

- whether levels and credits were commensurate with performance outcomes and training needs
- any gaps in skills and/or knowledge that could be captured by the development of new unit standards
- the assessability of the unit standards.

Main changes resulting from the review

- Thirteen unit standards in the Electronics Technology subfield have been reclassified in the Electronic Engineering subfield.
- Unit standard 11566 was reclassified from the Core Electronics domain in the Electronics Technology subfield to the Computer Engineering domain in the Electronic Engineering subfield.
- Unit standard 11583 was reclassified from the Communications Technology domain in the Telecommunications subfield to the Computer Engineering domain in the Electronic Engineering subfield.
- The evidence requirements of unit standards 16982 and 16993 were updated and their credit allocations were changed accordingly.
- The titles of unit standards 11572, 11573, 11576, 11580, 11582, 11583, 11585, and 11586 were changed and their evidence requirements were updated.
- The titles and evidence requirements of unit standards 11566-11569, 16968, 16969, 16971, 16973-16976, 16981, 16989, and 16991-16993 were updated and the credit allocations were changed accordingly.
- Unit standards 11564, 11565, 11571, 11579, 11584, and 16988 were designated review category C and replaced by unit standards 22724, 22723, 22728, 22729, 22720, and 22717 respectively.
- Twenty-six new unit standards have been registered.
- Forty unit standards, which are either no longer used or are no longer considered fit for purpose, have been designated expiring (review category D).

Unit standards categorised as category C or D expire at the end of December 2011.

Impact on existing provider accreditations

Current Accreditation for			Accreditation extended to		
Nature of accreditation	Classification or Id	Level	Nature of accreditation	Classification or Id	Level
Subfield	Electronics Technology	any	Subfield	Electronic Engineering	same
Domain	Electronics Technology > Computer Engineering	any	Domain	Electronic Engineering > Computer Engineering	same
Domain	Electronics Technology > Core Electronics	any	Domain	Electronic Engineering > Core Electronics	same

Impact on Accreditation and Moderation Action Plan (AMAP)

AMAP 0003 has been updated to reflect the changes made to the standards.

Impact on existing qualifications

Changes made as a result of the review and reclassification impact on existing qualifications. Qualifications impacted fall into two categories – *Affected* or *Not materially affected*.

Affected	The qualification lists a reviewed classification (domain or subfield) in an elective set The qualification lists a standard that has changes to level or credits The qualification lists a C or D category standard
Not materially affected	The qualification lists a standard that has a new title The qualification lists a standard that has a new classification

The following ETITO qualifications are impacted by the outcome of this review and will be updated to take account of the changes when they are next reviewed. The individual unit standards and classifications that generated the *Affected* status are in **bold**.

Qualification Title	Classification or standard in the qualification
National Certificate in Electronic Engineering (Level 2) [Ref: 1092]	16991
National Certificate in Electronic Engineering (Level 3) [Ref: 1093]	16991
National Certificate in Industrial Measurement and Control (Level 5) [Ref: 0976]	11564, 11565, 11573, 11579, 16968, 16969
National Certificate in Telecommunications (Level 4) with strands in Bearer and Switch, Building and Data Cabling, Customer Access Network, Customer Premises Equipment, and Radio [Ref: 1002]	16974, 16992
National Diploma in Engineering (Level 6) with strands in Computer Engineering, Electrical Engineering, Electronics, Industrial Measurement and Control, and Telecommunications [Ref: 0846]	Electronics Technology, 11562-11569, 11571, 11572, 11573, 11574, 11575, 11576, 11579, 11580, 11581, 11582, 11583, 11584, 11585, 11586, 16968-16971, 16973-16993, 17036

The following qualifications are also affected by the outcome of this review. The standard setting bodies (SSBs) have been advised that they require revision.

Qualification Title	Classification or Id	SSB Name
National Certificate in Electricity Supply (Technician) (Level 3) with strands in Control and Instrumentation, Power Technician, and HVDC Technician [Ref: 0922]	16973, 16991	Electricity Supply Industry Training Organisation
National Certificate in Electricity Supply (Technician) (Level 4) with strands in Control and Instrumentation, Power Technician, and HVDC Technician; and an optional strand in Electrical Services [Ref: 0917]	16975, 16987, 16993	
National Certificate in Electricity Supply (Power Technician) (Level 5) [Ref: 1260]	11579	
National Certificate in Music Technology (Level 5) [Ref: 0603]	Electronics Technology	NZQA
National Certificate in Performing Arts Technology (Level 2) [Ref: 0603]	Electronics Technology	
National Diploma in Engineering (Process and Materials Engineering) (Level 6) [Ref: 0592]	11562	InfraTrain New Zealand

Summary of main changes

All changes are in **bold**. For D category unit standards, suggested alternatives are in *italics*, where appropriate.

