



BMOL3401

Applied and Medical Microbiology

Session 2, Weekday attendance, North Ryde 2020

Department of Molecular Sciences

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Notice

As part of [Phase 3 of our return to campus plan](#), most units will now run tutorials, seminars and other small group learning activities on campus for the second half-year, while keeping an online version available for those students unable to return or those who choose to continue their studies online.

To check the availability of face-to-face and online activities for your unit, please go to [timetable viewer](#). To check detailed information on unit assessments visit your unit's iLearn space or consult your unit convenor.

General Information

Unit convenor and teaching staff

Unit Convenor

Sasha Tetu

sasha.tetu@mq.edu.au

Contact via sasha.tetu@mq.edu.au

room 201 14ER (E8A201)

Monday-Thursday

Credit points

10

Prerequisites

(BMOL2401 or CBMS215 or CBMS202)

Corequisites

Co-badged status

BMOL6431

Unit description

Applied and Medical Microbiology examines the microbial world and how it interacts with our own. A key focus will be the role of microorganisms in human health and disease, covering topics ranging from the role of the human microbiome and the body's natural defences in protecting against microbial disease to epidemiology and the pathogenesis of infectious microorganisms. This unit covers medically important bacteria, fungi and viruses as well as antimicrobial agents, microbial resistance and susceptibility testing. Topics in applied microbiology include biotechnology, synthetic biology, food and water microbiology. In the hands-on laboratory sessions students gain skills in the current tools and techniques used in medical and applied microbiology laboratories. This unit is especially valuable for students majoring in biomolecular sciences, biology, and medical sciences.

Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are available at <https://www.mq.edu.au/study/calendar-of-dates>

Learning Outcomes

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

ULO1: Explain principles of how microorganisms colonise different niches, and how they

respond to their chemical, physiological and physical environment, in complex communities.

ULO2: Demonstrate key practical skills in working with microorganisms, including being able to apply and adapt methods to identify microorganisms and the use of good microbiological practices.

ULO3: Integrate ideas, discuss and communicate results effectively for verbal and written presentation including sourcing appropriate microbiology literature to support scientific data.

ULO4: Work cooperatively in a team through engagement, exercising initiative, and with accountability in order to maximise the achievement of goals.

ULO5: Acquire knowledge and understanding of how microbiology concepts apply to diverse areas such as medicine and health, industry, agriculture and biotechnology.

Assessment Tasks

| Name | Weighting | Hurdle | Due |
|---|-----------|--------|-------------|
| Practical attendance | 0% | Yes | weeks 2-12 |
| Mid Semester Test | 15% | No | week 7 |
| Practical and tutorial work | 20% | No | weeks 2-12 |
| Final Examination | 55% | No | exam period |
| Microbe presentation | 10% | No | week 10 |

Practical attendance

Assessment Type ¹: Participatory task

Indicative Time on Task ²: 0 hours

Due: **weeks 2-12**

Weighting: **0%**

This is a hurdle assessment task (see [assessment policy](#) for more information on hurdle assessment tasks)

You are expected to attend and participate in at least 80% of the practical laboratory classes to pass this unit. This is a hurdle requirement.

On successful completion you will be able to:

- Demonstrate key practical skills in working with microorganisms, including being able to apply and adapt methods to identify microorganisms and the use of good microbiological practices.
- Work cooperatively in a team through engagement, exercising initiative, and with accountability in order to maximise the achievement of goals.

Mid Semester Test

Assessment Type ¹: Quiz/Test

Indicative Time on Task ²: 10 hours

Due: **week 7**

Weighting: **15%**

Mid Semester Test

On successful completion you will be able to:

- Explain principles of how microorganisms colonise different niches, and how they respond to their chemical, physiological and physical environment, in complex communities.
- Acquire knowledge and understanding of how microbiology concepts apply to diverse areas such as medicine and health, industry, agriculture and biotechnology.

Practical and tutorial work

Assessment Type ¹: Lab book

Indicative Time on Task ²: 20 hours

Due: **weeks 2-12**

Weighting: **20%**

Pre-practical exercises, performance in the practicals, tutorials and post-practical exercises and laboratory record keeping will be used to calculate the final practical mark. The tasks are designed to encourage you to engage with practical material and develop useful workplace skills including: planning and time management, safe working practices and good record keeping.

On successful completion you will be able to:

- Demonstrate key practical skills in working with microorganisms, including being able to apply and adapt methods to identify microorganisms and the use of good microbiological

practices.

- Integrate ideas, discuss and communicate results effectively for verbal and written presentation including sourcing appropriate microbiology literature to support scientific data.
- Work cooperatively in a team through engagement, exercising initiative, and with accountability in order to maximise the achievement of goals.

Final Examination

Assessment Type ¹: Examination

Indicative Time on Task ²: 32 hours

Due: **exam period**

Weighting: **55%**

The final exam will require students to apply terminology and concepts learnt in the lecture and practical components to answer a variety of questions of a critical thinking nature.

On successful completion you will be able to:

- Explain principles of how microorganisms colonise different niches, and how they respond to their chemical, physiological and physical environment, in complex communities.
- Acquire knowledge and understanding of how microbiology concepts apply to diverse areas such as medicine and health, industry, agriculture and biotechnology.

