UNIT CODE	**UPRBIO401**
UNIT TITLE	**Investigate biological science problems**
APPLICATION	This unit describes the performance outcomes, skills and knowledge required to investigate and formulate solutions to biological science problems at university entrance level. It requires the ability to apply biological theory and methodology, as a means of solving a variety of biological science problems at university entrance level. The unit applies to individuals who are seeking to develop their knowledge and skills in biological science, to facilitate an entry pathway into higher/tertiary vocational education courses, at undergraduate degree or Diploma/Advanced Diploma level. *No occupational licensing, certification or specific legislative requirements apply to this unit at the time of publication.*
PRE-REQUISITE UNIT *OPTIONAL FIELD*	Nil
ELEMENTS	**PERFORMANCE CRITERIA**
Elements describe the essential outcomes of the unit	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Apply knowledge of biological facts and principles to solve problems	1.1 Identify and summarise biological facts, formulae, procedures, theories/principles, and/or terminology where required 1.2 Solve biological science problems by selecting and using facts, formulae, procedures, theories/principles 1.3 Draw, label and interpret tables, graphs, diagrams and/or sequences

2. Analyse, evaluate and present information on biological science topics	2.1 Collect data/information on matters of biological science, and assess for relevance and accuracy 2.2 Analyse and evaluate data/information on biological science matters, obtained from a range of sources 2.3 Present written information on biological science, conforming to an accepted academic format
3. Solve problems in biological science using complex reasoning	3.1 Use relevant biological science evidence from at least two areas to reach a conclusion 3.2 Employ complex reasoning processes as relevant to support biological science problem solving 3.3 Integrate and evaluate relevant learned information to solve a novel problem in biological science 3.4 Participate actively in group discussion on how biological science concepts relate to data, and/or observations as part of the problem-solving process 3.5 Use technology, in compliance with health and safety practices, to assist with data collection and problem solving
4. Deliver a presentation on a biological science topic and contribute to group discussion	4.1 Deliver a presentation to a peer group on a biological science topic using appropriate visual/other aids 4.2 Present relevant information/ideas in a coherent, logical manner 4.3 Contribute to presentations by others through effective listening, questioning and/or discussion, as required 4.4 Use biological science terminology correctly, in context 4.5 Speak clearly and accurately in accepted form and style for presenting biological science information/ideas
5. Evaluate the strengths and limitations of scientific work in relation to biological science	5.1 Collate and analyse information on a contemporary application of scientific work undertaken in biological science 5.2 Compare differing perspectives on an application of biological science work in present day society 5.3 Describe the scientific method in relation to biological science and identify situations in which it is, or is not, effective 5.4 Identify and discuss ethical issues in relation to research/ work undertaken in biological science
	6.1 Clarify as required and follow the organisation's written laboratory and/or field study procedures carefully and accurately

6. Operate safely and proficiently in biological science activities	6.2 Use laboratory apparatus in accordance with the organisation's procedures and manufacturers' instructions 6.3 Work with chemicals, materials and equipment safely in accordance with legislative obligations/safety data sheets, organisational procedures and manufacturers' instructions, as and where required

FOUNDATION SKILLS

Foundation skills essential to performance in this unit, but not explicit in the performance criteria are listed below, along with a brief context statement.

Skill Remove skills that do not apply to unit.	**Performance Criteria**	**Description**
Reading skills to:	1.1 – 1.3; 2.1 - 2.3; 5.1; 6.1 - 6.3	Research; interpret theory and information specific to biological science/academic purpose
Writing skills to:	1.1; 2.3; 5.1; 5.2	Summarise data/information; compile notes; write and construct documents in clear, logical terms in accordance with specific scientific/academic purpose
Oral communication skills to:	3.4; 4.1–4.5;	Participate actively in discussion; deliver a structured presentation to peer group; convey information logically and coherently; use terminology in context; clear pronunciation
Numeracy skills to:	1.1 – 1.3; 3.2; 3.3; 3.5; 6.3	Analyse; interpret graphical, statistical and other mathematical information as relevant to specific biological science purpose Apply mathematical calculations to assist in investigation of biological science problems
Learning skills to:	2.1; 2.2; 3.2; 3.3; 4.1; 4.4	Use known strategies and approaches; adapt to own learning style to achieve required discipline outputs
Problem-solving skills to:	1.2; 2.1; 2.2; 3.1 - 3.4; 5.3	Collate, organise, analyse facts, theories, principles, other relevant information Apply logical/complex reasoning processes to assist in solving biological science problems individually or with others
Initiative and enterprise skills to:	2.1; 2.2; 3.3; 5.1 - 5.4	Draw upon known/learned information to evaluate and solve a novel problem

