

National Certificate in Engineering and Technology (for the Design and Construction Sector) (Level 4)

Level 4

Credits 60

This qualification is **expiring**. The last date to meet the requirements is 31 December 2013.

Purpose

This introductory qualification is for people considering a career at the technician level in the sectors covered by the Design and Construction industry. It recognises a wide range of knowledge and skills to enable learners to choose unit standards that will lead onto further qualifications in the Design and Construction sector.

The breadth of choices for this qualification allows the unit standards credited towards this qualification to provide the underpinning knowledge and skills for the National Diplomas in Architectural Technology, Civil Engineering, Construction Management, Design, Quantity Surveying, and Surveying. Thus the qualification is very flexible and has a high degree of portability.

This qualification also incorporates unit standards from the National Certificate in Design (Introductory Skills) (Level 2) [Ref: 0461] and the National Certificate in Design (Level 3) [Ref: 0462]. This will allow the relevant unit standards credited towards these qualifications to also be credited to this one: the National Certificate in Engineering Technology (for the Design and Construction Sector) (Level 4).

Credit Range

	Elective
Level 2 credits	0-20
Level 3 credits	0-20
Level 4 credits or above	40-60
Minimum totals	60

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

Elective – A minimum of 60 credits as specified

Detailed Requirements

Elective

A minimum of 60 credits

- Of which a minimum of 40 credits at Level 4 or above

Computing and Information Technology > Computing > Generic Computing

ID	Title	Level	Credit
2783	Demonstrate knowledge of the components of personal computer systems	3	3
2785	Create a computer spreadsheet to provide a solution for organisation use	3	5
2787	Produce a computer flatfile database to provide solutions for organisation use	3	5
5947	Use computer technology to solve a specified problem	3	3
5952	Demonstrate an understanding of information systems analysis	4	3

Engineering and Technology > Design > Design - Computer Graphics

ID	Title	Level	Credit
7481	Produce design ideas and images using computer graphics programs	2	3
19355	Produce scale production drawings using computer aided draughting (CAD) programs	3	8

Engineering and Technology > Design > Design - Graphic Communication

ID	Title	Level	Credit
7484	Produce and deliver a multi-media presentation	4	5

ID	Title	Level	Credit
7507	Use freehand sketching techniques to show design development	2	4
7508	Produce illustration and advertising graphics	2	4
7509	Produce circuit and/or systems graphics	2	4
7513	Produce architectural and environmental drawings for presentation	3	5
7514	Produce package design and promotional graphics	3	5
7515	Produce engineering and product design drawings	3	5
7516	Produce rendered design graphics for presentation	3	5
7517	Produce architectural, structural, and interior design drawings	4	6
7518	Produce promotional and marketing graphics	4	6
7519	Produce engineering, technological, and systems drawings for graphic communication	4	6
7520	Develop a graphic image to promote a product or service	4	5
7521	Produce 2D or 3D models for design and presentation	3	4
18995	Produce axonometric drawings	2	3
18996	Produce perspective and instrumental drawings	2	3

Engineering and Technology > Design > Generic Design

ID	Title	Level	Credit
7489	Identify design problems and carry out investigation	2	4
7490	Apply visual design elements to solve design problems	2	4
7491	Develop and refine design solutions	2	3
7492	Present design work	2	3
7493	Develop a design specification, and produce and implement an investigation plan	3	4
7494	Investigate and apply design principles and elements	3	4
7495	Apply design development and evaluation techniques	3	4
7496	Prepare, plan, and present design project work	3	4
7497	Write a design brief and specifications	4	4

Engineering and Technology > Technology > Materials Technology

ID	Title	Level	Credit
7525	Select materials and establish processes for a manufacturing task	2	4
7526	Use, and care for, portable machine tools in materials technology	2	4
7527	Apply fabrication, assembly, and finishing methods in materials technology	2	4
7528	Work to design tolerances using marking out and measuring tools safely in materials technology	2	4
7529	Test and select materials for a design task	3	5
7530	Use, and care for, fixed machine tools in materials technology	3	5
7531	Select, apply, and test joining processes for materials technology	3	5
7533	Process materials for alternative or new uses	4	6
7534	Produce product components using computer-aided machining (CAM) in materials technology	3	6

