MIIM30013 Techniques in Microbiology & Immunology

Credit Points:	12.50
Level:	3 (Undergraduate)
Dates & Locations:	2012, Parkville This subject commences in the following study period/s: Semester 1, Parkville - Taught on campus. Semester 2, Parkville - Taught on campus. An enrolment quota of 80 students per semester applies to this subject. For detailed information on the quota subject application process, refer to the Quota Subject link (under Advice and Support) on the MDHS Student Centre website: http://sc.mdhs.unimelb.edu.au/
Time Commitment:	Contact Hours: 1 x 1hr tutorial per week plus 5hr practical per week (which includes 12 x 1hr lectures during semester) Total Time Commitment: 120 hours
Prerequisites:	Bachelor of Science students: Prerequisite subjects are both

Subject	Study Period Commencement:	Credit Points:
MIIM20001 Principles of Microbiology & Immunology	Semester 1	12.50
MIIM20003 Experimental Microbiology	Semester 1, Semester 2	12.50

B. Sc. students who have taken MIIM20001, Principles in Microbiology and Immunology BUT NOT MIIM20003, Experimental Microbiology MAY be admitted to this subject after discussion with and specific permission from the subject coordinators. However, these students should note that this subject (MIIM30013) is a quota subject, and preference will be given to students who have taken MIIM20003.

Together with the following prerequisite subjects that may also be taken as co-requisite subjects:

Subject	Study Period Commencement:	Credit Points:
MIIM30002 Principles of Immunology	Semester 1	12.50
MIIM30011 Medical Microbiology: Bacteriology	Semester 1	12.50

Students who have obtained 40 - 49% for **MIIM30002 - Principles of Immunology** and/or **MIIM30011 – Medical Microbiology: Bacteriology** are advised to discuss the possibility of being accepted into this subject with the subject coordinators.

Bachelor of Biomedicine students (2009 on):

Prerequisite subjects are both

Subject	Study Period Commencement:	Credit Points:
BIOM20001 Molecular and Cellular Biomedicine	Semester 1	25
MIIM20002 Microbes, Infections and Responses	Semester 2	12.50

Together with the following prerequisite subject that may also be taken as a co-requisite subject:

Subject	Study Period Commencement:	Credit Points:
MIIM30002 Principles of Immunology	Semester 1	12.50

Students who have obtained 40 - 49% for MIIM30002 - Principles of Immunology are advised to discuss the possibility of being accepted into this subject with the subject coordinators.

Bachelor of Biomedical Science students (pre 2009):

One subject from

Subject	Study Period Commencement:	Credit Points:
MIIM20001 Principles of Microbiology & Immunology	Semester 1	12.50

OR

Subject	Study Period Commencement:	Credit Points:
MIIM20002 Microbes, Infections and Responses	Semester 2	12.50

Together with the following prerequisite subjects that may also be taken as co-requisite subjects:

Subject	Study Period Commencement:	Credit Points:
MIIM30002 Principles of Immunology	Semester 1	12.50
MIIM30011 Medical Microbiology: Bacteriology	Semester 1	12.50

Students who have obtained 40 - 49% for **MIIM30002 - Principles of Immunology** and/or **MIIM30011 – Medical Microbiology: Bacteriology** are advised to discuss the possibility of being accepted into this subject with the subject coordinators.

Corequisites:

None

Recommended Background Knowledge:

The prerequisite subjects should have provided a solid background in Microbiology and Immunology. An understanding of the molecules, genes and biology of the cell would be useful.

Non Allowed Subjects:

This subject is only available to students enrolled in the Bachelor of Biomedicine , the Bachelor of Science and the Bachelor of Biomedical Science.
This subject cannot be taken if students have gained credit for the following Bachelor of Biomedical Science and Bachelor of Science (pre-2010) subject:

Subject	Study Period Commencement:	Credit Points:
526-324 Immunological Techniques	Not offered 2012	

Core Participation Requirements:

For the purposes of considering request for Reasonable Adjustments under the Disability Standards for Education (Cwth 2005), and Students Experiencing Academic Disadvantage Policy, academic requirements for this subject are articulated in the Subject Description, Subject Objectives, Generic Skills and Assessment Requirements of this entry. The University is dedicated to provide support to those with special requirements. Further details on the disability support scheme can be found at the Disability Liaison Unit website: http://www.services.unimelb.edu.au/disability/

