

**He Puka Whakaaetanga,  
Whakamana Hōtaka |  
Programme Socialisation  
Document**

**Programme of Study:  
New Zealand Certificate in Applied Science**

**Leading to the award of:  
2550 New Zealand Certificate in Applied Science (Level 3)**



**Te Pūkenga**

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# 1 The Unified NZC in Applied Science (Level 3)

## 1.1 Te Tūhono Kawenga Hōtaka | A Unified Portfolio of Programmes

Te Pūkenga aims to develop a unified, sustainable, public network of regionally accessible vocational education programmes that have our ākonga (students) at the centre. This application for programme approval and accreditation forms part of the development of a national network of provision requiring partnerships and cooperation with co-responsibilities for programme delivery. This is consistent with Te Pūkenga academic delivery innovation strategic direction, which is aimed at establishing a coherent portfolio of programmes that will support ākonga, employers and industry to make informed decisions about future study and employment and achieve a sustainable network of ongoing delivery.

In order to develop a coherent portfolio of programmes that supports the above strategic direction, a unification process has been established that is aimed at achieving a future state of (in the main) one programme per qualification that supports and allows for a range of delivery modes, namely blended, distance and work-based learning. Currently, Te Pūkenga needs to work within the parameters of Programmes of Industry Training reporting via the ITR and Programmes of Study reporting via the SDR (as integrated NZ Programmes / Skills Standards and an integrated TEC reporting system are not yet available). The unified programme of study presented here unifies on-campus, blended and distance approaches, reported through the current SDR.

The unification process has been designed to employ a collaborative approach to redevelopment that will ensure that programme design meets the criteria set by [Te Pūkenga Charter](#) and our commitments under [Te Pae Tawhiti](#), our Te Tiriti o Waitangi Excellence Framework, and [Te Rito](#), our Ākonga at the Centre research project and reports. This approach also fulfills the expectations of the emerging Whiria Te Pūkenga (Mātauranga Māori Framework) and Te Pūkenga Ako Framework (Learning and Teaching Framework).

One of Te Pūkenga educational priorities is a relentless focus on equity and ensuring participation. Therefore, equity is integrated and embedded into Te Pūkenga operating model blueprint and business case. Te Pūkenga is also committed to putting ākonga at the centre of all we do, and working towards equity and success for ākonga of all genders, ethnicities, cultures and abilities, as outlined in our [Equity and Ākonga Success Strategy](#).

In 2020, Te Pūkenga commissioned the Ākonga at the Centre research project to gain insights from ākonga (and those that supported them) on the barriers and enablers to their success across the current learner journey. The project applied Te Tiriti o Waitangi inspired principles of excellence and used Critical Bicultural and Human Centred Design methodologies as a new and innovative approach for the public sector. The research led to three [Te Rito reports](#), focusing on Māori, Pacific and Disabled ākonga, respectively. [Te Rito](#) framework builds towards our Equity Outcomes framework, its purpose being to guide Te Pūkenga in its response to the unique needs of all ākonga, with a priority focus on Māori, Pacific and Disabled ākonga.

In accordance with Te Tiriti o Waitangi, Te Pūkenga is focused on ensuring our services work well and respond with excellence to the needs of Māori ākonga and their whānau, and to the aspirations of iwi and Māori communities throughout Aotearoa New Zealand. This objective comes from our Charter, our legislative mandate, and from the will of our Council, and is supported by the opportunities outlined in [Te Rito Report Part One](#). In working to achieve this objective, we know it is not Māori ākonga or communities that need to change to fit with us; rather it is our responsibility to ensure our services improve for the betterment of Māori.

In terms of the needs of Pacific ākonga, [Te Rito Report Part Two](#) indicated a range of opportunities to be taken up by Te Pūkenga. These range from targeted support for the wellbeing of Pacific learners to empowering and bringing effect to Pacific hopes and dreams for intergenerational

development and prosperity. Te Pūkenga is committed to ensuring all Pacific ākonga and kaimahi feel that they belong, that their voices are heard, that the use of Pacific languages is normalised and that their cultures are valued.

In terms of the needs of Disabled ākonga, [Te Rito Report Part Three](#) indicated the need for Te Pūkenga to provide appropriate impairment-related learning support for Disabled ākonga to achieve their academic potential and to resolve barriers to learning. The research also indicated the need for mental wellbeing support, the reduction of financial barriers, a focus on the development of digital literacy skills and ensuring access to the physical learning environment. Te Pūkenga has developed a national strategic disability action plan, which incorporates the Enabling Good Lives principles. The National Strategic Disability Action Plan implements the Accessibility Charter across Aotearoa New Zealand and supports consistent data collection on Disabled ākonga, and training. The plan provides a unified national strategy across Te Pūkenga and was developed with ākonga and kaimahi (staff). The plan provides a comprehensive road map towards a vocational system that hears the voices of Disabled ākonga and what they need to succeed.

The unified programme presented here contributes to the ability of Te Pūkenga to offer a coherent portfolio of programmes that responds to the needs of ākonga, industries, iwi, hapū, hāpori, Māori communities and Pacific communities. This also begins to take us towards addressing some of the inequities that exist for priority ākonga.

## 1.2 Te Huanui Whakawhanake i te Hōtaka | Development Approach

The New Zealand Certificate in Applied Science (Level 3) qualification was updated with Version 2 published in May 2021. The last date for assessments to take place for Version 1 of this qualification is 30 June 2023. Therefore, rather than each network partner dedicating time and resource to develop programmes of study for the new version individually, one programme of study was selected and revised to become the unified programme of study.

