

# National Certificate in Electrical Engineering (Advanced Trade) (Level 5) with strands in Electrotechnology Specialisation, Electrical Installation, and Industrial Electrical Engineering

**Level** 5

**Credits** 75-82

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

## Transition Arrangements

Version 7 of this qualification was republished to extend the last date for entry from 31 December 2016 to 31 December 2017.

This qualification has been reviewed and replaced by the New Zealand Certificate in Electrical Engineering (Level 5) [Ref: 2384].

The last date for entry into programmes leading to this qualification is 31 December 2017.

For detailed information see [Review Summaries](#) on the NZQA website.

## NZQF National Qualification Registration Information

Process	Version	Date	Last Date for Assessment
Registration	1	May 2002	December 2012
Revision	2	September 2002	December 2012
Revision	3	April 2004	December 2012
Revision	4	May 2009	December 2013
Review	5	October 2009	December 2013
Revision	6	October 2011	December 2021
Review	7	November 2014	December 2021
Republication	7	June 2016	December 2021

## Standard Setting Body

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## **National Certificate in Electrical Engineering (Advanced Trade) (Level 5) with strands in Electrotechnology Specialisation, Electrical Installation, and Industrial Electrical Engineering**

**Level** 5

**Credits** 75-82

### **Purpose**

This qualification is for qualified electricians who wish to develop their electrical, business and overall leadership knowledge and skills and gain a qualification at an advanced trade level. It prepares trainees for a wide range of roles in the electrotechnology, electrical contracting, or industrial electrical engineering sectors.

The qualification has two sections: a compulsory section covering advanced electrical theory and trade practice, and a section comprising three strands which allows a choice of standards to reflect the varied environments in which electricians are employed. At least one of these strands must be completed for award of the qualification.

Typically, the qualification will be gained during the course of a two to three year part-time training programme. Holders of this qualification have gained a range of knowledge and skills assessed both off-job (during courses conducted by training providers with consent to assess) and applied on-job (in the workplace).

The qualification is available with three strands, reflecting the major sectors of the electrical industry as follows:

- Electrotechnology Specialisation – a choice of broader electrotechnology subjects, at a more academic level for people who are involved in electrotechnology design, or to allow trainees to specialise in their chosen field of expertise not specifically covered by the elective section or the other strands;
- Electrical Installation – customer energy solution, electrical switchgear and switchboards, electrical installation practice, standby power plant, lighting installations, and building management systems; and
- Industrial Electrical Engineering – industrial measurement and control, programmable logic controllers, commissioning and handover of electrical engineering projects, and electrical machine safety systems.

The compulsory section of the qualification covers knowledge and skills relating to:

- project planning and management and quotation preparation;
- CAD tools;
- financial management for a small business;
- electrical circuit protection;
- non-electrical legislation;
- the inspection and certification of electrical installations;
- energy efficiency; and
- health and safety.

The qualification, which is predominantly theory-based, has credits in common with, and can lead to, the National Diploma in Electrical Engineering (Advanced Trade) (Level 5) with strands in Electrotechnology Specialisation, Electrical Installation, and Industrial Electrical Engineering [Ref: 1514], which includes a significant number of on-job credits. This qualification also leads to the National Diploma in Engineering (Electrotechnology) (Level 6) [Ref: 1313].

## Special Notes

- 1 Trainees who are intending to further their study through to the National Diploma in Electrical Engineering (Advanced Trade) (Level 5) with strands in Electrotechnology Specialisation, Electrical Installation, and Industrial Electrical Engineering [Ref: 1514] are encouraged to commence the applied study component of that qualification during study towards this certificate. The applied study component is contained in the Elective section of the diploma.
- 2 Applications for Recognition of Prior Learning (RPL) or Recognition for Current Competency (RCC), supported by appropriate documentation, should be made either to ElectroTechnology Industry Training Organisation (ETITO) or to a training provider with consent to assess.
- 3 Before commencing study towards this qualification it is recommended that candidates either hold at least one of the following qualifications or registrations:
  - National Certificate in Electrical Engineering (Electrician for Registration) (Level 4) [Ref: 1195];
  - National Certificate in Electrical Engineering (Electrician) (Level 4) [Ref: 0313];
  - Trade Certificate in Electrical Wiring; or
  - the National Certificate in Electricity Supply (Electrical) (Level 4) with strands in Electricity Supply Electrician, Electrical Fitter, and Electrical Technician [Ref: 1295]; or
  - Registration as an Electrician;or are working towards one of the following qualifications:
  - National Certificate in Electrical Engineering (Electrician for Registration) (Level 4) [Ref: 1195]; or
  - the National Certificate in Electricity Supply (Electrical) (Level 4) with strands in Electricity Supply Electrician, Electrical Fitter, and Electrical Technician [Ref: 1295].

