



# BMSC13002 *Advanced Clinical Biochemistry*

## Term 2 - 2024

Profile information current as at 12/07/2025 11:07 am

All details in this unit profile for BMSC13002 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

On completion of this unit, you will be able to evaluate the evidence base for biochemical tests used in the diagnosis and management of diseases in the major organ systems of the body. Problem solving and decision making skills will be developed through use of authentic case studies. Skill development in instrument calibration, best practice measurement, interpretation of test results and test quality control monitoring will occur through practical exercises. You will be required to attend a residential school at the biochemistry laboratory on the Rockhampton campus.

#### Details

Career Level: *Undergraduate*

Unit Level: *Level 3*

Credit Points: 6

Student Contribution Band: 8

Fraction of Full-Time Student Load: 0.125

#### Pre-requisites or Co-requisites

Pre-requisites: BMSC12010 Clinical Biochemistry and (BUSN11016 Introduction to Study and Professional Practice or BMSC11003 Introduction to Medical Sciences).

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 - 2024

- Mixed Mode
- Rockhampton

#### 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. **Case Study**

Weighting: 20%

#### 2. **Laboratory/Practical**

Weighting: Pass/Fail

#### 3. **Practical Assessment**

Weighting: 30%

#### 4. **Examination**

Weighting: 50%

### 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 Feedback

##### **Feedback**

Heavy Content

##### **Recommendation**

It's essential to note that the standardized content has remained consistent with previous years and adheres to established guidelines, ensuring alignment with accreditation standards, therefore, it can only be changed if required necessary. While I acknowledge the need for simplicity and increased clarity, there are limitations in significantly reducing the actual content due to accreditation requirements. Nevertheless, our teaching team is committed to making the content more plausible and approachable without compromising the necessary depth and standards. We will explore ways to enhance the clarity and presentation of the material to facilitate better understanding.

#### Feedback from Student Feedback

##### **Feedback**

Use of guest lecturers

##### **Recommendation**

There were concerns about the use of guest lecturers in the context of this being an unactioned item from students' previous feedback. Upon my recent arrival at the university, joining mid-year (when the term had already been started), due to staff movements and the departure of the previous lecturer, the college decided to utilize previously recorded guest lectures from the previous term set by my predecessor for continuity. In recognition of the workload associated with this transition, a new lecturer was specifically tasked to focus on delivering pre-designed tutorials in accordance with the study questions. It is understandable that this arrangement may not have been clearly communicated to all students, leading to concerns about the use of guest lecturers. This feedback highlights the importance of communication, and I am committed to improve transparency in conveying such arrangements in the future. I believe that open and regular communication is vital, especially during periods of staff movements or transitions.

#### Feedback from Student Feedback and self reflection

##### **Feedback**

Anxiety over invigilated exam

##### **Recommendation**

It's important to note that the university has historically employed invigilated exams as an exam format in line with accreditation standards. The online exams were implemented temporarily during the COVID situation. This year, the decision was made to return to invigilated exams as the primary assessment method. I understand that this change may induce anxiety, as students are transitioning back to this format. To address these concerns, I am committed to providing support by orientating students to the invigilated exam process. This will include detailed guidance, and information sessions to help them feel comfortable and prepared for the upcoming exams

## Unit Learning Outcomes

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

1. Explain the various processes involved in biochemical method evaluation, interpretation and development
2. Explore the limitations of laboratory procedures, regulatory aspects including external quality assurance and accreditation bodies
3. Describe the rationale and clinical correlation of specialised biochemical tests used in the detection and monitoring of processes affecting the major organ systems
4. Demonstrate skills in the use of biochemical instrumentation, including specimen handling and test processing in automated systems and institution of appropriate corrective action as required in response to errors in automated instrumentation function
5. Evaluate biochemical clinical cases to derive a provisional diagnosis.

## 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	5
1 - Case Study - 20%			•		•
2 - Laboratory/Practical - 0%				•	
3 - Practical Assessment - 30%		•			•
4 - Examination - 50%	•	•	•		•

### Alignment of Graduate Attributes to Learning Outcomes

Graduate Attributes	Learning Outcomes				
	1	2	3	4	5
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					

## Textbooks and Resources

### Textbooks

BMSC13002

#### Prescribed

#### **Clinical Chemistry: Principles, Techniques, and Correlations**

Edition: 9th (2023)

Authors: Michael L. Bishop; Edward P. Fody; Carleen Van Siclen; James March Mistler; Michelle Moy

Jones and Bartlett Learning

Burlington, Massachusetts, United States of America

ISBN: 9781284238860

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)
- Zoom (both microphone and webcam capability)

## Referencing Style

All submissions for this unit must use the referencing style: [Vancouver](#)

For further information, see the Assessment Tasks.