The programme of study presented here is based on a collaborative design process across the following Te Pūkenga network partners:

- Ara Institute of Canterbury Ltd (Ara)
- Nelson Marlborough Institute of Technology Ltd (NMIT)
- Universal College of Learning Ltd (UCOL)
- Waikato Institute of Technology Ltd (Wintec)

The collaborative design process was supported by two groups: (i) a Steering Group with representation from every relevant network partner, i.e., every network partner delivering programmes of study in the broad discipline area of Natural and Physical Sciences; and (ii) a Working Group tasked specifically with the unification of this programme of study. The Workforce Development Council was included in the Steering Group membership, and has thus been engaged in the unification process. The functions of the Steering Group were defined in a mutually agreed Terms of Reference, and included the following:

- oversight of the development of a single unified programme for each qualification Te Pūkenga delivers in the discipline area
- leading engagement with regional internal and external partners (including (i) relevant regional industry, including Māori and Pacific employers; (ii) communities at a local level, including hapū and iwi, and Pacific communities; (iii) Te Pūkenga kaimahi; and (iv) ākonga)
- steering programme unification work and providing advice and support to Working Groups

The Working Group of members from the collaborating Te Pūkenga network partners listed above selected the WinTec programme of study (an existing approved programme) for the programme unification process. The programme selection criteria included the following:

- Version changes or accreditation/regulatory body changes have already been made.

- The programme was developed in close partnership with industry, hapū, iwi and Pacific communities.
- The programme was updated within the past three years.
- Minor updates to the programme will allow it to align with Te Pūkenga Charter.
- The programme already enables multiple modes of delivery.
- Te Tiriti o Waitangi is evident across the programme.
- The programme is ākonga-centred and allows a focus on under-served ākonga (Māori, Pacific, Disabled) and adult and second-chance ākonga).
- Minor updates to the programme will enable it to align with industry and community needs and allow regional flexibility.
- The programme addresses identified future needs of ākonga, industry and community.

### 1.3 Te Whakawhitinga ki te Tūhono Kawenga Hōtaka | Transition to the Unified Programme

As is clear from the above, the unification of this programme of study was achieved by means of *transition* to a single unified programme, developed on the basis of existing approved programme offerings that were informed by regional/local needs. Thus, programme content and delivery are contextualised, and provide relevant pathways to meet the needs of those local communities.

It should be acknowledged that the selection of a current approved programme as the basis for the unified programme means that aspects of the selected programme will be adopted across the network, such as programme structure, course details, and the ways in which Mātauranga Māori is embedded throughout the programme. A Mātauranga Māori snapshot tool will be applied to this unified programme to identify how contextualised Mātauranga Māori content is evident and what next steps are required to enhance or develop this further.

The unified programme presented here contributes to the ability of Te Pūkenga to offer a coherent portfolio of programmes and takes us a step towards addressing some of the inequities that exist for priority ākonga. Transition arrangements may be required for ākonga who fail to successfully complete courses within the existing programme of any given network partner. To this end, each network partner currently delivering this programme will create its own transition plan based on equivalencies between existing and new courses. Transition pathways will be identified on a case-by-case basis, informed by these course equivalencies, logistics and individual ākonga knowledge gaps. All care will be taken to minimise any ākonga disadvantage by their transition to the new programme, while still maintaining the integrity of the new unified programme.

decision making.

## Appendix 1: Te Hono o te Kahurangi | Qualification Details

Details for the programme of study	NZQA Reference No.	Version No.	Credits	Level
<b>Programme Title</b> New Zealand Certificate in Applied Science	XXXXX	1	60	3

which leads to the award of the following qualification

Qualification Title	NZQA Reference No.	Version No.	Credits	Level
New Zealand Certificate in Applied Science	2550	2	60	3
NZSCED	019999 Natural and Physical Sciences>Other Natural and Physical Sciences>Natural and Physical Sciences not elsewhere classified			
Qualification developer	Ara Institute of Canterbury Ltd			
Quality assurance body	New Zealand Qualifications Authority			
Next review	31/05/2026			
Next planned consistency review	2023			

### Strategic purpose

The purpose of this qualification is to provide individuals with introductory operational and theoretical knowledge in science, technology, engineering, and mathematics (STEM) for employment or education.

The qualification will also identify for the STEM-related sectors in Aotearoa New Zealand those employees who are able to undertake supervised tasks in entry-level operational positions in manufacturing and regulatory industries, field work, research, and development

### Graduate profile

Graduates of this qualification will be able to:

1. Apply scientific principles and collect, record, and process data to carry out basic tasks in an operational and/or research context.
2. Work collaboratively in a team in a STEM-related workplace.
3. Work safely in a STEM-related workplace.
4. Apply knowledge of the introductory principles of professional, ethical, social, and culturally responsive behaviour in a STEM-related workplace.

### Qualification education pathway

This qualification may lead to further study in higher level qualifications in a wide range of science, technology, engineering, mathematics, or health-related disciplines.

### Employment/cultural/community pathway

Graduates of this qualification can work under supervision in entry-level operational positions in science, technology, engineering, mathematics, or health-related fields of work including manufacturing and regulatory industries, field work, research, and development.

#### **Professional recognition/accreditation**

#### **Other requirements of the qualification (including regulatory body or legislative requirements)**

None

#### **General conditions for programme**

Tertiary Education Organisations (TEOs) offering programmes leading to this qualification must deliver content that is current with amendments to, and replacements of relevant legislation, appropriate health and safety procedures, regulations, and Australia/New Zealand Standards (AS/NZS).

#### **Qualification version transition information**

Version 2 of this qualification was issued following a scheduled review. Please refer to Qualifications and Assessment Standards Approvals for further information.

The last date for assessments to take place for version 1 of this qualification is 30 June 2023.

People currently enrolled in version 1 of this qualification may either complete the requirements by 30 June 2023 or transfer to version 2 of this qualification.

It is not intended that anyone be disadvantaged by these transition arrangements. Any person who considers they have been disadvantaged may appeal to the address below:

Ara Institute of Canterbury Ltd

P O Box 540

Christchurch Mail Centre

Christchurch 8140

Telephone: 0800 24 24 76

Email:

info@ara.ac.nz



## Appendix 2: Waeture ā-Hōtaka | Programme Regulations

In the regulations presented here, unless the context otherwise requires, ‘delegated authority’ refers to an individual or role holder, or in some cases a committee, who has been delegated the authority to make a decision within a specific circumstance. A schedule of the various relevant delegations is maintained by the Programme Committee responsible for the programme. Te Pūkenga aims to enable broad access for ākonga and is committed to providing barrier-free access and participation for Māori, Pacific, Disabled and other equity groups.

