



The University of Southern Queensland

## Course specification

<b>Description: Microbiology and Immunology</b>						
Subject	Cat-nbr	Class	Term	Mode	Units	Campus
NSC	2921	45309	2, 2005	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

### OTHER-REQUISITES

Recommended prior study: NSC1951

### RATIONALE

This course provides an understanding of basic microbiology and immunology from a clinical perspective. Students require a sound foundation in the nature of the infectious process and the fundamentals of infection control for nursing practice.

### SYNOPSIS

This course provides an introduction to the significance of microbes to human health. The nature of infectious agents, mechanisms of pathogenicity and modes of microbial control are investigated. The interaction between infectious agents and the host immune system is investigated in terms of susceptibility to developing infectious disease. The course also provides the fundamentals of infection control practice in the health care setting.

### OBJECTIVES

On completion of this course students will be able to:

1. demonstrate an understanding of the fundamental nature of viruses, bacteria, fungi and parasites;
2. demonstrate an understanding of the fundamentals of controlling infections in a hospital setting;
3. explain the relevance of microbes to human disease;
4. demonstrate an understanding of the relevant procedures used for the collection of microbiological specimens;
5. demonstrate an understanding of the relationship between infectious disease and patient immunological status;
6. demonstrate a basic understanding of antimicrobial therapy.

## TOPICS

	Description	Weighting (%)
1.	<b>FUNDAMENTAL CONCEPTS IN MICROBIOLOGY</b> Historical perspective of microbiology Introduction to the bacteria, viruses, fungi and parasites The bacteria: - The nature of bacteria - Bacterial diversity - Bacterial growth and survival - Introduction to microbial genetics - Bacteriophages - Plasmids - Bacterial virulence factors - Examples of clinically important bacteria The Fungi: - The nature of fungi - Examples of clinically important fungi The Parsites: - The nature of parasites - Examples of clinically important parasites The Viruses: - The nature of viruses - Examples of clinically important viruses Controlling microbes: - Concepts of disinfection - Concepts of antisepsis - Concepts of sterilisation Antibiotics - Antibacterials	60.00
2.	<b>CONCEPTS IN INFECTIOUS DISEASES</b> The host/microbial interaction Normal microbial flora Factors in microbial pathogenesis The microbial pathogen The opportunistic pathogen The commensal microbe	5.00
3.	<b>THE HOST IMMUNE RESPONSE TO INFECTION</b> An overview of the human immune system Non specific host defence mechanisms Circulating and tissue leucocytes Inflammation Other biological non specific responses Specific immune responses - The nature of antibodies and antigens - The humoral immune response - Cell mediated immunity Immunological disorders - Hypersensitivity reactions - Autoimmune diseases	15.00
4.	<b>CLINICAL MICROBIOLOGY</b> Introduction to epidemiology Introduction to aetiology Community acquired infections Nosocomial infections Infection control procedures Community acquired infections-case studies The notion of standard and additional precautions Skin and soft tissue infections - Most common agents involved - Prophylaxis and therapy Respiratory infections - Most common agents involved - Prophylaxis and therapy Genitourinary tract infections - Most common agents involved - Prophylaxis and therapy	20.00

## 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).

(Online Access Only) 1996, *Infection Control in the Healthcare Setting: Guidelines for the Prevention of Transmission of Infectious Diseases*, AGPS, Canberra.

Black, J C 2004, *Microbiology Principles and Explorations*, 6th edn, Prentice Hall, Upper Saddle River.

Kotiw, M 2005, *Microbiology & Immunology External Study Book*, University of Southern Queensland, Toowoomba.

## 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.

Baron, E J et al 1999, *Manual of Clinical Microbiology*, 7th edn, ASM, Washington, DC.

Benjamini, E, Coico, R & Sunshine, G 2000, *Immunology: A Short Course*, 4th edn, Wiley-Liss, New York.

Elliott, T, Hastings, M & Desselberger, U 1997, *Lecture Notes on Medical Microbiology*, 3rd edn, Blackwell Science, Oxford: Cambridge: Mass, USA.

Gardner, J F & Peel, M M 1991, *Introduction to sterilisation, disinfection and infection control*, 2nd edn, Churchill Livingstone, London.

Humphries, H and Irving, W L 1996, *Problem-Orientated Clinical Microbiology and Infection*, Churchill Livingstone, New York, Edinburgh.

Inglis, T J J 1996, *Microbiology and Infection*, Churchill Livingstone, New York.

Lee, G & Bishop, P 1997, *Microbiology and infection control for health professionals*, Prentice Hall, Sydney.

Mandell, G L et al 1993, *Principles and Practice of Infectious diseases: Antimicrobial Therapy 1993-1994*, th edn, Churchill Livingstone, USA.

Pechenik, J A 2004, *A short guide to writing about biology*, 5th edn, Longman, Boston.

Ryan, K J (ed) 1994, *Sherris: Medical Microbiology, An introduction to infectious diseases*, Appleton and Lange Publishers, Norwalk, USA.

Slater, D I et al 1993, *An Atlas of Medical Microbiology*, 2nd edn, Victorian Pathology, Blackburn, Vic.

Wilks, D, Farrington, M & Rubenstein, D 1995, *The Infectious Diseases Manual*, Blackwell Science Ltd, Oxford: Cambridge: Mass, USA.

## STUDENT WORKLOAD REQUIREMENTS

ACTIVITY	HOURS
Examinations	2.25
Laboratory or Practical Classes	18.00
Lectures	24.00
Private Study	114.00

## ASSESSMENT DETAILS

Description	Marks out of	Wtg(%)	Due date
45MIN CLOSED MID-SEM TEST	45.00	30.00	19 Jul 2005 (see note 1)
1.5HR CLOSED EXAM	95.00	70.00	END S2 (see note 2)

### NOTES

1. Examiner to advise date of mid-semester test.
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.
- 2 Requirements for students to complete each assessment item satisfactorily:  
To complete each of the assignments satisfactorily, students must obtain at least 50% of the marks available for each assignment. To complete the examination satisfactorily, students must obtain at least 50% of the marks available for the examination.
- 3 Penalties for late submission of required work:  
If students submit assignments after the due date without prior approval then a penalty of 10% of the total marks gained by the student for the assignment will 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: (i) satisfactorily completing the examination and assignments; and (ii) obtaining at least 50% of the total weighted marks available for all summative assessment items.
- 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:  
Any Deferred or Supplementary examinations for this course will be held in the Semester 3 examination period of the current academic year.
- 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 The due date for an assignment is the date by which a student must despatch the assignment to the USQ. The onus is on the student to provide proof of the despatch date, if requested by the Examiner. Students must retain a copy of each item submitted for assessment. If requested by the Examiner, students will be required to provide a copy of assignments submitted for assessment purposes. Such copies should be despatched to USQ within 24 hours of receipt of a request being made. The examiner of a course may grant an extension of the due date of an assignment in extenuating circumstances.