Engineering and Technology > Technology > Process Technology

ID	Title	Level	Credit
7532	Design, set up, and complete a short run production project in process technology	3	5
7537	Use information technology to obtain and present information for a project in process technology	2	3
7538	Develop, and apply time management and project organisation to, a design brief in process technology	2	3
7539	Produce project presentation using computers and reprographics in process technology	2	3
7540	Identify and obtain materials for manufacturing, and develop a sequence for manufacturing	2	3
7541	Research design problems and present conclusions in process technology	3	4
7542	Create a manufacturing system for short run production in process technology	3	4
7544	Apply project management planning practices in process technology	4	5

Engineering and Technology > Technology > Systems Technology

ID	Title	Level	Credit
7549	Use rotary, reciprocating, and oscillating motion to solve mechanical problems in systems technology	3	5
7551	Modify an existing system of control and investigate its market potential for systems technology	4	6
7552	Create, and investigate market potential of, an electronic product for systems technology	4	6

Humanities > Communication Skills > Interpersonal Communications

ID	Title	Level	Credit
1307	Present ideas and information orally to a specified audience in a predictable situation	3	3
1311	Present and defend an argument orally	4	4
1312	Give oral instructions in the workplace	3	3
9692	Present information orally to an audience	5	2
9696	Apply problem solving strategies	4	4
11097	Listen to gain information in an interactive situation	3	3

Humanities > Communication Skills > Reading

ID	Title	Level	Credit
1272	Read efficiently to gain maximum information in time spent	3	2
2990	Read texts to research information	3	4

Humanities > Communication Skills > Writing

ID	Title	Level	Credit
1279	Write in plain English	3	2
3488	Write business letters and memoranda	2	6
3491	Write a report	3	4
9685	Write an analytical report	5	4
9701	Write proposals	4	3
11095	Write business correspondence to convey complex ideas and information	4	3

Sciences > Mathematics > Algebra

ID	Title	Level	Credit
5253	Sketch and describe graphs	2	3
5256	Use sequences and series to solve problems in real and simulated situations	3	4
5262	Use linear systems to solve problems	3	2
5264	Use numerical methods to solve problems	3	3

Sciences > Mathematics > Calculus

ID	Title	Level	Credit
5244	Demonstrate calculus skills	2	2

ID	Title	Level	Credit
5260	Find and use derivatives to solve problems involving rate of change	2	2
5261	Find and use integrals to solve problems	2	2

Sciences > Science > Physics

ID	Title	Level	Credit
6388	Apply formulae, graphical, vectorial and phasor methods to find unknowns for a physical system	3	3
6391	Demonstrate knowledge of, and determine unknowns for, wave systems	3	4
6394	Carry out a practical investigation of a physics-based application with guidance	3	3
6397	Demonstrate knowledge of circular, rotational, and simple harmonic motion	3	6

Sciences > Science > Science - Core

ID	Title	Level	Credit
9183	Demonstrate knowledge of units and notation in science	3	3

Transition Arrangements

Version 3

Version 3 was issued to indicate that this qualification is expiring.

For detailed information see Review Summaries on the NZQA website.

Previous versions

Version 2 was issued to take account of *Design*, *Mathematics*, and *Computing* unit standard reviews. Responsibility for the qualification has been transferred from the Design and Construction Consultants Industry Training Organisation to Infrastructure ITO.

Changes to structure and content

- *Design* unit standards 7482 and 7483 replaced by unit standard 19355
- *Design* unit standard 7511 replaced by unit standards 18995 and 18996
- Expired *Design* unit standard 7510 removed from qualification
- Level of *Mathematics* unit standards 5260 and 5261 decreased from 3 to 2
- Titles of *Computing* unit standards updated.

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.

Expiring Standards	Replacement Standards
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7482 and 7483	19355
7511	18995 and 18996

NZQF National Qualification Registration Information

Process	Version	Date	Last Date for Assessment
Registration	1	October 1999	December 2006
Revision	2	July 2004	December 2013
Review	3	June 2013	December 2013

Standard Setting Body

Infrastructure ITO
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Website <http://www.infrastructureito.org.nz/>

Other standard setting bodies whose standards are included in the qualification

The involvement of other standard setting bodies depends on the electives undertaken, and can be found on the unit standards concerned.

Certification

This certificate will display the logo of NZQA, Infrastructure ITO and the organisation that has been granted consent to assess against standards that meet the requirements of the qualification.

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
79	Engineering and Technology	03	Engineering and Related Technologies

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.