National Certificate in Electronic Engineering (Level 4)

Level **4**

Credits **101**

This qualification has been **reviewed**. The last date to meet the requirements is 31 December 2021.

Transition Arrangements

Version 3 of this qualification was republished in December 2018 to extend its last date for assessment from 31 December 2020 to 31 December 2021.

Version 3 of this qualification was republished in December 2017 to extend its last date for entry into programmes from 31 December 2017 to 31 December 2018.

This qualification has been reviewed and replaced by the New Zealand Certificate in Electronic Engineering (Level 4) [Ref: 2981].

This qualification contains expiring standards. For the purposes of this qualification, people who have gained credit for the expiring standards are exempt from the requirement to gain credit for the replacement standards – see below.

Credit for	Exempt from
29817	6873
29817	6874

For detailed information see Review Summaries on the NZQA website.

People working towards the replaced qualification may complete the requirements of this qualification or transfer their existing achievement to the replacement New Zealand qualification.

The last date for entry into programmes leading to the replaced qualification is 31 December 2018.

The last date for assessments to take place for the replaced qualification is 31 December 2021 when the qualification will be **discontinued**.

It is recommended that candidates currently enrolled in programmes leading to the replaced qualification and unable to complete it by 31 December 2021 transfer their existing achievement to the replacement New Zealand qualification.

It is anticipated that no existing candidates will be disadvantaged by these transition arrangements. However, anyone who feels that they have been disadvantaged may appeal to The Skills Organisation at the address below. Appeals will be considered on a case-by-case basis.

NZQF National Qualification Registration Information

Process	Version	Date	Last Date for Assessment
Registration	1	September 2004	December 2013
Review	2	September 2011	December 2019
Review	3	November 2015	December 2021
Republished	3	December 2017	December 2021
Republished	3	December 2018	December 2021

Standard Setting Body

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National Certificate in Electronic Engineering (Level 4)

Level **4**

Credits **101**

Purpose

The National Certificate in Electronic Engineering (Level 4) is an advanced qualification for people who wish to pursue a career as a servicing technician in the areas of industrial, domestic, commercial, telecommunications, marine, or military electronics. The qualification recognises the knowledge and skills required to perform competently and safely in the testing, maintenance, and repair of electronic equipment and products.

Typically, the qualification will be gained during a three to four year traineeship, incorporating learning in the workplace as well as courses conducted by accredited training providers. It builds on the National Certificate in Electronic Engineering (Level 3) [Ref: 1093], and may lead to the National Diploma in Engineering (Electrotechnology) (Level 6) [Ref: 1313], which expires December 2014. It has been replaced by the New Zealand Diploma in Engineering [Ref: 112950].

The qualification comprises a compulsory section, and two elective sections, to provide flexibility within the qualification and allow application in a variety of electronics industry contexts.

The compulsory section of the qualification covers knowledge to an advanced level required for the electronics industry and includes switching power supplies, d.c. and a.c. principles, digital and analogue electronics, electronic measurement, and diagnostic techniques.

The elective section allows candidates to select unit standards to cover skills for their roles from the electronic engineering subfield, such as: transducers, electronic filters, radio communications techniques, and radar principles.

The balance section allows candidates to prepare for various roles in the electronics industry by selecting unit standards that cover a range of knowledge and skill that includes electronic equipment servicing, fault diagnosis, and repair to module or component level. Types of equipment covered include industrial, telecommunications, consumer, office, and microprocessor controlled systems as well as radar, radio transmitters and receivers, computers and their peripherals, data communications equipment, and marine electrical and electronic equipment. Also included is a unit covering installation and commissioning of electronic equipment and another covering engineering mathematics.

Replacement Information

Version 1 of this qualification replaces the National Certificate in Electronics Technology (Level 4) with strands in Communications and Radar, Consumer Products, and Office Automation [Ref: 0409].

Special Notes

1 Entry to the qualification is open. However, it is recommended that people first complete the requirements of the National Certificate in Electronic Engineering (Level 3) [Ref: 1093], or equivalent recognised qualification.

2 The term *Electronic Engineering*, as used in the title of this and the corresponding lower level qualifications, is intended to convey an industry slant, expressed in the content by the inclusion of industry generic and safety skills, as well as fundamental electronics theory. By contrast, the term *Electronics Technology*, as in the National Certificate in Electronics Technology (Level 2) [Ref: 0240], indicates the absence of such additional skills.

3 The core electronics theory unit standards 20712-20715 have been designed to lead naturally on from the corresponding standards at Level 3. These in turn will integrate with the national diploma unit standards currently under review.

Credit Range

	Compulsory	**Elective**	**Balance**
Level 3 credits	-	-	0-8
Level 4 credits	36	0-68	0-43
Level 5 or above credits	-	0-40	0-43
Minimum totals	36	25	0

Requirements for Award of Qualification

Award of NZQF National Qualifications

Credit gained for a standard may be used only once to meet the requirements of this qualification.

Unit standards and achievement standards that are equivalent in outcome are mutually exclusive for the purpose of award. The table of mutually exclusive standards is provided on the New Zealand Qualifications Authority (NZQA) website: http://www.nzqa.govt.nz/qualifications-standards/standards/standards-exclusion-list/.

Reviewed standards that continue to recognise the same overall outcome are registered as new versions and retain their identification number (ID). Any version of a standard with the same ID may be used to meet qualification requirements that list the ID and/or that specify the past or current classification of the standard.

