ECHO11004 *Biochemistry for Cardiac Pharmacology*
Term 2 - 2021

Profile information current as at 03/05/2024 08:35 pm

General Information

Overview

This unit will enable you to develop knowledge and understanding of biomolecules, cell function and cellular biochemistry. You will develop a basic understanding of how biomolecules are synthesised, catabolised and interconverted through key biochemical pathways to meet the needs of the cell and organism. Cellular biochemistry will explore aspects of cell-cell communication to provide the necessary knowledge to study disease and drug treatment at the cellular level. This unit will prepare you for advanced level study of cardiovascular pharmacology.

Details

Career Level: *Undergraduate*
Unit Level: *Level 1*
Credit Points: *6*
Student Contribution Band: *8*
Fraction of Full-Time Student Load: *0.125*

Pre-requisites or Co-requisites

Pre-requisite: ECHO11003 Fundamentals of Cardiac Science AND Co-requisiteBMSC11002 Human Body Systems 2
Important note: Students enrolled in a subsequent unit who failed their pre-requisite unit, should drop the subsequent unit before the census date or within 10 working days of Fail grade notification. Students who do not drop the unit in this timeframe cannot later drop the unit without academic and financial liability. See details in the Assessment Policy and Procedure (Higher Education Coursework).

Offerings For Term 2 - 2021

- Online

Attendance Requirements

All on-campus students are expected to attend scheduled classes – in some units, these classes are identified as a mandatory (pass/fail) component and attendance is compulsory. International students, on a student visa, must maintain a full time study load and meet both attendance and academic progress requirements in each study period (satisfactory attendance for International students is defined as maintaining at least an 80% attendance record).

Website

This unit has a website, within the Moodle system, which is available two weeks before the start of term. It is important that you visit your Moodle site throughout the term. Please visit Moodle for more information.

Class and Assessment Overview

Recommended Student Time Commitment

Each 6-credit Undergraduate unit at CQUniversity requires an overall time commitment of an average of 12.5 hours of study per week, making a total of 150 hours for the unit.

Class Timetable

Regional Campuses
Bundaberg, Cairns, Emerald, Gladstone, Mackay, Rockhampton, Townsville

Metropolitan Campuses
Adelaide, Brisbane, Melbourne, Perth, Sydney

Assessment Overview

1. **Online Quiz(zes)**
Weighting: 40%
2. **Online Test**
Weighting: 60%

Assessment Grading

This is a graded unit: your overall grade will be calculated from the marks or grades for each assessment task, based on the relative weightings shown in the table above. You must obtain an overall mark for the unit of at least 50%, or an overall grade of 'pass' in order to pass the unit. If any 'pass/fail' tasks are shown in the table above they must also be completed successfully ('pass' grade). You must also meet any minimum mark requirements specified for a particular assessment task, as detailed in the 'assessment task' section (note that in some instances, the minimum mark for a task may be greater than 50%). Consult the University's Grades and Results Policy for more details of interim results and final grades.

CQUniversity Policies

All University policies are available on the CQUniversity Policy site.
You may wish to view these policies:

- Grades and Results Policy
- Assessment Policy and Procedure (Higher Education Coursework)
- Review of Grade Procedure
- Student Academic Integrity Policy and Procedure
- Monitoring Academic Progress (MAP) Policy and Procedure – Domestic Students
- Monitoring Academic Progress (MAP) Policy and Procedure – International Students
- Student Refund and Credit Balance Policy and Procedure
- Student Feedback – Compliments and Complaints Policy and Procedure
- Information and Communications Technology Acceptable Use Policy and Procedure

This list is not an exhaustive list of all University policies. The full list of University policies are available on the CQUniversity Policy site.

Previous Student Feedback

Feedback, Recommendations and Responses

Every unit is reviewed for enhancement each year. At the most recent review, the following staff and student feedback items were identified and recommendations were made.

Feedback from Students

Feedback
The Online Quizzes help students to cement their understanding of unit concepts.

Recommendation
Retain this style of assessment task.

Feedback from Unit Coordinator

Feedback
Individualised feedback for the Online Quizzes motivated students to maintain/improve their performance across the four Quizzes.

Recommendation
Continue to provide students with individualised feedback upon completion of each Online Quiz.

Feedback from Students; Unit Coordinator

Feedback
Segmented content improves learning and retention of the unit material.

Recommendation
Continue with the chunked format of content delivery.

Unit Learning Outcomes

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

1. Describe the structure, function and biological roles of the major types of biomolecules and macromolecules
2. Describe the relationship between structure and function of the components of biological membranes, especially in terms of selective permeability
3. Outline the basic processes involved in metabolic and catabolic pathways relevant to the cardiovascular system
4. Describe basic cell signalling, communication and metabolism.

