

Title	Demonstrate knowledge of logic circuit functions and their applications		
Level	3	Credits	3

Purpose	<p>This unit standard is intended for use in a senior secondary school environment, pre-employment electronics courses, or for electronics technicians.</p> <p>People credited with this unit standard are able to:</p> <ul style="list-style-type: none"> – demonstrate knowledge of logic circuits function and their applications.
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Classification	Electronic Engineering > Electronics Technology
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Available grade	Achieved, Merit, and Excellence
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Criteria for Merit	The candidate must provide an in-depth description of compound logic circuits and explain how the application works.
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Criteria for Excellence	The candidate must provide a comprehensive description of compound logic circuits and their practical applications that includes advantages, disadvantages, or suggested improvements.
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Guidance Information

- 1 This unit standard can be awarded with Achieved, Merit, or Excellence. For the Achieved grade to be awarded, the outcome must be achieved as specified in the outcome statement. For Merit or Excellence to be awarded, the candidate must meet the Merit or Excellence criteria specified above.
- 2 Definitions

AND – the Boolean function that is true only if all its arguments are true.

Compound logic circuit – for the purpose of this unit standard means a circuit comprising at least four logic functions, at least three of which are different.

Half-adder – a logic circuit that performs an addition operation on two one-bit binary numbers.

Logic gates – circuits that perform Boolean logic operations that may be discrete or PLA-based, named as AND, OR, NOT, NAND, NOR, XOR, half-adder.

NAND – Not AND, the Boolean function that is true unless both its arguments are true, the logical complement of AND.

NOR – Not OR, the Boolean function that is true if none of its inputs are true. It is the logical complement of inclusive OR.

NOT – the Boolean function that is true only if its input is false.

OR – the Boolean function that is true if any of its arguments are true.

Truth tables – mathematical tables used to define Boolean logic operations.

XOR – exclusive OR gate, a two-input Boolean logic function with an output that is true if one input is true and the other is false.

3 References

Health and Safety at Work Act 2015;

Safety in Technology Education – A Guidance Manual for New Zealand Schools, available from <https://technology.tki.org.nz/Technology-in-the-NZC/Safety-in-Technology-Education>;

and all subsequent amendments and replacements.

Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of logic circuit functions and their applications.

Performance criteria

1.1 Describe the function and operation of logic gate circuits.

Range AND, OR, NOT, NAND, NOR, XOR, half-adder.

1.2 Construct compound logic circuits and describe their applications.

Range evidence of two circuits is required.

Planned review date	31 December 2025
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	16 April 2010	31 December 2012
Review	2	15 April 2011	31 December 2024
Rollover and Revision	3	15 March 2012	31 December 2024
Revision	4	15 January 2014	31 December 2024
Rollover	5	27 January 2015	31 December 2024
Review	6	24 June 2021	N/A

Consent and Moderation Requirements (CMR) reference	0003
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This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

Comments on this unit standard

Please contact The Skills Organisation reviewcomments@skills.org.nz if you wish to suggest changes to the content of this unit standard.