Key to review category

A Dates changed, but no other changes are made - the replacement standard carries the same Id and a new version

number
B Changes made, but the overall outcome remains the same - the replacement standard carries the same Id and a new version number
C Major changes that necessitate the registration of a replacement standard with a new Id
D Standard will expire and not be replaced

Subfield Electrical Engineering
Domain Core Electrical

Id	Title	Level	Credit	Review Category
11564 22724	Describe and apply electric motor technology Demonstrate and apply knowledge of electrical machines	5 5	12 15	C
11565 22723	Describe and apply electrical power technology Demonstrate and apply intermediate knowledge of the elements of power engineering	5 5	12 15	C
22721	Demonstrate and apply fundamental knowledge of electrical circuit engineering principles	3	15	New
22722	Demonstrate and apply introductory knowledge of electrical circuit engineering principles	4	15	New
22725	Demonstrate and apply advanced knowledge of power system engineering	6	15	New

Domain Electrotechnology

Id	Title	Level	Credit	Review Category
11553	Build electrotechnology products	4	30	D
11554	Test electrotechnology products	5	50	D
11555	Service and repair electrotechnology products	5	30	D
11556	Identify and reduce electrotechnology quality problems	4	10	D
11558	Identify and apply industrial standards, codes, and legislation in electrotechnology applications	4	5	D
11559	Demonstrate workshop skills in an electrotechnology context	3	20	D
11561	Describe and apply manufacturing technology	5	12	D
11569	Describe and apply illumination technology Demonstrate intermediate knowledge of illumination engineering	5	12 15	B
11570	Describe and apply circuit analysis in electrotechnology	5	65	D
11576	Describe and apply electrical building services technology Demonstrate and apply knowledge of building electrical services engineering	6	15	B
11582	Describe and apply advanced illumination technology Demonstrate advanced knowledge of illumination engineering	6	15	B
14140	Demonstrate electrotechnology prototype development capability	6	35	D

Id	Title	Level	Credit	Review Category
16970	Describe and apply compliance practices in electrotechnology hardware and software applications	6	6	D
16981	<i>Demonstrate and apply advanced knowledge of programming techniques for electrotechnology</i>	6	15	
16971	Demonstrate electrotechnology hardware or software development capability Plan, develop, and document a practical electrotechnology product	6	18 15	B
16973	Demonstrate electrotechnology assembly skills Demonstrate and apply knowledge of electrotechnology engineering construction and testing skills	3	6 5	B
16974	Use and create electrotechnology drawings Demonstrate and apply knowledge of CAD tools as used in an electrotechnology engineering environment	4	6 5	B
16975	Describe and apply software packages in an electrotechnology context Demonstrate and apply knowledge of software tools as used in electrotechnology industry applications	3	6 5	B
16979	Demonstrate elementary software programming techniques in an electrotechnology context	4	6	D
16980	Demonstrate structured programming techniques in an electrotechnology context	5	12	D
22718	<i>Demonstrate and apply intermediate knowledge of programming techniques for electrotechnology</i>	5	15	
16991	Demonstrate electrotechnology workshop fabrication skills Demonstrate and apply knowledge of electrotechnology engineering workshop safe practice	3	6 5	B
16992	Demonstrate basic electrotechnology faultfinding skills Describe and apply knowledge of electrotechnology fault-diagnosis procedures	4	6 5	B
22734	Demonstrate and apply introductory knowledge of electrotechnology engineering mathematics	4	15	New
22735	Explain and apply information gathering methods and present reports in an electrotechnology industry	4	5	New
22736	Explain and apply communication skills and societal responsibilities in an electrotechnology industry	3	10	New
22737	Demonstrate introductory knowledge of emerging or new electrotechnology products or systems	4	15	New