		Obtain data/information from sources other than given learning materials to support biological science analysis
Teamwork skills to:	2.1; 3.4; 4.3	Participate actively in discussions and in practical field/ laboratory work/ activities with peer group
Planning and organising skills to:	2.1 -2.3; 3.3; 4.1; 5.1	Collate and process gathered data / information; plan, organise approaches to solve specific biological science matters Sequence, prioritise own learning and workload to achieve outcomes
Self-management skills to:	2.1 -2.3; 3.4; 3.5; 6.1 – 6.3	Self-direct learning/study, preparation and production of required discipline-specific outputs in the academic environment Undertake activities in accordance with safety requirements and guidelines
Technology skills to:	2.1 – 2.3; 3.5; 4.1; 5.1 -5.4; 6.2; 6.3	Use and apply appropriate technology/tools to support investigation, purpose and presentation of biological science matters

UNIT MAPPING INFORMATION

Code and Title Current Version	**Code and Title Previous Version**	**Comments**
UPRBIO401 Investigate biological science problems	QLD204BIO01A Investigate biological science problems	Equivalent Unit

TITLE	**Assessment Requirements for:** **UPRBIO401 Investigate biological science problems**
PERFORMANCE EVIDENCE	*The learner must show evidence of the ability to:* - *complete activities outlined in the elements and performance criteria of this unit* - *manage these activities and any contingencies in the context of the academic learning / work environment.* *There must be demonstrated evidence that the learner has completed the following:* • Applied biological science theory and methodology including complex reasoning to solve problems • Constructed information from relevant data and interpreted biological science information in tabular, graphical, diagrammatic or sequence form • Obtained and assessed value of relevant data/information from a minimum of three (3) reputable sources • Collected, analysed, evaluated, documented and presented data/ information in accordance with discipline and academic purpose • Investigated a contemporary application of biological science research work, including ethical issues where these exist • Delivered oral presentation on a biological science topic with coherence, clear communication and use of correct terminology • Applied safe work and procedural compliance practices in laboratory/field study environments Note: If a specific volume or frequency is not stated, then the evidence must be provided at least once.
KNOWLEDGE EVIDENCE	*The learner must be able to:* • *demonstrate essential knowledge required to effectively undertake the activities outlined in the elements and performance criteria of this unit* • *manage these activities and any contingencies in the context of the academic learning / work environment.* *This includes knowledge of:* • Relevant biological science theory (facts, principles, theories, formulae, procedures) and associated terminology • Methodology including: scientific method; complex reasoning processes, evidence evaluation

	• Graphical, statistical information; research data relevant to biological science • Document structure and format in accordance with discipline and academic purpose • Organisational procedures including health and safety measures for working in field / laboratory environments • Contemporary/ethical issues in biological science
ASSESSMENT CONDITIONS	A range of assessment methods must be used to assess both practical skills and knowledge. *The range of assessment methods may be in the form of a selected combination from:* • Observation and direct questioning • Questions requiring oral / written answers eg short answer; multiple choice; matching / gap-fill; extended answers; diagrammatic; tabular; sequence form answers • Computer based tasks / activities • Practical assessment events (eg field / laboratory work) • Workbook records • Assignment/s and reports • Oral, prepared presentations relevant to discipline • Research activities • Group-based assessment events incorporating individual assessment of process/product • Individual, authenticated portfolio • Relevant and specific third party reports (eg from a supervisor) and/or testimonials • Authenticated reports of achievement in relevant courses or training sessions (RPL / Credit transfer) Skills must be demonstrated in the context of an actual or simulated academic workplace/learning environment with access to all relevant equipment and resources of that environment.

	Holistic/integrated assessment of relevant components within this enterprise unit and/or with other relevant units is recommended, where practicable. All assessment must be completed in accordance with relevant academic workplace/learning environment health and safety standards. ***Assessor Requirements:*** Assessors must satisfy assessor requirements in the *Standards for Registered Training Organisations (RTOs) 2015*

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