### Whakatapoko | Admission

<b>General admission</b>	To be admitted to this programme applicants must meet the following requirements: Open Entry if the delegated authority at the campus/site is satisfied that the applicant has the capability to complete the requirements of the programme.
<b>English language requirements</b>	All applicants (international and domestic) for whom English or te reo Māori is not a first language need to provide evidence that they have the necessary English language proficiency required for the programme. International applicants are required to have an IELTS score of 5 (general or academic) with no individual band lower than 5 from one test taken in the preceding two years, or an equivalent described in <a href="#">NZQA Rules</a> .

### Tūtukitanga Whakamihi | Credit Recognition

The provisions and procedures for credit recognition through cross credit, credit transfer and recognition of prior learning in this programme are set out in with [Te Kawa Maiororo | Educational Regulatory Framework](#).

### Tohu o te Hōtaka | Award of Qualification

<b>Credit requirements</b>	<p>To be awarded the <b>New Zealand Certificate in Applied Science (Level 3)</b>, ākonga must achieve a minimum of 60 credits in the pattern set out in Table 1 below from the courses set out in Table 2 below.</p> <p><b>Table 1: Credit Requirements</b></p> <table border="1"> <thead> <tr> <th>Level</th> <th>Compulsory credits</th> <th>Elective credits</th> <th>Total credits</th> </tr> </thead> <tbody> <tr> <td>3</td> <td>30</td> <td>30</td> <td>60</td> </tr> <tr> <td colspan="3"><b>Total credits</b></td> <td><b>60</b></td> </tr> </tbody> </table> <p><b>Table 2: Schedule of Courses</b></p> <table border="1"> <thead> <tr> <th>Course code</th> <th>Course title</th> <th>Credits</th> <th>Pre-requisites</th> </tr> </thead> <tbody> <tr> <td colspan="4"><b>Level 3 Compulsory credits</b></td> </tr> <tr> <td>NSCI3101</td> <td>Professional Skills in Applied Science</td> <td>15</td> <td></td> </tr> <tr> <td>NSCI3102</td> <td>Making Sense of Data</td> <td>15</td> <td></td> </tr> <tr> <td colspan="2"><b>Total compulsory credits @ Level 3</b></td> <td colspan="2"><b>30</b></td> </tr> <tr> <td colspan="4"><b>Level 3 Elective credits (any two of the following electives)</b></td> </tr> <tr> <td>NSCI3103</td> <td>Physics</td> <td>15</td> <td></td> </tr> <tr> <td>NSCI3104</td> <td>Mathematics</td> <td>15</td> <td></td> </tr> <tr> <td>NSCI3105</td> <td>Engineering Calculations and Materials</td> <td>15</td> <td></td> </tr> <tr> <td>NSCI3106</td> <td>The Science of Food and the Environment</td> <td>15</td> <td></td> </tr> <tr> <td>NSCI3107</td> <td>New Zealand Ecosystems</td> <td>15</td> <td></td> </tr> <tr> <td>NSCI3108</td> <td>Environmental Management Practices</td> <td>15</td> <td></td> </tr> <tr> <td>NSCI3109</td> <td>Introduction to Food Processing</td> <td>15</td> <td></td> </tr> </tbody> </table>			Level	Compulsory credits	Elective credits	Total credits	3	30	30	60	<b>Total credits</b>			<b>60</b>	Course code	Course title	Credits	Pre-requisites	<b>Level 3 Compulsory credits</b>				NSCI3101	Professional Skills in Applied Science	15		NSCI3102	Making Sense of Data	15		<b>Total compulsory credits @ Level 3</b>		<b>30</b>		<b>Level 3 Elective credits (any two of the following electives)</b>				NSCI3103	Physics	15		NSCI3104	Mathematics	15		NSCI3105	Engineering Calculations and Materials	15		NSCI3106	The Science of Food and the Environment	15		NSCI3107	New Zealand Ecosystems	15		NSCI3108	Environmental Management Practices	15		NSCI3109	Introduction to Food Processing	15	
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	NSCI3110	Introduction to Food Assurance	15	
	NSCI3111	Applied Science Project	15	
	<b>Total elective credits @ Level 3</b>		<b>30</b>	
	<b>TOTAL CREDITS</b>		<b>60</b>	
<b>Programme completion</b>	<p>The minimum time to complete this programme is 6 months (full-time study) or 1 year (part-time study).</p> <p>The maximum time to complete this programme is 4 years.</p> <p>The delegated authority may approve an alternative maximum completion time.</p>			

### Waeture Aromatawai | Assessment Regulations

<b>Grading</b>	<p>Assessment in this programme is achievement-based.</p> <p>Grading follows the guidelines in <a href="#">Te Kawa Maiororo   Educational Regulatory Framework</a>.</p> <p>Specific assessment and/or course pass requirements are detailed in programme delivery documentation.</p>
<b>Assessment submission and additional opportunities</b>	<p>Requirements and processes for</p> <ul style="list-style-type: none"> <li>• assessment submission,</li> <li>• resit and/or resubmission opportunities for failed assessments,</li> <li>• reassessment opportunities for failed courses,</li> <li>• late submission of assessments, and</li> <li>• extension of assessment deadlines</li> </ul> <p>are outlined in programme delivery documentation provided to ākonga at the start of their course.</p>

Appendix 3: Ngā Hua o te Ako me te hāngai ki Ngā Putanga Ako a te Taurira | Learning Outcomes and Assessment Mapped to Graduate Profile Outcomes

