



# CBMS335

## Medical Microbiology

S1 Day 2015

*Science and Engineering Faculty level units*

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## General Information

Unit convenor and teaching staff

Unit Convenor

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Credit points

3

Prerequisites

(39cp including CBMS215) or admission to GCertBiotech

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 diseases caused by microorganisms, accompanying pathophysiological changes as a result of infection, epidemiological aspects and the management and prevention of infection in communities.

Interpret and formulate clinical diagnosis of infection from clinical data.

Apply competent methods to identify pathogens.

Design a research project proposal to include 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.

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

## Assessment Tasks

Name	Weighting	Due
1	15%	24 April 2015
2	10%	25 March 2015
3	25%	27 May 2015
4	50%	June 2015

### 1

Due: **24 April 2015**

Weighting: **15%**

Assessment of theory and the theory of the practical component of the unit.

This will include material discussed in lectures/tutorials/practical. Question format will be: multiple choice, short/ long answer application-type questions.

On successful completion you will be able to:

- Explain principles of diseases caused by microorganisms, accompanying pathophysiological changes as a result of infection, epidemiological aspects and the management and prevention of infection in communities.
- Interpret and formulate clinical diagnosis of infection from clinical data.

### 2

Due: **25 March 2015**

Weighting: **10%**

Submission of an Expression of Interest (EOI) for a research proposal. This assignment will be undertaken as group work in terms of research, discussion and seminar delivery (group assessment). However each student is to submit their own Expression of Interest to allow for

individual assessment of scientific writing.

In this assessment task students prepare an Expression of Interest (EOI) for a research project to be carried out at Macquarie University in a two-year funded Fellowship. Such research Fellowships are highly competitive and an Expression of Interest provides an opportunity for a candidate to propose an idea for a project and demonstrate his/her/their skills to carry out the project. The Expression of Interest provides the reviewers with an outline of what the project is about, what can be achieved, the significance and benefits of the work.

On successful completion you will be able to:

- Explain principles of diseases caused by microorganisms, accompanying pathophysiological changes as a result of infection, epidemiological aspects and the management and prevention of infection in communities.
- Design a research project proposal to include 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.
- Work cooperatively in a team through engagement, exercising initiative, and with accountability in order to maximise the achievement of goals.

### 3

Due: **27 May 2015**

Weighting: **25%**

A variety of case studies in clinical microbiology will be provided for interpretation. Over a number of weeks student groups will follow the clinical guidelines used in pathology laboratories to assess the case study, build a case for their patient, investigate the responsible organism/s and evaluate the aetiology, epidemiology and pathogenesis of the agent and the disease it causes. This task is assessed continually during the 5 week period. It's assessment structure provides the opportunity for improvement as you learn.

On successful completion you will be able to:

- Explain principles of diseases caused by microorganisms, accompanying pathophysiological changes as a result of infection, epidemiological aspects and the management and prevention of infection in communities.
- Interpret and formulate clinical diagnosis of infection from clinical data.
- Apply competent methods to identify pathogens.
- Design a research project proposal to include 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.
- Work cooperatively in a team through engagement, exercising initiative, and with accountability in order to maximise the achievement of goals.

## 4

Due: **June 2015**

Weighting: **50%**

The final examination will cover the theory, tutorial and practical content of the unit. Question format will include multiple choice questions and short and long answer questions.

On successful completion you will be able to:

- Explain principles of diseases caused by microorganisms, accompanying pathophysiological changes as a result of infection, epidemiological aspects and the management and prevention of infection in communities.
- Interpret and formulate clinical diagnosis of infection from clinical data.
- Apply competent methods to identify pathogens.

## Delivery and Resources

**Lectures** will be held on: Tuesdays 9-10 am in E4B 308

Friday 9-10 am in E4B 308

**Practicals** will be held on: Wednesday 1-2 pm in E8A 150

Thursday 9-1 pm in E8A 150

Practicals start in the first week of the semester (25th February 2015). **Please note that practical classes are a compulsory component for this course. Medical certificates are required should you be absent due to illness.** These should be submitted together with a special consideration request which can be found at: [www.mq.edu.au/policy/docs/special\\_consideration/policy.html](http://www.mq.edu.au/policy/docs/special_consideration/policy.html) and handed in to the Science Centre E7A as soon as possible.

**Tutorials** will be held on: Fridays 1-2 pm in E5A 170

Please note that **tutorials are highly recommended** as they cover the theory behind the

practical components to allow students to develop the skill of diagnostic culture interpretation ie plate reading and skills in clinical diagnosis.

### **Resources:**

**Microbiology, A Clinical Approach**, Anthony Strekauskas, Jennifer Strekauskas, Danielle Moszyk-Sterkauskas, Garland Science, Taylor & Francis Group, 2010.

**Clinical Laboratory Microbiology** – Karen M Kiser, William C Payne, Teresa A Taff, Pearson Clinical laboratory Science Series, Pearson Education, 2011.

