



# BMSC12011 *Medical Microbiology 1*

## Term 2 - 2020

Profile information current as at 20/04/2024 07:39 am

All details in this unit profile for BMSC12011 have been officially approved by CQUUniversity 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 provide you with evidence based learning and practice to maximise your diagnostic capabilities for the accurate detection, identification and management of infectious diseases of humans. This unit will provide you with a comprehensive knowledge and understanding of infectious diseases, the laboratory identification of causative pathogens as well as their pathogenicity and epidemiology. The unit will also include provision of the skills necessary to undertake common practical laboratory processes in clinical bacteriology.

### Details

Career Level: *Undergraduate*

Unit Level: *Level 2*

Credit Points: 6

Student Contribution Band: 8

Fraction of Full-Time Student Load: 0.125

### Pre-requisites or Co-requisites

Prerequisites: MBIO19012 Microbiology BIOL12106 Molecular Biology

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 - 2020

- 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).

### 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. **Practical Assessment**

Weighting: 35%

#### 2. **Written Assessment**

Weighting: 15%

#### 3. **Online Test**

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

Improve assessment return and feedback

##### Recommendation

Review assessment submission dates and residential school dates to avoid time clashes for students and markers.

## Unit Learning Outcomes

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

1. Discuss the clinical significance and laboratory detection of bacterial commensal flora, pathogens and opportunistic pathogens of each of the human body systems
2. Appraise the use of molecular techniques for identifying bacteria causing human disease
3. Use practical skills to isolate, identify and test the basic antimicrobial resistance of pathogenic bacteria
4. Discuss the mechanisms of antimicrobial resistance in bacteria
5. Apply appropriate quality control processes for the practice of bacteriology.

## 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 - Practical Assessment - 35%			•		•
2 - Written Assessment - 15%	•	•		•	
3 - Online Test - 50%	•	•		•	

### Alignment of Graduate Attributes to Learning Outcomes

Graduate Attributes	Learning Outcomes				
	1	2	3	4	5
1 - Communication	•		•		
2 - Problem Solving	•	•	•		•

Graduate Attributes	Learning Outcomes				
	1	2	3	4	5
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 - Practical Assessment - 35%	•	•	•	•				•		
2 - Written Assessment - 15%			•	•						
3 - Online Test - 50%		•	•	•				•		

## Textbooks and Resources

### Textbooks

BMSC12011

#### Prescribed

#### Bailey and Scott's Diagnostic Microbiology 14th Ed

Edition: 14th (2016)

Authors: Patricia M Tile

Elsevier

ISBN: 9780323354820

Binding: Hardcover

#### Additional Textbook Information

If you prefer to study with a paper copy, they can be purchased at the CQUni Bookshop here: <http://bookshop.cqu.edu.au> (search on the Unit code). eBooks can be purchased at the publisher's website.

[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

**Padraig Strappe** Unit Coordinator

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

## Schedule

### Week 1 - 13 Jul 2020

Module/Topic	Chapter	Events and Submissions/Topic
Staphylococci/ Streptococci	Bailey and Scott's Diagnostic Microbiology Chapters 13 and 14 (14th Ed)	Recorded Lecture Welcome to the unit and an overview of the subject content , learning materials and assessments

### Week 2 - 20 Jul 2020

Module/Topic	Chapter	Events and Submissions/Topic
Aerobic Gram positive bacilli/ Filamentous Gram positive bacilli	Bailey and Scott's Diagnostic Microbiology Chapters 15,16, 17 and 18 (14th Ed)	Recorded Lecture and Zoom Tutorial on week 1 content

### Week 3 - 27 Jul 2020

Module/Topic	Chapter	Events and Submissions/Topic
Enterobacteriaceae / Pathogenic Enterobacteriaceae	Bailey and Scott's Diagnostic Microbiology Chapter 19 (14th Ed)	Recorded Lecture and Zoom Tutorial on week 3 content

**Week 4 - 03 Aug 2020**

Module/Topic	Chapter	Events and Submissions/Topic
Oxidase positive Gram negative bacilli/ Facultative Gram negative bacilli	Bailey and Scott's Diagnostic Microbiology Chapters 20, 21, 22, 25, 29, 31, 32, 33, 34, 35, 36, 37 and 38 (14th Ed)	Recorded Lecture and Zoom Tutorial on week 2 content

