



# BMSC12011 *Medical Microbiology 1*

## Term 1 - 2023

Profile information current as at 20/04/2024 05:06 am

All details in this unit profile for BMSC12011 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 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

Co-requisites MBI019012 Microbiology AND BIOL12106 Molecular Biology OR BMSC12012 Molecular Cell 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 1 - 2023

- 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. **Written Assessment**

Weighting: 30%

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

Weighting: Pass/Fail

#### 3. **Presentation**

Weighting: 20%

#### 4. **Oral 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 data.

**Feedback**

Some students found the length and depth of knowledge required in the written assessment too much

**Recommendation**

The written assessment will be reviewed to ensure that the assignment length/depth of analysis is appropriate for the students' level of study.

#### Feedback from Self reflection

**Feedback**

The open book nature of online testing leads to a disproportionate number of D & HD grades.

**Recommendation**

Alternatives to open book online testing will be explored.

## 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 - Laboratory/Practical - 0%			•		•
2 - Presentation - 20%	•	•			
3 - Written Assessment - 30%	•	•			
4 - Oral 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

BMSC12011

#### Prescribed

#### **Bailey and Scott's Diagnostic Microbiology**

15th edition (2021)

Authors: Patricia M Tile

Elsevier

St Louis , Missouri , USA

ISBN: 9780323354820

Binding: Other

#### Additional Textbook Information

Both versions of the text can be purchased 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)
- Zoom (both microphone and webcam capability)

## Referencing Style

All submissions for this unit must use the referencing style: [Harvard \(author-date\)](#)

For further information, see the Assessment Tasks.

## Teaching Contacts

**William Deasy** Unit Coordinator

[w.deasy@cqu.edu.au](mailto:w.deasy@cqu.edu.au)

## Schedule

### Week 1 - 06 Mar 2023

Module/Topic	Chapter	Events and Submissions/Topic
Staphylococci/Streptococci	Bailey and Scott's Diagnostic Microbiology Chapters 13 and 14 (15th Ed)	Welcome to the unit and an overview of the subject content , learning materials and assessments

### Week 2 - 13 Mar 2023

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 (15th Ed)	Live/recorded Lecture and Zoom Tutorial on week 1 content

### Week 3 - 20 Mar 2023

Module/Topic	Chapter	Events and Submissions/Topic
Enterobacteriaceae/Pathogenic Enterobacteriaceae	Bailey and Scott's Diagnostic Microbiology Chapter 19 (15th Ed)	Live/recorded Lecture and Zoom Tutorial on week 2 content

**Week 4 - 27 Mar 2023**

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 (15th Ed)	Live/recorded Lecture and Zoom Tutorial on week 3 content

**Week 5 - 03 Apr 2023**

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 (15th Ed)	Live/recorded Lecture and Zoom Tutorial on week 4 content

**Vacation Week - 10 Apr 2023**

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

**Week 6 - 17 Apr 2023**

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 (15th Ed)	Live/recorded Lecture and Zoom Tutorial on week 5 content

**Week 7 - 24 Apr 2023**

Module/Topic	Chapter	Events and Submissions/Topic
Urinary tract infections, Antimicrobial therapies and Antibiotic resistance	Bailey and Scott's Diagnostic Microbiology Chapter 72 (15th Ed)	Live/recorded Lecture and Zoom Tutorial on week 6 content  <b>Written Assessment</b> Due: Week 7 Friday (28 Apr 2023) 9:00 am AEST

**Week 8 - 01 May 2023**

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 (15th Ed)	Live/recorded Lecture and Zoom Tutorial on week 7 content Residential School 7/5/23 - 9/5/23 ***Please note that these are the correct dates and this is a 3-day residential school, please ignore any other dates that you may have seen***

**Week 9 - 08 May 2023**

Module/Topic	Chapter	Events and Submissions/Topic
Skin, soft tissue and wound infections	Bailey and Scott's Diagnostic Microbiology Chapter 75 (15th Ed)	Recorded Lecture and Zoom Tutorial on week 8 content  <b>Journal Club Presentation</b> Due: Week 9 Tuesday (9 May 2023) 5:00 pm AEST

**Week 10 - 15 May 2023**

Module/Topic	Chapter	Events and Submissions/Topic
Genital tract infections and Gastrointestinal tract infections	Bailey and Scott's Diagnostic Microbiology Chapters 73 and 74 (15th Ed)	Live/recorded Lecture and Zoom Tutorial on week 9 content  <b>Residential School Practical</b> Due: Week 10 Friday (19 May 2023) 9:00 am AEST

**Week 11 - 22 May 2023**

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 (15th Ed)	Live/recorded Lecture and Zoom Tutorial on week 10 content
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### Week 12 - 29 May 2023

Module/Topic	Chapter	Events and Submissions/Topic
Testing for antimicrobial susceptibility	Bailey and Scott's Diagnostic Microbiology Chapter 11 (15th Ed)	Live/recorded Lecture and Zoom Tutorial on week 11 content

### Review/Exam Week - 05 Jun 2023

Module/Topic	Chapter	Events and Submissions/Topic
Revision	Bailey and Scott's Diagnostic Microbiology All Chapters	Zoom tutorial on week 12 content and revision  <b>Viva Voce assessment</b> Due: Review/Exam Week Monday (5 June 2023) 11:45 pm AEST

### Exam Week - 12 Jun 2023

Module/Topic	Chapter	Events and Submissions/Topic
		Date and time are placeholders. Date and time will be confirmed during the term.

