



MEDI2004

Pharmacology Fundamentals

Session 2, Special circumstances 2021

Medicine, Health and Human Sciences Faculty level units

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Disclaimer

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Session 2 Learning and Teaching Update

The decision has been made to conduct study online for the remainder of Session 2 for all units WITHOUT mandatory on-campus learning activities. Exams for Session 2 will also be online where possible to do so.

This is due to the extension of the lockdown orders and to provide certainty around arrangements for the remainder of Session 2. We hope to return to campus beyond Session 2 as soon as it is safe and appropriate to do so.

Some classes/teaching activities cannot be moved online and must be taught on campus. You should already know if you are in one of these classes/teaching activities and your unit convenor will provide you with more information via iLearn. If you want to confirm, see the list of [units with mandatory on-campus classes/teaching activities](#).

Visit the [MQ COVID-19 information page](#) for more detail.

General Information

Unit convenor and teaching staff

Unit Convenor, Lecturer and Tutor

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Credit points

10

Prerequisites

30cp at 1000 level or above including (BMOL1001 or CBMS104 or CBMS107 or CHEM1001)

Corequisites

Co-badged status

Unit description

This unit will introduce the fundamental principles of drug action. You will study key concepts relating to drug disposition (pharmacokinetics) and how drugs act on the human body (pharmacodynamics). You will build your knowledge of chemical substances, from both outside and inside the body, and how they influence human health and disease. You will explore the mechanism of action and disposition of some commonly-used groups of drugs, as well as reasons for variability in individual drug responses. Learning activities will include interactive tutorials, online activities, and lectures. Topics covered in this unit will help you to integrate knowledge of molecular biology, chemistry, biochemistry and physiology with the science of drugs.

Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are available at <https://students.mq.edu.au/important-dates>

Learning Outcomes

On successful completion of this unit, you will be able to:

- ULO1:** Apply the principles of pharmacokinetics in describing drug entry, distribution, metabolism and removal from the body.
- ULO2:** Identify major drug targets and mechanisms of drug action at the molecular level.
- ULO3:** Use pharmacodynamic principles to relate the concept of agonist and antagonist to the quantification of a drug effect.
- ULO4:** Describe the mechanism of action, adverse effects and drug interactions of some commonly used therapeutic agents.
- ULO5:** Outline the principles involved in individual variability of drug response and interactions between drugs.
- ULO6:** Effectively communicate your knowledge of pharmacology at an individual level and within a team environment.
- ULO7:** Discuss key stages of drug development including the regulatory process in Australia

General Assessment Information

Grade descriptors and other information concerning grading are contained in Schedule 1 of the Macquarie University Assessment Policy, which is available at: <https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policies/assessment>.

Further details for each assessment task will be available on iLearn.

All final grades in the Bachelor of Clinical Science are determined by a grading committee and

are not the sole responsibility of the Unit Convenor.

Students will be awarded a final grade plus a Standardised Numerical Grade (SNG). The SNG is not necessarily a summation of the individual assessment components. The final grade and SNG that are awarded reflect the corresponding grade descriptor in the Grading Policy.

To pass this unit, students must demonstrate sufficient evidence of achievement of the learning outcomes, meet any ungraded requirements including professionalism and achieve an SNG of 50 or better.

Student Professionalism

In the Faculty of Medicine, Health and Human Sciences, professionalism is a key capability embedded in all our courses. As part of developing professionalism, students are expected to attend all small group interactive sessions including tutorials, as well as clinical- and laboratory-based practical sessions.

Students are required to attend a minimum of 80% of the 12 weeks. To be marked present all weekly listed activities must be completed to the best of student's abilities. Students that do not meet this requirement may be deemed unable to meet expectations regarding professionalism and may be referred for disciplinary action (which may include exclusion from assessments and unit failure).

Similarly, as part of developing professionalism, students are expected to submit all work by the due date. Applications for assessment task extensions must be supported by appropriate evidence and submitted via www.ask.mq.edu.au. For further details please refer to the Special Consideration Policy available at <https://students.mq.edu.au/study/my-study-program/special-consideration>.

