

BIM341 Biochemical Pharmacology

School: School of Health - Biomedicine

2025 | Semester 1

UniSC Sunshine Coast
UniSC Moreton Bay

**BLENDED
LEARNING**

You can do this course without coming onto campus, unless your program has specified a mandatory onsite requirement.

Please go to usc.edu.au for up to date information on the teaching sessions and campuses where this course is usually offered.

1. What is this course about?

1.1. Description

This course will introduce you to the specialist field of pharmacology, with a strong emphasis on the underlying biochemical principles of drug action. You will explore the application of drugs/drug therapy used to treat diabetes, bacterial and viral infection, cancer, anxiety and depression.

1.2. How will this course be delivered?

| ACTIVITY | HOURS | BEGINNING WEEK | FREQUENCY |
|---|--------|----------------|-----------|
| BLENDED LEARNING | | | |
| Learning materials – Online narrated powerpoints with H5P embedded quizzes | 1.5hrs | Week 1 | 13 times |
| Tutorial/Workshop 1 – On campus | 2hrs | Week 1 | 7 times |
| Laboratory 1 – On campus | 2hrs | Week 2 | 6 times |

1.3. Course Topics

Drug-receptor interactions

Pharmacokinetics

Cancer chemotherapy

Antibiotics

Antiviral drugs

Antiprotozoal drugs

Hypoglycaemic drugs

Immunomodulatory drugs

Personalised medicine

Anxiolytic agents and antipsychotic drugs

Antidepressant drugs

2. What level is this course?

300 Level (Graduate)

Demonstrating coherence and breadth or depth of knowledge and skills. Independent application of knowledge and skills in unfamiliar contexts. Meeting professional requirements and AQF descriptors for the degree. May require pre-requisites where discipline specific introductory or developing knowledge or skills is necessary. Normally undertaken in the third or fourth full-time study year of an undergraduate program.

3. What is the unit value of this course?

12 units

4. How does this course contribute to my learning?

| COURSE LEARNING OUTCOMES | GRADUATE QUALITIES |
|--|--|
| On successful completion of this course, you should be able to... | Completing these tasks successfully will contribute to you becoming... |
| 1 Demonstrate and apply knowledge of the basic principles & concepts of biochemical pharmacology to familiar and unfamiliar metabolic pathways | Knowledgeable |
| 2 Solve problems by using evidence-based reasoning, and where appropriate, mathematical calculations. | Creative and critical thinker |
| 3 Communicate scientifically in the form of a problem set and poster, with reference to the literature. | Empowered |

5. Am I eligible to enrol in this course?

Refer to the [UniSC Glossary of terms](#) for definitions of “pre-requisites, co-requisites and anti-requisites”.

5.1. Pre-requisites

MBT251 or LFS251

5.2. Co-requisites

Not applicable

5.3. Anti-requisites

MBT351

5.4. Specific assumed prior knowledge and skills (where applicable)

Not applicable

6. How am I going to be assessed?

6.1. Grading Scale

Standard Grading (GRD)

High Distinction (HD), Distinction (DN), Credit (CR), Pass (PS), Fail (FL).

6.2. Details of early feedback on progress

Students will complete a Problem Set and submit this to Canvas Turnitin by 4.00 pm Thursday Week 4. The task will consolidate learning activities on pharmacokinetics included within the Weeks 2-4 learning materials and the Week 2 laboratory class. The assignment is worth 15% of the overall grade. Formative feedback will be provided to students in the laboratory and summative feedback will be provided to students within 2 weeks of the submission date.

