

Unit Outline (Higher Education)

Institute / School: Institute of Innovation, Science & Sustainability

Unit Title: Biotechnology Laboratory Techniques

Unit ID: SCMOL2001

Credit Points: 15.00

Prerequisite(s): (SCMIC2001)

Co-requisite(s): Nil

Exclusion(s): Nil

ASCED: 019909

Description of the Unit:

This unit will introduce students to fundamental laboratory techniques used in research and industry throughout the world. Students will focus on the development of practical skills for laboratory-based work & research. Many common practical procedures will be covered with students required to be able to link their practical skill development with the underlying theoretical framework. Students will develop both a practical awareness and intellectual understanding of which techniques to apply to address a wide range of scientific questions. Analysis and communication of research data is a fundamental requirement of any scientist, in this unit students will be required to demonstrate their grasp of these abilities through interpretation and reporting of data they have generated.

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

Work Experience:

No work experience

Placement Component: No

Supplementary Assessment: Yes

Where supplementary assessment is available a student must have failed overall in the Unit but gained a final mark of 45 per cent or above, has completed all major assessment tasks (including all sub-components where a task has multiple parts) as specified in the Unit Description and is not eligible for any other form of supplementary assessment.

Course Level:

Level of Unit in Course	AQF Level of Course					
	5	6	7	8	9	10
Introductory	■	■	■	■	■	■
Intermediate	■	■	✓	■	■	■
Advanced	■	■	■	■	■	■

Learning Outcomes:

Knowledge:

- K1.** Describe/compare and contrast the benefits and limitations of various research techniques.
- K2.** Determine and justify the use of particular laboratory techniques in biotechnology research.

Skills:

- S1.** Develop scientific problem-solving and investigation skills.
- S2.** Develop the ability to perform a variety of common laboratory techniques.
- S3.** Measurement and collection of laboratory data.
- S4.** Analysis of laboratory data.
- S5.** Communication of scientific results and conclusions.

Application of knowledge and skills:

- A1.** Decide on methodological approaches to obtain and collect data in an appropriate manner.
- A2.** Analyse and interpret data and draw appropriate conclusions.
- A3.** Apply problem solving skills and methodological theory to troubleshooting techniques and procedures.

Unit Content:

Topics may include:

1. Development of knowledge of common biotechnological methods and techniques and when/why they are used.
2. Communication of a specific research problem with well-defined objectives and application of appropriate research techniques.
3. Carry out experimental work consistent with modern biotechnology research.
4. Collate, evaluate and interpret experimental results.
5. Development of a folio which includes coverage of all the techniques completed within the unit.

FEDTASKS

Federation University Federation recognises that students require key transferable employability skills to prepare them for their future workplace and society. FEDTASKS (**T**ransferable **A**tttributes **S**kills and **K**nowledge) provide a targeted focus on five key transferable Attributes, Skills, and Knowledge that are embedded within curriculum, developed gradually towards successful measures and interlinked with cross-discipline and Co-operative Learning opportunities. *One or more FEDTASK, transferable Attributes, Skills or Knowledge must be evident in the specified learning outcomes and assessment for each FedUni Unit, and all must be directly assessed in each Course.*

FEDTASK attribute and descriptor		Development and acquisition of FEDTASKS in the Unit	
		Learning Outcomes (KSA)	Assessment task (AT#)
FEDTASK 1 Interpersonal	Students will demonstrate the ability to effectively communicate, inter-act and work with others both individually and in groups. Students will be required to display skills in-person and/or online in: <ul style="list-style-type: none"> • Using effective verbal and non-verbal communication • Listening for meaning and influencing via active listening • Showing empathy for others • Negotiating and demonstrating conflict resolution skills • Working respectfully in cross-cultural and diverse teams. 	Not applicable	Not applicable
FEDTASK 2 Leadership	Students will demonstrate the ability to apply professional skills and behaviours in leading others. Students will be required to display skills in: <ul style="list-style-type: none"> • Creating a collegial environment • Showing self-awareness and the ability to self-reflect • Inspiring and convincing others • Making informed decisions • Displaying initiative 	Not applicable	Not applicable
FEDTASK 3 Critical Thinking and Creativity	Students will demonstrate an ability to work in complexity and ambiguity using the imagination to create new ideas. Students will be required to display skills in: <ul style="list-style-type: none"> • Reflecting critically • Evaluating ideas, concepts and information • Considering alternative perspectives to refine ideas • Challenging conventional thinking to clarify concepts • Forming creative solutions in problem solving. 	Not applicable	Not applicable
FEDTASK 4 Digital Literacy	Students will demonstrate the ability to work fluently across a range of tools, platforms and applications to achieve a range of tasks. Students will be required to display skills in: <ul style="list-style-type: none"> • Finding, evaluating, managing, curating, organising and sharing digital information • Collating, managing, accessing and using digital data securely • Receiving and responding to messages in a range of digital media • Contributing actively to digital teams and working groups • Participating in and benefiting from digital learning opportunities. 	Not applicable	Not applicable
FEDTASK 5 Sustainable and Ethical Mindset	Students will demonstrate the ability to consider and assess the consequences and impact of ideas and actions in enacting ethical and sustainable decisions. Students will be required to display skills in: <ul style="list-style-type: none"> • Making informed judgments that consider the impact of devising solutions in global economic environmental and societal contexts • Committing to social responsibility as a professional and a citizen • Evaluating ethical, socially responsible and/or sustainable challenges and generating and articulating responses • Embracing lifelong, life-wide and life-deep learning to be open to diverse others • Implementing required actions to foster sustainability in their professional and personal life. 	Not applicable	Not applicable

Learning Task and Assessment:

Learning Outcomes Assessed	Assessment Tasks	Assessment Type	Weighting
S1, S2, S3, S4, S5, A2	In class assessment of laboratory skills, testing key competencies and key concepts.	Practical Assessment	35 - 55%
K1, K2, A1, A2, A3	Maintaining detailed laboratory notebook covering details of the techniques applied in class and the results achieved. This is to be maintained throughout the semester.	Laboratory book	5 - 15%
K1, K2, S1, S4, S5	Online multiple choice quizzes covering all material in a particular module.	Multiple Choice Quizzes	10 - 30%
K1, K2, S1, S4, S5, A2, A3	Test	Test	20 - 40%

Adopted Reference Style:

APA ()

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

Fed Cite - [referencing tool](#)