

# Biology

Course	Standard	Credits	Form of Assessment	Literacy/ Numeracy	
<b>Year 11 Science</b>  Level One Science involves studying acids and bases, genetics, mechanics, solar power, forest ecosystems and reaction rates. A thought provoking course which will prepare students for Level Two Biology, Physics and Chemistry.	90930	Chemistry 1.1 - Carry out a practical chemistry investigation, with direction	4	Internal	Num
	90940	Science 1.1 - Demonstrate understanding of aspects of mechanics	4	External	Num
	90941	Science 1.2 - Investigate implications of electricity and magnetism for everyday life	4	Internal	Num
	90944	Science 1.5 - Demonstrate understanding of aspects of acids and bases	4	External	
	90948	Science 1.9 - Demonstrate understanding of biological ideas relating to genetic variation	4	External	L1 Lit
	90951	Science 1.12 - Investigate the biological impact of an event on a New Zealand ecosystem	4	Internal	
<b>Year 12 Biology</b>  Students will investigate topics such as cell biology, ecology, animal adaptations, genetics and variation, and complete a practical investigation. This is a well-rounded course preparing students for Level 3 Biology.	91153	Biology 2.1 - Carry out a practical investigation in a biology context, with supervision	4	Internal	Num
	91155	Biology 2.3 - Demonstrate understanding of adaptation of plants or animals to their way of life	3	Internal	L1 Lit
	91156	Biology 2.4 - Demonstrate understanding of life processes at the cellular level	4	External	L1 Lit
	91157	Biology 2.5 - Demonstrate understanding of genetic variation and change	4	External	L1 Lit
	91158	Biology 2.2 - Analyse the biological validity of information presented to the public	3	Internal	L1 Lit
	91160	Biology 2.8 - Investigate biological material at the microscopic level	3	Internal	
	91159	Biology 2.7 - Demonstrate understanding of gene expression	4	External	L1 Lit
<b>Year 13 Biology</b>  A broad course preparing students for university level Biology study. Topics include: Practical investigation, Socio-Scientific issue research, homeostasis, biotechnology, evolution and human evolution.	91601	Biology 3.1 - Carry out a practical investigation in a biological context, with guidance	4	Internal	Num, L1 Lit
	91602	Biology 3.2 - Integrate biological knowledge to develop an informed response to a socio-scientific issue	3	Internal	L1 Lit, B Lit
	91604	Biology 3.4 - Demonstrate understanding of how an animal maintains a stable internal environment	3	Internal	L1 Lit, R Lit
	91605	Biology 3.5 - Demonstrate understanding of evolutionary processes leading to speciation	4	External	L1 Lit, B Lit
	91607	Biology 3.7 - Demonstrate understanding of human manipulations of genetic transfer and its biological implications	3	Internal	L1 Lit, R Lit
	91606	Biology 3.6 - Demonstrate understanding of trends in human evolution	4	External	L1 Lit, B Lit

# Chemistry

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	90944	Science 1.5 - Demonstrate understanding of aspects of acids and bases	4	External	
	90948	Science 1.9 - Demonstrate understanding of biological ideas relating to genetic variation	4	External	L1 Lit
	90951	Science 1.12 - Investigate the biological impact of an event on a New Zealand ecosystem	4	Internal	
<b>Year 12 Chemistry</b>  Chemistry students will need to demonstrate both theoretical understanding and practical ability. Topics covered: organic chemistry, structure and bonding, quantitative chemistry, ions in solution and redox.	91161	Chemistry 2.1 - Carry out quantitative analysis	4	Internal	Num
	91162	Chemistry 2.2 - Carry out procedures to identify ions present in solution	3	internal	
	91164	Chemistry 2.4 - Demonstrate understanding of bonding, structure, properties and energy changes	5	External	L1 Lit
	91165	Chemistry 2.5 - Demonstrate understanding of the properties of selected organic compounds	4	External	L1 Lit
	91167	Chemistry 2.7 - Demonstrate understanding of oxidation-reduction	3	internal	
<b>Year 13 Chemistry</b>  Emphasis on theoretical and practical chemistry. Focusing on reduction-oxidation, practical research, thermochemistry and organic chemistry.	91389	Chemistry 3.3 - Demonstrate understanding of chemical processes in the world around us	3	internal	L1 Lit, B Lit
	91387	Chemistry 3.1 - Carry out an investigation in chemistry involving quantitative analysis	4	internal	Num, L1 Lit, W Lit
	91388	Chemistry 3.2 - Demonstrate understanding of spectroscopic data in chemistry	3	internal	
	91390	Chemistry 3.4 - Demonstrate understanding of thermochemical principles and the properties of particles and substances	5	External	L1 Lit
	91391	Chemistry 3.5 - Demonstrate understanding of the properties of organic compounds	5	External	L1 Lit
	91393	Chemistry 3.7 - Demonstrate understanding of oxidation-reduction processes	3	internal	L1 Lit