Coordinator:

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Subject Overview:	This subject provides an overview of: (i) methods used to characterise the diversity of microbes, and particularly those used for pathogenic microbes; (ii) methods for dissection of the complex human and animal defences against microbial infection; and (iii) strategies used in constructing and presenting scientific reports, both oral and written. Laboratory techniques covered include molecular methods and functional assays used for the identification of bacteria and viruses, such as polymerase chain reaction (PCR), agarose gel electrophoresis, DNA cloning and sequencing, bioinformatics, gene expression following DNA transfection, antigen detection using Western blots and immunofluorescent labelling of adherent bacteria to tissue culture cells. Immunological techniques covered include the preparation, characterisation, separation of lymphocyte populations, detection of antigens in tissues by immunocytochemistry and flow cytometry and the assay of immune responses by enzyme immunoassays. Non-Laboratory sessions will be used for critical analysis and discussion of scientific research publications and demonstration of strategies used in constructing and presenting scientific reports, both oral and written. Upon completion of the subject students will have: # used molecular techniques (eg PCR, DNA electrophoresis, Western blot) to identify important characteristics of microbes, # used common bioinformatics methods to analyse DNA and protein sequence data, # developed skills in the in-vitro manipulation and quantification of immune cells from various tissues. # experience in the detection and analysis of cell associated molecules by flow cytometry and immunohistochemistry, and an understanding of the serological diagnosis of disease, # developed skills in constructing and presenting scientific reports, both oral and written. # participated in group work activities, both within and outside of the Laboratory.
Objectives:	Upon completion of this subject, students should be able to: # Describe and apply the principles and procedures involved in the identification and characterisation of bacteria, based on principles of microbial physiology # Describe and apply the use of molecular techniques to identify and characterise determinants associated with disease # Describe and apply the principles and procedures involved in isolating and characterising immune cells and their products # Describe the purpose of controls in the interpretation of experimental data # Keep clear laboratory records of all experimental work # Critically analyse and communicate scientific ideas and findings effectively in both oral and written form. # Participate in group work activities within and outside the Laboratory
Assessment:	2 hr Exam, End of Semester, 50% 2 Oral Presentations, Mid Semesters and End of Semester, 5% each 2 Written Reports, 1000 words each, Mid Semesters and End of Semester, 15% each Assessment of Laboratory participation and record keeping throughout the Semester, Ongoing, 10% Attendance is compulsory. Students who miss more than 20% of this subject (including ALL scheduled sessions) will not be eligible for final assessment.
Prescribed Texts:	None
Breadth Options:	This subject is not available as a breadth subject.

Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
Generic Skills:	On completion of this subject, students should have developed the following generic skills: # An ability to retrieve published scientific data using computer searches and library facilities. # The capacity to integrate knowledge across disciplines. # An ability to critically analyse scientific data. # An ability to communicate effectively in both orally and in writing. # An ability to work collaboratively within a team.
Notes:	This subject is available to students enrolled in the: Pre-2008 B. Sc Pre-2008 B. Biomed. Sc. (Stream 7). NG B. Sc. NG B. Biomed This subject is a practical subject and requires attendance at scheduled laboratory sessions. Whilst students will not be involved in the manipulation and handling of animals, tissues obtained from appropriately euthanased animals will be used in some experiments. These experiments will be approved by the University of Melbourne Animal Welfare Committee. Experiments contained in this unit will also be approved by the Biosafety and Gene Technology Committee.
Related Majors/Minors/ Specialisations:	Animal Disease Biotechnology (specialisation of Animal Health and Disease major) Biomedical Biotechnology (specialisation of Biotechnology major) Biotechnology (pre-2008 Bachelor of Science) Defence and Disease Immunology (pre-2008 Bachelor of Science) Microbiology (pre-2008 Bachelor of Science) Microbiology, Infection and Immunology Science credit subjects* for pre-2008 BSc, BASc and combined degree science courses Science-credited subjects - new generation B-SCI and B-ENG. Core selective subjects for B-BMED.