

## **CERTIFICATE IV IN ADULT TERTIARY PREPARATION (10397NAT)**

### **FOUR WEEK INTENSIVE CLASSES - 19 NOVEMBER TO 14 DECEMBER**

#### **BIOLOGY SPECIALISATION**

The Biology Specialisation applies to those who require foundation Biology knowledge and skills for entrance to tertiary study in a relevant discipline or field. This specialisation will teach students to operate safely and effectively in a practical experimental environment and to solve Biology problems by applying theory and skills relating to the Biology fundamentals of scientific method, the nature of life, cells, and plant and animal physiology, ecology, classification, genetics and evolution.

There are two units of study within the Biology Specialisation.

In Unit 1: ATBIO401A students will learn to apply theory relating to organisms, their cells and physiology, and scientific method in Biology. The knowledge to be gained in this unit includes:

- The meaning of the term Biology
- Characteristics of organisms
- Sequence and steps of scientific method
- Cell theory
- Prokaryotic and eukaryotic cell types
- The structure and function of cell organelles
- The names and nature of organic compounds present in cells
- Cellular respiration
- Cell processes of diffusion and osmosis
- Structures and functions of flowering plants
- Photosynthesis
- Transport in plants
- Gas exchange in plants
- The structure and function of human digestive, circulatory, respiratory and excretory systems
- Homeostasis
- The structure and function of the human reproductive system

The Performance Criteria for ATPBIO401A describes the required performance required to demonstrate achievement of that element:

<p><b>1. Apply knowledge of organisms, their cells and physiology and scientific method</b></p>	<p>1.1 Use accepted Biology terminology to describe and explain <b>Biology facts and theory</b>.</p> <p>1.2 Draw, label and explain <b>scientific diagrams</b>.</p>
<p><b>2. Conduct practical investigations relating to organisms, their cells and physiology</b></p>	<p>2.1 Follow verbal and written instructions to perform <b>practical investigations</b> using appropriate <b>equipment</b> and <b>safe practices</b>.</p> <p>2.2 Collect <b>primary data</b> using <b>scientific methodologies</b>.</p>
<p><b>3. Manipulate data and information relating to organisms, their cells and physiology</b></p>	<p>3.1 Present <b>primary data</b> and/or <b>secondary data</b> in appropriate graphical and tabular form.</p> <p>3.2 <b>Analyse and interpret</b> data and information.</p> <p>3.3 Develop valid and logical solutions to Biology problems by evaluating data and information, using relevant <b>Biology facts and theory</b>, and applying the appropriate knowledge, skills and strategies.</p>
<p><b>4. Communicate effectively in a Biology context on organisms, their cells and physiology, and scientific method</b></p>	<p>4.1 Convey Biology ideas and information in a <b>genre/medium</b> appropriate to <b>audience</b> and <b>purpose</b>.</p> <p>4.2 Use <b>scientific language and writing conventions</b> and <b>elements of academic writing</b> in written and oral genres to communicate ideas and information.</p>

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In Unit 2: ATPBIO402A students will learn to apply theory relating to ecology, classification, genetics and evolution in Biology. The knowledge to be gained in this unit includes:

The meaning of the term “ecology”

Populations, communities, ecosystems, environment, biosphere

Adaptations

Relationships within populations

Feeding relationships within communities

Cycling of matter

Flow of energy

Relationships other than feeding in communities

Changes in ecosystems

Field study techniques in population/community sampling

Classification of organisms including systems used and the levels of classification

Characteristics of the five kingdoms

Binomial naming system for species

Classification problems

Classification keys

Genetics and heredity

Variation by mutations

Chromosome theory of inheritance

Mitosis, meiosis

Genetic crosses including monohybrid, dominant/recessive inheritance, test cross, pedigrees, incomplete dominance/co-dominance, multiple alleles

DNA structure, function, replication

Protein synthesis

Evolution and the historical development of evolutionary theory and concepts

Evidence for evolutionary processes

Contemporary evolutionary theories

The Performance Criteria for ATPBIO402A describes the required performance required to demonstrate achievement of that element:

<p><b>1. Apply knowledge of ecology, classification, genetics and evolution</b></p>	<p>1.1 Use accepted Biology terminology to describe and explain <b>Biology facts and theory</b>.</p> <p>1.2 Draw, label and explain <b>scientific diagrams</b>.</p>
<p><b>2. Conduct investigations relating to ecology, classification, genetics and evolution</b></p>	<p>2.1 Follow verbal and written instructions to perform <b>practical investigations</b> using appropriate <b>equipment</b> and <b>safe practices</b>.</p> <p>2.2 Collect <b>primary data</b> using <b>scientific methodologies</b>.</p>
<p><b>3. Manipulate data and information relating to ecology, classification, genetics and evolution</b></p>	<p>3.1 Present <b>primary data</b> and/or <b>secondary data</b> in appropriate graphical and tabular form.</p> <p>3.2 <b>Analyse and interpret</b> data and information.</p> <p>3.3 Develop valid and logical solutions to Biology problems by evaluating data and information, using relevant <b>Biology facts and theory</b>, and applying the appropriate knowledge, skills and strategies.</p>
<p><b>4. Communicate effectively in a Biology context on ecology, classification, genetics and evolution</b></p>	<p>4.1 Convey Biology ideas and information in a <b>genre/medium</b> appropriate to <b>audience</b> and <b>purpose</b>.</p> <p>4.2 Use <b>scientific language and writing conventions</b> and <b>elements of academic writing</b> in written and oral genres to communicate ideas and information.</p>

November Intensive Biology Timetable - 2018

Mon	Tue	Wed	Thu	Fri	Sat
<b>19 Nov</b>  2.00pm – 7.00pm  (includes half hour break)	<b>20 Nov</b>  2.00pm – 7.00pm  (includes half hour break)	<b>21 Nov</b>  2.00pm – 7.00pm  (includes half hour break)	Private Study	Private Study	<b>24 Nov</b>  9.00am – 2.00pm  (includes half hour break)
<b>26 Nov</b>  2.00pm – 7.00pm  (includes half hour break)	<b>27 Nov</b>  2.00pm – 7.00pm  (includes half hour break)	<b>28 Nov</b>  2.00pm – 7.00pm  (includes half hour break)	<b>29 Nov</b>  2.00pm  Exam	Private Study	<b>1 Dec</b>  9.00am – 2.00pm  (includes half hour break)
Private Study	<b>4 Dec</b>  2.00pm – 7.00pm  (includes half hour break)	Private Study	<b>6 Dec</b>  2.00pm  Exam	<b>7 Dec</b>  2.00pm – 7.00pm  (includes half hour break)	<b>8 Dec</b>  9.00am – 2.00pm  (includes half hour break)
<b>10 Dec</b>  2.00pm – 7.00pm  (includes half hour break)	<b>11 Dec</b>  2.00pm – 7.00pm  (includes half hour break)	<b>12 Dec</b>  2.00pm – 7.00pm  (includes half hour break)	<b>13 Dec</b>  2.00pm – 7.00pm  (includes half hour break)	<b>14 Dec</b>  2.00pm  Class & Exam	