MEDI2004
Pharmacology Fundamentals
Session 2, Special circumstances 2021
Medicine, Health and Human Sciences Faculty level units

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Disclaimer
Macquarie University has taken all reasonable measures to ensure the information in this publication is accurate and up-to-date. However, the information may change or become out-dated as a result of change in University policies, procedures or rules. The University reserves the right to make changes to any information in this publication without notice. Users of this publication are advised to check the website version of this publication before acting on any information in this publication.

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.

https://unitguides.mq.edu.au/unit_offerings/135352/unit_guide/print
## General Information

<table>
<thead>
<tr>
<th>Unit convenor and teaching staff</th>
<th>Unit Convenor, Lecturer and Tutor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marina Junqueira Santiago</td>
<td><a href="mailto:marina.junqueirasantiago@mq.edu.au">marina.junqueirasantiago@mq.edu.au</a></td>
</tr>
<tr>
<td>Contact via email</td>
<td>Level 1, 75 Talavera Road</td>
</tr>
<tr>
<td>Consultation by appointment</td>
<td></td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Lecturer and Tutor</th>
<th>Rania Salama</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact via email</td>
<td><a href="mailto:rania.salama@mq.edu.au">rania.salama@mq.edu.au</a></td>
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<table>
<thead>
<tr>
<th>Tutor</th>
<th>Preeti Manandhar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact via email</td>
<td><a href="mailto:preeti.manandhar@hdr.mq.edu.au">preeti.manandhar@hdr.mq.edu.au</a></td>
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<table>
<thead>
<tr>
<th>Tutor</th>
<th>David Lovejoy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact via email</td>
<td><a href="mailto:david.lovejoy@mq.edu.au">david.lovejoy@mq.edu.au</a></td>
</tr>
</tbody>
</table>

| 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:

<table>
<thead>
<tr>
<th>Due date</th>
<th>Received</th>
<th>Days late</th>
<th>Deduction</th>
<th>Raw mark</th>
<th>Final mark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Friday 14th</td>
<td>Monday 17th</td>
<td>3</td>
<td>15%</td>
<td>75%</td>
<td>60%</td>
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**Assessment Tasks**

<table>
<thead>
<tr>
<th>Name</th>
<th>Weighting</th>
<th>Hurdle</th>
<th>Due</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short quiz</td>
<td>30%</td>
<td>No</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Name</td>
<td>Weighting</td>
<td>Hurdle</td>
<td>Due</td>
</tr>
<tr>
<td>----------------------</td>
<td>-----------</td>
<td>--------</td>
<td>-------------------</td>
</tr>
<tr>
<td>Group Role Play</td>
<td>20%</td>
<td>No</td>
<td>Weeks 8 and 9</td>
</tr>
<tr>
<td>Final Exam</td>
<td>50%</td>
<td>No</td>
<td>Exam period</td>
</tr>
</tbody>
</table>

### Short quiz

Assessment Type: Quiz/Test  
Indicative Time on Task: 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: Simulation/role play  
Indicative Time on Task: 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: Examination
Indicative Time on Task: 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.
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.

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:


**Unit Schedule**

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

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>MEDI2004 Introductory Lecture</td>
</tr>
<tr>
<td>1</td>
<td>Introduction to Pharmacology (Pharmacokinetics and Pharmacodynamics)</td>
</tr>
<tr>
<td>2</td>
<td>Drug absorption and distribution</td>
</tr>
<tr>
<td>3</td>
<td>Drug elimination: metabolism and excretion</td>
</tr>
<tr>
<td>3</td>
<td>Drug elimination: pharmacokinetics parameters</td>
</tr>
<tr>
<td>4</td>
<td>Assessment task - AT1.1 (online at specified time - check timetable)</td>
</tr>
<tr>
<td>4</td>
<td>Introduction to Pharmacodynamics</td>
</tr>
<tr>
<td>Week 4 - L8</td>
<td>Quantification of drug effect</td>
</tr>
<tr>
<td>Week 5 - L9</td>
<td>Drug targets - Receptors I</td>
</tr>
<tr>
<td>Week 5 - L10</td>
<td>Drug targets - Receptors II, Enzymes and Transporters</td>
</tr>
<tr>
<td>Week 6</td>
<td>Assessment task - AT1.2 (online at specified time - check timetable)</td>
</tr>
<tr>
<td>Week 6 - L11</td>
<td>Ion Channels and diseases</td>
</tr>
<tr>
<td>Week 6 - L12</td>
<td>Drug safety: Poisoning, adverse effects and drug interaction</td>
</tr>
<tr>
<td>Week 7 - L13</td>
<td>Pharmacology of small molecules vs biological drugs, and gene therapy</td>
</tr>
<tr>
<td>Week 7 - L14</td>
<td>Pharmacogenomics (Individual variation)</td>
</tr>
<tr>
<td>Week 8</td>
<td>Assessment task - AT1.3 (online at specified time - check timetable)</td>
</tr>
<tr>
<td>Week 8 - L15</td>
<td>Rational drug design, clinical trials and Placebo effect</td>
</tr>
<tr>
<td>Week 8 - L16</td>
<td>Native Plants and Traditional Aboriginal Medicines</td>
</tr>
<tr>
<td>Week 9</td>
<td>Assessment task - AT2 Group presentation</td>
</tr>
<tr>
<td>Week 9 - L17</td>
<td>Drug regulation in Australia: TGA, drug schedule and PBS</td>
</tr>
<tr>
<td>Week 10 - L18</td>
<td>Pharmacology of the Autonomic Nervous System</td>
</tr>
<tr>
<td>Week 10 - L19</td>
<td>Anti-inflammatory drugs - NSAIDs and corticosteroids</td>
</tr>
<tr>
<td>Week 11 - L20</td>
<td>Lipid-lowering drugs</td>
</tr>
<tr>
<td>Week 11 - L21</td>
<td>Antihypertensives</td>
</tr>
<tr>
<td>Week 12</td>
<td>Assessment task - AT1.4 (online at specified time - check timetable)</td>
</tr>
<tr>
<td>Week 12 - L22</td>
<td>Drugs and the respiratory system</td>
</tr>
<tr>
<td>Week 12 or 13 - L23</td>
<td>Clinical Pharmacology</td>
</tr>
<tr>
<td>Week 13</td>
<td>No tutorial</td>
</tr>
<tr>
<td>Exam period</td>
<td>Assessment task - AT3 Final exam</td>
</tr>
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</table>

**Policies and Procedures**

Macquarie University policies and procedures are accessible from [Policy Central](https://policies.mq.edu.au). Students should be aware of the following policies in particular with regard to Learning and Teaching:

- [Academic Appeals Policy](https://policies.mq.edu.au/policy/academicappealspolicy)
- [Academic Integrity Policy](https://policies.mq.edu.au/policy/academicintegritypolicy)
- [Academic Progression Policy](https://policies.mq.edu.au/policy/academicprogressionpolicy)
- [Assessment Policy](https://policies.mq.edu.au/policy/assessmentpolicy)
- [Fitness to Practice Procedure](https://policies.mq.edu.au/policy/fitnesstopracticeprocedure)
• Grade Appeal Policy
• Complaint Management Procedure for Students and Members of the Public
• Special Consideration Policy

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

To find other policies relating to Teaching and Learning, visit Policy Central (https://policies.mq.edu.au) and use the search tool.

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.