



CBMS335

Applied and Medical Microbiology

S2 Day 2019

Dept of Molecular Sciences

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Disclaimer

Macquarie University has taken all reasonable measures to ensure the information in this publication is accurate and up-to-date. However, the information may change or become out-dated as a result of change in University policies, procedures or rules. The University reserves the right to make changes to any information in this publication without notice. Users of this publication are advised to check the website version of this publication [or the relevant faculty or department] before acting on any information in this publication.

General Information

Unit convenor and teaching staff

Unit Convenor

Sasha Tetu

sasha.tetu@mq.edu.au

Contact via sasha.tetu@mq.edu.au

14ER201 (E8A201)

In Office: Tuesday 2-5pm, Otherwise via email (Workdays Mon-Thur)

Credit points

3

Prerequisites

(39cp at 100 level or above) including (CBMS215 or CBMS202)

Corequisites

Co-badged status

Unit description

This unit is concerned with the importance of micro-organisms in medicine. Topics range from the role of the normal human microflora and the body's natural defences in protecting against microbial disease to the epidemiology and the pathogenesis of infectious microorganisms. The unit covers medically important bacteria, fungi and viruses focusing on the pathology and physiological changes associated with infections. In the hands-on laboratory sessions students gain skills in using the tools and techniques used in a medical laboratory whilst developing interpretive skills for the clinical diagnosis of infectious diseases. 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:

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

Apply and adapt methods to identify microorganisms.

Interpret and formulate methodologies appropriate for solving current problems in the field.

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

General Assessment Information

- If you are unable to attend a practical class, exam, or hand in a form of assessment due to illness or misadventure, you must submit a request for special consideration no later than five (5) working days after the assessment task date or due date. Information for Special consideration can be found here: <https://students.mq.edu.au/study/my-study-program/special-consideration>.
- You should also immediately contact the Unit Convenor, Dr Sasha Tetu (sasha.tetu@mq.edu.au).
- You may only attend the practical class for which you are enrolled, as shown in your eStudent timetable.

Assessment Tasks

Name	Weighting	Hurdle	Due
Practical attendance	0%	Yes	Week 2-12
Mid Semester Test	15%	No	Week 7
Microbe Presentation	10%	No	Week 8
Practical assessment	20%	No	Week 2-12
Final Examination	55%	No	University Examination Period
Lecture-based Questions	0%	No	continuous

Practical attendance

Due: **Week 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:

- Apply and adapt methods to identify microorganisms.
- Interpret and formulate methodologies appropriate for solving current problems in the field.

Mid Semester Test

Due: **Week 7**

Weighting: **15%**

There will be a 45 minute test in Week 7 in the practical session which will cover course material delivered in weeks 1-6. This is designed to give you specific feedback on your understanding of the topics up to this stage to assist you in your further study of the unit.

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.
- Interpret and formulate methodologies appropriate for solving current problems in the field.

Microbe Presentation

Due: **Week 8**

Weighting: **10%**

Students will work in pairs to prepare and present a short report on a well studied 'helpful' or 'harmful' microorganism (~3-4 minutes). This will include an explanation of one specific interesting research finding based on a research publication in PubMed. Talks will take place during your allocated practical session in week 8 and slides must be uploaded to iLearn at least 48 hours beforehand. You will be required to contribute to peer-marking of the talks within your session.

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.
- Apply and adapt methods to identify microorganisms.
- Integrate ideas, discuss and communicate results effectively and succinctly for verbal

and written presentation including sourcing appropriate microbiology literature to support scientific data.

Practical assessment

Due: **Week 2-12**

Weighting: **20%**

Pre-practical exercises, performance in the practical, post-practical exercises and assessment of laboratory books will be used to calculate the final practical mark. The assessment 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:

- Apply and adapt methods to identify microorganisms.
- Interpret and formulate methodologies appropriate for solving current problems in the field.
- Integrate ideas, discuss and communicate results effectively and succinctly for verbal and written presentation including sourcing appropriate microbiology literature to support scientific data.

Final Examination

Due: **University Examination 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. The exam will consist of multiple-choice questions, short and long answer questions. You will need to take a calculator into the examination. Only non programmable calculators may be taken into the examination (3 hours plus 10 minutes reading time).

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.
- Interpret and formulate methodologies appropriate for solving current problems in the field.

