

# Microbiology, Infection and Immunology

| <b>Year and Campus:</b>                           | 2010  |                |                            |                |  |            |       |                                    |            |       |   |                        |       |         |                            |                |                                       |            |       |
|---|---|----------------|----------------------------|----------------|--|------------|-------|------------------------------------|------------|-------|---|------------------------|-------|---------|----------------------------|----------------|---------------------------------------|------------|-------|
| <b>Coordinator:</b>                               | Mrs Sandra Uren<br>Department of Microbiology and Immunology  |                |                            |                |  |            |       |                                    |            |       |   |                        |       |         |                            |                |                                       |            |       |
| <b>Contact:</b>                                   | sandraju@unimelb.edu.au   |                |                            |                |  |            |       |                                    |            |       |   |                        |       |         |                            |                |                                       |            |       |
| <b>Overview:</b>                                  | <p>This major provides students with an understanding of Microbiology, the study of bacteria, viruses, fungi and parasites and Immunology, the study of our immune system which has evolved to control harmful microbes, but which itself can cause damage. It describes how these disciplines are studied and their application to a range of areas in biomedicine. The major opens up careers in infectious disease, diagnostics, molecular biology, biotechnology, vaccinology, biosafety and regulation and post graduate research into infectious agents, their genes and mechanisms of disease together with the various aspects, beneficial and harmful, of the immune system. It provides a basis for further study into medicine and other paramedical disciplines.</p> <p>From 2010 the double major in Microbiology and Immunology is no longer available for students commencing third year level study. Pre-2008 BSc students may wish to choose to complete the new Microbiology, Infection and Immunology major instead.</p>   |                |                            |                |  |            |       |                                    |            |       |   |                        |       |         |                            |                |                                       |            |       |
| <b>Objectives:</b>                                | <p>On completion of this major, students should be able to:</p> <ul style="list-style-type: none"> <li># describe the diverse range of microbes (bacteria, viruses, fungi and parasites), and the ways in which they interact with their hosts, the environment and each other</li> <li># explain the molecular basis of the ability of various microorganisms to cause disease, together with strategies to interrupt this process, including the development of new antibiotics and other agents.</li> <li># explain the fundamental concepts of bacterial cell division, cell growth and the transfer of molecules and signals across the cell membrane</li> <li># describe the way the immune system responds to defend the body against agents of infection</li> <li># describe the mechanisms operating in response to tumours, transplants, and in allergies and autoimmune diseases.</li> <li># explain strategies to both restrict and boost the immune response by the development of novel vaccines and other interventions.</li> <li># describe the principles and procedures involved in the identification and characterisation of bacteria and viruses</li> <li># describe the use of molecular techniques to identify and characterise determinants associated with disease</li> <li># describe the principles and procedures involved in isolating and characterising immune cells and their products</li> <li># communicate scientific ideas and findings effectively in both oral and written form.</li> </ul> |                |                            |                |  |            |       |                                    |            |       |   |                        |       |         |                            |                |                                       |            |       |
| <b>Structure &amp; Available Subjects:</b>        | Completion of 50 points of study at third year level  |                |                            |                |  |            |       |                                    |            |       |   |                        |       |         |                            |                |                                       |            |       |
| <b>Subject Options:</b>                           | <p>Please note: a compulsory subject within this major is quota restricted.</p> <p>All three of:</p> <table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>MIIM30011 Molecular and Medical Microbiology</td> <td>Semester 1</td> <td>12.50</td> </tr> <tr> <td>MIIM30002 Principles of Immunology</td> <td>Semester 1</td> <td>12.50</td> </tr> <tr> <td>MIIM30013 Techniques in Microbiology &amp; Immunology</td> <td>Semester 1, Semester 2</td> <td>12.50</td> </tr> </tbody> </table> <p>Plus one elective selected from:</p> <table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>MIIM30014 Viruses and Other Parasites</td> <td>Semester 2</td> <td>12.50</td> </tr> </tbody> </table>  | Subject        | Study Period Commencement: | Credit Points: | MIIM30011 Molecular and Medical Microbiology | Semester 1 | 12.50 | MIIM30002 Principles of Immunology | Semester 1 | 12.50 | MIIM30013 Techniques in Microbiology & Immunology | Semester 1, Semester 2 | 12.50 | Subject | Study Period Commencement: | Credit Points: | MIIM30014 Viruses and Other Parasites | Semester 2 | 12.50 |
| Subject   | Study Period Commencement:  | Credit Points: |                            |                |  |            |       |                                    |            |       |   |                        |       |         |                            |                |                                       |            |       |
| MIIM30011 Molecular and Medical Microbiology      | Semester 1  | 12.50          |                            |                |  |            |       |                                    |            |       |   |                        |       |         |                            |                |                                       |            |       |
| MIIM30002 Principles of Immunology                | Semester 1  | 12.50          |                            |                |  |            |       |                                    |            |       |   |                        |       |         |                            |                |                                       |            |       |
| MIIM30013 Techniques in Microbiology & Immunology | Semester 1, Semester 2  | 12.50          |                            |                |  |            |       |                                    |            |       |   |                        |       |         |                            |                |                                       |            |       |
| Subject   | Study Period Commencement:  | Credit Points: |                            |                |  |            |       |                                    |            |       |   |                        |       |         |                            |                |                                       |            |       |
| MIIM30014 Viruses and Other Parasites             | Semester 2  | 12.50          |                            |                |  |            |       |                                    |            |       |   |                        |       |         |                            |                |                                       |            |       |

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|---------------------------|---|------------|-------|
|                           | MIIM30003 Medical and Applied Immunology  | Semester 2 | 12.50 |
| <b>Related Course(s):</b> | Bachelor of Arts and Bachelor of Science<br>Bachelor of Arts and Sciences<br>Bachelor of Commerce and Bachelor of Science<br>Bachelor of Science<br>Bachelor of Science and Bachelor of Information Systems |            |       |