

SCIENCE

NB: In all subjects, the final placements will be completed in 2021.
For further information contact the HOD Science, Ms Elliott.

CAREERS:

Biology is useful in careers such as nursing, physiotherapy, farm manager, dentist, horticulturist etc.

Chemistry is helpful in careers such as pharmacist, agricultural scientist, dietician, physiotherapist, forester, food technologist etc.

Physics is helpful in careers such as optometrist, architect, engineer, physiotherapist, geologist, surveyor etc.

Earth and Space Science is helpful in careers such as conservation, sustainability, geology, environmental studies etc.

Vocational Pathways for Science

Construction and Infrastructure (CI)

If you are interested in a career that involves physical work, working with your hands, tools, machinery and equipment and primarily focussing on building, repair or maintenance work then this sector is for you.

Types of jobs for this Vocational Pathway include:

• Architect • Boat builder • Building contractor • Cabinet maker • Environmental engineer • Landscape architect • Mining engineer • Quantity surveyor • Survey technician

Manufacture and Technology (MT)

If you are interested in a career from hands on production and assembly to construction or even computer design then this is the ideal pathway for you to follow.

Types of jobs for this Vocational Pathway include:

• Aeronautical engineer • Architect • Biomedical Engineer • Boat builder • Importer/exporter • Programmer

Primary Industry Sector (PI)

You'll be contributing to an important and sustainable sector that's one of New Zealand's biggest employers and exporters. Whether you're from a rural background or a townie, there's something here for you.

Types of jobs for this Vocational Pathway include:

• Agricultural technician • Biochemist • Forestry Scientist • Geophysicist • Science technician • Veterinarian

Service Industry Sector (SI)

With skills from this sector you can work and travel the world. It can be truly inspirational – from travel to tourism, hairdressing to hospitality, physical fitness to financial services. In these jobs you're the brand, dealing directly with people.

Types of jobs for this Vocational Pathway include:

• Accountant • Actuary • Aeronautical engineer • Aeroplane pilot • Air Force • Economist • Energy Auditor • Financial advisor • Pharmacist

Social and Community Services (SC)

With skills from this sector you can: work with people of different ages, life stages, abilities and cultures, counsel and treat people, promote health and offer advice, provide medical research, testing and technical support.

Types of jobs for this Vocational Pathway include:

• Ambulance officer • Anaesthetist • Audiologist • Biomedical technician • Cardiac technician • Environmental Scientist • Forensic Scientist • Podiatrist • Policy Analyst • Teacher • Psychiatrist

Creative Industries (CR)

Whether you are looking to move onto further study, training or work, or you're unsure about your options, the yellow pathway will help you plan your study and career options in the Creative Industries.

Types of jobs for this Vocational Pathway include:

• Sales & Marketing manager • Events Manager • Game Developer • Graphic Designer • Naval architect/boat builder

Level 1 SCIENCE COURSES

Students will be advised as to which course of study is recommended

NCEA Level One Internal Science - This course is a Science Course that includes internally assessed Level One Achievement Standards. It is recommended for students who would struggle with external examinations.

NCEA Level One General Science - This course in Science is assessed with both internal and external Achievement Standards. This course prepares students for level 2 individual sciences.

NCEA Level One Chemistry/Physics & NCEA Level One Biology/Science - Students will be invited to study this double Science course. These two courses are designed to give students a greater back-ground knowledge to study level 2 individual Sciences.

Level 1 INTERNAL SCIENCE

Prerequisite:	A course for students who would struggle with NCEA Level 1 General Science. Students will be directed by their Year 10 Science teacher into their suitable course of study.
Summary of Course:	A course will be developed with student input covering some of the modules listed below. This course includes the following topics: Healthy rivers, Fuels and the environment, Electricity, Earth Science, astronomy, energy and chemical reactions.

