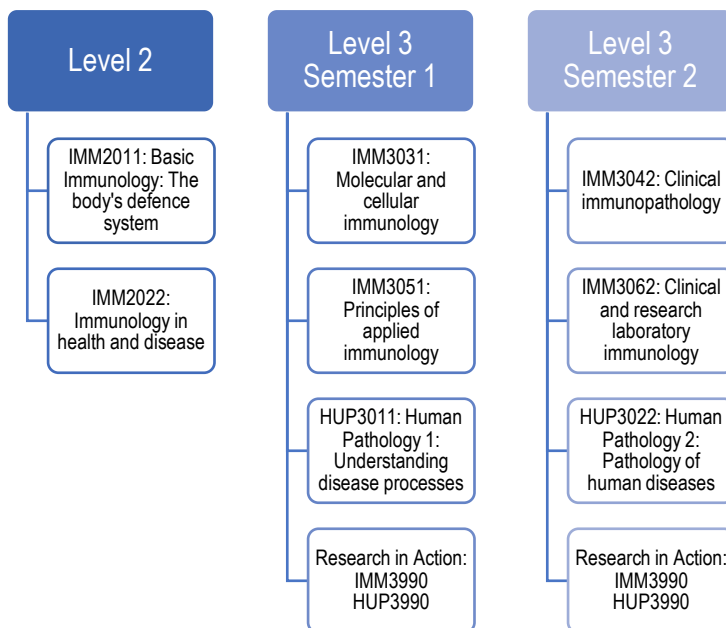




UNDERGRADUATE UNITS AT CCS – SCIENCE MAJORS AND BMS ELECTIVES



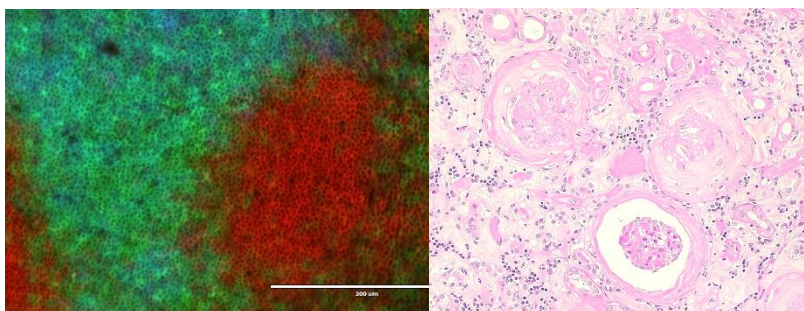
LEVEL 2 UNITS

IMM2011: BASIC IMMUNOLOGY: THE BODY'S DEFENCE SYSTEM

This foundational unit introduces students to the immune system which has evolved to protect us from microbial pathogens. It involves both theory and practical based sessions on topics including the structure and development of the immune system, the generation of immune responses, major effector mechanisms involved in pathogen clearance, and immunological techniques used in determining immune responses to micro-organisms. The role of inflammation in the pathology of disease is introduced.

IMM2022: IMMUNOLOGY IN HEALTH AND DISEASE

This unit provides students the opportunity to examine in more detail the role and diversity of immunological based issues. A selection of immune based health and disease states are examined in order to explore and understand the role that the immune system plays in each situation. The impact and implications of the immune system on a range of criteria, including social, economic and ethical criteria to name a few, are also investigated. Students have the opportunity to develop key research, writing and oral presentation skills through assignments that broaden their view of immunology and also aid in their general studies.



Knowing how immune cells physically interact gives us clues to their function, as shown here for B cells (red) and T cells (blue/green) in the spleen.

Understanding disease processes, such as inflammation and fibrosis in the kidney, helps both diagnosis and prognosis.