Course Code & Title		Course Aim & Outcomes		Assessment	Apply scientific principles and collect, record, and process data to carry out basic tasks in an operational and/or research context.	Work collaboratively in a team in a STEM-related workplace.	Work safely in a STEM-related workplace.	Apply knowledge of the introductory principles of professional, ethical, social, and culturally responsive behaviour in a STEM-related workplace.
					GPO 1	GPO 2	GPO 3	GPO 4
NSCI3101	Professional Skills in Applied Science	Aim	The aim of this course is to develop STEM related workplace knowledge and skills.		All LOs: Assessment portfolio (100%)			
		LO1	Apply interpersonal and communication skills in a STEM related environment.					✓
		LO2	Work collaboratively to develop an informed response to a problem in a STEM related environment.				✓	
		LO3	Implement professional health and safety obligations in a STEM related environment or industrial setting.				✓	
NSCI3102	Making Sense of Data	Aim	The aim of this course is to develop knowledge and skills relating to data analysis, data security and statistics in a collaborative project-based environment.		All LOs: Assessment portfolio (100%)			
		LO1	Use statistical analysis to make a formal inference in a STEM related project .			✓		
		LO2	Work collaboratively to investigate a situation using experimental design principles.			✓	✓	
		LO3	Investigate professional, ethical, social and cultural issues in a data-based project.					✓
NSCI3103	Physics	Aim	The aim of this course is to develop knowledge and skills in the basic concepts of physics and their application to real-world problems.		All LOs: Assessment portfolio (100%)			
		LO1	Use graphs to solve problems in one-dimensional motion.			✓		
		LO2	Apply the concepts of force, energy, and work to real-world situations.			✓		
		LO3	Use ray diagrams to solve problems involving lenses and mirrors.			✓		
		LO4	Apply basic electrical theory to simple circuits.		✓			
NSCI3104	Mathematics	Aim	The aim of this course is to develop knowledge and skills about polynomials, exponential, trigonometric and rational functions that apply to real world situations.		All LOs: Assessment portfolio (100%)			
		LO1	Solve problems involving a variety of shapes and solids in a STEM related context.			✓		
		LO2	Use lines and curves to model real-world situations.			✓		
		LO3	Solve problems involving polynomials and other functions and model real world processes.			✓		
		LO4	Use calculus to solve practical problems in a STEM related context.		✓			
NSCI3105	Engineering Calculations and Materials	Aim	The aim of this course is to develop knowledge and skills related to selected physical engineering principles and materials used in engineering, including calculations relating to these topics using the SI system of units.		All LOs: Assessment portfolio (100%)			
		LO1	Explain physical principles in engineering.			✓		
		LO2	Describe physical characteristics of materials used in engineering.			✓		
		LO3	Perform trade calculations for mechanical engineering trades.			✓		
		LO4	Apply basic computer skills to research, write and present scientific information.		✓			
NSCI3106	The Science of Food and the Environment	Aim	The aim of this course is to develop basic knowledge and skills relating to the science of food and the environment in an operational and/or research context.		All LOs: Assessment portfolio (100%)			
		LO1	Describe life cycles and environments in New Zealand's ecosystems in an operational and/or research context.			✓		
		LO2	Describe animal and plant production in New Zealand in an operational and/or research context			✓		
		LO3	Analyse the composition of common raw material and food products in an operational and/or research context.		✓			
NSCI3107	New Zealand Ecosystems	Aim	The aim of this course is to develop knowledge and skills to identify common New Zealand ecosystems flora and fauna and the significance of man-made impacts.		All LOs: Assessment portfolio (100%)			
		LO1	Describe the features of significant New Zealand ecosystems.			✓		
		LO2	Identify common New Zealand native flora and fauna in a selection of ecosystems.			✓		
		LO3	Describe significant man-made impacts on a selection of New Zealand ecosystems.		✓			

Course Code & Title		Course Aim & Outcomes		Assessment	GPO 1	GPO 2	GPO 3	GPO 4
NSCI3108	Environmental Management Practices	Aim	The aim of this course is to develop knowledge and skills to identify key environmental management practices in ecosystem restoration in an operational and/or research context.					
		LO1	Describe assessment and planning of ecosystem restoration in an operational and/or research context.	All LOs:	✓			
		LO2	Identify key environmental management practices used to restore a selection of New Zealand ecosystems in an operational and/or research context.	Assessment portfolio (100%)	✓			
NSCI3109	Introduction to Food Processing	Aim	The aim of this course is to develop knowledge and skills relating to food processing in an operational and/or research context.					
		LO1	Describe a generic food manufacturing process.	All LOs:	✓			
		LO2	Demonstrate preservation techniques in the food manufacturing industry.	Assessment portfolio (100%)	✓			
NSCI3110	Introduction to Food Assurance	Aim	The aim of this course is to develop knowledge and skills relating to food assurance in an operational and/or research context.					
		LO1	Describe key internal quality management tools and external controls that ensure food products are made safely.	All LOs:	✓			
		LO2	Apply sampling and testing regimes for food products.	Assessment portfolio (100%)	✓			
NSCI3111	Applied Science Project	Aim	The aim of this course is to develop knowledge and skills to apply scientific principles in planning, implementing, and presenting a simple applied science project / investigation.					
		LO1	Apply project management practices in planning a simple STEM related project/investigation.	All LOs:	✓			
		LO2	Implement a simple STEM related project/investigation	Assessment portfolio (100%)	✓			
		LO3	Present a project/investigation summary to a selected audience of key stakeholders		✓			

Apply scientific principles and collect, record, and process data to carry out basic tasks in an operational and/or research context.

Work collaboratively in a team in a STEM-related workplace.

Work safely in a STEM-related workplace.

Apply knowledge of the introductory principles of professional, ethical, social, and culturally responsive behaviour in a STEM-related workplace.

## Appendix 4: Akoranga | Courses

The following Course Descriptors provide an overview of the content and structure of each course in the programme. Learning and teaching, and assessment activities will employ a range of elements drawn from approved methods to align with the context of the learning (delivery mode, regional specific requirement, etc.) and any particular needs of the group of ākonga.

PROFESSIONAL SKILLS IN APPLIED SCIENCE					
Course code	NSCI3101	Level	3	Credits	15
Pre-requisites		Co-requisites			
Main programme	New Zealand Certificate in Applied Science (Level 3)	Other programmes			
Delivery modes	Provider-based Provider-based (extramural)	Total learning hours (See course delivery document for detailed breakdown.)	150		

### Whāinga/He Tauākī Akoranga | Aim/Outcome Statement

The aim of this course is to develop STEM related workplace knowledge and skills.

