

## **National Certificate in Telecommunications (Level 4) with strands in Bearer and Switch; Building and Data Cabling; Customer Access Network; Customer Premises Equipment; Information and Communications Technology; and Radio**

<b>Level</b>	<b>4</b>
<b>Credits</b>	<b>108-131 (depending on strand)</b>

### **Purpose**

This qualification is for people training to become telecommunications technicians, and who are engaged in the installation and maintenance of telecommunications equipment and plant. The qualification is available in five strands, reflecting the major sectors of installation and maintenance work within the industry as follows.

- Bearer and Switch – telephone exchange switching equipment, and bearer and multiplexing (transmission) systems.
- Building and Data Cabling – telecommunications cabling systems within buildings for voice and data communications.
- Customer Access Network – the network of copper, fibre, and/or coaxial cables (outside plant) interconnecting telecommunications customers and switching centres.
- Customer Premises Equipment – telecommunications equipment installed in customer premises, such as telephone systems, facsimile, alarm telemetry, digital subscriber lines, electronic funds transfer point of sale terminals (EFTPOS), and cable television.
- Information and Communications Technology (ICT) – installation of ICT cabling and equipment, service and equipment expansion, and maintenance.
- Radio – radio frequency plant and equipment such as point-to-point wireless links, broadcast radio and television, mobile and cellular radio, studio equipment, radar, direction finding systems, and microwave distribution systems.

People with this qualification have an understanding of the telecommunications industry as a whole, and the skills and knowledge to install and maintain equipment and plant in their chosen sector without supervision. They may supervise more inexperienced personnel in some situations. The qualification builds on the introductory National Certificate in Telecommunications (Level 3) with strands in Bearer and Switch, Building and Data Cabling, Customer Access Network, Customer Premises Equipment, Information and Communications Technology, and Radio [Ref: 0767], and is typically gained after four years of work experience.

More specifically the qualification includes the following skills and knowledge:

- establishment of effective working relationships;
- development of management skills;
- use and maintenance of installation tools;
- identification and control of hazards in the workplace;
- fault finding methodology;

- concepts of direct and alternating current and digital electronics;
- understanding of the concepts of telecommunications in general and for the chosen strand in particular;
- practical installation and maintenance of plant and equipment corresponding to the chosen strand.

With further training and work experience, technicians may progress to the National Diploma in Engineering (Electrotechnology) (Level 6) [Ref: 1313].

## Replacement Information

This qualification replaced the National Certificate in Telecommunications (Installation and Commissioning) with strands in Electronics, Mechanical, and Radio [Ref: 0103].

## Special Notes

### Recommended for entry

Entry to the qualification is open. However, it is recommended that people first complete the requirements of the National Certificate in Telecommunications (Level 3) with strands in Bearer and Switch, Building and Data Cabling, Customer Access Network, Customer Premises Equipment, Information and Communications Technology, and Radio [Ref: 0767], or equivalent recognised qualification.

### Recognition of prior learning

Applications for recognition of prior learning, supported by appropriate documentation, should be made either to the ElectroTechnology Industry Training Organisation or to accredited training providers.

## Credit Range

	<b>Core Compulsory</b>	<b>Core Elective</b>	<b>Bearer and Switch Strand</b>	<b>Building and Data Cabling Strand</b>
Level 3 credits	31	–	–	–
Level 4 credits	28	0–12	60	37
Level 5 credits	–	0–12	–	–
Minimum totals	59	12	60	37
Qualification total with strand			131	108

	<b>Customer Access Network Strand</b>	<b>Customer Premises Equipment Strand</b>	<b>Information and Communications Technology Strand</b>	<b>Radio Strand</b>
Level 4 credits	45	60	60	60
Minimum totals	45	60	60	60
Qualification total with strand	116	131	131	131

## 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

- Core Compulsory standards
- Core Elective – A minimum of 12 credits as specified

One of the following strands is required

- Bearer and Switch Strand
- Building and Data Cabling Strand
- Customer Access Network Strand
- Customer Premises Equipment Strand
- Information and Communications Technology Strand
- Radio Strand