Lecture-based Questions

Due: **continuous**

Weighting: **0%**

Students are encouraged to attend lectures and participate by submitting a question relating to lecture content. This activity will encourage students to engage with the lecture material, reflect on their understanding of lecture content and flag topics which may require further explanation. Students who attend and provide relevant questions for at least 10 lectures will be awarded 2% bonus mark, those contributing valid questions for 20 or more lectures will gain 5% bonus mark, which will be added to the 100% overall course mark.

On successful completion you will be able to:

- Interpret and formulate methodologies appropriate for solving current problems in the field.
- Integrate ideas, discuss and communicate results effectively and succinctly for verbal and written presentation including sourcing appropriate microbiology literature to support scientific data.

Delivery and Resources

Classes

Lecture times

Tuesday 1-2pm	23 Wallys Walk -T2 Theatre
Wednesday 12-1pm	14 Sir Christopher Ondaatje Ave - T5 Theatre

Lectures begin in week 1 of semester 2. Lecture graphics will be available in ilearn on the day before each lecture.

Laboratory classes

Monday 9.30-1pm	14 Eastern Rd -150 Science Lab

Practicals will begin in Week 2. Student need to register and attend one laboratory class per week. You must attend the class that you have registered for.

Teaching and Learning Strategy

CBMS335 is a 3-credit point, half year unit and will require an average of 9 hours of work per week (contact hours plus self study time).

The unit expectation is that you will:

- Read the recommended material and prepare for the laboratory classes.

- Actively engage with both lecture and practical components of the course.
- Complete all assessments and final exam.

If you prepare and attend all components of the unit and work consistently and continuously throughout the semester, you should be able to develop a strong understanding of the subject, develop key microbiology practical skills and perform satisfactorily in this unit.

Lectures

Most lecture material will be available on the unit web site or via links on this site. It is helpful to download the lecture material and bring it into the lecture class so you can spend most of the time listening to the lecturer rather than transcribing.

Lectures will be presented formally in most weeks, although questions may be asked in class or short discussions held during lecture periods.

For some lecture slots students will be expected to view/read material provided beforehand and the lecture period will involve discussion of this material.

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.

While 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.

Lecture participation is encouraged and students will be asked to submit a question at the end of each lecture regarding some aspect of the content to encourage them to reflect on their understanding the content and flag aspects for which they would benefit from further discussion. Students who attend and submit a relevant question on the lecture material will be awarded bonus marks (2 marks for those providing relevant questions for at least 10 lectures, 5 bonus marks for those contributing valid questions for 20 or more lectures).

Looking over lecture slides or recordings are NOT a suitable substitute to attending the lectures. Students historically fall behind and perform poorly if they do not attend the lecture classes and further material will in some cases be provided in the lecture class, so a student that does not attend the class will not be as well prepared as they would otherwise be.

Practicals

Practical classes are designed to develop microbiology laboratory skills, safety practices and critical and analytical thought.

Pre-practical questions are designed to make sure you are ready for the practical work and have grasped the relevant theory and safety practices necessary.

Laboratory record keeping in a designated lab book is required to help you develop skills in record keeping, methodology development, critical observation and calculations and assess your understanding of the theory behind the experiments conducted .

Students will be required to self-assess their laboratory record keeping skills.

Required and Recommended Texts and/or Materials

Prescribed text:

Brock Biology of Microorganisms Global Edition 15th edition. Madigan, Martenko, Stahl, Clark, Buckley. Publisher: Pearson education Inc, San Francisco. ISBN: 9781292235103

Required:

CBMS335 Microbiology Practical Manual - each laboratory session will be available on iLearn for download one week before the laboratory session, please make sure you bring this to class. Please note you must also bring a lab coat, closed shoes and lab notebook to each practical.

Technology Used and Required

You are expected to access the unit web site on a frequent basis and download PDF files provided. Please note information may also be sent by email to your student email account so please look at your email account on a frequent basis.

Unit Web Page

The URL of the CBMS335 Microbiology ilearn site is: <http://learn.mq.edu.au/>

You will be asked for a username and password. Your username is your student MQID. Your MQID and password have been mailed to you by the University. If you have lost them go to the student portal: <http://my.mq.edu.au>

You are expected to access the unit web site very frequently. This site contains important information including notes on ALL the topics to be covered.

Unit Schedule

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.*)

Undergraduate 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](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>).

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 improve your marks and take control of your study.

- [Workshops](#)
- [StudyWise](#)
- [Academic Integrity Module for Students](#)
- [Ask a Learning Adviser](#)

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.

Graduate Capabilities

Creative and Innovative

Our graduates will also be capable of creative thinking and of creating knowledge. They will be imaginative and open to experience and capable of innovation at work and in the community. We want them to be engaged in applying their critical, creative thinking.