Assessment	CI	MT	PI	SI	SC	CR	Credits	Internally assessed
90925		•	•	•	•		4	Biology practical investigation (Microbes) (N)
90930	•	•	•	•			4	Practical Chemistry (N)
90941	•	•	•			•	4	Electricity in the home (N)
90945	•	•	•	•	•		4	Fuels and the environment
90952			•	•		•	4	Geological surface features (L)
90954			•			•	4	Astronomical cycles (L)

(L) = Literacy (N) = Numeracy

Level 1 GENERAL SCIENCE

Prerequisite:	Students will be directed into the most suitable course of study for them. This course covers a broad base of science areas
Summary of Course:	A course that covers the basic biology, chemistry and physics requirements for NCEA Level 2

Assessment	CI	MT	PI	SI	SC	CR	Credits	Internally assessed
90930	•	•	•	•			4	Chemistry Practical (N)
90941	•	•	•			•	4	Electricity in the home (N)
								Externally Assessed
90940	•	•	•	•	•	•	4	Mechanics (N)
90944	•	•	•			•	4	Acids and Bases
90948		•	•		•		4	Genetics (L)

(L) = Literacy (N) = Numeracy

Level 1 FUTURE SCIENCE (4 hrs week)

Prerequisite:	Students will be invited to study this course. It is an extension of the Level 1 General Science course.
Summary of Course:	A course of study that gives students a sound base of Biology, Physics, Chemistry and Earth & Space Science skills.

Assessment	CI	MT	PI	SI	SC	CR	Credits	Internally assessed
90925		•	•	•	•		4	Biology Practical
90952			•	•		•	4	Surface Features
90953			•	•		•	4	The carbon cycle (L)
								Externally assessed
90927		•	•		•		4	Micro-organisms (L)
90938	•	•				•	4	Waves
90944	•	•	•			•	4	Acids and Bases

(L) = Literacy (N) = Numeracy

Level 2 SCIENCE COURSES

Students will be advised as to which course of study is recommended

NCEA Level 2 General Science - This course is a combination of Level 2 internal and external Achievement Standards.

NCEA Level 2 Physics, Chemistry, Biology & Earth and Space Science - Students with high achievement in Level 1 Science courses can choose either individual or a combination of these subjects with guidance from Science teachers.

Level 2 GENERAL SCIENCE									
Prerequisite:	14 credits in NCEA level 1 Science								
Summary of Course:	A selection of the listed Level 2 Internal and External Achievement Standards (approx. 22 credits total)								
Assessment	Uni Lit	CI	MT	PI	SI	SC	CR	Credits	Internally assessed
91153			•	•	•	•		4	Biological practical investigation
91154				•		•		3	Analyse biological validity
91162		•	•	•		•		3	Practical chemistry
91169		•	•	•		•	•	3	Aspects of Physics
91189		•						4	Geological processes
91190								4	Extreme environment
									Externally assessed
91192		•						4	Stars & Planets

Level 2 BIOLOGY									
Prerequisite:	Minimum of 'achieved' in Achievement standard 90948								
Summary of Course:	A combination of internal and external Level 2 Biology Achievement Standards.								
Assessment	Uni Lit	CI	MT	PI	SI	SC	CR	Credits	Internally assessed
91153			•	•	•	•		4	Biological practical investigation
91154				•		•		3	Analyse biological validity
91158				•				4	Ecological community patterns
									Externally assessed
91156				•		•		4	Cells
91157				•		•		4	Genetic variation
91159				•		•		4	Genes

Level 2 CHEMISTRY									
Prerequisite:	Minimum of 'achieved' in Achievement standards 90944 and 90930								
Summary of Course:	A combination of internal and external Level 2 Chemistry Achievement Standards								
Assessment	Uni Lit	CI	MT	PI	SI	SC	CR	Credits	Internally assessed
91161		•	•	•		•		4	Quantitative analysis
91167		•	•	•		•		3	Oxidation and Reduction
91163		•	•	•	•	•	•	3	Research (<i>Optional</i>)
91162		•	•	•		•		3	Ions in solution (<i>Optional</i>)
									Externally assessed
91164		•	•	•		•		5	Bonding
91165		•	•	•	•	•		4	Organics
91166		•	•	•	•	•		4	Reactivity

Level 2 PHYSICS

Prerequisite:	Minimum of 'achieved' in Achievement standards 90940 and 90941
Summary of Course:	A combination of internal and external Level 2 Physics Achievement Standards

Assessment	Uni Lit	CI	MT	PI	SI	SC	CR	Credits	Internally assessed
91168		•	•	•				4	Practical physics
91169		•	•	•		•	•	3	Understanding applied physics
91172			•			•		3	Atomics
									Externally assessed
91170		•	•	•		•		4	Waves
91171		•	•	•		•		4	Mechanics
91173		•	•	•				4	Electricity