### Detailed Requirements

#### Core Compulsory

The following standards are required

Engineering and Technology > Electrical Engineering > Core Electrical

ID	Title	Level	Credit
22721	Demonstrate and apply fundamental knowledge of electrical circuit engineering principles	3	15
22722	Demonstrate and apply introductory knowledge of electrical circuit engineering principles	4	15

Engineering and Technology > Electrical Engineering > Electrotechnology

ID	Title	Level	Credit
16992	Describe and apply knowledge of electrotechnology fault-diagnosis procedures	4	5

## Engineering and Technology &gt; Telecommunications &gt; Telecommunications - Management and Operational Support

ID	Title	Level	Credit
4967	Share information to solve problems and make decisions for telecommunications operations	4	4
4981	Assist telecommunications organisations to improve their overall efficiency and effectiveness	3	4

## Engineering and Technology &gt; Telecommunications &gt; Telecommunications - Organisational Operation and Control

ID	Title	Level	Credit
4897	Plan and allocate work to individuals and teams in telecommunications operations	4	4

## Engineering and Technology &gt; Telecommunications &gt; Telecommunications - Service Delivery

ID	Title	Level	Credit
17490	Identify and control hazards in telecommunications work	3	6
18707	Evaluate and prepare existing sites for minor installations of telecommunications equipment	3	6

**Core Elective**

A minimum of 12 credits

## Engineering and Technology &gt; Electrical Engineering &gt; Electrotechnology

ID	Title	Level	Credit
16974	Demonstrate and apply knowledge of CAD tools as used in an electrotechnology engineering environment	4	5

## Engineering and Technology &gt; Telecommunications &gt; Telecommunications - Management and Operational Support

ID	Title	Level	Credit
4970	Maintain and enhance professional and technical knowledge in the telecommunications industry	4	4

## Engineering and Technology &gt; Telecommunications &gt; Telecommunications - Organisational Operation and Control

ID	Title	Level	Credit
4898	Develop teams and individual team members to enhance performance in telecommunications operations	5	4
4899	Assess an individual's performance and competence and give feedback in telecommunications operations	5	6

ID	Title	Level	Credit
4993	Plan, manage, and review small to medium sized telecommunications projects	5	6
4994	Plan and lead meetings to solve problems and make decisions for telecommunications operations	4	4

Engineering and Technology > Telecommunications > Telecommunications - Service Delivery

ID	Title	Level	Credit
4906	Evaluate and prepare existing sites for major installations of telecommunications equipment	5	6
4944	Identify customer requirements and initiate provision of telecommunications products and services	4	6

**Bearer and Switch Strand**

The following standards are required

Engineering and Technology > Electronic Engineering > Core Electronics

ID	Title	Level	Credit
22726	Demonstrate and apply introductory knowledge of electronic engineering	4	15

Engineering and Technology > Telecommunications > Telecommunications - Service Delivery

ID	Title	Level	Credit
18709	Install and maintain telecommunications bearer or switching systems	4	25
18713	Demonstrate knowledge of telecommunications bearer and switching systems	4	20

**Building and Data Cabling Strand**

The following standards are required

Engineering and Technology > Telecommunications > Telecommunications - Service Delivery

ID	Title	Level	Credit
18705	Install and maintain telecommunications building and data cabling systems	4	25
18706	Demonstrate knowledge of telecommunications building and data cabling systems	4	12

**Customer Access Network Strand**

The following standards are required

Engineering and Technology > Telecommunications > Telecommunications - Service Delivery

ID	Title	Level	Credit
18708	Install and maintain telecommunications cable systems	4	25
18712	Demonstrate knowledge of telecommunications cable systems	4	20

**Customer Premises Equipment Strand**

The following standards are required

Engineering and Technology > Electronic Engineering > Core Electronics

ID	Title	Level	Credit
22726	Demonstrate and apply introductory knowledge of electronic engineering	4	15

Engineering and Technology > Telecommunications > Telecommunications - Service Delivery

ID	Title	Level	Credit
18711	Install and maintain telecommunications customer premises systems	4	25
18713	Demonstrate knowledge of telecommunications bearer and switching systems	4	20

