

Course Outline

Title: GENERAL MICROBIOLOGY

Code: MICGC2001

Faculty / Portfolio: Faculty of Science and Technology

Program Level:

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

Pre-requisites: BIOGC1722

Co-requisites: Nil

Exclusions: Nil

Credit Points: 15

ASCED Code: 010911

Learning Outcomes:

Knowledge:

- K1.** Understand 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.** Demonstrate knowledge of the metabolic pathways unique to microorganisms and how the diversity of pathways enables the ubiquity of microorganisms.
- K3.** Understand reproductive/replicative strategies of prokaryotes, fungi and viruses.
- K4.** Reflect on the mechanisms used by microorganisms to control the flow of genetic information.
- K5.** Understand the mechanisms prokaryotes use to increase genetic diversity and apply this knowledge to topical issues such as antimicrobial resistance and evolution of novel pathogens.
- K6.** Reflect on the interactions of microorganisms with human and non-human hosts, with demonstrated knowledge of harmful, beneficial and neutral interactions.
- K7.** Demonstrate an understanding of how we can control microbial populations.

Skills:

- S1.** Reflect on the inherent risks associated with practical microbiology and devise strategies to ensure a safe work environment in the laboratory setting.
- S2.** Develop skills in microscopy and specimen preparation and apply those skills to the characterization and identification of microorganisms.
- S3.** Gain an understanding of growth media and the specific growth conditions required by

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key taxonomic groups of microorganisms; then apply this knowledge to the culture of microorganisms.

- S4.** Analyse and interpret results of laboratory activities, and apply to analogous situations.
- S5.** Demonstrate an ability to communicate, particularly through the appropriate reporting of laboratory activities.

Application of knowledge and skills:

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

Values and Graduate Attributes:

Students will develop and understanding of the attributes and skills required to work cooperatively and safely in a shared laboratory setting.

Graduate Attributes:

Attribute	Brief Description	Focus
Continuous Learning	Providing strong foundation in Microbiology to enable further study and learning in the field.	High
Self Reliance	Laboratory exercises will develop and encourage self-reliance.	High
Engaged Citizenship	Course provides the background needed to develop and sound understanding of one of the major global health problems: infectious diseases.	Low
Social Responsibility	Instilling research and scientific ethics through course content.	Low

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.

Assessment:

Learning Outcomes Assessed	Assessment Task	Assessment Type	Weighting
S4, S5, A1, K (various, dependent on which exercise is selected for a given year)	Students will demonstrate their understanding of practical aspects of microbiology, and their ability to communicate effectively, by preparing reports for selected laboratory exercises.	Assessment of written reports (2).	10-15%

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K1, K7, S2, S3, S4, A1, A2	Students will be assessed on their ability to demonstrate sound practical skills, such as microscopy, plating and culture techniques.	Practical exam.	15-20%
K1-K7, S1-S5, A1-A2	Students will complete online quizzes that assist in development of required knowledge and skills.	Online quizzes (4).	15-20%
K1-K7, A1-A2	Three hour examination covering all course content.	Invigilated exam.	50-60%

Adopted Reference Style:

Australian

Presentation of Academic Work:

[FedUni General Guide to Referencing](#)