Level 2 EARTH AND SPACE SCIENCE

Prerequisite:	Minimum of 'achieved' in one Level 1 General Science Internal Achievement standard and one Level 1 General Science External Achievement standard
Summary of Course:	A combination of internal and external Level 2 Planet Earth & Beyond Achievement Standards

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Level 3 SCIENCE COURSES

Students will be advised as to which course of study is recommended

NCEA Level 3 Science - This course in Science is designed for those students who have had some success in NCEA Level 2 Science courses. It is a course made up of internally assessed Level 3 Achievement and Unit standards

NCEA Level 3 Physics, Chemistry, Biology & Earth and Space Science - These courses are designed for students with high achievement in Level 2 Physics, Chemistry, Biology & Earth Oceans and Space Science

Level 3 GENERAL SCIENCE	
Prerequisite:	A minimum of 10 NCEA Level 2 Science based credits
Summary of Course:	A selection of Level 3 Internal Achievement standards from Biology/ESS/Physics/Chemistry

Assessment	Uni Lit	CI	MT	PI	SI	SC	CR	Credits	Internally assessed
91415	R	•						4	ESS - Investigate an aspect of astronomy
91601			•	•		•		4	BIO - Carry out a practical investigation in a biological context, with guidance (Germination)
91388		•	•	•		•		3	CHEM - Demonstrate understanding of spectroscopic data in chemistry
91522		•	•	•		•		3	PHY – Application of physics

University Literacy R = reading W = writing

Level 3 BIOLOGY	
Prerequisite:	Minimum of 'achieved' in at least three Level 2 Biology Achievement standards with at least two of these in an external standard
Summary of Course:	A combination of Level 3 achievement standards that cover the curriculum requirements in biology

Assessment	Uni Lit	CI	MT	PI	SI	SC	CR	Credits	Internally assessed
91601			•	•		•		4	Practical investigation
91602	R,W		•	•		•		3	Socio Scientific issue
<i>University Literacy R = reading W = writing</i>									Externally assessed
91603	R,W			•				5	Responses of plants and animals to their external environment
91605	R,W		•	•		•		4	Patterns of evolution speciation
91606	R,W			•				4	Trends in human evolution

Level 3 CHEMISTRY	
Prerequisite:	Minimum of 'achieved' in at least three Level 2 Chemistry Achievement standards with at least two of these in an external standard
Summary of Course:	A combination of Level 3 achievement standards that cover the curriculum requirements in chemistry

Assessment	Uni Lit	CI	MT	PI	SI	SC	CR	Credits	Internally assessed
91389	R,W	•	•	•		•		3	Fossil fuels
91388		•	•	•		•		3	Spectroscopic data
91393		•	•	•		•		3	REDOX
<i>University Literacy R = reading W = writing</i>									Externally assessed
91390		•	•	•		•		5	Thermochemical principles
91391		•	•	•	•	•		5	Organics
91392		•	•	•		•		5	Aqueous systems

Level 3 PHYSICS	
Prerequisite:	Minimum of 'achieved' in at least three Level 2 Physics Achievement standards with at least one of these in an external standard
Summary of Course:	A combination of Level 3 achievement standards that cover the curriculum requirements in physics.

Assessment	Uni Lit	CI	MT	PI	SI	SC	CR	Credits	Internally assessed
91521		•	•			•		4	Practical Physics
91522		•	•	•		•		3	Physics in context
91525		•	•			•		3	Modern Physics
<i>University Literacy R = reading W = writing</i>									Externally assessed
91523		•	•	•		•		4	Waves
91524		•	•	•		•		6	Mechanics
91526		•	•	•		•		6	Electricity

Level 3 EARTH AND SPACE SCIENCE	
Prerequisite:	Minimum of 'achieved' in at least three Level 2 Earth and Space Science Achievement standards with at least one of these in an external standard, or the equivalent Biology, Chemistry or Physics level 2 standards
Summary of Course:	A combination of internal and external Level 3 Planet Earth & Beyond Achievement Standards

Assessment	Uni Lit	CI	MT	PI	SI	SC	CR	Credits	Internally assessed
91410	R,W	•						4	Practical investigation
91411	R,W	•						4	Socio scientific issues
91412		•						4	Dating geological events
91415	R	•						4	Aspects of astronomy
<i>University Literacy R = reading W = writing</i>									Externally assessed
91413	R,W	•						4	Ocean systems
91414	R,W	•						4	Atmosphere systems