Linked to National and International Standards
1. ASAR Accreditation Standards for Cardiac Sonography - critical practice Unit 8 - Cardiac, Foundation units of competence - 1- 5.
2. European Association of Cardiovascular Imaging Core Syllabus
3. American Registry for Cardiac Sonography Core Syllabus

Alignment of Learning Outcomes, Assessment and Graduate Attributes

— N/A Level ◦ Introductory Level • Intermediate Level • Graduate Level ◦ Professional Level ◦ Advanced Level

Alignment of Assessment Tasks to Learning Outcomes

Assessment Tasks	Learning Outcomes			
	1	2	3	4
1 - Online Quiz(zes) - 40%	•	•	•	•

Assessment Tasks	Learning Outcomes			
	1	2	3	4
2 - Online Test - 60%	•	•	•	•

Alignment of Graduate Attributes to Learning Outcomes

Graduate Attributes	Learning Outcomes			
	1	2	3	4
1 - Communication	•	•	•	•
2 - Problem Solving	•	•	•	•
3 - Critical Thinking	•	•	•	•
4 - Information Literacy	•	•	•	•
5 - Team Work				
6 - Information Technology Competence				
7 - Cross Cultural Competence				
8 - Ethical practice				
9 - Social Innovation				
10 - Aboriginal and Torres Strait Islander Cultures				

Alignment of Assessment Tasks to Graduate Attributes

Assessment Tasks	Graduate Attributes									
	1	2	3	4	5	6	7	8	9	10
1 - Online Quiz(zes) - 40%	•	•	•	•						
2 - Online Test - 60%	•	•	•	•						

Textbooks and Resources

Textbooks

ECHO11004

Supplementary

Medical Biochemistry
Edition: 5th edn (2018)
Authors: John W Baynes and Marek H. Dominiczak
Elsevier Health Sciences
Jamestown , UK
ISBN: 9780702072994
Binding: Paperback

Additional Textbook Information
If you prefer to study with a paper text, you can purchase one at the CQUni Bookshop here: http://bookshop.cqu.edu.au (search on the Unit code).

View textbooks at the CQUniversity Bookshop

IT Resources

You will need access to the following IT resources:

- CQUniversity Student Email
- Internet
- Unit Website (Moodle)

Referencing Style

All submissions for this unit must use the referencing style: Vancouver
For further information, see the Assessment Tasks.

Teaching Contacts

Jordon Irwin Unit Coordinator
j.irwin@cqu.edu.au

Schedule

Week 1 - 12 Jul 2021

Module/Topic	Chapter	Events and Submissions/Topic
Carbohydrates 'Cardiac-link' discussion: cardiovascular complications associated with hyperglycaemia	'Carbohydrates' in the Biochemistry Handbook (available on Moodle)	Online Zoom Tutorial on Carbohydrates

Week 2 - 19 Jul 2021

Module/Topic	Chapter	Events and Submissions/Topic
Proteins 'Cardiac-link' discussion: the quaternary structure of haemoglobin	'Proteins' in the Biochemistry Handbook (available on Moodle)	Online Zoom Tutorial on Proteins

Week 3 - 26 Jul 2021

Module/Topic	Chapter	Events and Submissions/Topic

Nucleic acids 'Cardiac-link' discussion: genetic mutations in Fabry's disease	'Nucleic acids' in the Biochemistry Handbook (available on Moodle)	Online Zoom Tutorial on Nucleic acids

Week 4 - 02 Aug 2021

Module/Topic	Chapter	Events and Submissions/Topic
Lipids 'Cardiac-link' discussion: prostaglandins in cardiovascular disease	'Lipids' in the Biochemistry Handbook (available on Moodle)	Online Zoom Tutorial on Lipids

Week 5 - 09 Aug 2021

Module/Topic	Chapter	Events and Submissions/Topic
Cell membranes 'Cardiac-link' discussion: spectrin dysfunction in cardiovascular disease	'Cell membranes' in the Biochemistry Handbook (available on Moodle)	Online Zoom Tutorial on Cell membranes

Vacation Week - 16 Aug 2021

Module/Topic	Chapter	Events and Submissions/Topic

Week 6 - 23 Aug 2021

Module/Topic	Chapter	Events and Submissions/Topic
Cell transport 'Cardiac-link' discussion: SGLT2 inhibitors and diabetes mellitus	'Cell transport' in the Biochemistry Handbook (available on Moodle)	Online Zoom Tutorial on Cell transport

Week 7 - 30 Aug 2021

Module/Topic	Chapter	Events and Submissions/Topic
Metabolism I 'Cardiac-link' discussion: creatine kinase isozymes as biomarkers of myocardial infarction	'Metabolism I' in the Biochemistry Handbook (available on Moodle)	Online Zoom Tutorial on Metabolism I