6.3. Assessment tasks

| DELIVERY MODE | TASK NO. | ASSESSMENT PRODUCT | INDIVIDUAL OR GROUP | WEIGHTING % | WHAT IS THE DURATION / LENGTH? | WHEN SHOULD I SUBMIT? | WHERE SHOULD I SUBMIT IT? |
|---------------|----------|-------------------------------------|---------------------|-------------|--------------------------------|-----------------------|--|
| All | 1a | Artefact - Technical and Scientific | Individual | 15% | 250 words | Week 4 | Online Assignment Submission with plagiarism check |
| All | 1b | Artefact - Technical and Scientific | Individual | 15% | 250 Words | Week 8 | Online Assignment Submission with plagiarism check |
| All | 2 | Artefact - Technical and Scientific | Individual | 30% | A0 size poster as a pdf file | Week 9 | Online Assignment Submission with plagiarism check |
| All | 3 | Examination - Centrally Scheduled | Individual | 40% | 2 hours (<1500 words) | Exam Period | Exam Venue |

All - Assessment Task 1a: Problem Set

| | | | |
|-----------------|--|---|---------------------------|
| GOAL: | The goal of this task is to allow you to demonstrate your problem solving skills in relation to the study of pharmacokinetics. This question set is related to questions that will be on the end-of-semester exam. | | |
| PRODUCT: | Artefact - Technical and Scientific | | |
| FORMAT: | Answers, with working, to 10 problems on a worksheet | | |
| CRITERIA: | No. | | Learning Outcome assessed |
| | 1 | Solve problems by using evidence-based reasoning, and where appropriate, mathematical calculations; Communicate scientifically in the form of a problem set | 1 3 |
| GENERIC SKILLS: | Communication, Problem solving, Organisation, Information literacy | | |

All - Assessment Task 1b: Problem Set

| | | | |
|-----------------|---|--|---------------------------|
| GOAL: | The goal of this task is to allow you to demonstrate your problem solving skills in relation to the study of pharmacokinetics, cancer chemotherapy and antibiotics. This question set is related to questions that will be on the end-of-semester exam. | | |
| PRODUCT: | Artefact - Technical and Scientific | | |
| FORMAT: | Answers, with working, to 10 problems on a worksheet | | |
| CRITERIA: | No. | | Learning Outcome assessed |
| | 1 | Solve problems using evidence-based reasoning, and were appropriate, mathematical calculations; Communicate scientifically in the form of a problem set. | 2 3 |
| GENERIC SKILLS: | Communication, Problem solving, Organisation, Information literacy | | |

All - Assessment Task 2: Poster

| | | | |
|------------------------|---|--|----------------------------------|
| GOAL: | In this task you will research a topic from a list provided by the course coordinator. You will prepare a scientific poster to communicate your research. | | |
| PRODUCT: | Artefact - Technical and Scientific | | |
| FORMAT: | A0 Size poster. Students are to select a topic for their poster from a list that is provided by the course coordinator, and to prepare an A0-size poster. A library tutorial will be provided in Week 2 to assist students with strategies for searching the literature. | | |
| CRITERIA: | No. | | Learning Outcome assessed |
| | 1 | Students are to select a topic for their poster from a list that is provided by the course coordinator, and to prepare an A0-size poster. A library tutorial will be provided in Week 6 to assist students with strategies for searching the literature. | 1 3 |
| | 2 | Posters will be assessed on scientific content and presentation, in accordance with a rubric that is provided within the laboratory manual. | 1 |
| | 3 | Posters will be projected onto a screen in the Week 12 laboratory class where students will have the opportunity to present and discuss their poster. The oral presentation will not form part of the assessment | 3 |
| GENERIC SKILLS: | Communication, Problem solving, Organisation, Applying technologies | | |

All - Assessment Task 3: Final exam

| | | | |
|------------------------|--|--|----------------------------------|
| GOAL: | The goal is to use understandings of pharmacology gained in the learning materials to answer questions and solve problems. | | |
| PRODUCT: | Examination - Centrally Scheduled | | |
| FORMAT: | Multiple choice questions, short answer questions, problem solving, calculations based on material from learning materials, tutorials and laboratory activities up to and including Week 13. | | |
| CRITERIA: | No. | | Learning Outcome assessed |
| | 1 | Accuracy of the basic principles and concepts of Biochemical Pharmacology; Solve problems by using evidence-based reasoning, and where appropriate, mathematical calculations. | 1 2 |
| GENERIC SKILLS: | Problem solving, Organisation, Applying technologies, Information literacy | | |

7. Directed study hours

A 12-unit course will have total of 150 learning hours which will include directed study hours (including online if required), self-directed learning and completion of assessable tasks. Student workload is calculated at 12.5 learning hours per one unit.

