

National Certificate in Electrical Engineering (Level 3)

Level 3

Credits 149

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

Transition Arrangements

Version 6 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 Theory (Level 3) [Ref: 2387].

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	October 1996	December 2004
Review	2	August 1999	December 2007
Revision	3	September 1999	December 2007
Review	4	September 2005	December 2021
Revision	5	March 2009	December 2021
Review	6	November 2014	December 2021
Republication	6	June 2016	December 2021

Standard Setting Body

The Skills Organisation
 FREEPOST 5164
 PO Box 24469
 Royal Oak
 Auckland 1345

Telephone 09 525 2590
 Email reviewcomments@skills.org.nz

National Certificate in Electrical Engineering (Level 3)

Level 3

Credits 149

Purpose

This qualification marks an intermediate stage in the training programme for people wishing to qualify as an electrician. Electricians install, maintain, and repair electrical wiring and electrical and electronic equipment in residential, commercial, and industrial environments. The qualification is typically achieved in the second or third year of a three to four year training programme.

Holders of this qualification have gained a range of knowledge and skills assessed both off-the-job (during courses conducted by accredited training providers) and on-the-job (in the workplace):

- knowledge of basic electrical theory, concepts, and trade practice
- skills and knowledge related to working safely in the electrical environment, including first aid, cardio-pulmonary resuscitation, safe-working practices, and safety testing
- some knowledge and application of relevant legislation, codes of practice, and standards
- knowledge of the New Zealand electricity supply
- competence in some of the practical skills required of a fully qualified electrician
- generic skills and knowledge related to working effectively in the electrical industry, such as communication skills, report writing, and rights and responsibilities as an employee
- draw and interpret electrical diagrams; and
- knowledge of electric motors.

This qualification includes all of the standards of the National Certificate in Electrical Engineering (Level 2) [Ref: 0174], and can lead to the National Certificate in Electrical Engineering (Electrician for Registration) (Level 4) [Ref: 1195]. The level 4 qualification may be followed by registration and licensing as an electrician by the Electrical Workers Registration Board.

This qualification shares credits with the National Certificate in Electricity Supply (Electrical) (Level 3) with strands in Electricity Supply Electrician, Electrical Fitter, and Electrical Technician [Ref: 1294].

Special Notes

Although the achievement of this qualification indicates competence in some of the skills of an electrician, the Electricity Act 1992 requires that all trainees are subject to supervision by a Supervisor of Electrical Work until they have registered as electricians.

Credit Range

Level 1 credits	3
Level 2 credits	50
Level 3 credits	75
Level 4 credits	21
Total	149

Requirements for Award of Qualification

Award of NQF 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 in section 7 of the New Zealand Qualifications Authority (NZQA) Rules and Procedures publications available at <http://www.nzqa.govt.nz/ncea/acrp/index.html>.

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

Detailed Requirements

Compulsory

The following standards are required

Core Generic > Core Generic > Work and Study Skills

ID	Title	Level	Credit
1978	Identify basic employment rights and responsibilities, and sources of information and assistance	1	2

Engineering and Technology > Electrical Engineering > Core Electrical

ID	Title	Level	Credit
750	Demonstrate knowledge of electrical test instruments and take measurements	2	2
1174	Disconnect and reconnect fixed wired electrical appliances or equipment	3	4
1178	Follow safe practices in an electrical workplace	2	3
2031	Demonstrate knowledge of three-phase theory	4	4
15844	Select and install flexible cords	2	3

ID	Title	Level	Credit
15845	Draw and explain simple electrical diagrams	2	4
15846	Demonstrate knowledge of capacitors and semiconductor diodes	2	3
15847	Demonstrate knowledge of mathematics and mechanics for electrical trades	2	4
15848	Demonstrate knowledge of safeguards for use with portable electrical appliances	2	2
15849	Perform manual soldering and de-soldering procedures for electrotechnology work	2	2
15850	Demonstrate knowledge of single-phase transformers	3	3
15851	Demonstrate knowledge of electrical safety and safe working practices for electrical workers	2	3
15852	Isolate and test low-voltage electrical subcircuits	2	2
15853	Demonstrate knowledge of alternating current (a.c.) theory	4	7
15854	Draw and interpret electrical diagrams	3	3
15856	Demonstrate knowledge of the New Zealand electricity supply system	3	2
15861	Demonstrate knowledge of direct current (d.c.) power supplies	3	3
16407	Use and maintain hand and power tools for electrical work	3	4
25070	Explain the properties of conductors, insulators, and semiconductors and their effect on electrical circuits	2	7
25071	Demonstrate knowledge of electromotive force (e.m.f.) production	2	3
25072	Demonstrate knowledge of electromagnetism theory	2	5

Engineering and Technology > Electrical Engineering > Electrical Appliance Servicing

ID	Title	Level	Credit
1192	Fault-find, repair, and test portable electrical tools and appliances	3	2
6705	Test electrical appliances for safety	3	3
16411	Fault-find, repair, and re-commission fixed-wired electrical appliances	3	4

Engineering and Technology > Electrical Engineering > Electrical Installation and Maintenance