Week 8 - 06 Sep 2021

Module/Topic	Chapter	Events and Submissions/Topic
Metabolism II 'Cardiac-link' discussion: the role of carbohydrates in obesity	'Metabolism II' in the Biochemistry Handbook (available on Moodle)	Online Zoom Tutorial on Metabolism II

Week 9 - 13 Sep 2021

Module/Topic	Chapter	Events and Submissions/Topic
Metabolic Regulation 'Cardiac-link' discussion: metabolic profile of the myocardium during left ventricular hypertrophy	'Metabolic Regulation' in the Biochemistry Handbook (available on Moodle)	Online Zoom Tutorial on Metabolic Regulation

Week 10 - 20 Sep 2021

Module/Topic	Chapter	Events and Submissions/Topic
Cell communication 'Cardiac-link' discussion: paracrine factors in cardiovascular disease	'Cell communication' in the Biochemistry Handbook (available on Moodle)	Online Zoom Tutorial on Cell communication

Week 11 - 27 Sep 2021

Module/Topic	Chapter	Events and Submissions/Topic
Introduction to Pharmacology 'Cardiac-link' discussion: cardiovascular drugs	'Introduction to Pharmacology' Extension Chapter (available on Moodle)	Online Zoom Tutorial on Introduction to Pharmacology

Week 12 - 04 Oct 2021

Module/Topic	Chapter	Events and Submissions/Topic
Revision	N/A	Online Zoom Tutorial on Revision

Term Specific Information

Lectures and Tutorials
All lectures for this unit are pre-recorded and will be available on the unit's Moodle site. Live tutorials will be delivered each week using Zoom. During these sessions, we will cover practice questions to help you become comfortable with the style of questions you will encounter in the Online Quizzes and end-of-term Online Test. All tutorials will be recorded and made available for later viewing on the Moodle site.
Readings in this Unit
All readings for this unit come from the 'Biochemistry Handbook', a copy of which is available on the Moodle Site. If you would like additional readings to aid your study, you are welcome to purchase the supplementary textbook (i.e. Medicinal Biochemistry). It is optional to purchase this text - all the resources you need to succeed in this unit will be available on the Moodle site.
Contacting the Teaching Staff
The best way to contact the Teaching Staff is via the Q&A forum on the unit Moodle site. All queries of a personal nature, however, should be sent directly to the Unit Coordinator.
Unit Study Commitment
As per Australian education standards, this unit has a Study Commitment of 150 hours total engagement for the term. A suggestion for how you should allocate your weekly study commitment to ECHO11004 is as follows:

- 2-3 hours watching recorded lectures and attending/viewing the tutorial.
- 1-2 hours completing the recommended readings.
- 2-3 hours completing the weekly study questions and practice assessment activities.
- 3-4 hours preparing for the Online Quizzes and Online Test.

Assessment Tasks

1 Online Quizzes

Assessment Type
Online Quiz(zes)

Task Description
A sound knowledge of biochemistry is essential for understanding human physiology and how drugs treat pathophysiology. Four Online Quizzes will be used to evaluate your understanding of the material presented in this unit. Each quiz will be comprised of 20 'fill-in-the-blank' questions (each worth one mark = 20 marks total), and you will have 35 minutes to complete each task. Exemplar questions and responses will be worked through in the tutorials.
You will have only one (1) attempt to complete each quiz. Your score from the quizzes will be combined and will contribute 40% to your final grade. You must obtain at least 50% of the available marks to be eligible to pass the unit (i.e. $\geq$ 40/80). In the absence of an approved extension, there will be no opportunity to complete the quizzes after their closing date. This is an individual task, and as such, no collusion or team work is permitted when answering the quiz questions. The specific dates and times for each quiz are outlined below (all times shown are AEST):

- Quiz 1 will open at 9:00 am on Friday 6th August 2021 (Week 4) and will remain open until 5:00 pm Friday 13th August 2021 (Week 5). This quiz will assess the topics covered during Weeks 1 to 4 i.e. macromolecules.
- Quiz 2 will open at 9:00 am on Friday 27th August 2021 (Week 6) and will remain open until 5:00 pm Friday 3rd September 2021 (Week 7). This quiz will assess the topics covered during Weeks 5 to 6 i.e. cell transport.
- Quiz 3 will open at 9:00 am on Friday 17th September 2021 (Week 9) and will remain open until 5:00 pm Friday 24th September 2021 (Week 10). This quiz will assess the topics covered during Weeks 7 to 9 i.e. metabolism.
- Quiz 4 will open at 9:00 am on Friday 1st October 2021 (Week 11) and will remain open until 5:00 pm on Friday 8th October 2021 (Week 12). This quiz will assess the topics covered during Weeks 10 to 11 i.e. cell communication and introductory pharmacology.

