



BMSC11005 Foundations of Biochemistry

Term 2 - 2017

Profile information current as at 28/04/2024 01:26 pm

All details in this unit profile for BMSC11005 have been officially approved by CQUniversity and represent a learning partnership between the University and you (our student). The information will not be changed unless absolutely necessary and any change will be clearly indicated by an approved correction included in the profile.

General Information

Overview

This unit will enable students to develop their knowledge and understanding of biomolecules and cell function, including the structure and biological role of amino acids, proteins, nucleic acids, carbohydrates and lipids. They will develop a basic understanding of how these biomolecules are synthesised, catabolised and interconverted through key biochemical pathways to meet the needs of the cell and organism, and will provide the necessary knowledge to begin to study disease and drug treatment at the cellular level. Students will also develop a theoretical understanding of methods used in biochemical analysis and develop literature searching skills in the recognition and use of primary sources of scientific information.

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

Prerequisites: CHEM11007 Introductory Concepts of Chemical Sciences and CHEM11008 Essential Principles of Chemical Sciences; or CHEM11041 Chemistry for the Life Sciences or CHEM11042 Fundamentals of Chemistry

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 - 2017

- Brisbane
- Cairns
- Distance
- Mackay
- Rockhampton
- Townsville

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. **Written Assessment**

Weighting: 20%

2. **Online Quiz(zes)**

Weighting: 40%

3. **Examination**

Weighting: 40%

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 Student evaluation and feedback

Feedback

Like the smaller lecture videos focusing on one topic, rather than a larger video focusing on multiple topics.

Recommendation

Maintain the use of multiple shorter lectures focusing on a single topic.

Feedback from Student evaluation and feedback. Course review.

Feedback

Feedback from forum posts and assessment submissions took longer than outlined in the course profile.

Recommendation

Ways of improving feedback times will be considered.

Unit Learning Outcomes

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

1. Demonstrate knowledge of the structure, function and biological roles of the major types of macromolecules and their building blocks.
2. Explain the various methods used to separate and characterise macromolecules.
3. Describe the relationship between structure and function of the components of biological membranes, especially in terms of selective permeability.
4. Outline the basic processes involved in metabolism of carbohydrates, fats and proteins and their catabolism to synthesise ATP through cellular respiration.
5. Utilise common search engines and scientific databases to find and recognise primary scientific information.

Alignment of Learning Outcomes, Assessment and Graduate Attributes



Alignment of Assessment Tasks to Learning Outcomes

Assessment Tasks	Learning Outcomes				
	1	2	3	4	5
1 - Written Assessment - 20%	•				•
2 - Online Quiz(zes) - 40%	•	•	•	•	
3 - Examination - 40%	•	•	•	•	

Alignment of Graduate Attributes to Learning Outcomes

Textbooks and Resources

Textbooks

BMSC11005

Prescribed

General, Organic and Biological Chemistry

Edition: 2nd or 3rd edn revised (2012)

Authors: Smith, JG

McGraw Hill

New York, NY, USA

ISBN: 9780073402789

Binding: Hardcover

[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 styles below:

- [American Psychological Association 6th Edition \(APA 6th edition\)](#)
- [Harvard \(author-date\)](#)

For further information, see the Assessment Tasks.

Teaching Contacts

Paul Neilsen Unit Coordinator

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Schedule

Week 1 - 10 Jul 2017

Module/Topic	Chapter	Events and Submissions/Topic
Cell structure and pH regulation		

Week 2 - 17 Jul 2017

Module/Topic	Chapter	Events and Submissions/Topic
Amino acids and proteins	Chapter 21 General, Organic and Biological Chemistry (J.G. Smith, 3rd Edition)	

Week 3 - 24 Jul 2017

Module/Topic	Chapter	Events and Submissions/Topic
Enzymes and enzyme kinetics	Chapter 21 General, Organic and Biological Chemistry (J.G. Smith, 3rd Edition)	

Week 4 - 31 Jul 2017

Module/Topic	Chapter	Events and Submissions/Topic
Nucleic acids and protein synthesis	Chapter 22 General, Organic and Biological Chemistry (J.G. Smith, 3rd Edition)	

Week 5 - 07 Aug 2017

Module/Topic	Chapter	Events and Submissions/Topic
Carbohydrates	Chapter 20 General, Organic and Biological Chemistry (J.G. Smith, 3rd Edition)	

Vacation Week - 14 Aug 2017

Module/Topic	Chapter	Events and Submissions/Topic

Week 6 - 21 Aug 2017

Module/Topic	Chapter	Events and Submissions/Topic
Lipids	Chapter 19 General, Organic and Biological Chemistry (J.G. Smith, 3rd Edition)	Online Quiz 1 opens at 5:00pm (AEST) Friday 25th August 2017. This will assess topics covered during Weeks 1 to 6 Protein Poster Due: Week 6 Friday (25 Aug 2017) 5:00 pm AEST

Week 7 - 28 Aug 2017

Module/Topic	Chapter	Events and Submissions/Topic
Metabolism pt I	Chapter 23 General, Organic and Biological Chemistry (J.G. Smith, 3rd Edition)	

Week 8 - 04 Sep 2017

Module/Topic	Chapter	Events and Submissions/Topic
Metabolism pt II	Chapter 24 General, Organic and Biological Chemistry (J.G. Smith, 3rd Edition)	

Week 9 - 11 Sep 2017

Module/Topic	Chapter	Events and Submissions/Topic
Transport across the cell membrane	Chapter 19 General, Organic and Biological Chemistry (J.G. Smith, 3rd Edition)	