# Physics

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	90944	Science 1.5 - Demonstrate understanding of aspects of acids and bases	4	External	
	90948	Science 1.9 - Demonstrate understanding of biological ideas relating to genetic variation	4	External	L1 Lit
	90951	Science 1.12 - Investigate the biological impact of an event on a New Zealand ecosystem	4	Internal	
<b>Year 12 Physics</b>  Topics covered: motion, energy, forces, electricity, electromagnetism. Carry out investigations and learn about nuclear physics.  Essential for level 3 Physics, but also helpful for those taking up a trade.	91168	Physics 2.1 - Carry out a practical physics investigation that leads to a non-linear mathematical relationship	4	Internal	Num, L1 Lit
	91169	Physics 2.2 - Demonstrate understanding of physics relevant to a selected context	3	Internal	L1 Lit
	91171	Physics 2.4 - Demonstrate understanding of mechanics	6	External	Num, L1 Lit
	91172	Physics 2.5 - Demonstrate understanding of atomic and nuclear physics	3	Internal	L1 Lit
	91173	Physics 2.6 - Demonstrate understanding of electricity and electromagnetism	6	External	Num, L1 Lit
<b>Year 13 Physics</b>  Students study similar topics to Level Two. This is a common prerequisite for university study in technology, engineering and health sciences.	91521	Physics 3.1 - Carry out a practical investigation to test a physics theory relating two variables in a non-linear relationship	4	Internal	L1 Lit
	91522	Physics 3.2 - Demonstrate understanding of the application of physics to a selected context	3	Internal	L1 Lit
	91523	Physics 3.3 - Demonstrate understanding of wave systems	4	External	L1 Lit
	91524	Physics 3.4 - Demonstrate understanding of mechanical systems	6	External	L1 Lit
	91525	Physics 3.5 - Demonstrate understanding of Modern Physics	3	Internal	L1 Lit
	91526	Physics 3.6 - Demonstrate understanding of electrical systems	6	External	L1 Lit

# Agriculture

Course	Standard	Credits	Form of Assessment	Literacy/ Numeracy
<b>Year 11 Agriculture</b> A Unit Standards course with both practical and theoretical components. Students learn about plant propagation, health and safety, motorbike safety, and tool maintenance.	4	Maintain hand tools and service small engines used in horticulture	5	Internal
	561	Install, dismantle, and store temporary electric fences	2	Internal
	2803	Maintain a documented work record of horticultural activities	5	Internal
	19145	Describe hydration, nutrition, and sleep in relation to physical well-being of agriculture workers	4	Internal
	23781	Grow and pot up plants from stem cuttings	5	Internal
	23783	Grow and maintain plants in containers from seed	5	Internal
	24555	Demonstrate knowledge of the safe operation of a motorcycle	3	Internal
<b>Year 12 Agriculture</b> A Unit Standards course providing hands-on, practical activities with theory to back up practical learning. The course covers: maintenance of small engines, livestock behaviour and animal welfare, agri-chemicals, Tractors, ATV's, and Chainsaws	31	Connect up, and perform repairs and maintenance on an on-farm water supply system	2	Internal
	19044	Demonstrate knowledge of the legal requirements and hazards associated with tractor use	3	Internal
	19138	Monitor and interpret weather information	4	Internal
	21554	Demonstrate knowledge of safety with agrichemicals	3	Internal
	23540	Demonstrate knowledge of hazards, hazard control, and the consequences of injury in a rural workplace	5	Internal
	24557	Demonstrate knowledge of the safe operation of a quad bike	3	Internal
	24832	Open and draw out a coil of wire, tie knots, join wire, and prepare wire for transport and storage	5	Internal
	24833	Identify and maintain fencing tools and equipment, and identify fencing construction materials and wire types	3	Internal
<b>Year 13 Agriculture</b> A Unit Standards course covering a range of different agricultural skill and knowledge areas. Theory assessed, backed up with practical experiences where possible. Topics covered include: Health and safety, pasture management, animal physiology and weed management.	18	Demonstrate knowledge of animal anatomy and physiology	4	Internal
	23542	Identify factors, and describe how to manage factors, that contribute to injury in a rural workplace	4	Internal
	24628	Describe pasture supply and demand, feeds, and grazing systems	7	Internal
	24837	Describe non-electric fence types and components	3	Internal
	27210	Identify and describe weeds, and methods of prevention and control	6	Internal