Late Submission

Late submissions will receive a 5% per day penalty including weekends and public holidays. If you submit the assessment task 10 days or more beyond the due date, without an approved extension, you will be awarded a maximum of 50% of the overall assessment marks. For example:

Due date	Received	Days late	Deduction	Raw mark	Final mark
Friday 14th	Monday 17th	3	15%	75%	60%

Assessment Tasks

Name	Weighting	Hurdle	Due
Short quiz	30%	No	Ongoing

Name	Weighting	Hurdle	Due
Group Role Play	20%	No	Weeks 8 and 9
Final Exam	50%	No	Exam period

Short quiz

Assessment Type ¹: Quiz/Test

Indicative Time on Task ²: 20 hours

Due: **Ongoing**

Weighting: **30%**

A series of four short quizzes using a combination of questions to assess lecture and tutorial material.

On successful completion you will be able to:

- Apply the principles of pharmacokinetics in describing drug entry, distribution, metabolism and removal from the body.
- Identify major drug targets and mechanisms of drug action at the molecular level.
- Use pharmacodynamic principles to relate the concept of agonist and antagonist to the quantification of a drug effect.
- Describe the mechanism of action, adverse effects and drug interactions of some commonly used therapeutic agents.
- Outline the principles involved in individual variability of drug response and interactions between drugs.
- Effectively communicate your knowledge of pharmacology at an individual level and within a team environment.
- Discuss key stages of drug development including the regulatory process in Australia

Group Role Play

Assessment Type ¹: Simulation/role play

Indicative Time on Task ²: 20 hours

Due: **Weeks 8 and 9**

Weighting: **20%**

Role-play activity that applies the knowledge acquired in lectures and tutorials.

On successful completion you will be able to:

- Apply the principles of pharmacokinetics in describing drug entry, distribution, metabolism and removal from the body.
- Identify major drug targets and mechanisms of drug action at the molecular level.
- Use pharmacodynamic principles to relate the concept of agonist and antagonist to the quantification of a drug effect.
- Describe the mechanism of action, adverse effects and drug interactions of some commonly used therapeutic agents.
- Outline the principles involved in individual variability of drug response and interactions between drugs.
- Effectively communicate your knowledge of pharmacology at an individual level and within a team environment.

Final Exam

Assessment Type ¹: Examination

Indicative Time on Task ²: 20 hours

Due: **Exam period**

Weighting: **50%**

Formal written exam using a combination of question types assessing content delivered across the session. This task is completed under examination conditions during the University examination period.

On successful completion you will be able to:

- Apply the principles of pharmacokinetics in describing drug entry, distribution, metabolism and removal from the body.
- Identify major drug targets and mechanisms of drug action at the molecular level.
- Use pharmacodynamic principles to relate the concept of agonist and antagonist to the quantification of a drug effect.
- Describe the mechanism of action, adverse effects and drug interactions of some commonly used therapeutic agents.
- Outline the principles involved in individual variability of drug response and interactions between drugs.
- Discuss key stages of drug development including the regulatory process in Australia

¹ If you need help with your assignment, please contact:

- the academic teaching staff in your unit for guidance in understanding or completing this type of assessment
- the [Learning Skills Unit](#) for academic skills support.

² Indicative time-on-task is an estimate of the time required for completion of the assessment task and is subject to individual variation

Delivery and Resources

Lectures and Tutorials

Lectures will be offered on campus (live-streamed), and recordings available online. In the case of a COVID-19 outbreak, lectures will be pre-recorded and available online.

Most tutorials will be offered on campus. Online tutorials will be prioritised for students not able to attend campus, e.g., international students who are not in Australia.

Technology Used

Active participation in the learning activities throughout the unit will require students to have access to a tablet, laptop or similar device.

Recommended Readings

Unit readings are available via Leganto and the university library website.

The recommended textbook for this unit is:

1. Rang and Dale's Pharmacology, 9th Edition. H. P. Rang, J. M. Ritter, R. J. Flower, and G. Henderson, (Elsevier 2020)

Unit Schedule

Proposed schedule. Note that due to unforeseen events changes may happen.

