



# MBIO19012 Microbiology

## Term 1 - 2017

Profile information current as at 23/04/2024 06:06 pm

All details in this unit profile for MBIO19012 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 successful completion of this unit, students will have a sound understanding of the fundamentals of microbiology. Students should be able to explain the principles by which microbes are classified, the relationship between form and function, the mechanisms by which genetic change occurs and the dynamics of growth and multiplication. Flex and Rockhampton students must attend a compulsory residential school or on-campus lab classes in order to achieve the learning outcomes.

#### 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

BIOL11099 Living Systems or BIOL 11100 Functional Biology or SCIE11022 Introductory Science or BIOH11005 Introductory Anatomy and Physiology or BMSC11001 Human Body Systems 1

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: 20%

#### 3. **Examination**

Weighting: 60%

### 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 Moodle unit evaluation + individual feedback (verbal)

**Feedback**

Students loved the residential school. It was very well organized and the pre-lab videos were very useful.

**Recommendation**

The residential schools will continue in the new format.

**Action**

The residential schools were continued with the same format.

#### Feedback from Moodle unit evaluation

**Feedback**

Students would like more equipment for residential school so there is less time spent waiting.

**Recommendation**

The high cost of some equipment means that it is not feasible to have equipment for each individual student. I will revise the lab timetable to try to run more things concurrently, so that students can move on to the next exercise instead of waiting. Overall though, the labs ran on time and nobody missed out on any exercises.

**Action**

The residential school schedule was slightly modified, and I had extra lab assistance, which seemed to alleviate the waiting time for students. There were no comments on it this year.

#### Feedback from Moodle unit evaluation + email/phone

**Feedback**

Some students struggled with the written assessment: microorganism design.

**Recommendation**

A few students seemed to have over-complicated the assessment task (microbe design) which made the task more difficult. I will include some restrictions in future offerings to attempt to prevent this.

**Action**

Some restrictions were made and extra guidance provided for the written assessment. This appeared to have improved overall results.

## Unit Learning Outcomes

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

1. Explain the principles by which microbes are classified, using traditional and molecular approaches
2. Describe the relationship between form and function in the major groups of microbes
3. Describe the mechanisms by which genetic exchange occurs in bacteria, fungi and viruses
4. Explain the dynamics of growth and multiplication of the major types of microbes, and the methods by which these can be investigated in the laboratory
5. Demonstrate basic practical microbiological procedures in the laboratory in a safe and efficient manner
6. Interpret the results of laboratory experiments in the context of the underlying microbiological principles

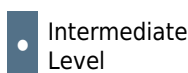
## Alignment of Learning Outcomes, Assessment and Graduate Attributes



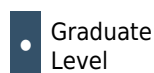
N/A  
Level



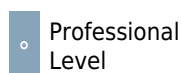
Introductory  
Level



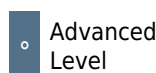
Intermediate  
Level



Graduate  
Level



Professional  
Level



Advanced  
Level



## Textbooks and Resources

### Textbooks

MBIO19012

#### Prescribed

#### Microbiology

(2013)

Authors: Wessner, Dupont & Charles

John Wiley and Sons

Hoboken , NJ , USA

ISBN: 9781118566381

Binding: Hardcover

#### Additional Textbook Information

Students may alternatively choose to purchase the e-book. Details will be available on the course Moodle site.

The paper textbook comes packaged with a WileyPlus card, giving access to additional online resources.

[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

**Sandrine Makiela** Unit Coordinator

[s.makiela@cqu.edu.au](mailto:s.makiela@cqu.edu.au)

## Schedule

### Week 1 - 06 Mar 2017

Module/Topic	Chapter	Events and Submissions/Topic
Introduction, laboratory safety, laboratory techniques.	Wessner, ch 1	

### Week 2 - 13 Mar 2017

Module/Topic	Chapter	Events and Submissions/Topic
Microbial diversity, form and function.	Wessner, ch 2-5	

### Week 3 - 20 Mar 2017

Module/Topic	Chapter	Events and Submissions/Topic
Microbial diversity, form and function.	Wessner, ch 2-5	

### Week 4 - 27 Mar 2017

Module/Topic	Chapter	Events and Submissions/Topic
Viruses.	Wessner, ch 5, 8	

<b>Week 5 - 03 Apr 2017</b>		
<b>Module/Topic</b>	<b>Chapter</b>	<b>Events and Submissions/Topic</b>
Microbial culture and metabolism.	Wessner, ch 6, 13	
<b>Vacation Week - 10 Apr 2017</b>		
<b>Module/Topic</b>	<b>Chapter</b>	<b>Events and Submissions/Topic</b>
<b>Week 6 - 17 Apr 2017</b>		
<b>Module/Topic</b>	<b>Chapter</b>	<b>Events and Submissions/Topic</b>
Microbial growth and control of growth.	Wessner, ch 6	
<b>Week 7 - 24 Apr 2017</b>		
<b>Module/Topic</b>	<b>Chapter</b>	<b>Events and Submissions/Topic</b>
Microbial genetics and identification.	Wessner, ch 7, 9	<b>Microorganism Design</b> Due: Week 7 Friday (28 Apr 2017) 11:45 pm AEST
<b>Week 8 - 01 May 2017</b>		
<b>Module/Topic</b>	<b>Chapter</b>	<b>Events and Submissions/Topic</b>
Residential Schools: 2-4th May 5-7th May		
<b>Week 9 - 08 May 2017</b>		
<b>Module/Topic</b>	<b>Chapter</b>	<b>Events and Submissions/Topic</b>
(other residential schools)		
<b>Week 10 - 15 May 2017</b>		
<b>Module/Topic</b>	<b>Chapter</b>	<b>Events and Submissions/Topic</b>
Human and microbial ecology.	Wessner, ch 16, 18	
<b>Week 11 - 22 May 2017</b>		
<b>Module/Topic</b>	<b>Chapter</b>	<b>Events and Submissions/Topic</b>
Mechanisms of disease. OR Environmental ecology. (see Term Specific Information)	Wessner, ch 18, 21-23 OR Wessner, ch 14, 15	
<b>Week 12 - 29 May 2017</b>		
<b>Module/Topic</b>	<b>Chapter</b>	<b>Events and Submissions/Topic</b>
Pathological ID and antimicrobials. OR Microbial symbionts. (see Term Specific Information)	Wessner, ch 24 OR Wessner, ch 17	
<b>Review/Exam Week - 05 Jun 2017</b>		
<b>Module/Topic</b>	<b>Chapter</b>	<b>Events and Submissions/Topic</b>
<b>Exam Week - 12 Jun 2017</b>		
<b>Module/Topic</b>	<b>Chapter</b>	<b>Events and Submissions/Topic</b>