**Week 5 - 10 Aug 2020**

Module/Topic	Chapter	Events and Submissions/Topic
Gram negative cocci - <i>Moraxella catarrhalis</i> and Neisseriaceae/ Anaerobes	Bailey and Scott's Diagnostic Microbiology Chapters 39, 40 and 41 (14th Ed)	Recorded Lecture and Zoom Tutorial on week 4 content

**Vacation Week - 17 Aug 2020**

Module/Topic	Chapter	Events and Submissions/Topic
Individual study time		

**Week 6 - 24 Aug 2020**

Module/Topic	Chapter	Events and Submissions/Topic
Mycobacteria/ Spirochaetes, Mycoplasmas & Ureaplasma, Chlamydiae and Rickettsiae	Bailey and Scott's Diagnostic Microbiology Chapters 42, 43, 44, and 45 (14th Ed)	Recorded Lecture and Zoom Tutorial on week 5 content

**Week 7 - 31 Aug 2020**

Module/Topic	Chapter	Events and Submissions/Topic
Urinary tract infections	Bailey and Scott's Diagnostic Microbiology Chapter 72 (14th Ed)	Recorded Lecture and Zoom Tutorial on week 6 content

**Week 8 - 07 Sep 2020**

Module/Topic	Chapter	Events and Submissions/Topic
Eye, ear, nose and throat & respiratory tract infections	Bailey and Scott's Diagnostic Microbiology Chapters 68, 69 and 71 (14th Ed)	Recorded Lecture and Zoom Tutorial on week 7 content  <b>Rapid Diagnostic Assays in Clinical Microbiology</b> Due: Week 8 Monday (7 Sept 2020) 11:55 pm AEST

**Week 9 - 14 Sep 2020**

Module/Topic	Chapter	Events and Submissions/Topic
Skin, soft tissue and wound infections	Bailey and Scott's Diagnostic Microbiology Chapter 75 (14th Ed)	Recorded Lecture and Zoom Tutorial on week 8 content

**Week 10 - 21 Sep 2020**

Module/Topic	Chapter	Events and Submissions/Topic
Genital tract infections and Gastrointestinal tract infections	Bailey and Scott's Diagnostic Microbiology Chapters 73 and 74 (14th Ed)	Recorded Lecture and Zoom Tutorial on week 9 content

**Week 11 - 28 Sep 2020**

Module/Topic	Chapter	Events and Submissions/Topic
Infections of sterile sites / Automation and molecular testing	Bailey and Scott's Diagnostic Microbiology Chapters 76, 72, 77 and 8 (14th Ed)	Recorded Lecture and Zoom Tutorial on week 10 content

**Week 12 - 05 Oct 2020**

Module/Topic	Chapter	Events and Submissions/Topic

Testing for antimicrobial susceptibility	Bailey and Scott's Diagnostic Microbiology Chapter 11 (14th Ed)	Recorded Lecture and Zoom Tutorial on week 11 content
--	---	---

#### Review/Exam Week - 12 Oct 2020

Module/Topic	Chapter	Events and Submissions/Topic
Revision	Bailey and Scott's Diagnostic Microbiology All Chapters	Zoom tutorial on week 12 content and revision

#### Exam Week - 19 Oct 2020

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

## Term Specific Information

Due to COVID-19, the dates for the Residential School(s) are yet to be set. You will be advised of these dates via the Moodle forum/site.

Your unit coordinator for BMSC12011 is Dr Padraig Strappe. You can contact me using the forum on the unit's Moodle site or alternatively through email (p.strappe@cqu.edu.au) or on 07 4930 6499. The forum for this unit is continuously monitored and you can expect a response within 24 hours of posting your question.

## Assessment Tasks

### 1 Laboratory Practical Assignment

#### Assessment Type

Practical Assessment

#### Task Description

Due the

The laboratory practical assignment to learn and perform a comprehensive range of bacteriological techniques and compliment the theoretical knowledge of diagnostic microbiology.

Due to COVID19 restrictions, the exact dates of the Residential school are yet to be announced

Students will undertake analysis of cases in clinical microbiology , designed to mimic true diagnostic microbiology laboratory cases and they will subsequently be required to document their observations and findings in a laboratory manual which will be provided on the Unit Moodle Site. A detailed marking rubric for the laboratory practical assessment will be available on the unit moodle site

#### Assessment Due Date

#### Return Date to Students

#### Weighting

35%

#### Minimum mark or grade

50%

#### Assessment Criteria

Students will be assessed on the accuracy and interpretation of their laboratory investigations of the bacterial identification, staining and antimicrobial resistance of the cases provided. This assessment will be performed by use of a workbook for recording laboratory investigations and mock laboratory report for each

case.