**Information and Communications Technology Strand**

The following standards are required

Engineering and Technology > Electronic Engineering > Core Electronics

ID	Title	Level	Credit
22726	Demonstrate and apply introductory knowledge of electronic engineering	4	15

Engineering and Technology > Telecommunications > Telecommunications - Service Delivery

ID	Title	Level	Credit
24520	Install and maintain information and communications technology (ICT) systems and services	4	25
24521	Demonstrate knowledge of information and communications technology (ICT) systems and services	4	20

## Radio Strand

The following standards are required

Engineering and Technology > Electronic Engineering > Core Electronics

ID	Title	Level	Credit
22726	Demonstrate and apply introductory knowledge of electronic engineering	4	15

Engineering and Technology > Telecommunications > Telecommunications - Service Delivery

ID	Title	Level	Credit
18710	Install and maintain telecommunications radio frequency systems	4	25
18714	Demonstrate knowledge of telecommunications radio frequency systems	4	20

## Transition Arrangements

Version 2 of the qualification was registered to include a sixth strand, Information and Communications Technology, and the qualification title was updated accordingly. Standard listings were updated to reflect new classifications and updated details of standards.

Changes to structure and content

- addition of a sixth strand – Information and Communications Technology – and title updated accordingly
- addition of standards 24520 and 24521 to the new Information and Communication Technology Strand
- standards 2780, 2781, and 17151 removed
- standards 22721 and 22722 replaced 16964, 16965, and 16972
- standard 22726 replaced standard 16966
- qualification credit value changed from 118-138 to 108-131.

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

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
4907, 4909, 4931	18709, 18713
4911, 4912, 4913	18710, 18714
4914, 4915, 4930	18708, 18712

Credit for	Exempt from
16964, 16965, 16972	22721, 22722
16966	22726

From the date of registration, all new candidates will be enrolled in programmes leading to version 2 of the qualification.

Candidates may either complete the requirements of version 1 before 31 December 2010 or transfer to version 2.

It is not intended that anyone be disadvantaged by this review, 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 1 of the qualification replaced the National Certificate in Telecommunications (Installation and Commissioning) with strands in Electronics, Mechanical, and Radio [Ref: 0103] which no longer met industry requirements.

The ElectroTechnology Industry Training Organisation completed a review of the telecommunications standards contained in the qualification being replaced, and identified the need for significant changes for technicians engaged in installation and maintenance of telecommunications plant and equipment. The review resulted in the following changes to the standards:

- incorporation of maintenance aspects in practical standards;
- inclusion of underpinning knowledge and skills in new standards;
- more emphasis on basic concepts and fault finding.

A review of the replaced qualification found that the strands no longer represented the technical disciplines within the industry, and more appropriate strands were identified for inclusion in the new qualification.

#### Changes to structure and content

- the five strands now recognised the major disciplines in the technical sector of the industry - Bearer and Switch, Building and Data Cabling, Customer Access Network, Customer Premises Equipment, and Radio;
- minimum credit total increased from 60 to 118.

The last date for award of the former qualification was 31 December 2003. Industry will continue to recognise the former qualification.

## NQF Registration Information

Process	Version	Date	Last Date for Assessment
Registration	1	February 2003	December 2010
Review	2	April 2008	N/A

## Standard Setting Body

ElectroTechnology Industry Training Organisation  
 FREEPOST 5164  
 PO Box 24-469  
 ROYAL OAK  
 Auckland 1345

Telephone 09 525 2590  
 Email [connect@etito.co.nz](mailto:connect@etito.co.nz)

## Planned Review

Any person or organisation may contribute to the review of this qualification by sending feedback to the standard setting body at the above address.

Next Review	2012
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## Other standard setting bodies whose standards are included in the qualification

NZQA

## Certification

The certificate will display the logos of NZQA, the provider and the ElectroTechnology Industry Training 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.

NQF Classification		NZSCED	
Code	Description	Code	Description
215	Engineering and Technology > Telecommunications	031309	Engineering and Related Technologies > Electrical and Electronic Engineering and Technology > Communications Equipment Installation and Maintenance

### 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.