

RECOMMENDED LEVEL OF ATTAINMENT

12 Level 1 credits in Science with 8 credits from external standards

INTRODUCTION

The three aims of this course are:

- to develop an understanding of key biological facts, be able to apply them in new situations, and to see them applied to meet human needs;
- to develop investigative and analytical skills;
- to develop an awareness and respect for the uniqueness of New Zealand fauna and flora.

Practical work is a key component of this course.

Students have the opportunity to work both co-operatively with others in group activities during field trips and laboratory investigations and individually on their chosen research focus and animal portfolio. The research topic increases students' awareness of New Zealand's ecological socio-scientific issues and enables students to develop transferable critical thinking and academic research and communication skills.

FUTURE PATHWAYS

Leads onto year 13BIO, useful for 13 AGR,
Leads on to careers in agriculture, aquaculture, biosecurity and conservation, biotechnology, environmental sciences, fisheries, forestry, health sciences, horticulture, teaching, veterinary,

CONTENT

- Ecology including investigating patterns in New Zealand ecological communities. A 3 day field trip to Temple Basin Ski Area is a compulsory part of the course.
- Cell biology looking at cellular structure and processes and the molecules that are found in cells
- DNA and gene expression, metabolic disorders and the effect of environmental factors
- Diversity in animals and adaptations to their way of life
- Genetic variation and processes that lead to changes in population gene pools
- Research and make recommendations on a New Zealand biological current issue

SKILLS

- Practical investigative skills including field work, laboratory experiments, microscope work and dissections, biological drawings
- Critical thinking
- Research using information technology
- Co-operative skills, team work
- Communication skills
- Information literacy

NCEA STANDARDS – 12BIO

Not all standards will necessarily be assessed.

	Level	Credits	UE Rdg.	UE Wrtg.	
External					
91156 v2	2	4	no	no	Biology 2.4 - Demonstrate understanding of life processes at the cellular level
91157 v2	2	4	no	no	Biology 2.5 - Demonstrate understanding of genetic variation and change
91159 v2	2	4	no	no	Biology 2.7 - Demonstrate understanding of gene expression
Internal					
91155 v2	2	3	no	no	Biology 2.3 - Demonstrate understanding of adaptation of plants or animals to their way of life
91158 v2	2	4	no	no	Biology 2.6 - Investigate a pattern in an ecological community, with supervision
91602 v2	3	3	yes	yes	Biology 3.2 - Integrate biological knowledge to develop an informed response to a socio-scientific issue

RECOMMENDED LEVEL OF ATTAINMENT

14 credits in Year 12 Biology including externally assessed credits. Students gaining 12 credits may be considered for entry based on their results in all assessments including formative assessments. Completion of all the internal standards and all external standards will be an important consideration.

INTRODUCTION

Year 13 Biology builds on the material covered in Year 12 Biology. It forms a strong foundation for students intending to go onto tertiary education and the wide course content also meets the needs of students who have an interest in biology and wish to increase their biological knowledge and critical thinking skills. There is a New Zealand focus in the animal behaviour and plant responses and evolutionary processes topics. Students develop their investigative skills and valuable transferrable academic writing and research skills in the individual plant/animal study. The biotechnology unit uses a case studies approach where students evaluate various manipulations of DNA transfer. This is of particular relevance to students interested in the Health sciences. The human evolution topic gives an up to date treatment of the biological and cultural development of our species and students learn to evaluate evidence and justify their opinions. They develop an awareness of the Nature of Science where scientific ideas change as new evidence is uncovered.

CONTENT

- Animal behaviour and plant responses
- Individual practical investigations with a plant/animal
- Processes of evolution in populations
- Biotechnology: manipulating the transfer of DNA
- Human evolution

SKILLS

- Investigative skills from experimental design, carrying out, concluding, evaluating and communicating findings in a scientific report
- Self-management and teamwork – undertake self-directed investigations and work cooperatively
- Creative and critical thinking, problem solving
- Communication skills
- Informed decision making

FUTURE PATHWAYS

Tertiary studies

Agronomist, animal behaviour scientist, animal welfare officer, biochemist, biotechnologist, cheese production supervisor, conservation biologist, environmental analyst, environmental ecologist, environmental manager, environmental officer, fisheries scientist, food and drink technologist, forestry technician, genetics technician, marine biologist, meat biochemist, medical sciences technician, nursery grower, plant pathologist, plant physiologist, quarantine officer, research manager, secondary school science teacher, zoologist.

NCEA STANDARDS – 13BIO

Not all standards will necessarily be assessed.

	Level	Credits	UE Rdg.	UE Wrtg.	
External					
91603 v2	3	5	yes	yes	Biology 3.3 - Demonstrate understanding of the responses of plants and animals to their external environment
91605 v2	3	4	yes	yes	Biology 3.5 - Demonstrate understanding of evolutionary processes leading to speciation
91606 v2	3	4	yes	yes	Biology 3.6 - Demonstrate understanding of trends in human evolution
Internal					
91601 v2	3	4	no	no	Biology 3.1 - Carry out a practical investigation in a biological context, with guidance
91607 v2	3	3	yes	no	Biology 3.7 - Demonstrate understanding of human manipulations of genetic transfer and its biological implications