

# Course Outline (Higher Education)

<b>School:</b>	School of Science, Psychology and Sport
<b>Course Title:</b>	FOOD MICROBIOLOGY
<b>Course ID:</b>	SCMIC3002
<b>Credit Points:</b>	15.00
<b>Prerequisite(s):</b>	SCMIC2001
<b>Co-requisite(s):</b>	Nil
<b>Exclusion(s):</b>	Nil
<b>ASCED:</b>	010911

## Description of the Course:

This course focuses on the role of microbiology in food quality and safety. Students develop understanding of microbial food safety hazards and the diseases they can cause. Spoilage organisms and microbial quality indicators are considered. The techniques used to control microbial growth are explored and used to understand correct recipe and process formulation for microbiologically stable foods. The theory behind pathogen detection is outlined for both standard cultural and molecular techniques. Outbreak investigation and the techniques employed to monitor foodborne outbreaks and subsequent interventions are explored. Laboratory practicals focus on standard microbiological techniques for the isolation and identification of microorganisms from food. The practical component is carefully aligned to the Australian Standard methods for microbiological analysis to ensure students are following current industry guidelines.

**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"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Learning Outcomes:****Knowledge:**

- K1.** Recognise microbiological food safety hazards and describe their associated diseases.
- K2.** Appraise causes of food spoilage and describe the food quality indicators commonly used in industry.
- K3.** Recognise the food formulations and processes that prevent spoilage.
- K4.** Contrast existing technology for isolation of microorganisms from food with emerging technologies.
- K5.** Outline the food sampling and testing plans used to identify and enumerate microorganisms.

**Skills:**

- S1.** Demonstrate microbiological techniques for isolating and identifying relevant microorganisms from food.
- S2.** Examine the theoretical and practical effects of control factors on microbial growth and death.
- S3.** Critique laboratory data and report the outcomes in an appropriate scientific format.
- S4.** Demonstrate competency in bacterial growth and death kinetics calculations.
- S5.** Explain critical microbiological food safety concepts to both scientific audiences and the general public.

**Application of knowledge and skills:**

- A1.** Appraise new information on microorganisms and modern technologies for improving food safety.
- A2.** Formulate safe and stable food product recipes and processes.
- A3.** Demonstrate competency in the microbiological testing of food and making subsequent food safety decisions based upon the results.
- A4.** Analyse and interpret foodborne outbreak detection investigation data and formulate appropriate interventions.

**Course Content:**

Topics may include:

- Introduction to foodborne pathogens
- Food safety: HACCP and food safety systems
- Food spoilage and microbial quality indicators
- Food preservation and hurdle technology
- Predictive microbiology - microbial growth and kill kinetics
- Microbial sampling and testing plans
- Foodborne outbreak detection and intervention

**Values:**

- V1.** Students will be equipped with the skills, motivation and confidence to engage in continuous learning to meet the personal, professional and vocational challenges of an ever changing world.
- V2.** Students will possess the confidence, capability, assurance, independence and enterprise to enable them to fulfil their personal and career aspirations.
- V3.** Students will add to the productive capacity of the economy and be in demand. They will be attuned to, and engage with, contemporary social and cultural issues; and aspire to make meaningful and helpful contributions to local, national and global communities.
- V4.** Students will be aware of generally accepted norms of ethical behaviour and be encouraged to act in a socially responsible manner both in the work place and other settings.

### 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 - K5, S2 - S5, A1, A2, A4	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.	A1, A2	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.	S5, A4	AT1, 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.	S5	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
K1, K5; S5; A4	Investigation of a selected outbreak of foodborne illness.	Individual oral and/or poster presentation. Assessment will include peer review.	20 - 30%
K4, K5; S1 - S4; A3	Performance of basic laboratory procedures and techniques and interpretation of data.	Participation and assessment of written laboratory report.	20 - 30%
K1 - K5; A1 - A2	Theory test	Test	40 - 60%

### Adopted Reference Style:

Australian Harvard

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

Fed Cite - [referencing tool](#)