



The University of Southern Queensland

## Course specification

This version produced 20 Dec 2007.

The current and official versions of the course specifications are available on the web at  
<<http://www.usq.edu.au/coursespecification/current>>.

Please consult the web for updates that may occur during the year.

### Description: Medical Microbiology 1

Subject	Cat-nbr	Class	Term	Mode	Units	Campus
BIO	3317	62704	1, 2007	ONC	1.00	Toowoomba

<b>Academic group:</b>	FOSCI
<b>Academic org:</b>	FOS002
<b>Student contribution band:</b>	2
<b>ASCED code:</b>	010911

### STAFFING

Examiner: Michael Kotiw

Moderator: Bernadette McCabe

### REQUISITES

Pre-requisite: BIO2205

### RATIONALE

The aim of this course is to enhance the student's understanding of medical bacteriology at an advanced level. This requires a detailed knowledge of the mechanisms of bacterial pathogenesis from a classical and molecular perspective. Detailed analysis of specific disease syndromes, together with discussion of relevant diagnostic and therapeutic options will enable the student to integrate these different fields of study and will enhance their capacity to make critical and informed judgements in a professional setting.

### SYNOPSIS

This course builds on the foundations obtained in course BIO2205. The course focuses on the nature, diagnosis and control of diseases in humans caused by bacteria with an emphasis on enhancing the student's understanding of bacterial pathogenesis at the molecular level. Areas of specific emphasis include the nature of bacterial virulence factors, antibacterial therapy and mechanisms of resistance, paradigms in microbe/host interactions and a system approach to clinical infectious disease syndromes

### OBJECTIVES

On completion of this course students will be able to:

1. give an overview of examples of major clinical diseases due to infections by bacteria (Exam);
2. demonstrate an understanding of methods available for the diagnosis and characterisation of bacterial infections (Exam);

3. give an overview of the human immunological defences against microbial infection (Exam);
4. demonstrate an understanding of bacterial virulence factors (Exam);
5. demonstrate an understanding of the nature, mechanisms of activity, appropriate use and limitations of antibacterial chemotherapeutic agents (Exam);
6. demonstrate an understanding of how bacteria become resistant to chemotherapeutic agents (Exam);
7. demonstrate an understanding through case studies, paradigms in host/bacteria interactions (Exam);
8. demonstrate an understanding of the nature, diagnosis and options for management of specified infectious disease syndromes (Exam);
9. perform and interpret bacterial culture, identification and antibiotic sensitivity assays from clinical or pseudo clinical specimens (Project Reports);

## TOPICS

	Description	Weighting (%)
1.	Overview of medical microbiology	8.00
2.	Overview of medically important bacterial infections	8.00
3.	Fundamentals of diagnosis and characterisation of bacterial pathogens: conventional approaches to characterisation of bacterial agents; determining colonisation vs infection; advances in characterisation of bacterial agents - PCR, Probes, RFLPS	8.00
4.	Fundamentals of the human immune response to infectious agents: cells of the immune system; the specific and non specific defence mechanisms; humoral immunity; cell mediated immunity; integration of the immune response	24.00
5.	Bacterial virulence factors: colonisation; invasive attributes; evasion mechanisms; exotoxins; virulence gene control; pathogenicity islands	12.00
6.	Bacterial control: antibiotics and therapeutics	12.00
7.	Case studies in host/bacterial interactions	12.00
8.	Infectious syndromes: gastric and duodenal ulcer; endotoxaemia; ischaemia/reperfusion and endotoxic shock	16.00

## TEXT and MATERIALS required to be PURCHASED or ACCESSED

ALL textbooks and materials are available for purchase from USQ BOOKSHOP (unless otherwise stated). Orders may be placed via secure internet, free fax 1800642453, phone 07 46312742 (within Australia), or mail. Overseas students should fax +61 7 46311743, or phone +61 7 46312742. For costs, further details, and internet ordering, use the 'Textbook Search' facility at <http://bookshop.usq.edu.au> click 'Semester', then enter your 'Course Code' (no spaces).

Kotiw M *Introductory Booklet: Course BIO3317 Medical Microbiology 1*, USQ Bookshop, Toowoomba.

