



# BMSC13002 *Advanced Clinical Biochemistry*

## Term 1 - 2017

Profile information current as at 20/05/2024 08:55 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 should be able to evaluate the evidence base for biochemical tests used in diagnosis and monitoring 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 on Rockhampton campus in order to promote development of unit learning outcomes.

### 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 or BMED19003 Clinical Biochemistry and BMSC11003 Introduction to Medical Science

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 1 - 2017

- Distance
- 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).

### Residential Schools

This unit has a Compulsory Residential School for distance mode students and the details are:

Click here to see your [Residential School Timetable](#).

### 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. **Practical and Written Assessment**

Weighting: 30%

#### 3. **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 evaluation

##### Feedback

This course should not be offered to clinical investigations major

##### Recommendation

This is a Pathology specific course and a program proposal change needs to be considered to tailor this course only for Pathology students.

##### Action

Consideration to a course proposal change was given, however it was decided that the relevance of the unit to the broader disciplines should be made clearer during the delivery of the unit.

## 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



### Alignment of Assessment Tasks to Learning Outcomes

Assessment Tasks	Learning Outcomes				
	1	2	3	4	5
1 - Written Assessment - 20%			•		•
2 - Practical and Written Assessment - 30%		•		•	•
3 - 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					

## Alignment of Assessment Tasks to Graduate Attributes

Assessment Tasks	Graduate Attributes									
	1	2	3	4	5	6	7	8	9	10
1 - Written Assessment - 20%	•	•	•	•						
2 - Practical and Written Assessment - 30%	•	•	•	•	•					
3 - Examination - 50%	•	•	•	•						

## Textbooks and Resources

### Textbooks

BMSC13002

#### Prescribed

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

Edition: 8th edn (2017)

Authors: Bishop, ML, Fody, EP & Schoeff, LE

Lippincott Williams and Wilkins

Philadelphia, PA, USA

ISBN: 9781496335586

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 style: [Harvard \(author-date\)](#)

For further information, see the Assessment Tasks.

## Teaching Contacts

**Paul Neilsen** Unit Coordinator

[p.neilsen@cqu.edu.au](mailto:p.neilsen@cqu.edu.au)

## Schedule

### Week 1 - 06 Mar 2017

Module/Topic	Chapter	Events and Submissions/Topic
1. Introduction		
2. Quality control and External Quality Assessment	3, 4	

### Week 2 - 13 Mar 2017

Module/Topic	Chapter	Events and Submissions/Topic
1. NATA, ISO - importance and relevance in Clinical Biochemistry	3, 4	
2. Medicare requirements		

### Week 3 - 20 Mar 2017

Module/Topic	Chapter	Events and Submissions/Topic
1. The analytical process and data interpretation	3	
2. Evaluation and validation of methods		

### Week 4 - 27 Mar 2017

Module/Topic	Chapter	Events and Submissions/Topic
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|-------------------------------|-------|
| 1. Automation in Biochemistry | 7, 10 |
| 2. Point of care testing      |       |

#### Week 5 - 03 Apr 2017

Module/Topic	Chapter	Events and Submissions/Topic
1. Biochemistry of body fluids	29, 31	
2. Toxicology		

#### Vacation Week - 10 Apr 2017

Module/Topic	Chapter	Events and Submissions/Topic
No lecture		

#### Week 6 - 17 Apr 2017

Module/Topic	Chapter	Events and Submissions/Topic
Tumour markers and genetic testing for cancer	32	<b>Case study report</b> Due: Week 6 Friday (21 Apr 2017) 5:00 pm AEST

#### Week 7 - 24 Apr 2017

Module/Topic	Chapter	Events and Submissions/Topic
Therapeutic drug monitoring	30	

#### Week 8 - 01 May 2017

Module/Topic	Chapter	Events and Submissions/Topic
Extremes of Age - the pediatric and the geriatric patient	34, 35	

#### Week 9 - 08 May 2017

Module/Topic	Chapter	Events and Submissions/Topic
Residential School - Tuesday, Wednesday and Thursday (9th, 10th and 11th May 2017)	Laboratory workbook	

#### Week 10 - 15 May 2017

Module/Topic	Chapter	Events and Submissions/Topic
Gastrointestinal Biochemistry	28	<b>Practical Assessment and Examination</b> Due: Week 10 Friday (19 May 2017) 5:00 pm AEST

#### Week 11 - 22 May 2017

Module/Topic	Chapter	Events and Submissions/Topic
Testing for Nutritional Pathology	33	

#### Week 12 - 29 May 2017

Module/Topic	Chapter	Events and Submissions/Topic
Revision lecture		

#### Review/Exam Week - 05 Jun 2017

Module/Topic	Chapter	Events and Submissions/Topic
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#### Exam Week - 12 Jun 2017

Module/Topic	Chapter	Events and Submissions/Topic
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## Assessment Tasks

### 1 Case study report

#### Assessment Type

Written Assessment

**Task Description**

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

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 (around 1,000 words) using a case study approach describing the pathophysiology, specific biochemical profile characteristics observed that led to the diagnosis, differential diagnosis, treatment options and any recommended further tests. 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 Friday (21 Apr 2017) 5:00 pm AEST

**Return Date to Students**

Week 8 Friday (5 May 2017)

**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: Harvard referencing system used with appropriate in-text references

**Referencing Style**

- [Harvard \(author-date\)](#)

**Submission**

Online

**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.

**Graduate Attributes**

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy

## 2 Practical Assessment and Examination

**Assessment Type**

Practical and Written Assessment

**Task Description**

You will be provided with a laboratory workbook on the Moodle site. This workbook will contain all the tasks that need to be completed during the residential school block. 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 haematological tests. Laboratory staff or demonstrators will assess your individual experimental capability during residential school to ensure your understanding of the learning outcomes. You will be required to submit the completed version of the laboratory workbook on the Moodle site.

Important: On Day 3 of your residential school block (Thursday 11th May 2017), you will have a final practical

examination. Further details regarding the examination will be available on the Moodle site.

**Assessment Due Date**

Week 10 Friday (19 May 2017) 5:00 pm AEST

**Return Date to Students**

Week 12 Friday (2 June 2017)

**Weighting**

30%

**Minimum mark or grade**

50%

**Assessment Criteria**

- Residential school and Workbook component: Each section will have respective assigned marks as indicated on the provided workbook. A total mark obtained for the workbook and associated tasks would then represent to 20% of your final grade. 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 weightage of marks associated with the tasks and subsequent questions/reports to be completed
- Practical examination component: The practical examination conducted on Day 3 of the residential school is worth 10% of your final grade. Further information on the examination will be available on the moodle site.
- Total for practical assessment:  $20 + 10 = 30\%$

**Referencing Style**

- [Harvard \(author-date\)](#)

**Submission**

Online

**Learning Outcomes Assessed**

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

**Graduate Attributes**

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy
- Team Work

## 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**

Calculator - all non-communicable calculators, including scientific, programmable and graphics calculators are authorised



## 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