

# Course Outline (Higher Education)

<b>School:</b>	School of Science, Psychology and Sport
<b>Course Title:</b>	BIOTECHNOLOGY LABORATORY TECHNIQUES
<b>Course ID:</b>	SCMOL2001
<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>	019909

## Description of the Course :

This course 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 course 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, etc.)

## Work Experience:

No work experience: Student is not undertaking work experience in industry.

**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.

## 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.

**Course Content:**

Topics may include:

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

**Values:**

**V1.** Experience the excitement of discovery in scientific research.

**V2.** Appreciate the need for scientific communication in various format.

**V3.** Appreciate the need for individual and team-based work and its application in the workplace.

**V4.** Understand the importance of being scrupulous in acknowledging the contribution of others to one`s work.

**V5.** Adoption of a respectful and courteous manner to colleagues.

**V6.** Further development of autonomous learning habits.

**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.	K1, K2, S1, S4, A1, A2, A3	A, A, A, A, A, A, A, A	AT1, AT2, AT3, AT4	B, A, A, A, A, A, B
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.	K2, A1	A, A	AT1, AT4	A, A
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.	S5	B	AT2	C
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.	K2, A3	B, B	AT1, AT4	C, C

### Learning Task and Assessment:

Learning Outcomes Assessed	Learning Tasks	Assessment Type	Weighting
S1-S5, A2	In class assessment of laboratory skills, testing key competencies and key concepts.	Practical Assessment	35 - 55%
K1, K2, A1-3	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%
S1, S4, S5, A2, K1, K2	Online multiple choice quizzes covering all material in a particular module.	Multiple Choice Quizzes	10 - 30%
S1, S4, S5, A2, A3, K1-K2	Test	Test	20 - 40%

### Adopted Reference Style:

Australian Harvard