This graduate capability is supported by:

Learning outcomes

- Apply and adapt methods to identify microorganisms.
- Interpret and formulate methodologies appropriate for solving current problems in the field.

Assessment task

- Microbe Presentation

Capable of Professional and Personal Judgement and Initiative

We want our graduates to have emotional intelligence and sound interpersonal skills and to demonstrate discernment and common sense in their professional and personal judgement. They will exercise initiative as needed. They will be capable of risk assessment, and be able to handle ambiguity and complexity, enabling them to be adaptable in diverse and changing

environments.

This graduate capability is supported by:

Learning outcomes

- Apply and adapt methods to identify microorganisms.
- Interpret and formulate methodologies appropriate for solving current problems in the field.

Assessment tasks

- Practical assessment
- Final Examination
- Lecture-based Questions

Commitment to Continuous Learning

Our graduates will have enquiring minds and a literate curiosity which will lead them to pursue knowledge for its own sake. They will continue to pursue learning in their careers and as they participate in the world. They will be capable of reflecting on their experiences and relationships with others and the environment, learning from them, and growing - personally, professionally and socially.

This graduate capability is supported by:

Learning outcomes

- Interpret and formulate methodologies appropriate for solving current problems in the field.
- Integrate ideas, discuss and communicate results effectively and succinctly for verbal and written presentation including sourcing appropriate microbiology literature to support scientific data.

Assessment task

- Lecture-based Questions

Discipline Specific Knowledge and Skills

Our graduates will take with them the intellectual development, depth and breadth of knowledge, scholarly understanding, and specific subject content in their chosen fields to make them competent and confident in their subject or profession. They will be able to demonstrate, where relevant, professional technical competence and meet professional standards. They will be able to articulate the structure of knowledge of their discipline, be able to adapt discipline-specific knowledge to novel situations, and be able to contribute from their discipline to inter-disciplinary solutions to problems.

This graduate capability is supported by:

Learning outcomes

- Explain principles of how microorganisms colonise different niches, and how they respond to their chemical, physiological and physical environment, in complex communities.
- Apply and adapt methods to identify microorganisms.
- Interpret and formulate methodologies appropriate for solving current problems in the field.
- Integrate ideas, discuss and communicate results effectively and succinctly for verbal and written presentation including sourcing appropriate microbiology literature to support scientific data.

Assessment tasks

- Practical attendance
- Mid Semester Test
- Microbe Presentation
- Practical assessment
- Final Examination

Critical, Analytical and Integrative Thinking

We want our graduates to be capable of reasoning, questioning and analysing, and to integrate and synthesise learning and knowledge from a range of sources and environments; to be able to critique constraints, assumptions and limitations; to be able to think independently and systemically in relation to scholarly activity, in the workplace, and in the world. We want them to have a level of scientific and information technology literacy.

This graduate capability is supported by:

Learning outcomes

- Explain principles of how microorganisms colonise different niches, and how they respond to their chemical, physiological and physical environment, in complex communities.
- Apply and adapt methods to identify microorganisms.
- Interpret and formulate methodologies appropriate for solving current problems in the field.
- Integrate ideas, discuss and communicate results effectively and succinctly for verbal and written presentation including sourcing appropriate microbiology literature to support scientific data.

Assessment tasks

- Mid Semester Test
- Microbe Presentation
- Practical assessment
- Final Examination
- Lecture-based Questions

Problem Solving and Research Capability

Our graduates should be capable of researching; of analysing, and interpreting and assessing data and information in various forms; of drawing connections across fields of knowledge; and they should be able to relate their knowledge to complex situations at work or in the world, in order to diagnose and solve problems. We want them to have the confidence to take the initiative in doing so, within an awareness of their own limitations.

This graduate capability is supported by:

Learning outcomes

- Apply and adapt methods to identify microorganisms.
- Interpret and formulate methodologies appropriate for solving current problems in the field.
- Integrate ideas, discuss and communicate results effectively and succinctly for verbal and written presentation including sourcing appropriate microbiology literature to support scientific data.

Assessment tasks

- Practical attendance
- Mid Semester Test
- Practical assessment
- Final Examination

Effective Communication

We want to develop in our students the ability to communicate and convey their views in forms effective with different audiences. We want our graduates to take with them the capability to read, listen, question, gather and evaluate information resources in a variety of formats, assess, write clearly, speak effectively, and to use visual communication and communication technologies as appropriate.