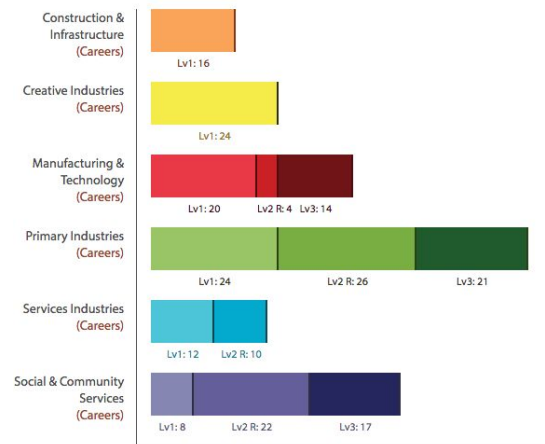
## Vocational Pathway

Science subjects fall into many of the vocational pathways. You will need all or some of these subjects if you want to study Health Sciences, Engineering, Surveying, or Veterinary Sciences at the tertiary level. Unit Standards Agricultural courses can prepare you for further study in Agriculture or for the work force.

## Careers

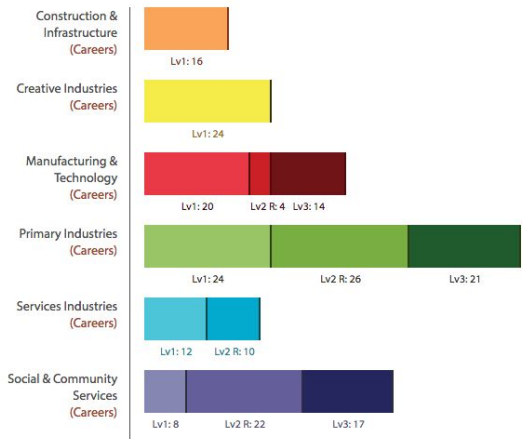
Biochemist, Marine Biologist, Veterinarian, Zookeeper, Medical Doctor, Dietician, Beekeeper, Dairy Farmer, Groundsperson, Electrical Engineer, Winemaker, Gas Fitter, Surveyor, Air Force Pilot, Game Developer, Lighting technician, Quarantine officer

## Biology Pathway Graph



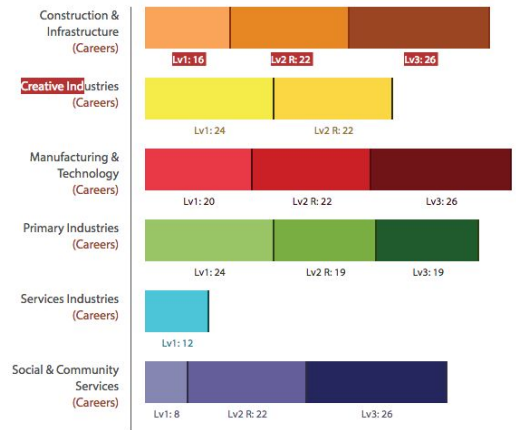
Vocational Credits: 71 | Other Credits: 0 | Total: 71  
R = Recommended SR = Sector Related

## Chemistry Pathway Graph



Vocational Credits: 71 | Other Credits: 0 | Total: 71  
R = Recommended SR = Sector Related

## Physics Pathway Graph



Vocational Credits: 72 | Other Credits: 0 | Total: 72  
R = Recommended SR = Sector Related

## Agriculture Pathway Graph