Summary of Requirements

- A minimum of 101 credits
- Compulsory standards
- Elective A – A minimum of 25 credits as specified
- Elective B – Balance

Detailed Requirements

Compulsory

The following standards are required

Engineering and Technology > Electronic Engineering > Core Electronics

ID	Title	Level	Credit
8211	Demonstrate and apply knowledge of switching power supplies	4	4
20712	Demonstrate and apply knowledge of d.c. principles for electronics technicians	4	6
20713	Demonstrate and apply knowledge of a.c. principles for electronics technicians	4	7
20714	Demonstrate and apply knowledge of digital principles for electronics technicians	4	7
20715	Demonstrate and apply knowledge of analogue electronics for electronics technicians	4	12

Elective

A minimum of 25 credits

Computing and Information Technology > Computing > Computer Support

ID	Title	Level	Credit
6873	Repair a personal computer to module level	5	10
6874	Repair personal computer peripherals to module level	5	10

Engineering and Technology > Electronic Engineering > Electronic Installation and Maintenance

ID	Title	Level	Credit
6061	Performance test and repair faulty radar equipment to unit or component level	4	12
6066	Diagnose and repair faulty electronic office equipment to module level	4	25
20722	Install and commission electronic equipment	4	25
20726	Diagnose and repair faulty electronic systems to module level	4	25
26724	Performance test and repair faulty electronic communications equipment	4	15
26726	Diagnose and repair faulty electronic equipment to component level	4	40

Manufacturing > Boating Industries > Boatbuilding

ID	Title	Level	Credit
11795	Commission marine electrical and electronic systems and equipment	4	10

ID	Title	Level	Credit
11796	Maintain and repair marine electronic systems and equipment	5	20

Balance
The balance of credits to achieve
A minimum of 101 credits may come from the following sets

- Set 1
- Set 2

Set 1
A minimum of 0 credits

Engineering and Technology > Electrical Engineering > Electrotechnology

ID	Title	Level	Credit
22734	Demonstrate and apply introductory knowledge of electrotechnology engineering mathematics	4	15

Engineering and Technology > Electronic Engineering > Core Electronics

ID	Title	Level	Credit
20716	Demonstrate and apply knowledge of transducers and their interfaces with digital circuits	4	10
20717	Demonstrate and apply knowledge of electronic filters, oscillators, and frequency synthesisers	4	6
20719	Demonstrate and apply knowledge of radio communications for electronics technicians	4	15
20720	Demonstrate knowledge of radar principles for electronics technicians	4	15
26723	Demonstrate knowledge of generic electronic products or systems for electronics technicians	4	10
26725	Demonstrate and apply knowledge of electronic product reliability and advanced electronic measurement and diagnosis	4	10

Engineering and Technology > Electronic Engineering > Electronic Installation and Maintenance

ID	Title	Level	Credit
8218	Carry out soldering and de-soldering of printed circuit board mounted components and printed circuit board repair	3	8

Set 2
A minimum of 0 credits at Level 4 or above

Field	Subfield	Domain
Engineering and Technology	Electronic Engineering	Any

Previous versions of the qualification

Version 2 of this qualification was issued following review.

Changes to structure and content included: credit value increased from 100 to 101; standards 6875 and 20434 removed from qualification; standard 26726 replaced standards 20723, 20724, and 20725; standard 26724 replaced standards 6062 and 6063; standard 26725 replaced standards 20718 and 20721; standards 22734 and 26723 added to balance.

This qualification contains standards that replace earlier standards. For the purposes of this qualification, people who have gained credit for the expiring standards are exempt from the requirement to gain credit for the replacement standards – see table below.

Credit for	Exempt from
6062, 6063	26724
20718, 20721	26725
20723, 20724, 20725	26726

This qualification contains classifications that replace earlier classifications. For the purposes of this qualification, people who have gained credit for standards in the lapsing or lapsed classifications may use those credits to meet the elective credits requirements.

Standards from	Are treated as Standards from
Engineering and Technology > Electronics Technology > Communications and Radar Electronics	Engineering and Technology > Electronic Engineering
Engineering and Technology > Electronics Technology > Consumer Electronics	Engineering and Technology > Electronic Engineering
Engineering and Technology > Electronics Technology > Electronic Office Automation	Engineering and Technology > Electronic Engineering

Version 1 of this qualification replaced the National Certificate in Electronics Technology (Level 4) with strands in Communications and Radar, Consumer Products, and Office Automation [Ref: 0409], which no longer met industry requirements for the training of new technicians.

Changes to structure and content; updated unit standards; improved pathways between lower and higher level qualifications in electronics; improved assessability; greater flexibility in delivery of programmes; introduction of a small elective component; and change of credit value from 67-70 to 100.

Other standard setting bodies whose standards are included in the qualification

NZ Marine and Composites Industry Training Organisation
NZQA

Certification

This certificate will display the logos of NZQA, ElectroTechnology Industry Training Organisation and the organisation that has been granted consent to assess against standards that meet the requirements of the qualification (accredited).

Classification

This qualification is classified according to the classification system listed on the Directory of Assessment Standards (DAS) and the New Zealand Standard Classification of Education (NZSCED) system as specified below.

DAS Classification		**NZSCED**	
Code	**Description**	**Code**	**Description**
412	Engineering and Technology/Electronic Engineering	031303	Engineering and Related Technologies/Electrical and Electronic Engineering and Technology/Electronic Engineering

Quality Management Systems
Providers and Industry Training Organisations must be granted consent to assess by a recognised Quality Assurance Body before they can register credits from assessment against standards. Organisation with consent to assess and Industry Training Organisations assessing against standards must engage with the moderation system that applies to those standards. Consent to assess requirements and the moderation system are outlined in the associated Consent and Moderation Requirements (CMR) for each standard.

Prerequisite Diagram