This graduate capability is supported by:

Learning outcomes

- 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 and succinctly for verbal and written presentation including sourcing appropriate microbiology literature to support scientific data.

Assessment tasks

- Microbe Presentation
- Practical assessment
- Final Examination
- Lecture-based Questions

Engaged and Ethical Local and Global citizens

As local citizens our graduates will be aware of indigenous perspectives and of the nation's historical context. They will be engaged with the challenges of contemporary society and with knowledge and ideas. We want our graduates to have respect for diversity, to be open-minded, sensitive to others and inclusive, and to be open to other cultures and perspectives: they should have a level of cultural literacy. Our graduates should be aware of disadvantage and social justice, and be willing to participate to help create a wiser and better society.

This graduate capability is supported by:

Learning outcomes

- Explain principles of how microorganisms colonise different niches, and how they respond to their chemical, physiological and physical environment, in complex communities.
- Interpret and formulate methodologies appropriate for solving current problems in the field.

Assessment tasks

- Microbe Presentation
- Practical assessment

Socially and Environmentally Active and Responsible

We want our graduates to be aware of and have respect for self and others; to be able to work with others as a leader and a team player; to have a sense of connectedness with others and country; and to have a sense of mutual obligation. Our graduates should be informed and active participants in moving society towards sustainability.

This graduate capability is supported by:

Learning outcomes

- Interpret and formulate methodologies appropriate for solving current problems in the field.
- Integrate ideas, discuss and communicate results effectively and succinctly for verbal and written presentation including sourcing appropriate microbiology literature to support scientific data.

Assessment task

- Final Examination

Changes from Previous Offering

CBMS335 Applied and Medical Microbiology is a new unit which will be offered for the first time in 2019. This unit will be substantially different to the previously run CBMS335 with new lectures, practicals and assessments.

CBMS335 2019 UNIT DESCRIPTION

Applied and Medical Microbiology will look at 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 the 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.

Feedback

As this is the first year this unit will run, i will be actively seeking feedback throughout the semester. I am most open to suggestions for improving the content and delivery of the unit. Please provide any feedback to Dr. Sasha Tetu, Mrs E Mardones or your practical demonstrator. I will also look to provide opportunities for anonymous feedback/suggestions/comments during semester in both lecture and practical time slots.

Special consideration requests including non-attendance and extensions

Five essential factors of Special Consideration

You need to show that your circumstances meet all of the following criteria:

1. were serious, unexpected and unavoidable

2. were beyond your control
3. caused substantial disruption to your academic work
4. substantially interfered with your otherwise satisfactory fulfilment of the unit requirements
5. lasted at least three consecutive days or a total of 5 days within the teaching period and prevented completion of an assessment task scheduled for a specific date.

Your supporting evidence must include all of the following:

1. identify the circumstances
2. include dates and/or the length of the circumstances
3. explain the severity and impact of the circumstances
4. clearly describe how the circumstances have adversely affected your capacity for effective study to which an assessment relates
5. include the date(s) on which you were seen by the professional providing the evidence

This policy is instituted to support students who experience serious and unavoidable disruption such that they do not reach their usual demonstrated performance level. If this does occur please submit a Special Consideration application using the application form in AskMQ.

Non-Attendance: Submit online the relevant documentation together with a Special Consideration application using the application form in AskMQ as described above.

Students **MUST** contact Dr. Sasha Tetu (sasha.tetu@mq.edu.au) immediately to make alternative arrangements if a laboratory session or an assessment task has been missed. Contact can be by email or phone. The intensive nature of laboratory sessions and assessments over a period of weeks means that non-attendance can significantly impact on your progress, can impact on your ability to complete the assignments and also impacts on your laboratory partner/group.

Final Exam

If you receive special consideration for the final exam, a supplementary exam will be scheduled to take place during a specific period, to be advised during semester 2. By making a special consideration application for the final exam you are declaring yourself available for a resit during the supplementary examination period and will not be eligible for a second special consideration approval based on pre-existing commitments. Please ensure you are familiar with the policy prior to submitting an application. Approved applicants will receive an individual notification one week prior to the exam with the exact date and time of their supplementary examination.

Extensions and penalties

10% of the mark allocated for the assignment will be deducted per day for any work submitted late.

Only medical certificates and/or other appropriate supporting documents outlining other serious, extenuating circumstances will be considered when submitting an assignment after the due date. All applications for special consideration or extension must be sought *before the due*

date unless this is absolutely impossible.

Changes since First Published

Date	Description
21/07/2019	assessment tasks modified