Number of Quizzes
4

Frequency of Quizzes
Other

Assessment Due Date

The due dates and times for each quiz are listed in the Task Description section above.

Return Date to Students

Results will be returned via Moodle once each quiz has closed.

Weighting
40%

Minimum mark or grade
This assessment has a minimum pass grade of 50% (i.e. 40/80).

Assessment Criteria
Each correct answer in the quiz will be awarded one (1) mark. No marks will be deducted for incorrect answers.

Referencing Style

- Vancouver

Submission
Online

Submission Instructions
The quizzes will be accessed and completed individually via Moodle.

Learning Outcomes Assessed

- Describe the structure, function and biological roles of the major types of biomolecules and macromolecules
- Describe the relationship between structure and function of the components of biological membranes, especially in terms of selective permeability
- Outline the basic processes involved in metabolic and catabolic pathways relevant to the cardiovascular system
- Describe basic cell signalling, communication and metabolism.

Graduate Attributes

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy

2 Online Test

Assessment Type
Online Test

Task Description
The ability to recall and apply fundamental biochemistry principles is a critical skill for health professionals. The purpose of this assessment task is to evaluate your understanding of the topics covered in this unit (Weeks 1-11 inclusive). You will complete one (1) Online Test which is comprised of ten (10) short-response questions (each worth 10 marks = 100 marks total). You must respond to all ten questions, and all answers are to be entered into the response boxes provided. Exemplar questions and responses will be worked through in the tutorials.
You will be permitted only one (1) attempt to complete the Test. Your score from the Online Test will contribute 60% to your final grade, and you must obtain at least 50% of the available marks to be eligible to pass the unit (i.e. > 50/100). In the absence of an approved extension, there will be no opportunity to complete the Test after the closing date. This is an individual task, and as such, no collusion or team work is permitted when answering the Test questions.

Assessment Due Date

The Online Test will be scheduled during the 'Term 2 Examination period'. The exact date will be made available on Moodle once confirmed.

Return Date to Students

Results will be returned to students via Moodle.

Weighting
60%

Minimum mark or grade
This assessment has a minimum pass grade of 50% (i.e. 50/100).

Assessment Criteria
Marks will be awarded for correct responses. No marks will be deducted for incorrect answers.

Referencing Style

- Vancouver

Submission
Online

Submission Instructions
The Online test will be accessed and completed individually via Moodle.

Learning Outcomes Assessed

- Describe the structure, function and biological roles of the major types of biomolecules and macromolecules
- Describe the relationship between structure and function of the components of biological membranes, especially in terms of selective permeability
- Outline the basic processes involved in metabolic and catabolic pathways relevant to the cardiovascular system
- Describe basic cell signalling, communication and metabolism.

Graduate Attributes

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy

Academic Integrity Statement

As a CQUniversity student you are expected to act honestly in all aspects of your academic work.

Any assessable work undertaken or submitted for review or assessment must be your own work. Assessable work is any type of work you do to meet the assessment requirements in the unit, including draft work submitted for review and feedback and final work to be assessed.

When you use the ideas, words or data of others in your assessment, you must thoroughly and clearly acknowledge the source of this information by using the correct referencing style for your unit. Using others' work without proper acknowledgement may be considered a form of intellectual dishonesty.

Participating honestly, respectfully, responsibly, and fairly in your university study ensures the CQUniversity qualification you earn will be valued as a true indication of your individual academic achievement and will continue to receive the respect and recognition it deserves.

As a student, you are responsible for reading and following CQUniversity's policies, including the **Student Academic Integrity Policy and Procedure**. This policy sets out CQUniversity's expectations of you to act with integrity, examples of academic integrity breaches to avoid, the processes used to address alleged breaches of academic integrity, and potential penalties.

What is a breach of academic integrity?
A breach of academic integrity includes but is not limited to plagiarism, self-plagiarism, collusion, cheating, contract cheating, and academic misconduct. The Student Academic Integrity Policy and Procedure defines what these terms mean and gives examples.

Why is academic integrity important?
A breach of academic integrity may result in one or more penalties, including suspension or even expulsion from the University. It can also have negative implications for student visas and future enrolment at CQUniversity or elsewhere. Students who engage in contract cheating also risk being blackmailed by contract cheating services.

Where can I get assistance?
For academic advice and guidance, the Academic Learning Centre (ALC) can support you in becoming confident in completing assessments with integrity and of high standard.

What can you do to act with integrity?

Be Honest
If your assessment task is done by someone else, it would be dishonest of you to claim it as your own

Seek Help
If you are not sure about how to cite or reference in essays, reports etc, then seek help from your lecturer, the library or the Academic Learning Centre (ALC)

Produce Original Work
Originality comes from your ability to read widely, think critically, and apply your gained knowledge to address a question or problem