7.1. Schedule

| PERIOD AND TOPIC | ACTIVITIES |
|--------------------------------------|--|
| Module 1: Drug-receptor interactions | Learning materials related to pharmacodynamics |
| Modules 2-4: Pharmacokinetics | Learning materials on drug dosing protocols |
| Modules 5-8: Chemotherapeutic agents | Learning materials relating to cancer, antibacterial drugs, antiviral drugs and antiprotozoal drugs. |
| Module 9: Hypoglycaemic agents | Learning materials on diabetes and treatments |
| Module 10: Immunomodulatory agents | Learning materials on drugs to prevent organ rejection following transplant surgery. |
| Module 11: Personalised medicine | Learning materials related to precision medicine. |
| Modules 12-13: CNS pharmacology | Learning materials on drugs used to treat anxiety and depression |

8. What resources do I need to undertake this course?

Please note: Course information, including specific information of recommended readings, learning activities, resources, weekly readings, etc. are available on the course Canvas site– Please log in as soon as possible.

8.1. Prescribed text(s) or course reader

Please note that you need to have regular access to the resource(s) listed below. Resources may be required or recommended.

| REQUIRED? | AUTHOR | YEAR | TITLE | EDITION | PUBLISHER |
|-----------|---|------|----------------------------|---------|-----------|
| Required | James M. Ritter, Rod J. Flower, Graeme Henderson, Yoon Kong Loke, David MacEwan, Emma Robinson, James Fullerton | 2024 | Rang & Dale's Pharmacology | 10th Ed | Elsevier |
| Required | Reginald H. Garrett, Charles M. Grisham | 2024 | Biochemistry | 7th Ed | Cengage |

8.2. Specific requirements

Laboratory coat, safety glasses, closed in footwear, calculator.

9. How are risks managed in this course?

Risk assessments have been performed for all studio and laboratory classes and a low level of health and safety risk exists. Some risk concerns may include equipment, instruments, and tools; as well as manual handling items within the laboratory. It is your responsibility to review course material, search online, discuss with lecturers and peers and understand the risks associated with your specific course of study and to familiarise yourself with the University's general health and safety principles by reviewing the [online induction training for students](#), and following the instructions of the University staff.

10. What administrative information is relevant to this course?

10.1. Assessment: Academic Integrity

Academic integrity is the ethical standard of university participation. It ensures that students graduate as a result of proving they are competent in their discipline. This is integral in maintaining the value of academic qualifications. Each industry has expectations and standards of the skills and knowledge within that discipline and these are reflected in assessment.

Academic integrity means that you do not engage in any activity that is considered to be academic fraud; including plagiarism, collusion or outsourcing any part of any assessment item to any other person. You are expected to be honest and ethical by completing all work yourself and indicating in your work which ideas and information were developed by you and which were taken from others. You cannot provide your assessment work to others. You are also expected to provide evidence of wide and critical reading, usually by using appropriate academic references.

In order to minimise incidents of academic fraud, this course may require that some of its assessment tasks, when submitted to Canvas, are electronically checked through Turnitin. This software allows for text comparisons to be made between your submitted assessment item and all other work to which Turnitin has access.

10.2. Assessment: Additional Requirements

Eligibility for Supplementary Assessment

Your eligibility for supplementary assessment in a course is dependent of the following conditions applying:

The final mark is in the percentage range 47% to 49.4%

The course is graded using the Standard Grading scale

You have not failed an assessment task in the course due to academic misconduct

10.3. Assessment: Submission penalties

Late submission of assessment tasks may be penalised at the following maximum rate (the rates are cumulative):

- 5% (of the assessment task's identified value) per day for the first two days from the date identified as the due date for the assessment task.

