



BMSC12011 *Medical Microbiology 1*

Term 1 - 2024

Profile information current as at 01/05/2024 12:48 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 - 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).

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. **Presentation**

Weighting: 20%

3. **Laboratory/Practical**

Weighting: Pass/Fail

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 SUTE feedback + Informal feedback

Feedback

Viva assessment was an excellent way of demonstrating knowledge of the unit.

Recommendation

Viva Voce Assessment will be maintained as it allowed for more authentic assessment in an invigilated setting.

Feedback from SUTE feedback

Feedback

The laboratory practical is very useful for reinforcing the unit content. The laboratory workbook was very comprehensive and also assisted student learning.

Recommendation

Refinements will be made to further enhance the relevance of the Residential School practical to our students' clinical practice and to include more advanced techniques where possible.

Feedback from Informal feedback

Feedback

The rubric for the written assessment was unclear in some parts.

Recommendation

The rubric will be reviewed and updated to increase it's usability and clarity.

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

[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

Schedule

Week 1 - 04 Mar 2024

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

Week 2 - 11 Mar 2024

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 - 18 Mar 2024

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 - 25 Mar 2024

Module/Topic	Chapter	Events and Submissions/Topic
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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
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Week 5 - 01 Apr 2024

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 - 08 Apr 2024

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

Week 6 - 15 Apr 2024

Module/Topic	Chapter	Events and Submissions/Topic
		Live/recorded Lecture and Zoom Tutorial on week 5 content
Mycobacteria/Spirochaetes, Mycoplasmas & Ureaplasma, Chlamydiae and Rickettsiae	Bailey and Scott's Diagnostic Microbiology Chapters 42, 43, 44, and 45 (15th Ed)	Residential School 20/4/24 - 22/4/24 Written Assessment Due: Week 6 Monday (15 Apr 2024) 5:00 pm AEST

Week 7 - 22 Apr 2024

Module/Topic	Chapter	Events and Submissions/Topic
		Live/recorded Lecture and Zoom Tutorial on week 6 content
Urinary tract infections, Antimicrobial therapies and Antibiotic resistance	Bailey and Scott's Diagnostic Microbiology Chapter 72 (15th Ed)	Journal Club Presentation Due: Week 7 Monday (22 Apr 2024) 1:00 pm AEST

Week 8 - 29 Apr 2024

Module/Topic	Chapter	Events and Submissions/Topic
		Live/recorded Lecture and Zoom Tutorial on week 7 content
Eye, ear, nose and throat & respiratory tract infections	Bailey and Scott's Diagnostic Microbiology Chapters 68, 69 and 71 (15th Ed)	Residential School Practical Due: Week 8 Friday (3 May 2024) 5:00 pm AEST

Week 9 - 06 May 2024

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

Week 10 - 13 May 2024

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

Week 11 - 20 May 2024

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

Week 12 - 27 May 2024

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
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Review/Exam Week - 03 Jun 2024

Module/Topic	Chapter	Events and Submissions/Topic
Revision	Bailey and Scott's Diagnostic Microbiology All Chapters	Zoom tutorial on week 12 content and revision Viva Voce assessment Due: Review/Exam Week Monday (3 June 2024) 9:00 am AEST

Exam Week - 10 Jun 2024

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 48 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 6 Monday (15 Apr 2024) 5:00 pm AEST

Please submit this via the assessment dropbox on Moodle.

Return Date to Students

Week 8 Monday (29 Apr 2024)

Return will be online via Turnitin feedback studio.

Weighting

30%

Minimum mark or grade

50%

Assessment Criteria

Provide a succinct 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 description of the selected studies including the methods used, the results obtained. Contextualise the results and quality assurance data presented. Provide a detailed comparison of both techniques with a detailed discussion of the strengths and weaknesses of both techniques when compared to both each other and to both standard culture techniques and other assays used in diagnostic microbiology laboratories.

Students are permitted to use Generative AI for this assessment in the following ways:

- developing literature search strategies
- compiling suitable literature sources and locating data
- guidance for structuring the assignment

If Generative AI is used in any way, it must be cited as per the CQU Guidelines (Academic Learning Centre).

If students choose to use generative AI, the following statement must be completed and included on the front page of the uploaded assessment: "I have used (insert technology) to (insert how you used this) in accordance with the requirements of this unit. The reason I used this was to (explain why you used it). The details of how I used it as (insert how). I hereby declare that the submission is an appropriate representation of my individual skills and abilities to meet the requirements of the task/s."

As per academic writing requirements and assessment criteria; citations of information should be of the primary source (i.e. statistics returned by AI must be fact-checked and referenced from their original source as well as the AI source).

Failure to cite primary sources as well as AI sources could be considered a breach of academic integrity.

Your use of Generative AI must be clearly outlined in an appendix as a separate file which includes the prompt used and Generative AI response (in line with marking rubric). Failure to include an appendix may result in academic integrity investigation.

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 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 7 Monday (22 Apr 2024) 1:00 pm AEST

Presentation will occur on the final day of the residential school

Return Date to Students

Week 8 Friday (3 May 2024)

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 provide:

- Introduce the topic of the chosen paper and cover the background material in sufficient detail to allow the

- audience to understand the entirety of the presented material (10 marks).
- Provides a detailed overview of the aims and hypotheses of the chosen paper (10 marks).
- Discuss the methods and the key outcome measures used with a description of why these measures were chosen (10 marks).
- Provide a detailed explanation of the study outcomes and provide a strong reflection on how these outcomes met/did not meet the study aims (15 marks).
- Provide a thoughtful analysis of the study's impact on the field of microbiology and/or clinical diagnostics. Demonstrate the magnitude of this impact to the audience in a clear and concise way that allows them to understand the position of the research within the literature (25 marks).
- Provide realistic and informed options for future research and/or how this current research could be impact laboratory diagnostics in human health (10 marks)
- Presentation (10 marks).
- Contribution to presentation (10 marks).

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

3 Residential School Practical

Assessment Type

Laboratory/Practical

Task Description

Students will undertake laboratory 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 the workbook assessment of the laboratory practical will also be available through Moodle.

Assessment Due Date

Week 8 Friday (3 May 2024) 5:00 pm AEST

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

Return Date to Students

Week 10 Friday (17 May 2024)

Assessment will be returned via Turnitin 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 and assessed using through submission of their laboratory workbook. Students require 50% of their total workbook score to pass.

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.

4 Viva Voce assessment

Assessment Type

Oral Examination

Task Description

This assessment item is an oral examination which is comprised of two parts. You complete this assessment via Zoom conferencing software and will require 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 = 40 marks.

Presentation: 10 marks

Total Viva Voce is worth 60 marks.

Assessment Due Date

Review/Exam Week Monday (3 June 2024) 9:00 am 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 Friday (14 June 2024)

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

Weighting

50%

Minimum mark or grade

50%

Assessment Criteria

Practice tests will be made available during the term to familiarise yourself with the style of questions that you will encounter. Students are able to bring **hand written notes** in paper form to assist them. The test is 60 minutes long.

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 8 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 targeted to a general audience. Responses are delivered with clear diction, appropriate volume and pace. (worth 2/10 marks)

Presentation: 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