Field Engineering and Technology

Review of *Mechanical Engineering* unit standards

Subfield	Domain	ID
Mechanical Engineering	Engineering - Fabrication	25698-25705, 25710, 25874, 25875
	Engineering Machining and Toolmaking	22909, 22910
	Fluid Power - Hydraulics	20611
	Fluid Power - Pneumatics	20612
	Maintenance and Diagnostics in Mechanical Engineering	2406, 22901-22904
	Mechanical Assembly	22913, 22914
	Welding	2684-2686, 2688, 2689, 2691

Competenz has completed the review of the unit standards listed above.

Date new versions published **July 2017**

Planned review date **December 2022**

Summary

The unit standards were reviewed and new unit standards were written to align with the recently registered New Zealand Certificate in Mechanical Engineering (Level 3) [Ref: 2715] and New Zealand Certificate in Mechanical Engineering (Trade) (Level 4) [Ref: 2714] and to meet Competenz's ongoing unit standard review schedule.

The review was carried out during March – May 2017. Feedback was collated about the unit standards from assessors and any unit standard feedback that may have been received from industry training managers, technical experts, assessors and users. A full day consultation with a technical advisory group representative group of mechanical engineering industry technical experts from industry and training providers was held. Subsequent detail development was carried out by email and phone. Changes were endorsed by the industry technical group.

Main changes

- Changes were made to titles, levels, credits, outcome statements, evidence requirements, and range statements to clarify assessment requirements, remove duplication, and ensure alignment with current industry requirements.
- 17 unit standards were retained.
- Eight unit standards were replaced by new unit standards.
- Three unit standards were set to expire without replacement due to low usage or where alternatives are available.

- 10 new unit standards were registered.

Category C and D unit standards will expire at the end of December 2022

The last date for assessment of superseded versions of Category B unit standards is December 2022

Impact on existing organisations with consent to assess

Current consent for			Consent extended to		
Nature of consent	**Classification or ID**	**Level**	**Nature of consent**	**Classification or ID**	**Level**
Subfield	Mechanical Engineering	2	Standards	20611, 20612	3
Subfield	Mechanical Engineering	3	Standard	30439	4
Domain	Fluid Power - Hydraulics	2	Standard	20611	3
Domain	Fluid Power - Pneumatics	2	Standard	20612	3
Domain	Maintenance and Diagnostics in Mechanical Engineering	4	Standard	30438	3
Domain	Mechanical Assembly	3	Standard	30439	4
Standard	2406	4	Standard	30438	3
Standard	2684	4	Standards	30277, 30278	4
Standard	25702	4	Standard	30272	4
Standard	25703	4	Standard	30272	4
Standard	22914	3	Standard	30439	4
Standard	25874	4	Standard	30440	3
Standard	25875	4	Standard	30440	3

Detailed list of unit standards – classification, title, level, and credits

All changes are in **bold**.

Key to review category	
A	Dates changed, but no other changes are made - the new version of the standard carries the same ID and a new version number
B	Changes made, but the overall outcome remains the same - the new version of the standard carries the same ID and a new version number
C	Major changes that necessitate the registration of a replacement standard with a new ID
D	Standard will expire and not be replaced

Engineering > Mechanical Engineering

ID	Domain	Title	Level	Credit	Review Category
2406	Maintenance and Diagnostics in Mechanical Engineering	Dismantle, inspect, assemble and test components	4	15	C
30438	**Mechanical Assembly**	**Dismantle, inspect, and assemble component parts within assemblies**	**3**	**6**	