### Ngā Hua o te Ako | Learning Outcomes

Upon the successful completion of this course, ākonga will be able to...		Graduate outcome alignment
LO1	Apply interpersonal and communication skills in a STEM related environment.	GPO 4
LO2	Work collaboratively to develop an informed response to a problem in a STEM related environment.	GPO 2
LO3	Implement professional health and safety obligations in a STEM related environment or industrial setting.	GPO 3

### Ngā Tūtohu o te Kiko | Indicative Content

LO1	Communication skills (report writing, oral presentation, negotiation and problem solving)
LO2	<ul style="list-style-type: none"> <li>Gathering and organising information</li> <li>Science ethics, group dynamics and problem solving in the workplace</li> </ul>
LO3	<ul style="list-style-type: none"> <li>Personal and corporate responsibility</li> <li>Risk assessment</li> <li>Health and safety legislation</li> </ul>

### Ngā Mahi Ako me te Whakaako | Learning & Teaching Activities

Learning and teaching activities will employ a range of elements drawn from approved methods to align with the context of the learning (delivery mode, regional specific requirement, etc.) and any particular needs of the group of ākonga.

### Aromatawai | Assessment

Assessment in this course is achievement-based. Ākonga will be advised of all matters relating to summative assessment at the start of the course.

Assessment activity	Weighting	Learning outcomes
<b>Assessment portfolio</b> Will employ a range of elements drawn from approved methods to align with the context of the learning (delivery mode, regional specific requirement, etc.) and any particular needs of the group of ākonga.	100%	All

Ākonga are required to provide sufficient evidence against all learning outcomes in order to pass the course.

### Ngā Rauemi Ako | Learning Resources

All required and recommended resources are advised to ākonga via course outlines.

### Version Tracking

Ver No.	Approved by	Approval date	Effective from	Description of change

## MAKING SENSE OF DATA

Course code	NSCI3102	Level	3	Credits	15
Pre-requisites		Co-requisites			
Main programme	New Zealand Certificate in Applied Science (Level 3)	Other programmes			
Delivery modes	Provider-based Provider-based (extramural)	Total learning hours (See course delivery document for detailed breakdown.)			150

### Whāinga/He Tauākī Akoranga | Aim/Outcome Statement

The aim of this course is to develop knowledge and skills relating to data analysis, data security and statistics in a collaborative project-based environment.

### Ngā Hua o te Ako | Learning Outcomes

Upon the successful completion of this course, ākonga will be able to...		Graduate outcomes
LO1	Use statistical analysis to make a formal inference in a STEM related project.	GPO 1
LO2	Work collaboratively to investigate a situation using experimental design principles.	GPO 1, 2
LO3	Investigate professional, ethical, social, and cultural issues in a data-based project.	GPO 4

### Ngā Tūtohu o te Kiko | Indicative Content

LO1	<ul style="list-style-type: none"> <li>Study design principles and data collection</li> <li>Production and interpretation of graphical summaries of data</li> <li>Production and interpretation of numerical summary statistics</li> </ul>
LO2	<ul style="list-style-type: none"> <li>Collaborative work</li> <li>Graphical and numeric description of the relationship between two quantitative variables</li> </ul>
LO3	<ul style="list-style-type: none"> <li>Data analysis and data security</li> <li>Ethically, socially, and culturally responsive behaviour</li> </ul>

### Ngā Mahi Ako me te Whakaako | Learning & Teaching Activities

Learning and teaching activities will employ a range of elements drawn from approved methods to align with the context of the learning (delivery mode, regional specific requirement, etc.) and any particular needs of the group of ākonga. Collaborative

### Aromatawai | Assessment

Assessment in this course is achievement-based. Ākonga will be advised of all matters relating to summative assessment at the start of the course.

Assessment activity	Weighting	Learning outcomes

<p>Assessment portfolio</p> <p>Will employ a range of elements drawn from approved methods to align with the context of the learning (delivery mode, regional specific requirement, etc.) and any particular needs of the group of ākonga.</p>	100%	All
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Ākonga are required to provide sufficient evidence against all learning outcomes in order to pass a course.

### Ngā Rauemi Ako | Learning Resources

All required and recommended resources are advised to ākonga via course outlines.

### Version Tracking

Ver No.	Approved by	Approval date	Effective from	Description of change
1	Poari Akoranga		DD-MM-YYYY	New Course



## PHYSICS

Course code	NSCI3103	Level	3	Credits	15
Pre-requisites		Co-requisites			
Main programme	New Zealand Certificate in Applied Science (Level 3)	Other programmes			
Delivery modes	Provider-based Provider-based (extramural)	Total learning hours (See course delivery document for detailed breakdown.)			150

### Whāinga/He Tauākī Akoranga | Aim/Outcome Statement

The aim of this course is to develop knowledge and skills in the basic concepts of physics and their application to real-world problems.

### Ngā Hua o te Ako | Learning Outcomes

Upon the successful completion of this course, ākonga will be able to...		Graduate outcomes
LO1	Use graphs to solve problems in one-dimensional motion.	GPO 1
LO2	Apply the concepts of force, energy, and work to real-world situations.	GPO 1
LO3	Use ray diagrams to solve problems involving lenses and mirrors.	GPO 1
LO4	Apply basic electrical theory to simple circuits.	GPO 1

### Ngā Tūtohu o te Kiko | Indicative Content

LO1	<ul style="list-style-type: none"> <li>One dimensional motion (motion in a straight line, uniform motion, motion with constant acceleration)</li> </ul>
LO2	<ul style="list-style-type: none"> <li>Force, energy, and work (Introduction to Newton's laws, the concept of work done by a force, conservation of energy)</li> </ul>
LO3	<ul style="list-style-type: none"> <li>Geometric Optics (Ray diagrams for lenses and mirrors)</li> </ul>
LO4	<ul style="list-style-type: none"> <li>Electrostatics, and current electricity</li> </ul>

### Ngā Mahi Ako me te Whakaako | Learning & Teaching Activities

Learning and teaching activities will employ a range of elements drawn from approved methods to align with the context of the learning (delivery mode, regional specific requirement, etc.) and any particular needs of the group of ākonga.

### Aromatawai | Assessment

Assessment in this course is achievement-based. Ākonga will be advised of all matters relating to summative assessment at the start of the course.

Assessment activity	Weighting	Learning outcomes
Assessment portfolio	100%	All

Will employ a range of elements drawn from approved methods to align with the context of the learning (delivery mode, regional specific requirement, etc.) and any particular needs of the group of ākonga.		
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Ākonga are required to provide sufficient evidence against all learning outcomes in order to pass a course.

