



CBMS335

Medical Microbiology

S1 Day 2014

Chemistry and Biomolecular Sciences

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General Information

Unit convenor and teaching staff

Unit Convenor

Maria Lategan

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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
5	5%	3 March-12 June
1	10%	2 May 2014
2	10%	3 April 2014
3	25%	12 June 2014
4	50%	June 2013

5

Due: **3 March-12 June**

Weighting: **5%**

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

1

Due: **2 May 2014**

Weighting: **10%**

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

This will include material discussed in lectures/tutorials/practical. Question format will be: multiple choice, True or False, fill in/match words nature, short/ 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.

2

Due: **3 April 2014**

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: **12 June 2014**

Weighting: **25%**

A variety of case studies in clinical microbiology will be provided. Over a number of weeks student groups will follow the clinical guidelines used in pathology laboratories to assess the case study provided.

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 2013**

Weighting: **50%**

The final examination will cover the theory, tutorial and practical content of the unit. Question format will include multiple choice questions, True or False 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 12-1 pm 8-9 in E7B 263

Thursday 4-5 pm in E7B 264

Practicals will be held on: Thursday 9-1 pm in E8A 150

Practicals start in the first week of the semester (27th February 2013). **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 and handed in to the Science Centre E7A as soon as possible.

Tutorials will be held on: Fridays 10-11 pm in E5A 170

Please note that **tutorials are a compulsory component of the unit** 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.

Microbiology and infection control for health professionals/ Gary Lee and Penny Bishop. 4th Edition, Pearson Education Australia, 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 3.

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.

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

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

Disruption to Studies Policy 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/

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

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

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

- 5
- 2
- 3

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:

Assessment task

- 5

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

- 5
- 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

- 5
- 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

- 5
- 1
- 2
- 3

- 4

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

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

- 5
- 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