Weighting

35%

### Referencing Style

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

### Submission

Online

### Submission Instructions

A laboratory workbook will be submitted online

### Learning Outcomes Assessed

- Use practical skills to isolate, identify and test the basic antimicrobial resistance of pathogenic bacteria
- Apply appropriate quality control processes for the practice of bacteriology.

### Graduate Attributes

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy
- Ethical practice

## 2 Rapid Diagnostic Assays in Clinical Microbiology

### Assessment Type

Written Assessment

### Task Description

This assessment is an opportunity to research in further detail the application of assays based on the polymerase chain reaction (PCR) and matrix-assisted laser desorption ionization time of flight mass spectrometry (MALDI-TOF-MS) for specific bacterial pathogen detection in terms of diagnostic technology.

The application of these two assays to the clinical microbiology laboratory has revolutionized diagnosis in terms of speed and enhanced specificity. In this assessment you will choose one group of clinically significant bacteria for example, Staphylococci, *Streptococci*, *Salmonella*, *E.Coli*, *Pseudomonas* (A complete list will be available on the Moodle site) and complete a 1500 to 2000 word literature review on the application of PCR and MALDI-TOF technology in detection of these pathogens.

You will also be required to provide a background on the pathogenicity of your chosen bacterium and on the technical development of PCR and MALDI-TOF.

To achieve this you will need to.

- 1: Choose a specific bacterium from a list of clinically relevant bacteria which will be available on the Moodle site. If you are unsure of the suitability of your choice for this assessment, please consult with the unit coordinator. A comprehensive explanation of the defining features of each of the bacteria will be available through the learning materials provided during Week 2.
- 2: Research the literature relevant to your chosen bacterium. Scientific journal articles should form the basis for this literature search.
- 3: Prepare a 1500-2000 literature review summarizing the application of both PCR and MALDI-TOF in detection of the bacterium protein, with appropriate citation to your sources of literature

### Assessment Due Date

Week 8 Monday (7 Sept 2020) 11:55 pm AEST

### Return Date to Students

Week 10 Monday (21 Sept 2020)



**Weighting**

15%

**Minimum mark or grade**

50%

**Assessment Criteria**

The literature review will be evaluated in accordance with the detailed marking rubric available on the unit Moodle site.

A brief overview of the assessment criteria are as follows;

A total of 100 marks will be available for the assessment

1: 40 marks for the scientific content which demonstrates a clear understanding of pathogenicity of the bacterium, the underlying technology behind PCR and MALDI-TOF, and the application of these techniques to clinical diagnosis.

2: 40 marks for a comprehensive discussion of the sensitivities of the two assays , comparing the advantages and disadvantages of each assay

3: 10 marks for overall layout and organisation of the literature review

4: 10 marks for the appropriate use of references and formatting of the reference list. Weighting 15%

**Referencing Style**

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

**Submission**

Online

**Submission Instructions**

Submit through moodle

**Learning Outcomes Assessed**

- Discuss the clinical significance and laboratory detection of bacterial commensal flora, pathogens and opportunistic pathogens of each of the human body systems
- Appraise the use of molecular techniques for identifying bacteria causing human disease
- Discuss the mechanisms of antimicrobial resistance in bacteria

**Graduate Attributes**

- Critical Thinking
- Information Literacy

### 3 Online test

**Assessment Type**

Online Test

**Task Description**

The online test will be performed through the moodle site and will comprise of a combination of short answer and long answer questions.

**Assessment Due Date****Return Date to Students****Weighting**

50%

**Minimum mark or grade**

50%

**Assessment Criteria**

The online test will be mark according to a marking rubric for each test

**Referencing Style**

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

## Submission

Online

## Submission Instructions

Online test submitted through moodle

## Learning Outcomes Assessed

- Discuss the clinical significance and laboratory detection of bacterial commensal flora, pathogens and opportunistic pathogens of each of the human body systems
- Appraise the use of molecular techniques for identifying bacteria causing human disease
- Discuss the mechanisms of antimicrobial resistance in bacteria

## Graduate Attributes

- Problem Solving
- Critical Thinking
- Information Literacy
- Ethical practice

## 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