



Course Outline (Higher Education)

School:	School of Science, Psychology and Sport
Course Title:	GENERAL MICROBIOLOGY
Course ID:	SCMIC2001
Credit Points:	15.00
Prerequisite(s):	(SCBIO1001 or SCBIO1010)
Co-requisite(s):	Nil
Exclusion(s):	Nil
ASCED:	010911

Description of the Course:

The course provides students with a strong foundation in microbiology. Students will gain the skills and knowledge needed to study higher level related subjects, and an understanding of the importance of microbiology in today`s society. Students will learn about the diversity of microorganisms, focusing on morphological, physiological and ecological characteristics. Important taxonomic groups will be covered, ensuring students have the theoretical knowledge to distinguish between key taxonomic groups. Students will be introduced to microbial growth, microbial genetics, mycology and virology. The theoretical knowledge will be supplemented by exercises that aim to develop capacity in the practical aspects of microbiology.

Grade Scheme: Graded (HD, D, C, P, MF, F, XF)

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	<input type="checkbox"/>					
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	✓	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Advanced	<input type="checkbox"/>					

Learning Outcomes:**Knowledge:**

- K1.** Outline the similarities and differences in cell structure and function within the various taxonomic groups of microorganisms; and compare microbial structure and function to that of more complex life forms.
- K2.** Describe the metabolic pathways unique to microorganisms and relate the diversity of pathways to the ubiquity of microorganisms.
- K3.** Describe reproductive/replicative strategies and nutritional needs of prokaryotes, fungi and viruses.
- K4.** List the mechanisms used by microorganisms to control the flow of genetic information.
- K5.** State the mechanisms prokaryotes and viruses use to increase genetic diversity and recognise the importance of these mechanisms in relation to topical issues such as antimicrobial resistance and evolution of novel pathogens
- K6.** Describe the interactions of microorganisms with human and non-human hosts, and relate to harmful, beneficial and neutral relationships
- K7.** Outline how we can control microbial populations.

Skills:

- S1.** Appraise the inherent risks associated with practical microbiology and devise strategies to ensure a safe work environment in the laboratory setting.
- S2.** Compare the nutritional and selective compositions of various growth media, and practise simulated growth and incubation of microorganisms to demonstrate skills in practical aspects of microbiology.
- S3.** Analyse and interpret results of simulated laboratory activities, and apply to analogous situations.
- S4.** Demonstrate communication skills, particularly through the appropriate reporting of simulated laboratory outputs.

Application of knowledge and skills:

- A1.** Apply theoretical knowledge in microbiology to simulated practical aspects of the course, such as the ability to culture and differentiate key taxonomic groups of bacteria.
- A2.** Apply mathematical and graphical methods to enable the enumeration/quantification of microbial populations.

Course Content:

Topics may include:

- The diversity of microorganisms
- Structure and function: viruses, bacteria, archaea and eukaryotic microbes
- Physiology and metabolic pathways in microorganisms
- Culture of microorganisms
- Control of microorganisms
- Microbial taxonomy and the identification of key taxonomic groups
- Practical applications of microorganisms

Values:

- V1.** Students will develop an understanding of the attributes and skills required for cooperative and safe work in a shared laboratory setting.

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)	Assessment task (AT#)
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.	K1 - K7, S1 - S3	AT1, AT2, AT3
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.	S1, A1, A2	AT1, AT2, AT3
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.	K5, K6	AT3
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.	S3, S4	AT1
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

Learning Task and Assessment:

Learning Outcomes Assessed	Learning Tasks	Assessment Type	Weighting
K3, K7, S1 - S4, A1, A2	Assessment of understanding of practical aspects of microbiology through the analysis and interpretation of (supplied) data	Written report(s)	10-20%
K1 - K6, S4	Assessment of understanding of microbial physiology by presenting on selected structures.	Presentation (recorded)	10-20%
K1 - K7, S1, S2, S3	Quizzes testing retention of knowledge	Quizzes, predominantly online	10-30%
K1 - K7, A1 - A2.	Theory Test	Test	40-60%

Adopted Reference Style:

Australian Harvard

Refer to the [library website](#) for more information

Fed Cite - [referencing tool](#)