For further details – Immunology

- Contact A/P Frank Alderuccio – frank.alderuccio@monash.edu
- See the Department of Immunology & Pathology [website](#)
- Refer to the [University handbook](#)

For further details – Human Pathology

- Contact Dr Steven Petratos – steven.petratos@monash.edu
- See the Human Pathology [website](#)
- Refer to the [University handbook](#)





LEVEL 3 IMMUNOLOGY UNITS

IMM3031: MOLECULAR AND CELLULAR IMMUNOLOGY

This theory-based unit examines, in depth, important features of the development and function of the immune system. Areas covered include development of the innate and adaptive immune system, antigen processing and presentation, maturation of the immune response, self-tolerance and regulation. Students learn the principles of advanced techniques used in immunology, including the relevance of genetic engineering, and acquire skills in reviewing literature and scientific writing.

IMM3051: PRINCIPLES OF APPLIED IMMUNOLOGY

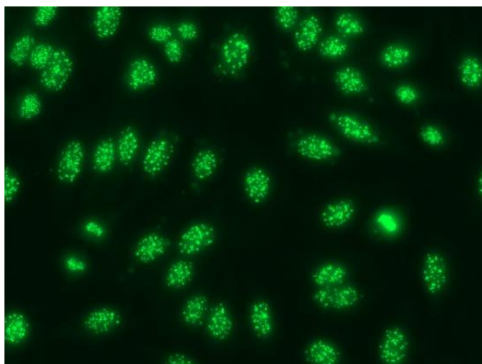
The aim of this unit is to develop students' practical skills and knowledge of laboratory immunology. The course is laboratory-based with embedded in-lab small group sessions to ensure a thorough theoretical understanding of techniques. Students will learn about antibody production, purification and research techniques. This unit gives students a firm understanding of techniques relevant to immunology and many other scientific disciplines.

IMM3042: CLINICAL IMMUNOPATHOLOGY

This theory-based unit examines regulation of the immune response in a disease setting and how this knowledge can be applied to improve treatment. Host-pathogen interactions are considered together with new strategies for vaccines. In addition, diseases of the immune system are examined including immunodeficiencies, autoimmune and allergic diseases. Additionally, students study the role of the immune system in tissue transplantation and tumour eradication.

IMM3062: CLINICAL AND RESEARCH LABORATORY IMMUNOLOGY

IMM3062 examines advanced immunology-based techniques used in either clinical or research laboratories. These include assays for lymphocyte proliferation, cytokine production, cell-mediated cytotoxicity, detection of antigen/antibody reactions, and point-of-care testing. The unit is laboratory-based with small group sessions to ensure a thorough theoretical understanding of techniques. Students consolidate their knowledge by designing their own immunology experiment in a cutting-edge cross-disciplinary topic.



Confirmation of the presence of anti-nuclear autoantibodies is used in the diagnosis of autoimmune diseases such as lupus.

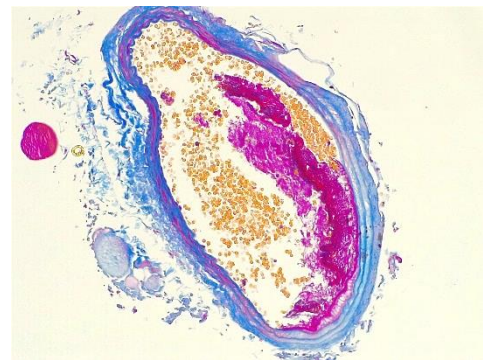
LEVEL 3 HUMAN PATHOLOGY UNITS

HUP3011: HUMAN PATHOLOGY 1: UNDERSTANDING DISEASE PROCESSES

This theory- and practical-based unit introduces students to basic pathology. The mechanisms involved in pathological processes are reviewed together with how they cause disease i.e. the consequences of pathological alterations upon normal tissue and organ function. The concepts of tissue injury and cell death, inflammation, disorders of immunity and cell growth, and the pathology of infectious diseases are presented. This approach provides students with an understanding of the terminology applicable to pathology and an appreciation of the causes and natural progression of human diseases.

HUP3022: HUMAN PATHOLOGY 2: PATHOLOGY OF HUMAN DISEASES

HUP3022 introduces students to a systemic approach to pathology i.e. the diseases of organ systems. Key diseases presented include ischaemic heart disease, diabetes, obesity, stroke, leukaemia, common carcinomas, inflammatory disease, and diseases of the nervous system. The cause, clinical presentation, treatment, and course of these diseases are discussed. Particular emphasis is placed on molecular and genetic aspects of disease pathogenesis. Laboratory investigations are undertaken to provide an integrated approach to the diagnosis of specific diseases.



