact hours. You are expected to take an additional 50 hours of non-class contact hours to complete assessments, readings and exam preparation.

Week [Date/Session]	Topic [Module]	Activity [Learning opportunity]	Related CLO
Week 1	Pharmacodynamics 1 Pharmacodynamics 2 Sites of Drug Action Course Introduction Pharmacodynamics	Lecture Lecture Lecture Applied Pharmacology Session Q&A Session	CLO1, CLO2, CLO3, CLO4
Week 2	Cell Signalling Selectivity – Adrenergic Selectivity – Cholinergic Concentration-Response Signalling & Selectivity	Lecture Lecture Lecture Applied Pharmacology Session Q&A Session	CLO1, CLO2, CLO3, CLO4
Week 3	Drug Absorption Drug Distribution Drug Metabolism Autonomic Pharmacology Pharmacokinetics	Lecture Lecture Lecture Applied Pharmacology Session Q&A Session	CLO1, CLO2, CLO3, CLO4
Week 4	Drug Elimination Toxic Side Effects Special Populations Pharmacokinetics Pharmacokinetics	Lecture Lecture Lecture Applied Pharmacology Session Q&A Session	CLO1, CLO2, CLO3, CLO4
Week 5	Endocrine Drugs 1 Endocrine Drugs 2 Endocrine Drugs Mid-Term Exam	Lecture Lecture Applied Pharmacology Session – mid-term progress test Q&A Session	CLO1, CLO2, CLO3, CLO4
Week 7	Cardiovascular 1	Lecture	CLO1, CLO2,

	Cardiovascular 2 Cardiovascular 3 Clinical Pharmacology Cardiovascular	Lecture Lecture Applied Pharmacology Session Q&A Session	CLO3, CLO4
Week 8	Gastrointestinal Drugs CNS Drugs 1 CNS Drugs 2 CNS & Drugs of Abuse CNS and GIT Drugs	Lecture Lecture Lecture Applied Pharmacology Session Q&A Session	CLO1, CLO2, CLO3, CLO4
Week 9	Anti-Inflammatory Drugs 1 Anti-Inflammatory Drugs 2 Antibacterial Drugs 1 Analgesics Anti-Inflammatory Drugs	Lecture Lecture Lecture Applied Pharmacology Session Q&A Session	CLO1, CLO2, CLO3, CLO4
Week 10	Antibacterial Drugs 2 Antiviral & Antifungal Drugs Anticancer Drugs Anti-Infectives and Cancer Anti-Infectives	Lecture Lecture Lecture Applied Pharmacology Session Q&A Session	CLO1, CLO2, CLO3, CLO4

Exam Period: 11th August – 24th August 2023
Supplementary Exam Period: 4th September – 8th September 2023

5. Assessment

5.1 Assessment tasks

Assessment task	Length	Weight	Mark	Due date and time
Assessment 1: Quizzes 4 online quizzes testing material covered in lectures and practicals will be taken in class time. Feedback provided at the end of each quiz		10% (4 x 2.5%)	10	Week 2, 4, 8 & 10
Assessment 2: Mid-session test (1 hr duration) This assessment will be in the format of MCQ and short answer questions. Students will receive general feedback.	1 hour	25%	100	30 June 2023, 11am
Assessment 3: Group Assignment Working in groups students will produce a product that communicates to the general public information about a therapeutic area or drug class. The contribution of each student to the team will be assessed and individual grades adjusted via this process. Detailed written feedback will be provided		15%	100	21 July 2023, 5pm
Assessment 4: End of session exam (2 hr duration) This assessment will be in the format of MCQ and short answer questions.	2 hours	50%	100	TBD

Quizzes

There are 4 online quizzes that will be held in Weeks 2, 4, 8, and 10. Feedback will be given immediately afterwards. Each quiz will be based on the materials covered so far in the course, including lectures and applied pharmacology sessions.

Mid-session test and Final examination

The *mid-term examination* will be held in the applied pharmacology session at **11 am on Friday 30th June** (Please refer to the course timetable on Moodle). This exam will give you feedback on how you are progressing in the course.

The *end of session examination* will be held during the official examination period.

Exam questions will be based on the material covered in the lectures and applied pharmacology sessions across the whole course.

Final exam period for Term 2, 2023 is Friday, 11th August to Thursday, 24th August.

Supplementary exam period for Term 2, 2023 is Monday, 4 September to Friday, 8 September.

Group Assignment

Students will work in teams of five to create a product (video, webpage, pamphlet etc) to inform the public about a pharmacological topic. All members of the group are required to contribute to this task. You need to research the topic and search for relevant information based on the latest literature. The product will be graded on scientific content, structure, design, critical analysis and presentation. The final product must be submitted via Moodle by the **due date of Friday 21st July (5pm).** Details regarding the group project (group allocation, topic titles, marking criteria, etc) and all other assessment tasks will be given during the first applied pharmacology session in week 1, as well as being available on Moodle.

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 applied pharmacology sessions and the Q & A sessions.

Details regarding the assessment tasks, including the group project, will be provided to you during the first applied pharmacology session in week 1, as well as being available on the course Moodle page. A detailed marking rubric for the group project 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 earnt 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 Consideration.

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: Quizzes. Feedback for individual responses in each progress quiz will be available once the quiz closes.

Assessment 2: Mid-session test. Individual marks are provided via Moodle once the exams have been graded. Cohort feedback is provided in the form of a podcast via the course Moodle page in week 7.

Assessment 3: Group Assignment. Feedback will be provided via a rubric and written comments for the group and for each individual. Peer feedback will be submitted via an online form and the individual grades will be available via Moodle.

Assessment 4: End of session exam. 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.

Either APA or superscript numbering format can be used for the final submission of the Group Project.

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.*[1] *At UNSW, this means that your work must be your own, and others' ideas*

[1] International Center for Academic Integrity, 'The Fundamental Values of Academic Integrity', T. Fishman (ed), Clemson University, 2013.

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

Recommended Primary Texts:

- Katzung GG. Basic & Clinical Pharmacology. 14th Edition (2018); New York: McGraw-Hill.
- Brunton LL, Hilal-Dandan R, Knollmann BC. Goodman and Gilman's the Pharmacological Basis of Therapeutics. 13th 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