

Title	Demonstrate and apply advanced knowledge of programming techniques for electrotechnology		
Level	6	Credits	15

Purpose	<p>This unit standard covers advanced knowledge of programming techniques that would be used in the electrotechnology industry.</p> <p>People credited with this unit standard are able to:</p> <ul style="list-style-type: none"> – demonstrate practical software development skills using development tools; – develop a program using a high-level language to a given specification; and – evaluate the performance of the structured executable code created in accordance with outcome 2.
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Classification	Electronic Engineering > Computer Engineering
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Available grade	Achieved
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Prerequisites	Unit 22718, <i>Demonstrate and apply intermediate knowledge of programming techniques for electrotechnology</i> , or demonstrate equivalent knowledge and skills.
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Guidance Information

- 1 This unit standard is intended for use in engineering courses at diploma level.
- 2 This unit standard is one of three designed to cover skill and knowledge of programming techniques for electrotechnology engineering, the others being Unit 22715, *Use personal computer software to demonstrate computer programming concepts for electrotechnology*; and Unit 22718, *Demonstrate and apply intermediate knowledge of programming techniques for electrotechnology*.
- 3 Reference
Health and Safety at Work Act 2015;
and all subsequent amendments and replacements.
- 4 Definitions
Advanced knowledge – means employing specialised knowledge, with depth in more than one area of the subject matter, to analyse, reformat, and evaluate a wide range of information.
Industry practice – practice used and recommended by organisations involved in the electrotechnology industry.

- 5 All measurements are to be expressed in Système International (SI) units, and, where required, converted from Imperial units into SI units.
- 6 All activities must comply with: any policies, procedures, and requirements of the organisations involved; the standards of relevant professional bodies; and any relevant legislative and/or regulatory requirements.
- 7 Range
 - a performance in relation to the outcomes of this unit standard must comply with the Health and Safety at Work Act 2015;
 - b laboratory and workshop safety practices are to be observed at all times.

Outcomes and performance criteria

Outcome 1

Demonstrate practical software development skills using development tools.

Performance criteria

- 1.1 Different software development tool features are analysed and compared in terms of application in accordance with industry practice.

Range may include but is not limited to – advantages/disadvantages of simulations and debuggers;
evidence of four different applications is required.

Outcome 2

Develop a program using a high-level language to a given specification.

Range specification includes but is not limited to – description of human interface input and output, input and output device purposes, operational characteristics;
a textual / diagrammatic / mathematical description of the processing required to satisfy the needs of the application;
high-level language may include but is not limited to – C, JAVA.

Performance criteria

- 2.1 A given engineering specification is interpreted and a program structure outline is produced in accordance with industry practice.

Range may include but is not limited to – pseudo code.

- 2.2 A high-level language is used to create structured executable code that implements the program outline in accordance with industry practice.

- 2.3 The program is documented in accordance with industry practice.

Range may include but is not limited to – in-line comments, subroutine descriptions, program flow.

Outcome 3

Evaluate the performance of the structured executable code created in accordance with outcome 2.

Performance criteria

- 3.1 The relative significance of each part of the executable code is evaluated in terms of usability and operational and performance processes and outcomes.
- 3.2 The technical appraisal provides informed judgement on the software solution deficiencies.
- 3.3 Areas of improvement are identified and solutions documented in accordance with industry practice.

Range areas include – analysis, function, operational and performance processes and outcomes.

This unit standard is expiring. Assessment against this standard must take place by the last date for assessment set out below.

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	27 April 2000	31 December 2021
Review	2	18 December 2006	31 December 2021
Rollover and Revision	3	28 June 2018	31 December 2021
Review	4	28 January 2021	31 December 2021

Consent and Moderation Requirements (CMR) reference

0003

This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.