## Teaching Contacts

**Amer Siddiq** Unit Coordinator

[a.siddiq@cqu.edu.au](mailto:a.siddiq@cqu.edu.au)

## Schedule

### Week 1 - 08 Jul 2024

Module/Topic	Chapter	Events and Submissions/Topic
Analytical Techniques, Automation & POCT	Clinical Chemistry, Principles, Techniques and Correlations: 4,5& 29	Zoom tutorial - Introduction

### Week 2 - 15 Jul 2024

Module/Topic	Chapter	Events and Submissions/Topic
Kidney Functions & Electrolytes	Clinical Chemistry, Principles, Techniques and Correlations: 21& 11	Zoom tutorial - covering Week 1

### Week 3 - 22 Jul 2024

Module/Topic	Chapter	Events and Submissions/Topic
Acid Base Balance	Clinical Chemistry, Principles, Techniques and Correlations: 12	Zoom tutorial - covering Week 2

### Week 4 - 29 Jul 2024

Module/Topic	Chapter	Events and Submissions/Topic
--------------	---------	------------------------------

Cardiovascular System	Clinical Chemistry, Principles, Techniques and Correlations: 20	Zoom tutorial - covering Week 3
<b>Week 5 - 05 Aug 2024</b>		
<b>Module/Topic</b>	<b>Chapter</b>	<b>Events and Submissions/Topic</b>
Liver, Pancreatic & GIT Function	Clinical Chemistry, Principles, Techniques and Correlations:19 & 22	Zoom tutorial - covering Week 4
<b>Vacation Week - 12 Aug 2024</b>		
<b>Module/Topic</b>	<b>Chapter</b>	<b>Events and Submissions/Topic</b>
No lecture	N/A	No Tutorial
<b>Week 6 - 19 Aug 2024</b>		
<b>Module/Topic</b>	<b>Chapter</b>	<b>Events and Submissions/Topic</b>
Carbohydrates Metabolism	Clinical Chemistry, Principles, Techniques and Correlations: 9	Zoom tutorial - covering Week 5
		<b>Case Study Report</b> Due: Week 6 Monday (19 Aug 2024) 10:00 am AEST
<b>Week 7 - 26 Aug 2024</b>		
<b>Module/Topic</b>	<b>Chapter</b>	<b>Events and Submissions/Topic</b>
Lipid Metabolism & Nutrition	Clinical Chemistry, Principles, Techniques and Correlations: 10 & 27	Zoom tutorial - covering Week 6
<b>Week 8 - 02 Sep 2024</b>		
<b>Module/Topic</b>	<b>Chapter</b>	<b>Events and Submissions/Topic</b>
QC & EQAP	Clinical Chemistry, Principles, Techniques and Correlations: 3	Zoom tutorial - covering Week 7
<b>Week 9 - 09 Sep 2024</b>		
<b>Module/Topic</b>	<b>Chapter</b>	<b>Events and Submissions/Topic</b>
1. Tumor markers 2. Endocrinology basics	1. Clinical Chemistry, Principles, Techniques and Correlations: 28 2. Clinical Chemistry, Principles, Techniques and Correlations: 13	Zoom tutorial - covering Week 8
<b>Week 10 - 16 Sep 2024</b>		
<b>Module/Topic</b>	<b>Chapter</b>	<b>Events and Submissions/Topic</b>
Revision	N/A	Zoom tutorial - covering Week 9
<b>Week 11 - 23 Sep 2024</b>		
<b>Module/Topic</b>	<b>Chapter</b>	<b>Events and Submissions/Topic</b>
Residential School	A Laboratory Workbook will be provided.	A tutorial will be run in the Residential School in addition to an open Q&A session and discussion.  <b>Practical Assessment</b> Due: Week 11 Wednesday (25 Sept 2024) 11:45 am AEST
<b>Week 12 - 30 Sep 2024</b>		
<b>Module/Topic</b>	<b>Chapter</b>	<b>Events and Submissions/Topic</b>

### Review/Exam Week - 07 Oct 2024

Module/Topic	Chapter	Events and Submissions/Topic
		An invigilated examination will be scheduled during the CQUniversity examination period. The exact date will be communicated to all students.

### Exam Week - 14 Oct 2024

Module/Topic	Chapter	Events and Submissions/Topic
		An invigilated examination will be scheduled during the CQUniversity examination period. The exact date will be communicated to all students.

## Assessment Tasks

### 1 Case Study Report

#### Assessment Type

Case Study

#### Task Description

You will be provided with a clinical case study on the Moodle page.

You will be provided with information regarding the clinical presentation, patient history and specific biochemical parameters (provided by an automated analyser) for this clinical case study. You are required to write a report using a case study approach describing the pathophysiology, specific biochemical profile characteristics observed that led to the provisional diagnosis, differential diagnoses and potential treatment options. You may also recommended further tests that will assist in confirming the diagnosis. Further details on the case, a template and an exemplar will be provided to you on the Moodle site to assist in preparation.

