

National Certificate in Heating, Ventilating, and Air Conditioning (Mechanical Services) (Level 4)

Level 4

Credits 254

This qualification has been reviewed. The last date to meet the requirements is 31 December 2022.

Transition Arrangements

This qualification was republished in October 2017 to extend the last date for enrolment from 31 December 2017 to 31 December 2018, and the last date of assessment from 31 December 2021 to 31 December 2022. This qualification has been replaced by the New Zealand Certificate in Mechanical Building Services (Trade) (Level 4) [Ref: 2717].

The last date for entry into programmes leading to this qualification is 31 December 2018. The last date for assessments to take place for this qualification is 31 December 2022, when the qualification will be discontinued.

People currently working towards this qualification may either complete the requirements by 31 December 2022, or transfer their results to the replacement qualification.

This qualification contains expiring unit standards for which replacement unit standards have now been registered. For the purposes of this qualification, those people who have gained credit for the replacement standards are exempt from the requirement to gain credit for the expiring standards.

Credit for	Exempt from
26551, 26552	6401, 6402
29549	20917
29550	20799
29653	2432
29655	2430
29670, 29730	25075
29674	21909

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

NZQF National Qualification Registration Information

Process	Version	Date	Last Date for Assessment
Registration	1	December 1995	December 2002
Review	2	September 1997	July 2003
Review	3	August 2001	December 2010
Revision	4	April 2002	December 2021
Review	5	October 2010	December 2022
Review	6	July 2015	December 2022
Republication	6	May 2016	December 2022
Republication	6	October 2017	December 2022

Standard Setting Body

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REVIEWED

National Certificate in Heating, Ventilating, and Air Conditioning (Mechanical Services) (Level 4)

Level	4
Credits	254

Purpose

The National Certificate in the Heating, Ventilating, and Air Conditioning (Mechanical Services) (Level 4) is a trade qualification for people in the Heating, Ventilating, and Air Conditioning (HVAC) industries. People awarded this qualification are able to, install, integrate, pre-commission, and maintain HVAC systems.

The compulsory section incorporates:

- Foundation knowledge and skills in:
 - health and safety;
 - trade mathematics and mechanics;
 - metals and other materials used in engineering;
 - fasteners and assembly;
 - sketching;
 - measurement;
 - engineering tools;
 - machining or fabrication operations;
 - welding safety and procedures.
- Underpinning knowledge of heating, ventilating and air conditioning components and systems.
- Practical skills in:
 - installation of HVAC components and systems;
 - pre-commissioning of HVAC components and systems;
 - integration of HVAC system components;
 - installation of pipe-work, ducting, and insulation;
 - installation of control components.

The elective section comprises skills and knowledge to suit the nature of the particular enterprise the individual is engaged in and includes:

- Core Electrical;
- Engineering – Fabrication;
- Heating, Ventilating, and Air Conditioning;
- Refrigeration and Air Conditioning;
- Split Systems Air Conditioning;
- Welding.

Holders of this qualification may progress to the:

- National Certificate in Mechanical Engineering (Level 5) with strands in Engineering Fabrication, Fire Protection, General and Maintenance Engineering, Mechanical Services, and Precision Engineering [Ref: 1545];
- National Diploma in Engineering (Mechanical Engineering) (Level 6) [Ref: 0534].

This qualification builds on and incorporates all the standards of the National Certificate in Engineering Level 2 [Ref: 1220]. People who have achieved that qualification will already have 62 credits towards this qualification.

Credit Range

	Compulsory	Elective
Level 1 credits	6	-
Level 2 credits	58	-
Level 3 credits	71	0-20
Level 4 or above credits	99	0-20
Minimum totals	234	20

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
- Elective – A minimum of 20 credits as specified

Detailed Requirements

Compulsory

The following standards are required

Engineering and Technology > Mechanical Engineering > Engineering Core Skills

ID	Title	Level	Credit
2395	Select, use and care for, engineering hand tools	2	4
2396	Select, use and maintain portable hand held engineering power tools	2	4
21905	Demonstrate knowledge of trade calculations and units for mechanical engineering trades	2	4
21908	Demonstrate knowledge of basic mechanics for mechanical engineering trades	2	2
21909	Demonstrate knowledge of fasteners used in mechanical engineering	2	1