Id	Title	Level	Credit	Review Category
22738	Demonstrate and apply intermediate knowledge of electrotechnology engineering mathematics	5	15	New
22739	Demonstrate intermediate knowledge of emerging or new electrotechnology products or systems	5	15	New
22740	Demonstrate knowledge of project management in an electrotechnology engineering environment	6	15	New
22741	Demonstrate advanced knowledge of emerging or new electrotechnology products or systems	6	15	New
22742	Conduct negotiated research in the field of electrotechnology engineering	6	15	New

Subfield Electronics Technology
Domain Computer Engineering
Subfield **Electronic Engineering**
Domain **Computer Engineering**

Id	Title	Level	Credit	Review Category
16976	Demonstrate personal computer engineering skills Demonstrate and apply advanced knowledge of personal computer engineering	6	16 15	B
16977	Describe and apply computer operating system software in the context of computer engineering	5	12	D
11566	<i>Demonstrate and apply intermediate knowledge of personal computer engineering</i>	5	15	
16978	Describe and apply computer software engineering techniques	6	16	D
16981	<i>Demonstrate and apply advanced knowledge of programming techniques for electrotechnology</i>	6	15	
16981	Demonstrate object oriented programming techniques in an engineering context Demonstrate and apply advanced knowledge of programming techniques for electrotechnology	6	16 15	B
16982	Demonstrate rapid application development software techniques in an engineering context	6	16 15	B
16983	Demonstrate internet programming techniques in an engineering context	6	16	D
16981	<i>Demonstrate and apply advanced knowledge of programming techniques for electrotechnology</i>	6	15	
16984	Demonstrate small computer network administration skills from a computer engineering perspective	6	16	D
11583	<i>Demonstrate and apply advanced knowledge of local computer network engineering principles</i>	6	15	
16989	<i>Describe and apply advanced knowledge of computer network engineering techniques to set up a WAN</i>	6	15	

Id	Title	Level	Credit	Review Category
16985	Describe and apply advanced software application functions from a computer engineering perspective	4	6	D
22715	<i>Use personal computer software to demonstrate computer programming concepts for electrotechnology</i>	3	5	
16986	Demonstrate system software programming skills	6	16	D
16981	<i>Demonstrate and apply advanced knowledge of programming techniques for electrotechnology</i>	6	15	
16987	Demonstrate advanced software programming techniques in an engineering context	4	6	D
22715	<i>Use personal computer software to demonstrate computer programming concepts for electrotechnology</i>	4	15	
16988	Describe and apply computer network concepts from a computer engineering perspective	5	12	C
22717	Demonstrate and apply intermediate knowledge of computer network engineering principles	5	15	
16989	Describe and apply advanced computer network techniques from a computer engineering perspective	6	16	B
	Describe and apply advanced knowledge of computer network engineering techniques to set up a WAN		15	
16990	Describe and apply structured cabling concepts	5	12	D
22712	<i>Demonstrate and apply introductory knowledge of computer network engineering principles</i>	4	15	
22712	Demonstrate and apply introductory knowledge of computer network engineering principles	4	15	New
22713	Demonstrate and apply knowledge of computer networking infrastructure principles	4	15	New
22715	Use personal computer software to demonstrate computer programming concepts for electrotechnology	3	5	New
22716	Demonstrate and apply introductory knowledge of open computer operating systems	4	15	New
22718	Demonstrate and apply intermediate knowledge of programming techniques for electrotechnology	5	15	New
22719	Demonstrate knowledge of and install wireless local area computer networks	6	15	New

Subfield Electronics Technology
Domain Core Electronics
Subfield **Electronic Engineering**
Domain **Computer Engineering**

Id	Title	Level	Credit	Review Category
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Id	Title	Level	Credit	Review Category
11566	Describe and apply personal computer technology in electrotechnology applications Demonstrate and apply intermediate knowledge of personal computer engineering	5	12 15	B

Subfield Electronics Technology
Domain Core Electronics
Subfield **Electronic Engineering**
Domain **Core Electronics**