## Credit Range

	Compulsory	Electrotechnology Specialisation Strand	Electrical Installation Strand	Industrial Electrical Engineering Strand
Level 3 credits	9	-	-	-
Level 4 credits	10	-	13	15
Level 5 or above credits	26	30	24	20
Minimum totals	45	30	37	35
Qualification total with strand		75	82	80

## 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

- Compulsory standards

One of the following strands is required

- Electrotechnology Specialisation Strand
- Electrical Installation Strand
- Industrial Electrical Engineering Strand

## Detailed Requirements

### Compulsory

The following standards are required

Business > Financial Management > Financial Skills

ID	Title	Level	Credit
18956	Demonstrate knowledge of financial management for an entity	3	5

Engineering and Technology > Electrical Engineering > Electrical Installation and Maintenance

ID	Title	Level	Credit
19001	Demonstrate advanced knowledge of electrical circuit protection	5	3
19008	Prepare quotations for electrical work	5	5

Engineering and Technology > Electrical Engineering > Electrical Standards and Statutes

ID	Title	Level	Credit
19009	Apply non-electrical legislation in the electrical industry	5	4
25638	Demonstrate knowledge of inspection and certification of electrical work	5	8

Engineering and Technology > Electrical Engineering > Electrotechnology

ID	Title	Level	Credit
4993	Plan implementation of, manage, and review small to medium sized electrotechnology projects	5	6
16974	Demonstrate and apply knowledge of CAD tools as used in an electrotechnology engineering environment	4	5
25630	Demonstrate knowledge of and analyse energy efficiency of buildings and plant	4	5

Health > Occupational Health and Safety > Occupational Health and Safety Practice

ID	Title	Level	Credit
17602	Apply hazard identification and risk assessment procedures in the workplace	3	4

**Electrotechnology Specialisation Strand**

A minimum of 30 credits at Level 5 or above

Field	Subfield	Domain
Engineering and Technology	Electrical Engineering	Electrotechnology
	Electronic Engineering	Computer Engineering Electronic Manufacturing
	Mechanical Engineering	Any
	Telecommunications	Any
	Explosive Atmospheres	Any

### Electrical Installation Strand

The following standards are required

Engineering and Technology > Electrical Engineering > Electrical Installation and Maintenance

ID	Title	Level	Credit
19002	Demonstrate advanced knowledge of electrical switchgear and switchboards	5	5
19004	Demonstrate knowledge of standby power plant	5	4
19006	Design simple electric lighting installations	5	5
25634	Demonstrate advanced knowledge of electrical installation practice and knowledge of data communication principles	5	10

Engineering and Technology > Electrical Engineering > Electrotechnology

ID	Title	Level	Credit
25629	Demonstrate introductory knowledge of building management systems	4	5

Engineering and Technology > Electricity Supply > Electricity Supply - Utilisation

ID	Title	Level	Credit
14191	Undertake a preliminary analysis and interpretation of customer energy solution	4	8

### Industrial Electrical Engineering Strand

The following standards are required

Engineering and Technology > Electrical Engineering > Electrical Installation and Maintenance

ID	Title	Level	Credit
25631	Demonstrate knowledge of and design documentation for the commissioning of significant electrical installations	5	5

Engineering and Technology > Electronic Engineering > Core Electronics

ID	Title	Level	Credit
22727	Demonstrate and apply intermediate knowledge of programmable logic controller engineering applications	5	15

