

# Course Outline (Higher Education)

<b>School:</b>	School of Science, Psychology and Sport
<b>Course Title:</b>	IMMUNOLOGY
<b>Course ID:</b>	SCMOL3020
<b>Credit Points:</b>	15.00
<b>Prerequisite(s):</b>	(SCMED2010)
<b>Co-requisite(s):</b>	Nil
<b>Exclusion(s):</b>	(IMMGC3802 and SCMED2020 and SCMOL2020)
<b>ASCED:</b>	010901

## Description of the Course :

The Immunology course will develop a broad understanding of the mammalian immune system and how it protects an individual from infectious disease. This will be contrasted with the role of the defective immune system in causing pathology associated with chronic disease. The course begins with a detailed exploration of the two arms of the immune system, innate and adaptive immunity, demonstrating how innate immune cells and associated components work in collaboration with adaptive immune cells (lymphocytes) to provide effective defence against different types of pathogens. The important role of lymphocytes in antibody production and the development of immunological memory, a property critical to successful vaccination will be discussed. Finally, the course explores the impact of inappropriate activation or impairment of the immune system on normal physiological processes and reviews recent developments in immune based therapies that harness the immune system to treat disease.

**Grade Scheme:** Graded (HD, D, C, etc.)

**Placement Component:** No

**Supplementary Assessment:** Yes

Where supplementary assessment is available a student must have failed overall in the course but gained a final mark of 45 per cent or above and submitted all major assessment tasks.

**Program Level:**

Level of course in Program	AQF Level of Program					
	5	6	7	8	9	10
Introductory	■	■	■	■	■	■
Intermediate	■	■	■	■	■	■
Advanced	■	■	✓	■	■	■

### Learning Outcomes:

#### Knowledge:

- K1.** Describe the normal functions of the major innate and adaptive immune cell types
- K2.** Relate knowledge of innate and adaptive immune functions to their contribution to effective immunity against different types of pathogens
- K3.** Compare and contrast the anatomy and function of the immune system across vertebrate species
- K4.** Apply knowledge of normal immune function to determine suitable strategies for the development of vaccines, immunotherapies, breeding tools and diagnostics
- K5.** Explain the central role of immunological techniques and their applications in experimental science

#### Skills:

- S1.** Analyse experimental results and identify key results to make a diagnosis
- S2.** Devise effective strategies to research a topic and critically evaluate relevant scientific literature
- S3.** Integrate information from varied sources to construct and support a contention in written or oral formats

#### Application of knowledge and skills:

- A1.** Analyse experimental data and justify interpretation of the findings
- A2.** Compare and contrast the role of the various immune components in fighting different types of pathogens or causing disease pathology
- A3.** Generalise on the immunological basis for strategies that harness the immune system to treat or prevent disease

#### Course Content:

Topics may include:

- Development and function of innate and adaptive immune cells
- Comparative anatomy and function of vertebrate immune systems
- Communication between innate and adaptive immune systems
- The role of the immune system in defence against different types of pathogens
- Immunological basis of disease conditions such as inflammation, autoimmunity, hypersensitivity, immunodeficiency and cancer
- Applications of immunology: diagnostic testing (disease and animal breeding), vaccine development and immunotherapy

#### Values:

- V1.** Appreciate the importance of immunology in biology, medicine and agriculture
- V2.** Develop an awareness of global health issues, including disease prevalence in human and animal populations worldwide and the problems associated with unequal access to treatments and preventative vaccines

- V3.** Consider the social and ethical implications of experimental research and clinical trials in animals and humans
- V4.** Recognise the necessity of clear scientific communication in individual and team-based work in various formats

### Graduate Attributes

The Federation University FedUni graduate attributes (GA) are entrenched in the Higher Education Graduate Attributes Policy (LT1228). FedUni graduates develop these graduate attributes through their engagement in explicit learning and teaching and assessment tasks that are embedded in all FedUni programs. Graduate attribute attainment typically follows an incremental development process mapped through program progression. **One or more graduate attributes must be evident in the specified learning outcomes and assessment for each FedUni course, and all attributes must be directly assessed in each program**

Graduate attribute and descriptor		Development and acquisition of GAs in the course			
		Learning Outcomes (KSA)	Code A. Direct B. Indirect N/A Not addressed	Assessment task (AT#)	Code A. Certain B. Likely C. Possible N/A Not likely
GA 1 Thinkers	Our graduates are curious, reflective and critical. Able to analyse the world in a way that generates valued insights, they are change makers seeking and creating new solutions.	K2, K4, K5	A, A, A	1, 2, 4	A, A, A
GA 2 Innovators	Our graduates have ideas and are able to realise their dreams. They think and act creatively to achieve and inspire positive change.	K4, S2, S3, A1	B, A, B, A	1	B
GA 3 Citizens	Our graduates engage in socially and culturally appropriate ways to advance individual, community and global well-being. They are socially and environmentally aware, acting ethically, equitably and compassionately.	Not applicable	Not applicable	Not applicable	Not applicable
GA 4 Communicators	Our graduates create, exchange, impart and convey information, ideas, and concepts effectively. They are respectful, inclusive and empathetic towards their audience, and express thoughts, feelings and information in ways that help others to understand.	S2, S3, A2	A, B, B	1, 2	A, B
GA 5 Leaders	Our graduates display and promote positive behaviours, and aspire to make a difference. They act with integrity, are receptive to alternatives and foster sustainable and resilient practices.	Not applicable	Not applicable	Not applicable	Not applicable

### Learning Task and Assessment:

Learning Outcomes Assessed	Learning Tasks	Assessment Type	Weighting
K1, K2, K4, S2, S3, A2, A3,	Comprehension assignment - Research an infectious disease, applying knowledge of the immune system to consider possible treatments or vaccine based approaches to prevention and prepare a written report.	Written report	10-30%
K2, K5, S1, S2, S3, A1, A2	Case Studies: Analyse scientific report(s) describing an investigation, or a published clinical and/or commercial data set. Discuss and demonstrate understanding of key findings in a written or oral presentation	Oral or written presentation	10-30%
K1, K2, K3, K4, K5	Quizzes - online quizzes throughout the semester will be used to evaluate understanding of key topic areas	quiz	0-15%
K1, K2, K3, K4, K5, S1, A1, A2, A3	End of semester test - to assess knowledge of the core content and the ability to apply this knowledge to interpret and discuss the role of the immune system in different scenarios	Test	40-60%

**Adopted Reference Style:**

Australian Harvard