Microbe presentation

Assessment Type ¹: Presentation

Indicative Time on Task ²: 12 hours

Due: **week 10**

Weighting: **10%**

Students will prepare and present a short report on a well studied microorganism.

On successful completion you will be able to:

- Explain principles of how microorganisms colonise different niches, and how they respond to their chemical, physiological and physical environment, in complex communities.

- Integrate ideas, discuss and communicate results effectively for verbal and written presentation including sourcing appropriate microbiology literature to support scientific data.
 - Work cooperatively in a team through engagement, exercising initiative, and with accountability in order to maximise the achievement of goals.
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¹ If you need help with your assignment, please contact:

- the academic teaching staff in your unit for guidance in understanding or completing this type of assessment
- the [Writing Centre](#) for academic skills support.

² Indicative time-on-task is an estimate of the time required for completion of the assessment task and is subject to individual variation

Delivery and Resources

Lectures

The expectation is that you will engage with lecture material and carry out the additional readings and/or viewing of associated material which is provided with certain lectures.

Attending live zoom sessions is highly recommended. While these lectures will be scheduled for recording this is not guaranteed and if there are technical issues with recordings the affected lecture(s) will not be re-recorded.

Lectures will include questions and discussion sessions and participation is highly encouraged.

Looking over lecture slides or recordings are NOT a suitable substitute to attending the lectures. Students tend to perform poorly if they do not engage with lectures throughout the term and this will also impact your ability to prepare for and understand material in practical and tutorial sessions.

Practicals and tutorials

Both lab-based practical classes and practical skill focussed online tutorials are designed to develop microbiology laboratory skills, safety practices and critical and analytical thought. Pre-practical exercises are designed to make sure you are ready for the practical work and have grasped the relevant theory and safety practices necessary.

Self-Study

The unit expectation is that you will spend time outside formal instruction reviewing notes taken in class, reading assigned materials (textbook sections and other referenced papers or articles) and exploring other sources of information on applied and medical microbiology. To self-assess

your degree of understanding and to practice problem solving skills you are expected to attempt problems from the lectures, textbook and other resources.

Required and Recommended Texts and Materials

Practical Manual and Tutorial outlines – information outlining each tutorial and laboratory session will be available on iLearn for download one week prior to the session. Please download and complete any preparatory activities prior to your session.

You will be expected to bring a copy of practical manual notes, a lab coat, closed shoes and lab notebook to each practical.

Prescribed text: Brock Biology of Microorganisms Global Edition 15th edition. Madigan, Martenko, Stahl,

Clark, Buckley. Publisher: Pearson education Inc, San Francisco. ISBN: 9781292235103

Interactive lectures (via zoom), laboratory practical sessions and practical skill focussed online tutorials are all integral components of the unit. A comprehensive understanding of material covered in each of these course components will greatly assist you in the final exam, which covers ALL components of the unit.

Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central \(https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central\)](https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central). Students should be aware of the following policies in particular with regard to Learning and Teaching:

- [Academic Appeals Policy](#)
- [Academic Integrity Policy](#)
- [Academic Progression Policy](#)
- [Assessment Policy](#)
- [Fitness to Practice Procedure](#)
- [Grade Appeal Policy](#)
- [Complaint Management Procedure for Students and Members of the Public](#)
- [Special Consideration Policy](#) (**Note:** *The Special Consideration Policy is effective from 4 December 2017 and replaces the Disruption to Studies Policy.*)

Students seeking more policy resources can visit the [Student Policy Gateway \(https://students.mq.edu.au/support/study/student-policy-gateway\)](https://students.mq.edu.au/support/study/student-policy-gateway). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

If you would like to see all the policies relevant to Learning and Teaching visit [Policy Central \(http://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central\)](http://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central).

Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: <https://students.mq.edu.au/study/getting-started/student-conduct>

Results

Results published on platform other than [eStudent](#), (eg. iLearn, Coursera etc.) or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in [eStudent](#). For more information visit ask.mq.edu.au or if you are a Global MBA student contact globalmba.support@mq.edu.au

Student Support

Macquarie University provides a range of support services for students. For details, visit <http://students.mq.edu.au/support/>

Learning Skills

Learning Skills (mq.edu.au/learningskills) provides academic writing resources and study strategies to help you improve your marks and take control of your study.

- [Getting help with your assignment](#)
- [Workshops](#)
- [StudyWise](#)
- [Academic Integrity Module](#)

The Library provides online and face to face support to help you find and use relevant information resources.

- [Subject and Research Guides](#)
- [Ask a Librarian](#)

Student Services and Support

Students with a disability are encouraged to contact the [Disability Service](#) who can provide appropriate help with any issues that arise during their studies.

Student Enquiries

For all student enquiries, visit Student Connect at ask.mq.edu.au

If you are a Global MBA student contact globalmba.support@mq.edu.au

IT Help

For help with University computer systems and technology, visit http://www.mq.edu.au/about_us/

[offices_and_units/information_technology/help/](#).

When using the University's IT, you must adhere to the [Acceptable Use of IT Resources Policy](#).
The policy applies to all who connect to the MQ network including students.