

# Unit Outline (Higher Education)

**Institute / School:** Institute of Innovation, Science & Sustainability

**Unit Title:** PRINCIPLES OF BIOLOGY

**Unit ID:** SCBIO1001

**Credit Points:** 15.00

**Prerequisite(s):** Nil

**Co-requisite(s):** Nil

**Exclusion(s):** (BIOGC1722 and SCBIO1010 and SCCOR1100)

**ASCED:** 010999

**Description of the Unit:**

This unit introduces some of the fundamental principles of biology and explores such key elements as: cell biology - organelle and tissue structure and function and cellular energetics, genes, chromosomes and genetic engineering, Mendelian and non-Mendelian rules of inheritance, and evolution of populations and species including their classification. These topics establish the foundational knowledge upon which the second- and third-year level science units in our life science degrees are built.

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

**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 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	<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 type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### Learning Outcomes:

Students undertaking this course are expected to be able to demonstrate the following knowledge and skills.

#### Knowledge:

- K1.** Identify the major cell constituents and tissues in eukaryotic organisms and their functions.
- K2.** Describe the pathways through which energy is converted to different forms in organisms.
- K3.** Explain the basis of genetic inheritance of traits and the rules governing those processes.
- K4.** Describe independent lines of evidence supporting the theory of evolution, and processes involved in natural selection of traits and species.

#### Skills:

- S1.** Relate the structure of cells and organelles to their function, determine the purpose of major cellular organelles and tissues
- S2.** Relate biochemical reactions to the physiological processes of living organisms.
- S3.** Determine the influence of genetics on trait inheritance and its relationship with the chemistry of genetic material.
- S4.** Describe the scientific basis of evolutionary theory and explain how evolution has shaped living organisms.

#### Application of knowledge and skills:

- A1.** Conduct lab-based studies using standard methods, equipment, technology and approaches in biological science.
- A2.** Observe key biological processes, functions and structures and report observations in standard lab report formats.
- A3.** Use standard biological terms and terminology to describe and report observations.

#### Unit Content:

This unit provides an introduction to some of the fundamental principles of biology. Topics covered may include cellular structure, integrity and communication, and link biochemistry and macromolecules with energy transfer, and cellular respiration. We also explore cellular replication, genes, chromosomes and genetic engineering, and look at patterns of inheritance, and investigate evidence of evolution by looking at microevolution in populations, and macroevolution leading to the formation of new species.

These topics are arranged into four broad themes:

- Cell Biology,
- Biochemistry (and energy),
- Genetics,
- Evolution.

## 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	<p>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:</p> <ul style="list-style-type: none"> <li>Using effective verbal and non-verbal communication</li> <li>Listening for meaning and influencing via active listening</li> <li>Showing empathy for others</li> <li>Negotiating and demonstrating conflict resolution skills</li> <li>Working respectfully in cross-cultural and diverse teams.</li> </ul>	A1	practical scientific reports, worksheets
FEDTASK 2 Leadership	<p>Students will demonstrate the ability to apply professional skills and behaviours in leading others. Students will be required to display skills in:</p> <ul style="list-style-type: none"> <li>Creating a collegial environment</li> <li>Showing self-awareness and the ability to self-reflect</li> <li>Inspiring and convincing others</li> <li>Making informed decisions</li> <li>Displaying initiative</li> </ul>	Not applicable	Not applicable
FEDTASK 3 Critical Thinking and Creativity	<p>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:</p> <ul style="list-style-type: none"> <li>Reflecting critically</li> <li>Evaluating ideas, concepts and information</li> <li>Considering alternative perspectives to refine ideas</li> <li>Challenging conventional thinking to clarify concepts</li> <li>Forming creative solutions in problem solving.</li> </ul>	A1, A2, A3	practical scientific reports, worksheets

FEDTASK attribute and descriptor		Development and acquisition of FEDTASKS in the Unit	
		Learning Outcomes (KSA)	Assessment task (AT#)
FEDTASK 4 Digital Literacy	<p>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:</p> <ul style="list-style-type: none"> <li>• Finding, evaluating, managing, curating, organising and sharing digital information</li> <li>• Collating, managing, accessing and using digital data securely</li> <li>• Receiving and responding to messages in a range of digital media</li> <li>• Contributing actively to digital teams and working groups</li> <li>• Participating in and benefiting from digital learning opportunities.</li> </ul>	Not applicable	Not applicable
FEDTASK 5 Sustainable and Ethical Mindset	<p>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:</p> <ul style="list-style-type: none"> <li>• Making informed judgments that consider the impact of devising solutions in global economic environmental and societal contexts</li> <li>• Committing to social responsibility as a professional and a citizen</li> <li>• Evaluating ethical, socially responsible and/or sustainable challenges and generating and articulating responses</li> <li>• Embracing lifelong, life-wide and life-deep learning to be open to diverse others</li> <li>• Implementing required actions to foster sustainability in their professional and personal life.</li> </ul>	Not applicable	Not applicable

### Learning Task and Assessment:

Learning Outcomes Assessed	Assessment Tasks	Assessment Type	Weighting
K1, K2, K3, K4, S1, S2, S3, S4, A1, A2, A3	Conduct lab-based studies and report on findings in an appropriate format.	Practical scientific reports	10-30%
K1, K2, K3, K4, S1, S2, S3, S4, A1, A3	Investigation of a key biological process, function, structure or other aspect.	laboratory/tutorial worksheets	10-30%
K1, K2, K3, K4, S1, S2, S3, S4	Demonstration and interpretation of key biological concepts	Online Quizzes	10-30%
K1, K2, K3, K4, S1, S2, S3, S4, A3	Demonstration, application and interpretation of knowledge and skills.	Theory Test	30-50%

### Adopted Reference Style:

APA

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

Fed Cite - [referencing tool](#)