Australian Government

Department of Education, Employment and Workplace Relations

MEM30305 Certificate III in Engineering - Fabrication Trade

Release: 4

MEM30305 Certificate III in Engineering - Fabrication Trade

Modification History

ISC upgrade to include new units in Trade Specialisation list. Refer to Mapping of Changes.

Description

This qualification covers the skills and knowledge required for employment as an Engineering Tradesperson - Fabrication within the metal, engineering, manufacturing and associated industries or other industries where Engineering Tradespersons - Fabrication work. The qualification has been specifically developed to meet the needs of apprentices in the above trade. The qualification packaging has been developed on an assumption that competency will be developed through an integrated combination of on and off-the-job learning strategies such as those delivered through a formal apprenticeship. The qualification may also be achieved through formal skills recognition assessment processes.

Job roles/employment outcomes
The Certificate III in Engineering - Fabrication Trade specifies the competencies required for employment as an Engineering Tradesperson - Fabrication including metal fabrication, forging, founding, structural steel erection, electroplating, metal spinning, metal polishing, sheet metal work, welding and the use of related computer controlled equipment.
Employment outcomes related to this qualification are found in a wide variety of manufacturing and engineering related sectors as well as Engineering Tradesperson - Fabrication roles in other industries.

Application
This qualification is designed to provide an industry recognised skills profile related to trade work as an Engineering Tradesperson - Fabrication. Skills development would usually be undertaken through an Australian Apprenticeship arrangement where the mix of on and off-the-job training would be specified in the Training Plan associated with the Contract of Training between the employer and apprentice.
Assessment of some units of competency must, where indicated, include evidence of the candidate's performance in a productive work environment where there is a sufficient range of appropriate tasks and materials to cover the scope of application of those units. All outcomes must reflect the standard of performance inherent in the job.
Occupational titles that this qualification is suitable for may vary and include metal fabrication tradesperson, boilermaker, 1st class sheet metal worker, 1st class welder, moulder, foundry tradesperson and patternmaker.

Pathways Information

Pathways into the qualification
There is no qualification entry requirement. It is assumed that the learner is engaged as an apprentice under a Training Contract and that the learner is receiving appropriate structured on the job training while undertaking this qualification.

This qualification may be accessed by direct entry. Credit for relevant units of competency achieved should be granted towards this qualification for those who have completed MEM10105 Certificate I in Engineering, MEM10205 Certificate I in Boating Services, MEM20105 Certificate II in Engineering, MEM20205 Certificate II in Engineering - Production Technology or other relevant qualifications. Credit towards this qualification may also include units of competency contained within relevant pre-vocational and pre-apprenticeship programs and Statements of Attainment.

Pathways from the qualification
Further training pathways from this qualification include MEM40105 Certificate IV in Engineering and MEM50105 Diploma of Engineering - Advanced Trade or other relevant qualifications.

Additional qualification advice
An additional descriptor may be added to this qualification to illustrate a particular skill focus or trade discipline.
This could be achieved by adding a pathway descriptor or sentence *below* the formal title of the qualification. Note that no changes may be made to the qualification title and the use of one of these descriptors to a qualification does not change the qualification's formal title or unique national code.
There are no specific requirements associated with the use of these descriptors other than their use should reflect the nature of the choice of units of competency in the qualification and must be consistent with the work role of an Engineering Tradesperson - Fabrication.
Reference to other occupational or functional pathways consistent with the role of an Engineering Tradesperson - Fabrication may be included on any qualification statement that is issued.
Competitive Manufacturing qualifications are available for employees at this level who already possess trade and other technical skills and who require additional manufacturing practice skills above those available in this qualification.

Licensing considerations
There are no specific licences that relate to this qualification. However, some units of competency in this qualification may relate to licensing or regulatory requirements. Local regulations should be checked for details.

Licensing/Regulatory Information

Refer to Pathways Information

Entry Requirements

Not Applicable

Employability Skills Summary

EMPLOYABILITY SKILLS QUALIFICATION SUMMARY	
Employability Skill	**Industry/enterprise requirements for this qualification include**:
Communication	• Read, interpret, follow and communicate information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents • Convey and share technical information • Produce sketches, diagrams, charts or graphs • Check and clarify task-related information • Recognise and use common fabrication terminology • Liaise with appropriate authorities
Teamwork	• Work alone or as part of a team • Contribute to a group effort in order to plan and carry out work • Identify work roles, communicate and cooperate with others
Problem-solving	• Undertake numerical operations, geometry and calculations/ formulae (including addition, subtraction, multiplication, division, fractions and decimals, percentages and proportions, simple ratios and averages) • Use appropriate measuring techniques • Inspect quality of own or other employee's work • Analyse information according to enterprise and work requirements • Assess operation and condition of components against specifications or manufacturer's requirements • Use diagnostic skills to identify and determine causes of faults, including interpretation of in-built fault indicators and error codes • Translate designs into practical outcomes
Initiative and enterprise	• Be capable of applying the competency in new and different situations and contexts • Identify actual and foreseeable workplace hazards during course of work • Implement OHS risk management procedures • Modify work plan to overcome unforeseen difficulties or developments that occur as work progresses • Participate in improvement procedures including process, quality and internal/external customer/supplier relationships • Economise material use and minimise waste
Planning and organising	• Plan, prioritise and sequence work operations/complete