ID	Title	Level	Credit
1204	Demonstrate knowledge of earthing	3	2

ID	Title	Level	Credit
2016	Install earthing systems for multiple earthed neutral installations	3	3
2020	Plan and install cable support systems	3	4
15855	Demonstrate knowledge of circuit protection	3	3
15859	Demonstrate knowledge of electrical cables and accessories	3	7
15867	Install, wire, and test lights in existing installations	3	5
15868	Install, wire, and test power outlets in existing installations	3	5
15871	Demonstrate knowledge of electrical installation in damp situations	4	3
16408	Pre-wire an electrical installation	3	5
16409	Fit-off an electrical installation	3	5
16412	Fault-find, repair, and re-commission electric lighting	3	4

Engineering and Technology > Electrical Engineering > Electrical Machines

ID	Title	Level	Credit
1184	Test, and locate and diagnose faults in electrical machine windings	3	2
15858	Demonstrate knowledge of a.c. motors	4	7

Engineering and Technology > Electrical Engineering > Electrical Standards and Statutes

ID	Title	Level	Credit
15860	Demonstrate knowledge of legislation and standards governing the work of electricians	3	2

Health > Health Studies > Core Health

ID	Title	Level	Credit
6401	Provide first aid	2	1
6402	Provide resuscitation level 2	1	1

Humanities > Communication Skills > Interpersonal Communications

ID	Title	Level	Credit
1277	Communicate information in a specified workplace	2	3

Humanities > Communication Skills > Writing

ID	Title	Level	Credit
3492	Write a short report	2	3

Transition Arrangements

Version 5

Version 5 was issued following revision in order to include magnetism and electricity standards 25070-25072, which replaced standard 15843 to improve assessability.

Changes to structure and content

- standards 25070-25072 replaced standard 15843
- the credit value of standard 1192 was changed from 4 to 2
- qualification references were updated
- the credit total decreased from 151 to 149.

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

Trainees may either complete the requirements of version 4 of the qualification or transfer to version 5.

All new trainees will be enrolled in programmes leading to version 5 of the qualification.

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

Credit for	Exempt from
15843	25070, 25071, 25072

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 the ElectroTechnology Industry Training Organisation at the address below.

Previous versions of the qualification

Version 4 was issued following a review of the Electrical Engineering standards. Changes to structure and content included: standard 2780 was removed from the qualification; titles of standards 3492, 6402, 15846, 15849, 15851, 15852, and 15856 were updated; and the credit total decreased from 153 to 151.

Version 3 was issued in order to extend the transition arrangements to include standard 1177.

Version 2 was issued following a major review of competency training in 1998, during which many standards were revised or combined and new ones introduced. Changes to structure and content included: redesign of the structure; addition of all of the standards contained in the National Certificate in Electrical Engineering (Level 2) instead of requiring it as a prerequisite; addition of replacements for reviewed standards; and the credit total increased from 90 to 153.

Other standard setting bodies whose standards are included in the qualification

NZQA

Certification

The certificate will display the logos of NZQA, the ElectroTechnology Industry Training Organisation and the accredited organisation.

Classification

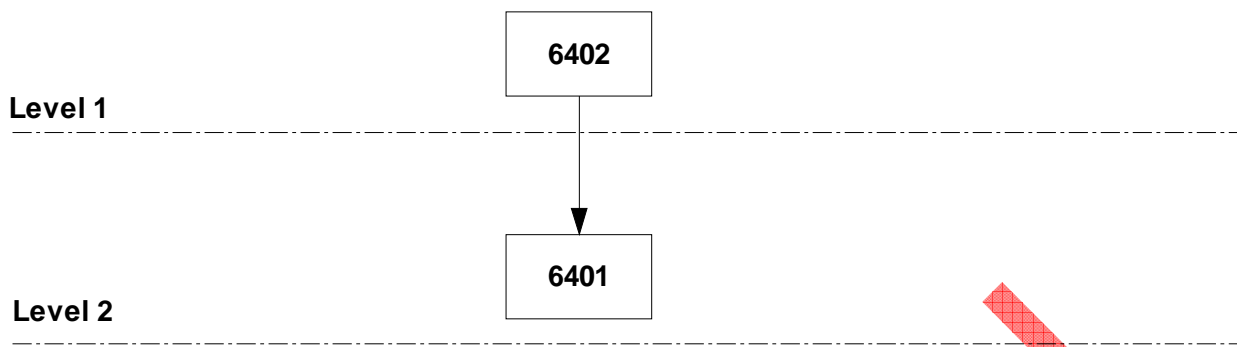
This qualification is classified according to the NQF classification system and the New Zealand Standard Classification of Education (NZSCED) system as specified below.

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 accredited by a recognised Quality Assurance Body before they can register credits from assessment against standards. Accredited providers and Industry Training Organisations assessing against standards must engage with the moderation system that applies to those standards. Accreditation requirements and the moderation system are outlined in the associated Accreditation and Moderation Action Plan (AMAP) for each standard.

Prerequisite Diagram



Reviewed