### Ngā Rauemi Ako | Learning Resources

All required and recommended resources are advised to ākonga via course outlines.

### Version Tracking

Ver No.	Approved by	Approval date	Effective from	Description of change
1	Poari Akoranga		DD-MM-YYYY	New Course

## MATHEMATICS

Course code	NSCI3104	Level	3	Credits	15
Pre-requisites		Co-requisites			
Main programme	New Zealand Certificate in Applied Science (Level 3)	Other programmes			
Delivery modes	Provider-based Provider-based (extramural)	Total learning hours (See course delivery document for detailed breakdown.)			150

### Whāinga/He Tauākī Akoranga | Aim/Outcome Statement

The aim of this course is to develop knowledge and skills about polynomials, exponential, trigonometric and rational functions that apply to real-world situations.

### Ngā Hua o te Ako | Learning Outcomes

Upon the successful completion of this course, ākonga will be able to...		Graduate outcomes
LO1	Solve problems involving a variety of shapes and solids in a STEM related context.	GPO 1
LO2	Use lines and curves to model real-world situations.	GPO 1
LO3	Solve problems involving polynomials and other functions and model real-world processes.	GPO 1
LO4	Use calculus to solve practical problems in a STEM related context.	GPO 1

### Ngā Tūtohu o te Kiko | Indicative Content

LO1	<ul style="list-style-type: none"> <li>• Shapes and solids</li> </ul>
LO2	<ul style="list-style-type: none"> <li>• Lines and curves</li> </ul>
LO3	<ul style="list-style-type: none"> <li>• Polynomials</li> <li>• Trigonometric functions</li> <li>• Exponential and log functions</li> </ul>
LO4	<ul style="list-style-type: none"> <li>• Calculus</li> </ul>

### Ngā Mahi Ako me te Whakaako | Learning & Teaching Activities

Learning and teaching activities will employ a range of elements drawn from approved methods to align with the context of the learning (delivery mode, regional specific requirement, etc.) and any particular needs of the group of ākonga.

### Aromatawai | Assessment

Assessment in this course is achievement-based. Ākonga will be advised of all matters relating to summative assessment at the start of the course.

<b>Assessment activity</b>	<b>Weighting</b>	<b>Learning outcomes</b>
Assessment portfolio Will employ a range of elements drawn from approved methods to align with the context of the learning (delivery mode, regional specific requirement, etc.) and any particular needs of the group of ākongā.	100%	All

Ākongā are required to provide sufficient evidence against all learning outcomes in order to pass a course.

### **Ngā Rauemi Ako | Learning Resources**

All required and recommended resources are advised to ākongā via course outlines.

### **Version Tracking**

<b>Ver No.</b>	<b>Approved by</b>	<b>Approval date</b>	<b>Effective from</b>	<b>Description of change</b>
1	Poari Akoranga		DD-MM-YYYY	New Course

## ENGINEERING CALCULATIONS AND MATERIALS

Course code	NSCI3105	Level	3	Credits	15
Pre-requisites		Co-requisites			
Main programme	New Zealand Certificate in Applied Science (Level 3)	Other programmes			
Delivery modes	Provider-based Provider-based (extramural)	Total learning hours (See course delivery document for detailed breakdown.)		150	

### Whāinga/He Tauākī Akoranga | Aim/Outcome Statement

The aim of this course is to develop knowledge and skills related to selected physical engineering principles and materials used in engineering, including calculations relating to these topics using the SI system of units.

### Ngā Hua o te Ako | Learning Outcomes

Upon the successful completion of this course, ākonga will be able to...		Graduate outcomes
LO1	Explain physical principles in engineering.	GPO 1
LO2	Describe physical characteristics of materials used in engineering.	GPO 1
LO3	Perform trade calculations for mechanical engineering trades.	GPO 1
LO4	Apply basic computer skills to research, write and present scientific information.	GPO 1

### Ngā Tūtohu o te Kiko | Indicative Content

LO1	<ul style="list-style-type: none"> <li>Simple machines</li> </ul>
LO2	<ul style="list-style-type: none"> <li>Metals and their characteristics</li> </ul>
LO3	<ul style="list-style-type: none"> <li>The SI system of units</li> <li>Arithmetic and algebraic operations</li> </ul>
LO4	<ul style="list-style-type: none"> <li>Introductory computer skills for engineering</li> </ul>

### Ngā Mahi Ako me te Whakaako | Learning & Teaching Activities

Learning and teaching activities will employ a range of elements drawn from approved methods to align with the context of the learning (delivery mode, regional specific requirement, etc.) and any particular needs of the group of ākonga.

### Aromatawai | Assessment

Assessment in this course is achievement-based. Ākonga will be advised of all matters relating to summative assessment at the start of the course.

Assessment activity	Weighting	Learning outcomes

<p>Assessment portfolio</p> <p>Will employ a range of elements drawn from approved methods to align with the context of the learning (delivery mode, regional specific requirement, etc.) and any particular needs of the group of ākonga.</p>	100%	All
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Ākonga are required to provide sufficient evidence against all learning outcomes in order to pass a course.

### Ngā Rauemi Ako | Learning Resources

All required and recommended resources are advised to ākonga via course outlines.

### Version Tracking

Ver No.	Approved by	Approval date	Effective from	Description of change
1	Poari Akoranga		DD-MM-YYYY	New Course

## THE SCIENCE OF FOOD AND THE ENVIRONMENT

Course code	NSCI3106	Level	3	Credits	15
Pre-requisites		Co-requisites			
Main programme	New Zealand Certificate in Applied Science (Level 3)	Other programmes			
Delivery modes	Provider-based Provider-based (extramural)	Total learning hours (See course delivery document for detailed breakdown.)		150	

### Whāinga/He Tauākī Akoranga | Aim/Outcome Statement

The aim of this course is to develop basic knowledge and skills relating to the science of food and the environment in an operational and/or research context.