#### Assessment Due Date

Week 6 Monday (19 Aug 2024) 10:00 am AEST

The case study report should be uploaded in Moodle in word Document file

#### Return Date to Students

Feedback will be provided within two to three (2-3 ) weeks of submission.

#### Weighting

20%

#### Minimum mark or grade

50%

#### Assessment Criteria

The assessment task is marked according to how well you have met the specific requirements and in accordance with the criteria outlined below:

**Presentation:** The report is presented in the provided template with clarity of purpose and coherence of expression (spelling, grammar, syntax) in a clear and organised manner.

**Abstract:** Provides a clear overview and overall summary of the case study.

**Introduction:** Provides necessary background information and pathophysiology of the case. Does not discuss the final diagnosis, rather supports the intended diagnosis via arguments.

**Materials and Methods:** Briefly describes all the methods used to aid in diagnosis. Discusses further tests to be employed in order to confirm the diagnosis.

**Results:** All data presented clearly with reference ranges. Layout is clear with further tests and expected results discussed.

**Discussion:** Clear discussion of the results with supporting arguments and reasoning for arriving at the final diagnosis.

**References:** Correct referencing system used with appropriate in-text references.

#### Referencing Style

- [Vancouver](#)

#### Submission

Online

#### Submission Instructions

The documents are to be uploaded to Moodle in word document file

#### Learning Outcomes Assessed

- Describe the rationale and clinical correlation of specialised biochemical tests used in the detection and monitoring of processes affecting the major organ systems
- Evaluate biochemical clinical cases to derive a provisional diagnosis.

## 2 Laboratory Workbook

#### Assessment Type

Laboratory/Practical

#### Task Description

You will be provided with a laboratory workbook on the Moodle page. This workbook will contain all the tasks that need to be completed during the residential school. It will also contain a series of short questions and patient reports to be completed in relation to the authentic cases provided. Group experimental activities during the residential school will foster team work and provide hands-on experience of the biochemical techniques used in pathology laboratories. Completion of the workbook will evidence student engagement and understanding of the principles behind the Biochemical tests. Laboratory staff or demonstrators will assess your individual experimental capability during residential school to ensure your understanding of the learning outcomes.

#### Assessment Due Date

Week 12 Thursday (3 Oct 2024) 10:00 am AEST

A scanned version of the laboratory workbook will be submitted on the Moodle page following the Residential School.

#### Return Date to Students

Results will be posted on the Moodle page within two to three (2-3 ) weeks of submission.

#### Weighting

Pass/Fail

#### Minimum mark or grade

50%

#### Assessment Criteria

Residential school Workbook component:

Each section will have respective assigned marks as indicated on the provided workbook.

The Workbook is a PASS/FAIL Assessment.

The laboratory staff will provide immediate verbal feedback to you on the practical hands-on aspect of this assessment item.

The laboratory workbook template will contain the weighting of marks associated with the tasks and subsequent questions/reports to be completed.

#### Referencing Style

- [Vancouver](#)

#### Submission

Online

#### Submission Instructions

A scanned version of the laboratory workbook will be submitted on the Moodle page following the Residential School.

#### Learning Outcomes Assessed

- Demonstrate skills in the use of biochemical instrumentation, including specimen handling and test processing in automated systems and institution of appropriate corrective action as required in response to errors in automated instrumentation function



## 3 Practical Assessment

### Assessment Type

Practical Assessment

### Task Description

On Day 3 of your residential school, you will have a final practical assessment. Further details regarding the practical assessment will be available on the Moodle page.

### Assessment Due Date

Week 11 Wednesday (25 Sept 2024) 11:45 am AEST

The Practical Assessment will be conducted in class on the last day of the Residential School

### Return Date to Students

Results of the Practical Assessment will be posted on the Moodle page with in two to three (2-3 ) weeks of submission.

### Weighting

30%

### Minimum mark or grade

50%

### Assessment Criteria

Practical assessment component: The practical assessment conducted on Day 3 of the Residential School is worth 30% of your final grade.

Further information on the practical assessment will be available on the Moodle page.

### Referencing Style

- [Vancouver](#)

### Submission

Offline

### Submission Instructions

Assessments are to be handed in at the conclusion of the assessment on Day 3 of the Residential School.

### Learning Outcomes Assessed

- Explore the limitations of laboratory procedures, regulatory aspects including external quality assurance and accreditation bodies
- Evaluate biochemical clinical cases to derive a provisional diagnosis.

## Examination

### Outline

Complete an invigilated examination.

### Date

During the examination period at a CQUniversity examination centre.

### Weighting

50%

### Length

180 minutes

### Minimum mark or grade

50%

### Exam Conditions

Closed Book.

### Materials

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