ID	Title	Level	Credit
21911	Demonstrate knowledge of safety on engineering worksites	2	1
21912	Apply safe working practices on an engineering worksite	2	2
21913	Shift loads in engineering installation, maintenance, and fabrication work	2	2
22900	Demonstrate knowledge of job costing in mechanical engineering	4	2

Engineering and Technology > Mechanical Engineering > Engineering Drawing and Design

ID	Title	Level	Credit
2430	Draw and interpret engineering sketches under supervision	2	4
2432	Construct engineering plane geometric shapes under supervision	2	3

Engineering and Technology > Mechanical Engineering > Engineering - Fabrication

ID	Title	Level	Credit
25075	Perform basic fabrication operations under supervision	2	12

Engineering and Technology > Mechanical Engineering > Engineering - Materials

ID	Title	Level	Credit
20799	Demonstrate basic knowledge of engineering metals	2	4
20917	Demonstrate basic knowledge of engineering materials	2	2

Engineering and Technology > Mechanical Engineering > Engineering - Measurement

ID	Title	Level	Credit
4433	Select, use, and care for simple measuring devices used in engineering	1	2
4435	Select, use, and care for engineering dimensional measuring equipment	2	3
4436	Select, use, and care for engineering marking-out equipment	2	4

Engineering and Technology > Mechanical Engineering > Heating, Ventilating, and Air Conditioning

ID	Title	Level	Credit
3239	Install duct work to plans and specifications under supervision	2	6
3244	Install control components to plans and specifications under supervision	3	6

ID	Title	Level	Credit
26327	Install pipe-work and ducting for heating, ventilating, and air conditioning systems under supervision	3	7
26328	Integrate heating, ventilating, and air conditioning systems components under supervision	3	7
26329	Pre-commission and maintain heating, ventilating, and air conditioning systems under supervision	3	15
26331	Interpret heating, ventilating, and air conditioning systems drawings	3	3
26332	Integrate heating, ventilating, and air conditioning systems components	4	30
26333	Install external insulation to pipe-work and ducting for heating, ventilating, and air conditioning systems	3	3
26334	Install pipe-work for heating, ventilating, and air conditioning systems	4	25
26335	Demonstrate introductory knowledge of heating, ventilating, and air conditioning	3	12
26336	Demonstrate knowledge of the components used in heating, ventilating, and air conditioning systems	3	8
26337	Demonstrate advanced knowledge of heating, ventilating, and air conditioning systems	4	12
26339	Pre-commission heating, ventilating, and air conditioning systems	4	20

Engineering and Technology > Mechanical Engineering > Mechanical Assembly

ID	Title	Level	Credit
2387	Assemble mechanical components under supervision	2	2

Engineering and Technology > Mechanical Engineering > Refrigeration and Air Conditioning

ID	Title	Level	Credit
23959	Prepare and purge braze piping for refrigeration and air conditioning	3	4

Engineering and Technology > Mechanical Engineering > Welding

ID	Title	Level	Credit
21907	Demonstrate and apply knowledge of safe welding procedures under supervision	2	3
22906	Demonstrate and apply knowledge of welding low carbon steel	3	3

Health > Health Studies > Core Health

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

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

ID	Title	Level	Credit
497	Demonstrate knowledge of workplace health and safety requirements	1	3

Planning and Construction > Construction Trades > Core Construction

ID	Title	Level	Credit
9184	Erect non-notifiable prefabricated scaffolding	3	3

Elective

A minimum of 20 credits at Level 3 or above

Field	Subfield	Domain
Engineering and Technology	Electrical Engineering	Core Electrical
	Mechanical Engineering	Engineering - Fabrication
		Heating, Ventilating, and Air Conditioning
		Refrigeration and Air Conditioning
		Split System Air Conditioning
	Welding	

Transition Arrangements

Version 5

Version 5 was issued following extensive review of the standards in the *Heating, Ventilating and Air Conditioning* domain. The planned review resulted in an update of the content of the qualification to meet current and future industry needs while at the same time addressing the issue of expiring standards.

Changes to structure and content

- Total credits for the qualification have increased from 218 to 254.
- The Elective requirement has increased from 18 to 20 credits.
- The content of both sections of the qualification has changed to fulfil current industry requirements as well as changes in standards made since the last review.
- Structure and standards have changed to clearly distinguish between on-job and off-job learning and assessments.