### Ngā Hua o te Ako | Learning Outcomes

Upon the successful completion of this course, ākonga will be able to...		Graduate outcomes
LO1	Describe life cycles and environments in New Zealand's ecosystems in an operational and/or research context.	GPO 1
LO2	Describe animal and plant production in New Zealand in an operational and/or research context.	GPO 1
LO3	Analyse the composition of common raw material and food products in an operational and/or research context.	GPO 1

### Ngā Tūtohu o te Kiko | Indicative Content

LO1	<ul style="list-style-type: none"> <li>• New Zealand environments</li> <li>• Life cycles</li> <li>• Air, water, soil</li> </ul>
LO2	<ul style="list-style-type: none"> <li>• Plant and animal form and function</li> <li>• Plant and animal husbandry</li> </ul>
LO3	<ul style="list-style-type: none"> <li>• Composition of common raw materials and food products</li> </ul>

### Ngā Mahi Ako me te Whakaako | Learning & Teaching Activities

Learning and teaching activities will employ a range of elements drawn from approved methods to align with the context of the learning (delivery mode, regional specific requirement, etc.) and any particular needs of the group of ākonga.

### Aromatawai | Assessment

Assessment in this course is achievement-based. Ākonga will be advised of all matters relating to summative assessment at the start of the course.

Assessment activity	Weighting	Learning outcomes

<p>Assessment portfolio</p> <p>Will employ a range of elements drawn from approved methods to align with the context of the learning (delivery mode, regional specific requirement, etc.) and any particular needs of the group of ākonga.</p>	100%	All
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Ākonga are required to provide sufficient evidence against all learning outcomes in order to pass a course.

### Ngā Rauemi Ako | Learning Resources

All required and recommended resources are advised to ākonga via course outlines.

### Version Tracking

Ver No.	Approved by	Approval date	Effective from	Description of change
1	Poari Akoranga		DD-MM-YYYY	New Course



## NEW ZEALAND ECOSYSTEMS

Course code	NSCI3107	Level	3	Credits	15
Pre-requisites		Co-requisites			
Main programme	New Zealand Certificate in Applied Science (Level 3)	Other programmes			
Delivery modes	Provider-based Provider-based (extramural)	Total learning hours (See course delivery document for detailed breakdown.)			150

### Whāinga/He Tauākī Akoranga | Aim/Outcome Statement

The aim of this course is to develop knowledge and skills to identify common New Zealand ecosystems flora and fauna and the significance of man-made impacts.

### Ngā Hua o te Ako | Learning Outcomes

Upon the successful completion of this course, ākonga will be able to...		Graduate outcomes
LO1	Describe the features of significant New Zealand ecosystems.	GPO 1
LO2	Identify common New Zealand native flora and fauna in a selection of ecosystems.	GPO 1
LO3	Describe significant man-made impacts on a selection of New Zealand ecosystems.	GPO 1

### Ngā Tūtohu o te Kiko | Indicative Content

LO1	• New Zealand ecosystems
LO2	• Common New Zealand native flora and fauna
LO3	• Man-made impacts on ecosystems in New Zealand

### Ngā Mahi Ako me te Whakaako | Learning & Teaching Activities

Learning and teaching activities will employ a range of elements drawn from approved methods to align with the context of the learning (delivery mode, regional specific requirement, etc.) and any particular needs of the group of ākonga.

### Aromatawai | Assessment

Assessment in this course is achievement-based. Ākonga will be advised of all matters relating to summative assessment at the start of the course.

Assessment activity	Weighting	Learning outcomes
Assessment portfolio	100%	All

Will employ a range of elements drawn from approved methods to align with the context of the learning (delivery mode, regional specific requirement, etc.) and any particular needs of the group of ākonga.		
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Ākonga are required to provide sufficient evidence against all learning outcomes in order to pass a course.

### Ngā Rauemi Ako | Learning Resources

All required and recommended resources are advised to ākonga via course outlines.

### Version Tracking

Ver No.	Approved by	Approval date	Effective from	Description of change
1	Poari Akoranga		DD-MM-YYYY	New Course

## ENVIRONMENTAL MANAGEMENT PRACTICES

Course code	NSCI3108	Level	3	Credits	15
Pre-requisites		Co-requisites			
Main programme	New Zealand Certificate in Applied Science (Level 3)	Other programmes			
Delivery modes	Provider-based Provider-based (extramural)	Total learning hours (See course delivery document for detailed breakdown.)			150

### Whāinga/He Tauākī Akoranga | Aim/Outcome Statement

The aim of this course is to develop knowledge and skills to identify key environmental management practices in ecosystem restoration in an operational and/or research context.

### Ngā Hua o te Ako | Learning Outcomes

Upon the successful completion of this course, ākonga will be able to...		<b>Graduate outcomes</b>
LO1	Describe assessment and planning of ecosystem restoration in an operational and/or research context.	GPO 1
LO2	Identify key environmental management practices used to restore a selection of New Zealand ecosystems in an operational and/or research context.	GPO 1

### Ngā Tūtohu o te Kiko | Indicative Content

LO1	<ul style="list-style-type: none"> <li>Ecosystem restoration</li> <li>Ecosystem restoration assessment and planning</li> </ul>
LO2	<ul style="list-style-type: none"> <li>Environmental management practices</li> </ul>

### Ngā Mahi Ako me te Whakaako | Learning & Teaching Activities

Learning and teaching activities will employ a range of elements drawn from approved methods to align with the context of the learning (delivery mode, regional specific requirement, etc.) and any particular needs of the group of ākonga.

### Aromatawai | Assessment

Assessment in this course is achievement-based. Ākonga will be advised of all matters relating to summative assessment at the start of the course.

Assessment activity	Weighting	Learning outcomes
Assessment portfolio Will employ a range of elements drawn from approved methods to align with the context of the learning (delivery mode, regional specific requirement, etc.) and any particular needs of the group of ākonga.	100%	All

Ākonga are required to provide sufficient evidence against all learning outcomes in order to pass a course.

### **Ngā Rauemi Ako | Learning Resources**

All required and recommended resources are advised to ākonga via course outlines.