Salyers, A A and Whitt, D D 2002, *Bacterial pathogenesis: a molecular approach*, 2nd edn, ASM Press, Washington.  
(ISBN 1-55581-171X)

## REFERENCE MATERIALS

Reference materials are materials that, if accessed by students, may improve their knowledge and understanding of the material in the course and enrich their learning experience.

Alberts, B et al 2002, *The molecular biology of the cell*, 4th edn, Garland Science, New York.

Benjamini, E et al 2003, *Immunology: a short course*, 5th edn, Wiley, Davis, Calif.

Janeway et al 2005, *Immunobiology: the immune system in health and disease*, 6th edn, Garland Science, New York.

(ISBN 08153 4101 6)

Mandell et al 2005, *Principles and practice of infectious diseases*, 6th edn, Churchill Livingstone, New York, Vol 1&2.

Ryan, K J 2004, *Sherris medical microbiology: an introduction to infectious diseases*, 4th edn, McGraw Hill, New York.

## STUDENT WORKLOAD REQUIREMENTS

ACTIVITY	HOURS
Examinations	2.00
Laboratory or Practical Classes	30.00
Lectures	26.00
Private Study	114.00

## ASSESSMENT DETAILS

Description	Marks out of	Wtg(%)	Due date
PROJECT REPORTS	40.00	40.00	06 Mar 2007 (see note 1)
2HR CLOSED EXAMINATION	60.00	60.00	END S1 (see note 2)

### NOTES

1. Examiner to advise the end of semester due date for Project Reports.
2. Examination dates will be available during the Semester. Please refer to the examination timetable when published.

## IMPORTANT ASSESSMENT INFORMATION

### 1 Attendance requirements:

It is the students' responsibility to attend and participate appropriately in all activities (such as lectures, tutorials, laboratories and practical work) scheduled for them, and to study all material provided to them or required to be accessed by them to maximise their

- chance of meeting the objectives of the course and to be informed of course-related activities and administration. To maximize their chances of satisfying the objectives of the practical component of the course, students should attend and actively participate in the laboratory sessions in the course. The use of safe procedures in the laboratory will be strictly enforced and continuously monitored to ensure competent performance by students. Students who fail to attend sufficient number of practical sessions (less than 80% of total sessions) may be excluded from completion of the practical course on grounds of safety.
- 2 Requirements for students to complete each assessment item satisfactorily:  
To satisfactorily complete an individual assessment item a student must achieve at least 50% of the marks or a grade of at least C-. (Depending upon the requirements in Statement 4 below, students may not have to satisfactorily complete each assessment item to receive a passing grade in this course).
  - 3 Penalties for late submission of required work:  
If students submit reports after the due date without prior approval then a penalty of 5% of the total marks gained by the student for the assignment may apply for each working day late.
  - 4 Requirements for student to be awarded a passing grade in the course:  
To be assured of a passing grade, students must demonstrate, via the summative assessment items, that they have achieved the required minimum standards in relation to the objectives of the course by obtaining at least 50% of the total marks available for the course.
  - 5 Method used to combine assessment results to attain final grade:  
The final grades for students will be assigned on the basis of the weighted aggregate of the marks obtained for each of the summative assessment items in the course.
  - 6 Examination information:  
In a Closed Examination, candidates are allowed to bring only writing and drawing instruments into the examination.
  - 7 Examination period when Deferred/Supplementary examinations will be held:  
No supplementary examinations will be offered in the laboratory component of the course. Any Deferred or Supplementary examinations for this course will be held during the Semester 3 examination period following this offering of the course.
  - 8 University Regulations:  
Students should read USQ Regulations 5.1 Definitions, 5.6. Assessment, and 5.10 Academic Misconduct for further information and to avoid actions which might contravene University Regulations. These regulations can be found at the URL <http://www.usq.edu.au/corporateservices/calendar/part5.htm> or in the current USQ Handbook.

## **ASSESSMENT NOTES**

- 9 In order to attend laboratory classes, students must provide and wear appropriate personal protective equipment. This shall include a laboratory coat, closed-in shoes, and safety glasses. Such equipment must be approved by supervising staff. Failure to provide and wear the appropriate safety equipment will result in students being excluded from classes.