Engineering and Technology > Mechanical Engineering > Engineering - Fabrication

ID	Title	Level	Credit	Review Category
25698 **30275**	Form and shape light fabrication materials **Form light fabrication materials**	4 **4**	20 **20**	B **B**
25699 **30277**	Form and shape heavy fabrication materials **Form heavy fabrication materials**	4 **4**	20 **20**	B **B**
25700	Assemble and join light fabrication materials	4	20	B
25701	Assemble and join heavy fabrication materials	4	20	D
25702 25703 **30272**	Cut light fabrication materials Cut heavy fabrication materials **Cut fabrication materials using machines**	4 4 **4**	15 15 **10**	C
25704	Develop fabrication patterns manually for simple three-dimensional objects	3	10 **5**	B
25705	Develop fabrication patterns for complex three-dimensional objects **Develop fabrication patterns manually for complex three-dimensional objects**	4	10	B
25710	Manufacture jigs for fabrication **Make up jigs and fixtures for use in engineering fabrication**	4	5	B
25874 25875 **30440**	Lay out and mark off light fabrication shapes Lay out and mark off heavy fabrication shapes **Mark out fabrication components using geometrical methods**	4 4 **3**	15 15 **5**	C C
30274	**Cut fabrication materials using hand held power tools**	**3**	**5**	**New**

Engineering and Technology > Mechanical Engineering > Engineering Machining and Toolmaking

ID	Title	Level	Credit	Review Category
22909 **30276**	Demonstrate and apply knowledge of setting and operating CNC engineering machines **Demonstrate and apply knowledge of programming and operating CNC lathes and machining centres**	3 **2**	4 **4**	C
22910	Demonstrate and apply knowledge of programming CNC engineering machines **Produce a part program for a CNC engineering lathe or machining centre**	3	4 **3**	B
30273	**Set up and operate a CNC engineering lathe or machining centre**	**3**	**3**	**New**

Engineering and Technology > Mechanical Engineering > Fluid Power - Hydraulics

ID	Title	Level	Credit	Review Category
20611	Demonstrate knowledge of hydraulics and hydraulic power systems **Demonstrate knowledge of hydraulic power systems**	2 **3**	5	B

Engineering and Technology > Mechanical Engineering > Fluid Power - Pneumatics

ID	Title	Level	Credit	Review Category
20612	Demonstrate knowledge of pneumatics and pneumatic power systems **Demonstrate knowledge of pneumatic power systems**	2 **3**	5	B

Engineering and Technology > Mechanical Engineering > Maintenance and Diagnostics in Mechanical Engineering

ID	Title	Level	Credit	Review Category
22901	Demonstrate knowledge of pumps, fans, and valves for mechanical engineering trades **Demonstrate knowledge of pumps, fans, valves and static and dynamic balancing of components**	3	3	B
22902	Demonstrate knowledge of process control in mechanical engineering	4	3	B
22903	Demonstrate knowledge of modern manufacturing concepts and their significance in plant maintenance	4	3	D
22904	Demonstrate knowledge of modern engineering plant maintenance practice **Demonstrate knowledge of mechanical engineering plant maintenance**	4	5 **3**	B

Engineering and Technology > Mechanical Engineering > Mechanical Assembly

ID	Title	Level	Credit	Review Category
22913	Assemble and fit precision tooling	3	10	D
22914 **30439**	Assemble and fit precision components **Assemble, fit and test precision components**	3 **4**	10 **10**	C

Engineering and Technology > Mechanical Engineering > Welding

ID	Title	Level	Credit	Review Category
2684 **30277** **30278**	Weld steel structures in all positions using the gas metal arc or flux cored arc welding processes **Weld steel structures in all positions using the gas shielded flux cored arc welding processes** **Weld steel structures in all positions using the gas metal arc welding process**	4 **4** **4**	10 **5** **5**	C
2685	Weld steel structures in all positions using the manual metal arc welding process	4	10	B
2686	Weld aluminium in all positions using the gas metal arc welding process	4	10	B
2688	Weld stainless steel tube using the gas tungsten arc welding process	4	12	B
2689	Weld aluminium in all positions using the gas tungsten arc welding process	4	10	B

ID	Title	Level	Credit	Review Category
2691	Cut metals using mechanised thermal cutting equipment	4	4	B
30275	**Weld steel structures in all positions using the self shielded flux cored arc welding processes**	**4**	**6**	**New**