

Title	Develop, implement, and evaluate solutions for well-defined mechanical engineering problems		
Level	6	Credits	15

Purpose	<p>This unit standard is for people working towards the New Zealand Diploma in Engineering Practice [Ref: 1714]. It is intended to supplement and integrate the academic learning achieved through completion of the New Zealand Diploma in Engineering [Ref: 2612] with practical knowledge and experience, and hence develop further competence in engineering through on-job experience.</p> <p>People credited with this unit standard are able to develop, implement, and evaluate solutions for well-defined mechanical engineering problems.</p>
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Classification	Mechanical Engineering > Applied Principles of Mechanical Engineering
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Available grade	Achieved
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Entry information	
Recommended skills and knowledge	It is expected that candidates will have completed, or be working towards completion of, the New Zealand Diploma in Engineering [Ref: 2612] or an equivalent engineering qualification recognised by the New Zealand Board for Engineering Diplomas through the Dublin Accord (International Engineering Alliance, 2002).

Explanatory notes

- The following legislation and requirements apply to this unit standard:
 Health and Safety at Work Act 2015;
 Resource Management Act 1991;
 Current New Zealand jurisdiction requirements and regulatory framework including but not limited to: compliance regimes covered by statute or local body by-law, design specifications, conditions of contract (including applicable registered standards and approved codes of practice), and public consultation procedures.

Other legislation and requirements applicable to this unit standard may include but are not limited to:

Treaty of Waitangi Act 1975;

Local Government Act 2002;

Public Works Act 1981;

Building Act 2004;

Client and/or company specifications and standards;

The ethical codes and standards relevant to professional bodies such as the Institution of Professional Engineers New Zealand (IPENZ), the Institute of Refrigeration, Heating and Air Conditioning Engineers of New Zealand Inc (IRHACE), or the Electricity Engineers' Association (EEA), , New Zealand Asset Management Support (NAMS).

Any legislation or other requirement superseding any of the above will apply, pending review of this unit standard.

2 Definitions

Accepted procedures and methodologies are the procedures and methodologies required by the candidate's engineering sector and which meet applicable legal and code requirements, registered standards, organisational policies and procedures, and manufacturers' specifications.

Well-defined mechanical engineering problems, are engineering problems that have some or all of the following characteristics:

- Can be solved in standardised ways.
- Require detailed knowledge and use of practical procedures and practices for widely-applied operations and processes.
- Are discrete components of engineering systems.
- Are encompassed by standards and/or documented codes of practice.
- Involve a limited range of stakeholders who mostly have similar needs.
- Involve several issues with few of these issues involving significant conflicting constraints.
- Are frequently encountered and thus familiar to most practitioners in the candidate's practice area.
- Have consequences which are important locally and only occasionally extend more widely.
- Involve a limited range of resources in terms of people, money, equipment, materials, and technologies.

3 Assessment

Assessment against this unit standard must be based on evidence from the practice area the candidate is engaged in. The practice area for the candidate may include but is not limited to: engineering consultancy, maintenance or asset management, design, manufacturing, installation, production engineering, technical sales and customer service, draughting services, construction, or contracting in the mechanical engineering discipline.

All outcomes and evidence requirements in this standard must be demonstrated in accordance with accepted procedures and methodologies.

Evidence of at least two problems is required.

Outcomes and evidence requirements

Outcome 1

Develop, implement, and evaluate solutions for well-defined mechanical engineering problems.

Evidence requirements

- 1.1 Problem requirements and constraints are identified.
- 1.2 Solutions are developed and tested.
- 1.3 Stakeholders are consulted.
- 1.4 Solution options are evaluated.
- 1.5 Solutions are selected that best match problem constraint, and are then justified.
- 1.6 Solutions are planned and implemented effectively, efficiently, and practically.
- 1.7 The outcomes of solutions are evaluated.

Planned review date	31 December 2019
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	17 November 2011	31 December 2018
Review	2	16 June 2016	N/A

Consent and Moderation Requirements (CMR) reference	0234
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This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

Please note

Providers must be granted consent to assess against standards (accredited) by NZQA, before they can report credits from assessment against unit standards or deliver courses of study leading to that assessment.

Industry Training Organisations must be granted consent to assess against standards by NZQA before they can register credits from assessment against unit standards.

Providers and Industry Training Organisations, which have been granted consent and which are assessing against unit standards must engage with the moderation system that applies to those standards.

Requirements for consent to assess and an outline of the moderation system that applies to this standard are outlined in the Consent and Moderation Requirements (CMR). The CMR also includes useful information about special requirements for organisations wishing to develop education and training programmes, such as minimum qualifications for tutors and assessors, and special resource requirements.

Comments on this unit standard

Please contact Competenz info@competenz.org.nz if you wish to suggest changes to the content of this unit standard.