### **Teaching and Learning Strategy**

CBMS335 is a 3 credit point unit that requires an average of 9 hours study/work per week. This includes contact hours and self study. Class time is provided for completion of assessment task 2 and 3. Although lectures are recorded, please note that some lectures are delivered in Flipped Classroom mode. These will not be recorded.

The unit expectation is that students will:

- Read the recommended material and prepare for laboratory classes. Extra self reading will be required.
- Support lecture material by consulting recommended resources.
- Demonstrate competence in assignments and tutorial work.
- Collaborate with members in group work.
- Perform satisfactorily in both the practical and theoretical components in order to complete the unit.

## **Policies and Procedures**

Macquarie University policies and procedures are accessible from [Policy Central](#). Students should be aware of the following policies in particular with regard to Learning and Teaching:

Academic Honesty Policy [http://mq.edu.au/policy/docs/academic\\_honesty/policy.html](http://mq.edu.au/policy/docs/academic_honesty/policy.html)

Assessment Policy <http://mq.edu.au/policy/docs/assessment/policy.html>

Grading Policy <http://mq.edu.au/policy/docs/grading/policy.html>

Grade Appeal Policy <http://mq.edu.au/policy/docs/gradeappeal/policy.html>

Grievance Management Policy [http://mq.edu.au/policy/docs/grievance\\_management/policy.html](http://mq.edu.au/policy/docs/grievance_management/policy.html)

Disruption to Studies Policy [http://www.mq.edu.au/policy/docs/disruption\\_studies/policy.html](http://www.mq.edu.au/policy/docs/disruption_studies/policy.html) *The Disruption to Studies Policy is effective from March 3 2014 and replaces the Special Consideration Policy.*

In addition, a number of other policies can be found in the [Learning and Teaching Category](#) of 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/support/student\\_conduct/](https://students.mq.edu.au/support/student_conduct/)

## Results

Results shown in *iLearn*, 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](http://ask.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](http://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](http://ask.mq.edu.au)

## IT Help

For help with University computer systems and technology, visit <http://informatics.mq.edu.au/help/>.

When using the University's IT, you must adhere to the [Acceptable Use 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**

- Interpret and formulate clinical diagnosis of infection from clinical data.
- Apply competent methods to identify pathogens.
- Design a research project proposal to include methodologies appropriate for solving current problems in the field.

### **Assessment tasks**

- 1
- 2
- 3
- 4

## **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**

- Interpret and formulate clinical diagnosis of infection from clinical data.
- Design a research project proposal to include 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.
- Work cooperatively in a team through engagement, exercising initiative, and with accountability in order to maximise the achievement of goals.

### **Assessment tasks**

- 2
- 3



## 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 diseases caused by microorganisms, accompanying pathophysiological changes as a result of infection, epidemiological aspects and the management and prevention of infection in communities.
- Interpret and formulate clinical diagnosis of infection from clinical data.
- Apply competent methods to identify pathogens.
- Design a research project proposal to include methodologies appropriate for solving current problems in the field.

### Assessment tasks

- 1
- 2
- 3
- 4

## 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 diseases caused by microorganisms, accompanying pathophysiological changes as a result of infection, epidemiological aspects and the management and prevention of infection in communities.
- Interpret and formulate clinical diagnosis of infection from clinical data.
- Apply competent methods to identify pathogens.

- Design a research project proposal to include methodologies appropriate for solving current problems in the field.

## **Assessment tasks**

- 1
- 2
- 3
- 4

## **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**

- Interpret and formulate clinical diagnosis of infection from clinical data.
- Apply competent methods to identify pathogens.
- Design a research project proposal to include 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**

- 1
- 2
- 3
- 4

## **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 diseases caused by microorganisms, accompanying pathophysiological changes as a result of infection, epidemiological aspects and the management and prevention of infection in communities.
- Interpret and formulate clinical diagnosis of infection from clinical data.
- Apply competent methods to identify pathogens.
- Design a research project proposal to include 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

- 1
- 2
- 3
- 4

## 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 outcome

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

## Assessment tasks

- 2
- 3

## 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 clinical diagnosis of infection from clinical data.
- Design a research project proposal to include 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.
- Work cooperatively in a team through engagement, exercising initiative, and with accountability in order to maximise the achievement of goals.

## **Assessment tasks**

- 2
- 3

## **Changes from Previous Offering**

Please note that there are significant changes to the unit which may affect your learning.

- The 10% assessable component comprising tutorial questions have been removed. These were introduced in the last offering and found to be of extreme value as they ensured student participation, engagement and facilitated the application of learnt knowledge. However, they require extra time to be allocated for marking which, in this offering, is not available. Tutorial questions will be provided for discussion, however they will not be assessable.
- For the same reason, the option to gain extra bonus marks for laboratory book presentation has also been removed.
- As a result of workload concerns by the department, feedback on student performance will no longer be provided to students in the written form. For Assignment 2, feedback will be provided in the form of a 10-minute meeting with each student group for every week for the duration of the assignment. As a result, students will need to ensure that they are available should they want to receive personal feedback during that session.