Week 10 - 18 Sep 2017

Module/Topic	Chapter	Events and Submissions/Topic
Chemical messengers - amines and neurotransmitters	Chapter 18 General, Organic and Biological Chemistry (J.G. Smith, 3rd Edition)	Online Quiz 2 opens at 5:00pm (AEST) Friday 22nd September 2017. This will assess topics covered during Weeks 7 to 10

Week 11 - 25 Sep 2017

Module/Topic	Chapter	Events and Submissions/Topic
Unit content revision lectures		

Week 12 - 02 Oct 2017

Module/Topic	Chapter	Events and Submissions/Topic
Exam revision		

Review/Exam Week - 09 Oct 2017

Module/Topic	Chapter	Events and Submissions/Topic

Assessment Tasks

1 Protein Poster

Assessment Type

Written Assessment

Task Description

This assignment is designed to strengthen your understanding of amino acids, protein structure and function (Learning Outcome 1) through engagement with relevant literature on the topic (Learning Outcome 5). The assessment requires you to **produce a poster that provides information on the structure, function and biological role(s) of a particular protein**. You will be provided with a list of potential proteins to select from on the unit's Moodle site. Alternatively, you may select a different protein related to your interest. This assessment requires you to undertake a literature search on your chosen protein, and it is expected that you reference at least 5 primary scientific journal articles.

In order to achieve this you will need to:

- Identify a suitable protein that is of interest to you (either from the list provided on the Moodle site, or based on your interest and review of the literature)
- Research the literature related to the structure and function of this protein (scientific journal articles should form the basis for this literature search)
- Prepare a poster written in your own words that summarises the structure, function and biological role(s) of the protein, with appropriate citation to your sources of literature.

Support for this assignment will be available on the Moodle site (Assessment 1 tutorial sessions and additional learning resources)

Assessment Due Date

Week 6 Friday (25 Aug 2017) 5:00 pm AEST

Return Date to Students

Week 9 Friday (15 Sept 2017)

Weighting

20%

Minimum mark or grade

This assessment has a minimum passing grade of 45% (which equates to a minimum mark of 45 out of 100)

Assessment Criteria

The poster will be evaluated on-line and individual marks/feedback will be provided through the Moodle website using the following assessment criteria;

- 50 marks available for the scientific content that demonstrates a clear understanding of how the amino acids composition is related to the protein's structure and function.
- You must include information on the following:
 - Structure - primary, secondary, tertiary, and quaternary (if the protein has a quaternary structure)
 - Function of the protein and how it achieves this (what specifics about the structure allow the protein to carry out its function?)
 - Other relevant information - in particular possible disease/s associated with the protein and how modifications to the structure and function may be altered in the disease. This may be expanded upon to be made relevant in the context of your specific course and career pathway.
- 20 marks available for research - you should have used at least 5 primary references (ideally journal articles)
- 10 marks available for organisation - The content of the poster should be organised into defined sections. All posters should have a clear title with the author's name and affiliation (University and unit code) underneath. Headings should clearly identify the information contained within the section. The choice of headings is up to the author.
- 10 marks available for the appropriate use and presentation of references.
- 10 marks available for presentation style / visual effectiveness of the poster, spelling, grammar, sentence structure and punctuation.

The total maximum grade for the protein poster is 100 marks. A copy of the marking rubric will be provided on the

Moodle site. You are encouraged to closely consult this rubric whilst preparing your poster.

Referencing Style

- [American Psychological Association 6th Edition \(APA 6th edition\)](#)
- [Harvard \(author-date\)](#)

Submission

Online

Learning Outcomes Assessed

- Demonstrate knowledge of the structure, function and biological roles of the major types of macromolecules and their building blocks.
- Utilise common search engines and scientific databases to find and recognise primary scientific information.

Graduate Attributes

- Communication
- Problem Solving
- Information Literacy
- Information Technology Competence

2 Online Quizzes

Assessment Type

Online Quiz(zes)

Task Description

Students are required to complete two online quizzes. Each quiz will be comprised of 20 questions and has a time limit of 30 minutes to complete.

You will be allowed one attempt at the each quiz. Your score from the quizzes will contribute 40% to your final grade (2 quizzes X 20% each = 40%).

Quiz 1 will open on Friday 25th August 2017 (Friday of Week 6) and will be open until Friday 6th October (Friday of Week 12). This quiz will assess the topics covered during Weeks 1 to 6.

Quiz 2 will open on Friday 22nd September 2017 (Friday of Week 10) and will be open until Friday 6th October (Friday of Week 12). This quiz will assess the topics covered during Weeks 7 to 10.

Number of Quizzes

2

Frequency of Quizzes

Other

Assessment Due Date

Please see the timeline outlined above for specific information about due dates.

Return Date to Students

Students will receive their score on completion of the quiz.

Weighting

40%

Minimum mark or grade

This assessment has a minimum passing grade of 45% (for both online quizzes combined), which equates to a minimum mark of 18 out of 40.

Assessment Criteria

Each online quiz is worth a total of 20 marks. Each quiz will have 20 questions with one mark per correct answer to each question.

Referencing Style

- [American Psychological Association 6th Edition \(APA 6th edition\)](#)
- [Harvard \(author-date\)](#)

Submission

Online

Learning Outcomes Assessed

- Demonstrate knowledge of the structure, function and biological roles of the major types of macromolecules and their building blocks.
- Explain the various methods used to separate and characterise 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 metabolism of carbohydrates, fats and proteins and their catabolism to synthesise ATP through cellular respiration.

Graduate Attributes

- Problem Solving
- Information Literacy

Examination

Outline

Complete an invigilated examination.

Date

During the examination period at a CQUniversity examination centre.

Weighting

40%

Length

180 minutes

Minimum mark or grade

45

Exam Conditions

Closed Book.

Materials

No calculators permitted

Dictionary - non-electronic, concise, direct translation only (dictionary must not contain any notes or comments).

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