Id	Title	Level	Credit	Review Category
11571	Describe and apply microprocessor and microcontroller technology	5	15	C
22728	Demonstrate and apply intermediate knowledge of microcontroller engineering concepts	5	15	
11572	Describe and apply electronic signal technology Demonstrate and apply knowledge of electronic signal technology engineering	6	15	B
11573	Describe and apply power electronics technology Demonstrate and apply knowledge of power electronics technology engineering	6	15	B
11579	Describe and apply programmable logic controller system technology	6	15	C
22729	Demonstrate and apply advanced knowledge of programmable logic controller engineering applications	6	15	
11580	Describe and apply real time programming technology Demonstrate and apply knowledge of real-time programming in electrotechnology engineering	6	15	B
16968	Describe and apply electronic circuit analysis concepts Demonstrate and apply intermediate knowledge of electronic engineering	5	12 15	B
16969	Describe and apply digital systems technology Demonstrate and apply knowledge of digital systems technology	5	12 15	B
16993	Demonstrate electronic printed circuit board layout skills	4	6 5	B
22726	Demonstrate and apply introductory knowledge of electronic engineering	4	15	New
22727	Demonstrate and apply intermediate knowledge of programmable logic controller engineering applications	5	15	New
22730	Demonstrate and apply advanced knowledge of microcontroller engineering concepts	6	15	New

Subfield Electronics Technology
Domain Core Electronics

Id	Title	Level	Credit	Review Category
11581 16981	Describe and apply embedded system technology <i>Demonstrate and apply advanced knowledge of programming techniques for electrotechnology</i>	6 6	15 15	D
12593	Design printed circuit board layouts for electronic circuits	6	100	D
12594	Prepare electronic product technical information	6	40	D
12595	Supply technical support on an electronic product	6	40	D
12596	Supply technical support on the manufacture of electronic product	7	60	D
12597	Provide engineering documentation for electronic products	6	20	D
12598	Identify information requirements for electronic product technical documentation	7	40	D
12599	Plan contents of electronic product technical documentation	7	40	D
12600	Produce electronic product technical documentation	7	40	D
12601	Supply electronic equipment calibration	6	50	D
12602	Test electronic systems	7	60	D
12603	Evaluate electronic product performance	7	60	D
12604	Design electronic products to given specifications	7	120	D
12605	Install electronic systems	6	60	D
12606	Commission electronic systems	7	60	D

Subfield Electronic Engineering
Domain Electronic Manufacturing

Id	Title	Level	Credit	Review Category
22732	Apply intermediate knowledge of electronic manufacturing	5	15	New
22733	Demonstrate advanced knowledge of electronic manufacturing process engineering	6	15	New

Subfield Industrial Measurement and Control
Domain Industrial Measurement and Control - Theory

Id	Title	Level	Credit	Review Category
11562	Describe and apply control technology	5	12	D
11563 22743	Describe and apply instrumentation technology <i>Demonstrate and apply intermediate knowledge of instrumentation and control system engineering</i>	5 5	12 15	D
11574 22745	Describe and apply advanced control technology <i>Demonstrate and apply advanced knowledge of instrumentation and control principles</i>	6 6	15 15	D
11575	Describe and apply advanced measurement technology	6	15	D

Id	Title	Level	Credit	Review Category
17036 22745	Describe and apply process science concepts <i>Demonstrate and apply advanced knowledge of instrumentation and control principles</i>	4 6	6 15	D
22743	Demonstrate and apply intermediate knowledge of instrumentation and control system engineering	5	15	New
22744	Demonstrate and apply knowledge of industrial automation engineering	6	15	New
22745	Demonstrate and apply advanced knowledge of instrumentation and control principles	6	15	New

Subfield Telecommunications
Domain Communications Technology

Id	Title	Level	Credit	Review Category
11567	Describe and apply telecommunications technology Demonstrate knowledge of telecommunications network structures and transmission engineering	5	12 15	B
11568	Describe and apply telecommunication systems technology Describe and apply telecommunications transmission engineering and testing techniques	5 6	12 15	B
11584 22720	Describe and apply telecommunication network technology Demonstrate and apply knowledge of telecommunications network engineering principles	6 6	15 15	C
11585	Describe and apply radio frequency technology Demonstrate and apply knowledge of radio frequency engineering principles	6	15	B
11586	Describe and apply radio system technology Demonstrate and apply knowledge of radio systems technology	6	15	B

Subfield Telecommunications
Domain Communications Technology
Subfield Electronic Engineering
Domain Computer Engineering

Id	Title	Level	Credit	Review Category
11583	Describe and apply data communication technology Demonstrate and apply advanced knowledge of local computer network engineering principles	6	15	B