Identifying the components of atherosclerotic plaques in blood vessels can be used to assess the efficacy of novel treatments.

RESEARCH IN ACTION

IMM3990 (IMMUNOLOGY)

HUP3990 (HUMAN PATHOLOGY)

These units provide high achieving students the opportunity to join a research laboratory and conduct a research project within the Central Clinical School and associated departments. On completion of this unit, students will have acquired skills in searching relevant databases, reviewing scientific literature, and in preparing and presenting oral and written reports. They are involved in planning, conducting, and analysing experiments designed to address defined scientific questions. Students undertaking this unit will have typically completed some level 3 units of their major. These units have an academic prerequisite.



Please note: this course map is a guide only and the complete course requirements are specified in the Monash University Handbook (www.handbook.monash.edu)

BACHELOR OF SCIENCE – MAJOR IN IMMUNOLOGY

Unit level	Unit 1	Unit 2	Unit 3	Unit 4
Level 1 Semester 1	BIO1011	Approved Level 1 Sequence 2	One of SCI1020, SCI1022, STA1010, MTH1020, MTH1030	Elective
Level 1 Semester 2	BIO1022	Approved Level 1 Sequence 2	Science elective – level 1	Elective
Level 2 Semester 1	IMM2011 <i>prereq: BIO1022</i>	Level 2/3 science unit	Level 2/3 science unit	Elective
Level 2 Semester 2	IMM2022 <i>prereq: IMM2011</i>	Level 2/3 science unit	Level 2/3 science unit	Elective
Level 3 Semester 1	IMM3031 <i>prereq: IMM2011</i>	IMM3051 <i>prereq: IMM2011</i>	Elective	Elective
Level 3 Semester 2	IMM3042 <i>prereq: IMM2011</i>	One of: IMM3062 <i>prereq: IMM2011</i> IMM3990 <i>prereq: an average of 70% over 4 relevant level 2 units.</i>	Elective	Elective

BACHELOR OF SCIENCE – MAJOR IN HUMAN PATHOLOGY

Unit level	Unit 1	Unit 2	Unit 3	Unit 4
Level 1 Semester 1	BIO1011	Approved Level 1 Sequence 2	One of SCI1020, SCI1022, STA1010, MTH1020, MTH1030	Elective
Level 1 Semester 2	BIO1022	Approved Level 1 Sequence 2	Science elective – level 1	Elective
Level 2 Semester 1	IMM2011 <i>prereq: BIO1022</i>	MCB2011 <i>prereq: BIO1011 and BIO1022</i>	Level 2/3 science unit	Elective
Level 2 Semester 2	IMM2022 <i>prereq: IMM2011</i>	Level 2/3 science unit	Level 2/3 science unit	Elective
Level 3 Semester 1	HUP3011 <i>prereq: IMM2011, and either MCB2011 or IMM2022</i>	Level 2/3 science unit	Level 2/3 science unit	Elective
Level 3 Semester 2	HUP3022 <i>prereq: HUP3011; or IMM2011 and either IMM2022, MCB2011, or DEV2011</i>	One of: HUP3990 <i>prereq: an average of 70% over 4 relevant level 2 units.</i> IMM3042 <i>prereq: IMM2011</i>	Elective	Elective

While the information provided herein was correct at the time of viewing and/or printing, Monash University reserves the right to alter procedures, fees and regulations should the need arise. Students should carefully read all official correspondence, other sources of information for students and the official university noticeboards to be aware of changes to the information contained herein. The inclusion in a publication of details of a course in no way creates an obligation on the part of the university to teach it in any given year, or to teach it in the manner described. The university reserves the right to discontinue or vary courses at any time without notice. Students should always check with the relevant faculty officers when planning their courses. Some courses and units are described which may alter or may not be offered due to insufficient enrolments or changes to teaching personnel.
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