Title	**Demonstrate knowledge of welding technology**		
Level	**5**	**Credits**	**20**

Purpose	People credited with this unit standard are able to demonstrate knowledge of the physics of welding, and of welding and cutting processes.

Classification	Mechanical Engineering > Welding

Available grade	Achieved

Guidance Information

1 This unit standard is for people seeking the *International Welding Specialist* qualification from the International Institute of Welding (IIW). Details are available from the Heavy Engineering Research Association, P O Box 76 134, Manukau City.

2 Industry standards/codes relevant to this unit standard include (but are not limited to):
- a AS/NZS 1554.1:2004, *Structural steel welding – Welding of steel structures*.
- b *The 2004 ASME Boiler and Pressure Vessel Code*.
- c ISO 15607:2003, *Specification and qualification of welding procedures for metallic materials – General rules.*

Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of the physics of welding.

Performance criteria

1.1 Energy sources are identified for welding.

Range electrical, chemical, mechanical.

1.2 The characteristics of the electric arc are defined for welding.

Range heat generation at cathode and anode, alternating and direct current, magnetic fields.

1.3 Power sources are identified according to process requirements.

Range static and dynamic characteristics, controls, rating and duty cycle, applications.

Outcome 2

Demonstrate knowledge of welding and cutting processes.

Range processes include – oxy-gas welding, gas tungsten arc welding, gas metal arc welding, flux cored arc welding, manual metal arc welding, submerged arc welding, plasma arc welding, cutting (arc, plasma arc, oxyfuel gas, laser).

Performance criteria

2.1 Advantages, limitations, and applications of processes are described.

2.2 Equipment for welding and cutting processes is described in terms of the requirements of each process.

Range cables, electrode holders, wire feeders, travel units, welding heads, jigs, fixtures, manipulators.

2.3 Welding and cutting consumables are identified by composition and specification to industry standards.

2.4 Welding and cutting processes are compared in terms of practicality and cost effectiveness.

This unit standard is expiring. Assessment against the 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Status information and last date for assessment for superseded versions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	4 April 2001	31 December 2025
Rollover and Revision	2	20 April 2006	31 December 2025
Review	3	26 January 2023	31 December 2025

Consent and Moderation Requirements (CMR) reference	0013

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