	Topic
Week 1 - L1	MEDI2004 Introductory Lecture
Week 1 - L2	Introduction to Pharmacology (Pharmacokinetics and Pharmacodynamics)
Week 2 - L3 & L4	Drug absorption and distribution
Week 3 - L5	Drug elimination: metabolism and excretion
Week 3 - L6	Drug elimination: pharmacokinetics parameters
Week 4	Assessment task - AT1.1 (online at specified time - check timetable)
Week 4 - L7	Introduction to Pharmacodynamics

Week 4 - L8	Quantification of drug effect
Week 5 - L9	Drug targets - Receptors I
Week 5 - L10	Drug targets - Receptors II, Enzymes and Transporters
Week 6	Assessment task - AT1.2 (online at specified time - check timetable)
Week 6 - L11	Ion Channels and diseases
Week 6 - L12	Drug safety: Poisoning, adverse effects and drug interaction
Week 7 - L13	Pharmacology of small molecules vs biological drugs, and gene therapy
Week 7 - L14	Pharmacogenomics (Individual variation)
Week 8	Assessment task - AT1.3 (online at specified time - check timetable)
Week 8 - L15	Rational drug design, clinical trials and Placebo effect
Week 8 - L16	Native Plants and Traditional Aboriginal Medicines
Week 9	Assessment task - AT2 Group presentation
Week 9 - L17	Drug regulation in Australia: TGA, drug schedule and PBS
Week 10 - L18	Pharmacology of the Autonomic Nervous System
Week 10 - L19	Anti-inflammatory drugs - NSAIDs and corticosteroids
Week 11 - L20	Lipid-lowering drugs
Week 11 - L21	Antihypertensives
Week 12	Assessment task - AT1.4 (online at specified time - check timetable)
Week 12 - L22	Drugs and the respiratory system
Week 12 or 13 - L23	Clinical Pharmacology
Week 13	No tutorial
Exam period	Assessment task - AT3 Final exam

Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central \(https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central\)](https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central). Students should be aware of the following policies in particular with regard to Learning and Teaching:

- [Academic Appeals Policy](#)
- [Academic Integrity Policy](#)
- [Academic Progression Policy](#)
- [Assessment Policy](#)

- [Fitness to Practice Procedure](#)
- [Grade Appeal Policy](#)
- [Complaint Management Procedure for Students and Members of the Public](#)
- [Special Consideration Policy](#) (**Note:** *The Special Consideration Policy is effective from 4 December 2017 and replaces the Disruption to Studies Policy.*)

Students seeking more policy resources can visit the [Student Policy Gateway](https://students.mq.edu.au/support/study/student-policy-gateway) (<https://students.mq.edu.au/support/study/student-policy-gateway>). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

If you would like to see all the policies relevant to Learning and Teaching visit [Policy Central](http://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central) (<http://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central>).

Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: <https://students.mq.edu.au/admin/other-resources/student-conduct>

Results

Results published on platform other than [eStudent](#), (eg. iLearn, Coursera etc.) or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in [eStudent](#). For more information visit ask.mq.edu.au or if you are a Global MBA student contact globalmba.support@mq.edu.au

Student Support

Macquarie University provides a range of support services for students. For details, visit <http://students.mq.edu.au/support/>

Learning Skills

Learning Skills (mq.edu.au/learningskills) provides academic writing resources and study strategies to help you improve your marks and take control of your study.

- [Getting help with your assignment](#)
- [Workshops](#)
- [StudyWise](#)
- [Academic Integrity Module](#)

The Library provides online and face to face support to help you find and use relevant information resources.

- [Subject and Research Guides](#)
- [Ask a Librarian](#)

Student Enquiry Service

For all student enquiries, visit Student Connect at ask.mq.edu.au

If you are a Global MBA student contact globalmba.support@mq.edu.au

Equity Support

Students with a disability are encouraged to contact the [Disability Service](#) who can provide appropriate help with any issues that arise during their studies.

IT Help

For help with University computer systems and technology, visit http://www.mq.edu.au/about_us/offices_and_units/information_technology/help/.

When using the University's IT, you must adhere to the [Acceptable Use of IT Resources Policy](#). The policy applies to all who connect to the MQ network including students.