### **Version Tracking**

<b>Ver No.</b>	<b>Approved by</b>	<b>Approval date</b>	<b>Effective from</b>	<b>Description of change</b>
1	Poari Akoranga		DD-MM-YYYY	New Course

## INTRODUCTION TO FOOD PROCESSING

Course code	NSCI3109	Level	3	Credits	15
Pre-requisites		Co-requisites			
Main programme	New Zealand Certificate in Applied Science (Level 3)	Other programmes			
Delivery modes	Provider-based Provider-based (extramural)	Total learning hours (See course delivery document for detailed breakdown.)		150	

### Whāinga/He Tauākī Akoranga | Aim/Outcome Statement

The aim of this course is to develop knowledge and skills relating to food processing in an operational and/or research context.

### Ngā Hua o te Ako | Learning Outcomes

Upon the successful completion of this course, ākonga will be able to...		<b>Graduate outcomes</b>
LO1	Describe a generic food manufacturing process.	GPO 1
LO2	Demonstrate preservation techniques in the food manufacturing industry.	GPO 1

### Ngā Tūtohu o te Kiko | Indicative Content

LO1	<ul style="list-style-type: none"> <li>Generic food manufacturing process</li> </ul>
LO2	<ul style="list-style-type: none"> <li>Techniques for food preservation</li> <li>Importance of food preservation</li> </ul>

### Ngā Mahi Ako me te Whakaako | Learning & Teaching Activities

Learning and teaching activities will employ a range of elements drawn from approved methods to align with the context of the learning (delivery mode, regional specific requirement, etc.) and any particular needs of the group of ākonga.

### Aromatawai | Assessment

Assessment in this course is achievement-based. Ākonga will be advised of all matters relating to summative assessment at the start of the course.

Assessment activity	Weighting	Learning outcomes
Assessment portfolio Will employ a range of elements drawn from approved methods to align with the context of the learning (delivery mode, regional specific requirement, etc.) and any particular needs of the group of ākonga.	100%	All

Ākonga are required to provide sufficient evidence against all learning outcomes in order to pass a course.

## Ngā Rauemi Ako | Learning Resources

All required and recommended resources are advised to ākonga via course outlines.

### Version Tracking

<b>Ver No.</b>	<b>Approved by</b>	<b>Approval date</b>	<b>Effective from</b>	<b>Description of change</b>
1	Poari Akoranga		DD-MM-YYYY	New Course

## INTRODUCTION TO FOOD ASSURANCE

Course code	NSCI3110	Level	3	Credits	15
Pre-requisites		Co-requisites			
Main programme	New Zealand Certificate in Applied Science (Level 3)	Other programmes			
Delivery modes	Provider-based Provider-based (extramural)	Total learning hours (See course delivery document for detailed breakdown.)			150

### Whāinga/He Tauākī Akoranga | Aim/Outcome Statement

The aim of this course is to develop knowledge and skills relating to food assurance in an operational and/or research context.

### Ngā Hua o te Ako | Learning Outcomes

Upon the successful completion of this course, ākonga will be able to...		<b>Graduate outcomes</b>
LO1	Describe key internal quality management tools and external controls that ensure food products are made safely.	GPO 1
LO2	Apply sampling and testing regimes for food products.	GPO1

### Ngā Tūtohu o te Kiko | Indicative Content

LO1	• Quality management tools and controlling food product safety
LO2	• Sampling and testing regimes for food products

### Ngā Mahi Ako me te Whakaako | Learning & Teaching Activities

Learning and teaching activities will employ a range of elements drawn from approved methods to align with the context of the learning (delivery mode, regional specific requirement, etc.) and any particular needs of the group of ākonga.

### Aromatawai | Assessment

Assessment in this course is achievement-based. Ākonga will be advised of all matters relating to summative assessment at the start of the course.

Assessment activity	Weighting	Learning outcomes
Assessment portfolio Will employ a range of elements drawn from approved methods to align with the context of the learning (delivery mode, regional specific requirement, etc.) and any particular needs of the group of ākonga.	100%	All

Ākonga are required to provide sufficient evidence against all learning outcomes in order to pass a course.

## Ngā Rauemi Ako | Learning Resources

All required and recommended resources are advised to ākonga via course outlines.

### Version Tracking

<b>Ver No.</b>	<b>Approved by</b>	<b>Approval date</b>	<b>Effective from</b>	<b>Description of change</b>
1	Poari Akoranga		DD-MM-YYYY	New Course



## APPLIED SCIENCE PROJECT

Course code	NSCI3111	Level	3	Credits	15
Pre-requisites		Co-requisites			
Main programme	New Zealand Certificate in Applied Science (Level 3)	Other programmes			
Delivery modes	Provider-based Provider-based (extramural)	Total learning hours (See course delivery document for detailed breakdown.)			150

### Whāinga/He Tauākī Akoranga | Aim/Outcome Statement

The aim of this course is to develop knowledge and skills to apply scientific principles in planning, implementing, and presenting a simple applied science project / investigation.

### Ngā Hua o te Ako | Learning Outcomes

Upon the successful completion of this course, ākonga will be able to...		Graduate outcomes
LO1	Apply project management practices in planning a simple STEM related project/investigation	GPO1
LO2	Implement a simple STEM related project / investigation	GPO1
LO3	Present a project/investigation summary to a selected audience of key stakeholders	GPO1

### Ngā Tūtohu o te Kiko | Indicative Content

LO1	• Introduction to Applied Science project/investigation planning and management
LO2	• Conducting a project/investigation
LO3	• Reporting and presenting summary of applied science project/investigation

### Ngā Mahi Ako me te Whakaako | Learning & Teaching Activities

Learning and teaching activities will employ a range of elements drawn from approved methods to align with the context of the learning (delivery mode, regional specific requirement, etc.) and any particular needs of the group of ākonga.

### Aromatawai | Assessment

Assessment in this course is achievement-based. Ākonga will be advised of all matters relating to summative assessment at the start of the course.

Assessment activity	Weighting	Learning outcomes
Assessment portfolio	100%	All

Will employ a range of elements drawn from approved methods to align with the context of the learning (delivery mode, regional specific requirement, etc.) and any particular needs of the group of ākonga.		
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Ākonga are required to provide sufficient evidence against all learning outcomes in order to pass a course.

### Ngā Rauemi Ako | Learning Resources

All required and recommended resources are advised to ākonga via course outlines.

### Version Tracking

Ver No.	Approved by	Approval date	Effective from	Description of change
1	Poari Akoranga		DD-MM-YYYY	New Course