- 10% (of the assessment task's identified value) for the third day

- 20% (of the assessment task's identified value) for the fourth day and subsequent days up to and including seven days from the date identified as the due date for the assessment task.

- A result of zero is awarded for an assessment task submitted after seven days from the date identified as the due date for the assessment task.

Weekdays and weekends are included in the calculation of days late.

To request an extension you must contact your course coordinator to negotiate an outcome.

10.4. SafeUniSC

UniSC is committed to a culture of respect and providing a safe and supportive environment for all members of our community. For immediate assistance on campus contact SafeUniSC by phone: [07 5430 1168](tel:0754301168) or using the [SafeZone](#) app. For general enquires contact the SafeUniSC team by phone [07 5456 3864](tel:0754563864) or email safe@usc.edu.au.

The SafeUniSC Specialist Service is a Student Wellbeing service that provides free and confidential support to students who may have experienced or observed behaviour that could cause fear, offence or trauma. To contact the service call [07 5430 1226](tel:0754301226) or email studentwellbeing@usc.edu.au.

10.5. Study help

For help with course-specific advice, for example what information to include in your assessment, you should first contact your tutor, then your course coordinator, if needed.

If you require additional assistance, the Learning Advisers are trained professionals who are ready to help you develop a wide range of academic skills. Visit the [Learning Advisers](#) web page for more information, or contact Student Central for further assistance: +61 7 5430 2890 or studentcentral@usc.edu.au.

10.6. Wellbeing Services

Student Wellbeing provide free and confidential counselling on a wide range of personal, academic, social and psychological matters, to foster positive mental health and wellbeing for your academic success.

To book a confidential appointment go to [Student Hub](#), email studentwellbeing@usc.edu.au or call 07 5430 1226.

10.7. AccessAbility Services

Ability Advisers ensure equal access to all aspects of university life. If your studies are affected by a disability, learning disorder mental health issue, injury or illness, or you are a primary carer for someone with a disability or who is considered frail and aged, [AccessAbility Services](#) can provide access to appropriate reasonable adjustments and practical advice about the support and facilities available to you throughout the University.

To book a confidential appointment go to [Student Hub](#), email AccessAbility@usc.edu.au or call 07 5430 2890.

10.8. Links to relevant University policy and procedures

For more information on Academic Learning & Teaching categories including:

- Assessment: Courses and Coursework Programs
- Review of Assessment and Final Grades
- Supplementary Assessment
- Central Examinations
- Deferred Examinations
- Student Conduct
- Students with a Disability

For more information, visit <https://www.usc.edu.au/explore/policies-and-procedures#academic-learning-and-teaching>

10.9. Student Charter

UniSC is committed to excellence in teaching, research and engagement in an environment that is inclusive, inspiring, safe and respectful. The [Student Charter](#) sets out what students can expect from the University, and what in turn is expected of students, to achieve these outcomes.

10.10.General Enquiries

In person:

- **UniSC Sunshine Coast** - Student Central, Ground Floor, Building C, 90 Sippy Downs Drive, Sippy Downs
- **UniSC Moreton Bay** - Service Centre, Ground Floor, Foundation Building, Gympie Road, Petrie
- **UniSC SouthBank** - Student Central, Building A4 (SW1), 52 Merivale Street, South Brisbane
- **UniSC Gympie** - Student Central, 71 Cartwright Road, Gympie
- **UniSC Fraser Coast** - Student Central, Student Central, Building A, 161 Old Maryborough Rd, Hervey Bay
- **UniSC Caboolture** - Student Central, Level 1 Building J, Cnr Manley and Tallon Street, Caboolture

Tel: +61 7 5430 2890

Email: studentcentral@usc.edu.au