## Term Specific Information

Your unit coordinator for BMSC12011 is Dr William Deasy. You can contact me using the forum on the unit's Moodle site or alternatively through email (w.deasy@cqu.edu.au) or on 07 4930 6365. The forum for this unit is continuously monitored and you can expect a response within 24 hours of posting your question.

## Assessment Tasks

### 1 Written Assessment

#### 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 2500 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 2500 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 7 Friday (28 Apr 2023) 9:00 am AEST

Please submit this via the assessment dropbox on Moodle.

**Return Date to Students**

Week 9 Friday (12 May 2023)

Return will be online via feedback studio

**Weighting**

30%

**Minimum mark or grade**

50%

**Assessment Criteria**

Provide a succinct and detailed introduction of the chosen microorganism and both techniques, covering all aspects relevant to both the disease/s and the organism responsible. Cover all aspects of pathogenicity including important virulence factors, toxins etc. Provide a succinct and detailed description of the selected studies including the methods used, the results obtained. Contextualise the results and quality assurance data presented. Provide a strong comparison of both techniques with a detailed discussion of the strengths and weaknesses of both techniques when compared to both each other and standard culture techniques and other assays.

**Referencing Style**

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

**Submission**

Online

**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

## 2 Residential School Practical

**Assessment Type**

Laboratory/Practical

**Task Description**

Students will undertake analysis of case studies in clinical microbiology, designed to mimic true diagnostic microbiology laboratory cases. Students will be required to document their observations and findings in a laboratory workbook which will be provided on the Unit Moodle Site. Criteria for assessment of the laboratory practical will also be available through Moodle.

**Assessment Due Date**

Week 10 Friday (19 May 2023) 9:00 am AEST

Lab workbook will be submitted via the assessment dropbox in Moodle.

**Return Date to Students**

Week 11 Friday (26 May 2023)

Assessment will be returned via feedback studio in Moodle.

**Weighting**

Pass/Fail

**Assessment Criteria**

Students will be assessed on their practicals skills including staining, biochemical testing and rapid testing techniques.

**Referencing Style**

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

**Submission**

Online

### **Submission Instructions**

Please submit this via assessment dropbox on Moodle.

### **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.

## **3 Journal Club Presentation**

### **Assessment Type**

Presentation

### **Task Description**

During this assessment students will work in pairs to present a recent high impact journal article (last 3 years) within the discipline of microbiology to the class at the residential school on the final day. The presentation will incorporate information regarding aims, methods, outcomes and relevance to provide context to the paper's contribution to both the literature and to microbiology as a whole.

### **Assessment Due Date**

Week 9 Tuesday (9 May 2023) 5:00 pm AEST

Presentation will occur on the final day of the residential school

### **Return Date to Students**

Week 9 Friday (12 May 2023)

Feedback and marks will be available through Moodle

### **Weighting**

20%

### **Assessment Criteria**

Students will work in pairs to prepare a 10 minute journal club presentation using a high impact paper in the field of microbiology from the past 3 years. The presentation will summarise the following:

- Aims
- Key measurements
- Outcomes
- Impact and position within the literature
- Future directions

### **Referencing Style**

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

### **Submission**

Offline Group

### **Submission Instructions**

Presentation will be conducted in-person on the final day of the compulsory residential school.

### **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

## **4 Viva Voce assessment**

### **Assessment Type**

Oral Examination

### **Task Description**

This assessment item is an oral examination which is comprised of two parts. You have the option to complete this face to face or via Zoom conferencing software. If you choose for the latter, it is a requirement that you have access to Zoom, a webcam and a microphone.

You will be required to answer:

**Part A:** 5 x short answer questions (to demonstrate memory recall). These questions will be worth 2 marks each = 10 marks; AND

**Part B:** 5 x longer answer questions (to demonstration interpretation of data/application). You will be presented with seven (7) questions and only need to choose only five (5). These questions will be worth 10 marks each = 50 marks.

**Total Viva Voce is worth 60 marks.**

**Assessment Due Date**

Review/Exam Week Monday (5 June 2023) 11:45 pm AEST

This will be held during the examination period; specific Viva Voce times to be negotiated with the Unit Coordinator during term.

**Return Date to Students**

Exam Week Monday (12 June 2023)

Assessment return will be following the completion of the final scheduled Viva Voce.

**Weighting**

50%

**Minimum mark or grade**

50%

**Assessment Criteria**

**Part A.** This section relies on memory which is designed to contain short answer questions. Each of these questions will be worth two marks (5 questions x 2 marks = maximum of 10 marks)

**Part B.** This section relies on an interpretation and application of knowledge and contains longer questions. Each of these questions are worth 10 marks each with the breakdown of marks as follows.

Three key criteria will be marked in this assessment.

**1. Relevance** - The ability to deliver the correct answer(s) to the question in a comprehensive and succinct manner (worth 6/10 marks)

**2. Coherence** - The ability to logically sequence the response (worth 2/10 marks)

**3. Overall organisation, expression and flow** - Responses are well crafted and include a scientific/medical vocabulary. Responses are delivered in a confident manner using language targetted to a general audience. Responses are delivered with clear diction, appropriate volume and pace. (worth 2/10 marks)

**Referencing Style**

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

**Submission**

Offline Online

**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
- Discuss the mechanisms of antimicrobial resistance in bacteria

## 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