## Term Specific Information

You will notice in the Schedule that there are different topic choices in weeks 11 and 12. This is done to make the unit more relevant to your discipline area. Students enrolled in Medical Science will be encouraged to do the disease topics whereas students enrolled in Science / Environmental Science will be encouraged to do the environmental topics. Students enrolled in other program areas will be given the choice of which to study.

## Assessment Tasks

### 1 Microorganism Design

#### Assessment Type

Written Assessment

#### Task Description

Keeping in mind your chosen field of study, you are required to design a microorganism which is best suited to a particular environment. Please choose **one** of the following:

1. An opportunistic pathogen, which causes bloating of the human digestive system.
2. A pathogen of the human nervous system, which causes behavioural changes.
3. A decomposer in a grassland, which degrades plastic.
4. A pathogen of dicotyledon plant flowers, which causes flower deformity.

**Please note** that you are designing a hypothetical organism.

In your paper, you will be required to:

- Name your microorganism, both genus and species.
- Decide on the type of organism (bacterium, fungus, virus, or protozoan).
- Select the features of your microorganism based on your knowledge of microbial form and function, physiology and ecology. These features should enable your microorganism to survive and be successful in its environment (in the case of a disease, you may also choose additional symptoms).
- Rationalise your choices based on relevant literature.

Suggested length: 2000 words.

#### Assessment Due Date

Week 7 Friday (28 Apr 2017) 11:45 pm AEST

#### Return Date to Students

Week 9 Friday (12 May 2017)

#### Weighting

20%

#### Minimum mark or grade

40%

#### Assessment Criteria

The complete assessment rubrics will be available on the Moodle site, and will be on the following criteria:

- Knowledge of theory (30%)
- Selected features and rationalisation (40%)
- Presentation (10%)
- Clarity of expression (10%)
- Referencing (10%)

#### Referencing Style

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

#### Submission

Online

#### Learning Outcomes Assessed

- Explain the principles by which microbes are classified, using traditional and molecular approaches
- Describe the relationship between form and function in the major groups of microbes

#### Graduate Attributes

- Communication
- Critical Thinking
- Information Literacy
- Information Technology Competence

## 2 Practical Competencies

### Assessment Type

Practical and Written Assessment

### Task Description

This assessment is in 3 parts:

Part 1 - pre-lab quizzes. Students are required to do online quizzes based on the laboratory manual and provided instructional videos before coming to the laboratory. There are 5 quizzes in total, and all will be open from the start of term. Rockhampton internal students will do these weekly. Distance students will do them all before coming to residential school. Each quiz will consist of 5 questions and will be timed (15min). You can have 2 attempts at each quiz.

Part 2 - practical competencies. Students will be marked on 7 practical skills during either internal laboratories (Rockhampton internal students only) or residential school. These skills are: aseptic technique, pipetting, the four streak dilution method, microscope use, Gram staining, fungal slide preparation, and microbial identification. The marking will occur during the normal course of the practical sessions (it is not under exam conditions). Detailed descriptions and requirements for this task will be available from the Moodle site.

Part 3 - post-lab quiz. Students are required to do an online quiz (short-answer questions) based on the results of the practical sessions. The quiz will open on the last day of your practical session (whether internal laboratories or residential school). The quiz will consist of 5 questions and will be timed (45min). You have one attempt only.

### Assessment Due Date

Part 1 - 5pm AEST the day before your practical session, Part 3 - 2 weeks after the last day of your practical session.

### Return Date to Students

Part 1 - within half an hour, Part 3 - two weeks after the due date.

### Weighting

20%

### Minimum mark or grade

40%

### Assessment Criteria

Part 1 is worth 5%, and will be marked as the total of all five quizzes (your highest mark of each).

Part 2 is worth 10%, and will be marked on how well you perform each competency and the result (final product). A detailed marks sheet will be available on the Moodle site.

Part 3 is worth 5%, and will be your quiz mark.

### Referencing Style

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

### Submission

Online

### Learning Outcomes Assessed

- Demonstrate basic practical microbiological procedures in the laboratory in a safe and efficient manner
- Interpret the results of laboratory experiments in the context of the underlying microbiological principles

### Graduate Attributes

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

## Examination

### Outline

Complete an invigilated examination.

### Date

During the examination period at a CQUniversity examination centre.

### Weighting

60%



**Length**

180 minutes

**Minimum mark or grade**

50%

**Exam Conditions**

Closed Book.

**Materials**

No calculators permitted

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