



The University of Southern Queensland

Course specification

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: Immunopathology

Subject	Cat-nbr	Class	Term	Mode	Units	Campus
BIO	8102	86957	1, 2009	ONC	1.00	Toowoomba

Academic group:	FOSCI
Academic org:	FOS002
Student contribution band:	6
ASCED code:	010913

STAFFING

Examiner: Michael Kotiw
Moderator: John Dearnaley

REQUISITES

Pre-requisite: BIO2205

RATIONALE

The course aims to provide a thorough understanding of the principles of human immunology with particular emphasis on host response to microbial infection. The course particularly aims to provide an understanding of immunological processes associated with the ability to distinguish self from non-self antigens, immunochemistry, immunobiology, abnormal immune responses including autoimmunity and allergies/hypersensitivities. The course also aims to provide an understanding of the pathogenic processes associated with a range of infectious agents with an emphasis on viruses infecting humans. Further, through undertaking laboratory exercises, and literature surveys, the aim of this course is to provide an in depth understanding of current molecular and conventional investigative tools involved in the analysis of complex infectious and immunological diseases. The course also aims to provide training and experience in research methodology so as to provide a platform for candidates wishing to undertake studies for higher degrees by research.

SYNOPSIS

This course provides the principles underpinning humoral or cellular defence mechanisms associated with the host response to infection. The course includes a study of innate defence mechanisms, antigenic specificity, induction of humoral and cellular immune responses, immunoglobulin structure, function and genetic basis of antibody diversity, the role of the immune system in health and disease including cell-mediated immunity, hypersensitivity reactions, autoimmunity, immune tolerance, and vaccine development strategies. The course also leads students to understand the mechanisms of microbial pathogenesis with specific emphasis on viral diseases affecting humans. The course provides candidates with a perspective of the diversity associated with medical microbiology investigations and provides students with career choices for their future. Candidates

will undertake research methods training by completing an Investigative Research report. Students will be involved in the development and application of conventional and molecular technologies for organizing, analysing and interpreting complex immunological and microbiological data. The course will provide advanced practical experience immunological methodology. Candidates will undertake laboratory exercises in a group environment, but will be required to prepare independent reports for assessment. Students will develop microbiological investigative and analytical skills and be able to provide advanced technical reports and recommendations on the management of immunological disease syndromes. Specific Topics will be published in the course handbook.

OBJECTIVES

On completion of this course students will be able to:

1. demonstrate an awareness of the diversity of medically important infectious diseases (Closed Exam);
2. demonstrate an understanding of the nature of an integrated human immune system including aspects of the innate, humoral and cell mediated immune responses to infectious agents (Closed Exam);
3. describe the different classes/subclasses of immunoglobulins/antibodies, their structure and function (Closed Exam);
4. demonstrate an understanding of the concept of antibody specificity (Closed Exam);
5. describe the role played by the innate defence mechanisms including inflammatory responses, the complement system and its function, antiphagocytic mechanisms and the role played by cytokines in protection against infectious disease (Closed Exam);
6. describe the nature of autoimmune diseases and hypersensitivity (Closed Exam);
7. describe concepts in vaccine development (Closed Exam);
8. describe the biology and pathogenic mechanisms associated with major viral pathogens affecting humans (Closed Exam);
9. use a wide range of conventional and molecular laboratory techniques to formulate and solve complex infectious and molecular disease problems (Research Project Report);
10. undertake, synthesize and deliver coherent literature searches relevant to infectious diseases (Literature review);
11. undertake and independently solve complex immunological and microbiological problems (Research Project Reports);
12. demonstrate effective skills for searching literature databases and electronic resources (Literature review);
13. demonstrate skills and knowledge required to perform laboratory experiments safely with appropriate equipment, including molecular and conventional microbiological and immunological apparatus, computer software and hardware for data acquisition and analysis (Research Project Reports);
14. demonstrate skills required for the preparation and submission of a detailed laboratory report (Research Project Reports);
15. demonstrate the skills required for the preparation and submission of a detailed literature review (Literature review).

TOPICS

Description	Weighting (%)
1. Overview of medical microbiology	4.00
2. Overview of the human immune system	8.00

3.	Immunogens and antigens	8.00
4.	Antibody structure and function	8.00
5.	B lymphocytes biology, activation and function	8.00
6.	T lymphocytes biology, activation and function	8.00
7.	Major histocompatibility complexes	8.00
8.	Cytokines	8.00
9.	Complement	4.00
10.	Autoimmune diseases and hypersensitivity	4.00
11.	Vaccinology	8.00
12.	Virology	16.00
13.	Mycosis	4.00
14.	Parasitology	4.00

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).

Coico, R, Sunshine, G & Benjamini, E 2003, *Immunology: a short course*, 5th edn, Wiley-Liss, Davis, Calif,

Kotiw M 2009, *BIO8102 Immunopathology, Course Handbook*, USQ Publication, 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.

Alberts, B et al 2002, *Molecular biology of the cell*, 4th edn, Garland Science, Davis, Calif,

Goldsby, RA, Kindt, TJ & Osborne, BA 2003, *Kuby immunology*, 5th edn, WH Freeman & Co,

Janeway, CA et al 2005, *Immunology*, 6th edn, Churchill Livingstone, New York.

Mandell, GL et al 2005, *Principles and practice of infectious diseases*, 6th edn, PA Elsevier Churchill Livingstone, Philadelphia, Vol 1&2.

Murray, PR et al 2005, *Medical microbiology*, 5th edn, Mosby, St Louis.

Roitt, I, Brostoff, J & Male, D 2006, *Immunology*, 7th edn, Mosby, London.

Salyers, AA & Whitt, DD 2002, *Bacterial pathogenesis: a molecular approach*, 2nd edn, ASM Press, Washington.

STUDENT WORKLOAD REQUIREMENTS

ACTIVITY	HOURS
Examinations	2.00
Laboratory	30.00
Lectures	26.00
Private Study	101.00
Tutorials	13.00

ASSESSMENT DETAILS

Description	Marks out of	Wtg (%)	Due date
LITERATURE REVIEW	30.00	30.00	02 Mar 2009 (see note 1)
RESEARCH PROJECT REPORT	100.00	40.00	02 Mar 2009 (see note 2)
2 HOUR CLOSED EXAMINATION	100.00	30.00	END S1 (see note 3)

NOTES

1. Examiner to advise the due dates for the Literature Review. Details of the requirements for the Literature Review will be provided by the examiner in the Immunopathology Course Handbook 2009.
2. Examiner to advise the due dates for the Research Project Report. Details of the requirements for the Research Project Report will be provided by the examiner in the Immunopathology Course Handbook 2009.
3. Examination due 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.
- 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 receiving a passing grade a student must achieve at least 50% of the total weighted 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:
Any Deferred or Supplementary examinations for this course will be held during the next examination period.
- 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.