Engineering and Technology > Industrial Measurement and Control > Industrial Measurement and Control - Theory

ID	Title	Level	Credit
2654	Demonstrate knowledge of on/off and proportional integral derivative mode control theory and controllers	4	8

ID	Title	Level	Credit
24887	Demonstrate knowledge of electronic variable speed drives	4	3

Health > Occupational Health and Safety > Occupational Health and Safety Practice

ID	Title	Level	Credit
18410	Manage hazard identification and control on plant and machinery	4	4

## Transition Arrangements

### Version 6

Version 6 was issued following revision in order to maintain achievability for candidates. The revision reflects changes to classifications, and amendment to the title, credit value and level of one standard.

Changes to structure and content

- Removed the *Electrical Equipment in Hazardous Areas* domain from the Electrotechnology Specialisation Strand because it had been designated expiring.
- Removed the *Electronic Installation and Maintenance* domain from the Electrotechnology Specialisation Strand because there were no Level 5 standards from which to choose.
- Added the *Explosive Atmospheres* subfield to the Electrotechnology Specialisation Strand to meet current industry needs.
- Amended the title, credit value and level of reviewed standard 18956.

For detailed information see [Review Summaries](#) on the NZQA website.

Trainees may either complete the requirements of version 5 or transfer to version 6.

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
19003	25634
19014	25638

This qualification contains a classification that replaced an earlier classification. For the purposes of this qualification people with credit for standards listed in the lapsing domain can use them to meet the relevant qualification elective requirements - see table below.

Credit for	Exempt from
Engineering and Technology > Electrical Engineering > Electrical Equipment in Hazardous Areas	Engineering and Technology > Explosive Atmospheres

It is not intended that anyone is disadvantaged by this revision and the above arrangements have been designed for a smooth transition. However, anyone who feels they have been disadvantaged may appeal to ETITO at the address below.

### Previous versions of the qualification

Version 5 was issued following a major review of competency training, carried out by the electrical industry during 2008, which resulted in many standards being revised, replaced or removed from the qualification. Changes to structure and content included: strands covering Electrotechnology Specialisation, Electrical Installation, and Industrial Electrical Engineering were added; title of the certificate was changed to National Certificate in Electrical Engineering (Advanced Trade) (Level 5) with strands in Electrotechnology Specialisation, Electrical Installation, and Industrial Electrical Engineering; standards 18997-18999 were removed; standards 4993, 16974, 17602, 18956, 25630, and 25638 were added to the compulsory section; standard 19003 was replaced standard by 25634 in the Electrical Installation Strand; the elective section was moved to the new National Diploma in Electrical Engineering (Advanced Trade) (Level 5) with strands in Electrotechnology Specialisation, Electrical Installation, and Industrial Electrical Engineering [Ref: 1514].

Some content of Ref: 1514 is based on components removed from Ref: 0951 at review. Candidates may wish to transition directly from Ref: 0951 to Ref: 1514.

The last date for entry to programmes or courses for the replaced version is 31 December 2011.

Version 4 of the qualification was issued following a revision to take account of subfield and domain reclassifications in the Field Business.

Version 3 of the qualification was issued following a revision to take account of subfield and domain reclassifications of standards.

Version 2 was issued to include Unit 4098, *Use standards to assess candidate performance* and Unit 11552, *Design assessment*, which were omitted from version 1.

Version 1 of the qualification replaced the Advanced Trade Certificate in Electrical Wiring. The last Advanced Trade Certificate in Electrical Wiring examinations were held in November 2002, and final date for the award of Trade Certificate was 31 December 2007. The Advanced Trade Certificate in Electrical Wiring will continue to be recognised by industry and there is no need to convert those qualifications to a National Certificate in Electrical Engineering (Level 5).



## Other standard setting bodies whose standards are included in the qualification

Electricity Supply Industry Training Organisation  
 New Zealand Industry Training Organisation  
 NZQA

## Certification

This certificate will display the logos of NZQA, ETITO 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
204	Engineering and Technology > Electrical Engineering	031301	Engineering and Related Technologies > Electrical and Electronic Engineering and Technology > Electrical 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.