- Standards 497, 2387, 4435, 6401, 6402, 21909, 22900, 26327, 26329, 26332, and 26335-26337 were added to the Compulsory.
- Standards 2678, 2683, 2690, and 4432 were removed from the Compulsory.
- Standard 20917 replaced standard 4795; standard 20799 replaced standard 4796; standard 21907 replaced standard 2670; standards 21911 and 21912 replaced standard 2824; standard 21913 replaced standard 12299; standard 25075 replaced standards 2414-2417; standard 26333 replaced standards 3241 and 3242; standard 26334 replaced standards 3234, 3235, and 3237; and standard 26339 replaced selected combinations of standards 3246-3250, 3252, and 3253 (see exemption table).
- Standard 21905 was substituted for standard 16954; standard 21908 was substituted for standards 16955 and 16956; standard 22906 was substituted for standard 2682; standard 23959 was substituted for standards 2678 and 2679; standard 26331 was substituted for standard 2431; and standard 26328 was substituted for standard 3240.
- The Elective now specifies classifications rather than specific standards, but all the standards previously listed in the Elective can be used to meet the requirements of the new Elective.

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

It is recommended that people working towards version 4 of this qualification complete that version as version 5 is significantly different. However, they may choose to transfer to the new version. All new trainees will be enrolled on version 5 from 1 January 2011.

This qualification contains standards that replace, and standards that have been substituted for, 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
2414, 2415	25075
2414, 2416	25075
2414, 2417	25075
2415, 2416	25075
2415, 2417	25075
2416, 2417	25075
2431	26331
2670	21907
2678	23959
2679	23959
2682	22906
2824	21911, 21912

Credit for	Exempt from
3199, 3200, 3201, 3203	26332
3199, 3200, 3202, 3203	26332
3199, 3200, 3203, 3204	26332
3199, 3200, 3203, 3205	26332
3234, 3235, 3237	26334
3240	26328
3241, 3242	26333
3246, 3247, 3248, 3252	26339
3246, 3247, 3249, 3252	26339
3246, 3247, 3250, 3252	26339
3246, 3247, 3252, 3253	26339
4795	20917
4796	20799
12299	21913
16954	21905
16955	21908
16956	21908

Previous versions of the qualification

Version 4 was issued to take account of the renaming of the *heating and ventilation* domain to *heating, ventilating, and air conditioning*. The word 'systems' was deleted from the title and standard 2680 removed from the qualification.

For people completing version 4, a number of compulsory standards will expire on 31 December 2010, 31 December 2012, and 31 December 2014, although the last date for assessment of version 4 is 31 December 2016. The majority of the expiring standards are completed in the first and second years of training and therefore should be completed prior to their expiry dates. Assessment against standards 2414, 2416, and 2417 must be completed before 31 December 2014. Reverse transition has been included for the other expiring standards to ensure that no candidates are disadvantaged.

Version 4 of this qualification contained standards that have been replaced or substituted by other standards. For the purposes of this qualification people who have gained credit for the replacement standards are exempt from the requirement to gain credit for the expiring standards – see table below.

Credit for	Exempt from
20799	4796
20917	4795
21905	16954
21907	2670
21913	12299
25075	2415
21911, 21912	2824

This transition has been included to ensure all candidates currently enrolled in version 4 of this qualification are able to complete the requirements of that version if they wish to.

Version 3 was issued to provide a single pathway for all personnel in the HVAC industry by combining the three strands, ducted systems, duct work and light metal fabrication, and piped systems.

Version 2 was issued to take into account the lack of flexibility of version 1 of the qualification.

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 Competenz at the address below.

Other standard setting bodies whose standards are included in the qualification

New Zealand Industry Training Organisation
 NZQA
 Opportunity - The Training Organisation

Certification

This certificate will display the logos of NZQA, Competenz 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
1821	Engineering and Technology > Mechanical Engineering > Heating, Ventilating, and Air Conditioning	030799	Engineering and Related Technologies > Mechanical and Industrial Engineering and Technology > Mechanical and Industrial Engineering & Technology not elsewhere classified

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.

Review

Prerequisite Diagram