EMPLOYABILITY SKILLS QUALIFICATION SUMMARY	
	activities/scheduled production • Select and use planning techniques and tools • Organise and analyse information relevant to work • Set up jobs prior to commencement of work including selection of appropriate tools, equipment and materials and adjustment of equipment
Self-management	• Carry out work safely and in accordance with company policy and procedures, manufacturer's recommendations, environmental guidelines and legislative requirements • Monitor performance of operation or quality of product or service to ensure customer satisfaction • Take responsibility for own work outcomes • Apply techniques, procedures, tools and equipment for compliance with site or manufacturers' specifications.
Learning	• Check and clarify task related information with appropriate personnel or technical adviser • Identify customers' requirements with respect to the operation or quality of the product or service • Assess and modify own work practices • Use manuals, online help and other reference materials such as catalogues/lists as required • Maintain current knowledge of applicable standards, legislation, codes of practice and product/process developments • Assist with on the job training and assessment
Technology	• Select and use appropriate tools, equipment, materials and machines • Select and use appropriate measuring/testing devices • Navigate technology to access /input /store/retrieve/save and produce information/data using appropriate software applications • Apply knowledge of appropriate engineering principles, techniques, procedures, tools and equipment to achieve the required outcome

Packaging Rules

Packaging Rules

The minimum requirements for achievement of the Certificate III in Engineering - Fabrication Trade are:

- completion of all core units of competency listed below, and

- completion of Group A Fabrication stream units listed below to the value of at least 40 points, and
- completion of units from Group B Certificate III Trade specialisation units listed in Appendix 1, Volume 1 of the Training Package, to bring the total value to at least 73 points

Points associated with prerequisites count towards the total (refer to units and prerequisites listing in Appendix 2, Volume 1).
Appropriate Group B elective units to the value of 16 points may be chosen from other endorsed Training Packages and accredited courses where those units are available for inclusion at Certificate III. Note that the elective units listed below include all of the units that are approved for selection from the MEM Training Package for use in this qualification. This meets the NQC requirement that one sixth of the total units must be able to be selected from other qualifications in the same Training Package.
Registered Training Organisations must seek a determination from Manufacturing Skills Australia in respect of the allocation of points values for units of competency drawn from other Training Packages or accredited courses.

Only select units that would be suitable for Fabrication Trade occupational outcomes.

Additional qualification descriptors
The following additional descriptors are approved for use with this qualification: Casting and Moulding; Heavy Fabrication; Light Fabrication; Maintenance; Patternmaking; Surface Finishing; Welding.

Core units

- select all of the units from this list

Unit code	**Unit title**
MEM12023A	Perform engineering measurements
MEM12024A	Perform computations
MEM13014A	Apply principles of occupational health and safety in the work environment
MEM14004A	Plan to undertake a routine task
MEM14005A	Plan a complete activity
MEM15002A	Apply quality systems
MEM15024A	Apply quality procedures
MEM16006A	Organise and communicate information

Unit code	Unit title
MEM16007A	Work with others in a manufacturing, engineering or related environment
MEM16008A	Interact with computing technology
MEM17003A	Assist in the provision of on the job training
MSAENV272B	Participate in environmentally sustainable work practices

Elective Units

Group A - Fabrication Trade stream units

- select units from this list to the value of at least 40 points

Unit code	Unit title	P
MEM03003B	Perform sheet and plate assembly	4
MEM04001B	Operate melting furnaces	4
MEM04002B	Perform gravity die casting	2
MEM04003B	Operate pressure die casting machine	4
MEM04004B	Prepare and mix sand for metal moulding	4
MEM04005C	Produce moulds and cores by hand (jobbing)	16
MEM04006B	Operate sand moulding and core making machines	8
MEM04007B	Pour molten metal	4
MEM04008B	Fettle and trim metal castings/forgings	4
MEM04010B	Develop and manufacture wood patterns	20
MEM04011B	Produce polymer patterns	8

Unit code	Unit title	P
MEM04012B	Assemble plated patterns	8
MEM04013B	Develop and manufacture polystyrene patterns	2
MEM04014B	Develop and manufacture production patterns	8
MEM04015B	Develop and manufacture vacuum forming moulds and associated equipment	6
MEM04016C	Develop and manufacture precision models	6
MEM04017B	Develop and manufacture gear, conveyor screw and propeller patterns	4
MEM04018B	Perform general woodworking machine operations	4
MEM04019B	Perform refractory installation and repair	4
MEM05001B	Perform manual soldering/desoldering - electrical/electronic components	4
MEM05002B	Perform high reliability soldering and desoldering	4
MEM05003B	Perform soft soldering	2
MEM05004C	Perform routine oxy acetylene welding	2
MEM05005B	Carry out mechanical cutting	2
MEM05006C	Perform brazing and/or silver soldering	2
MEM05007C	Perform manual heating and thermal cutting	2
MEM05008C	Perform advanced manual thermal	2

Unit code	Unit title	P
	cutting, gouging and shaping	
MEM05009C	Perform automated thermal cutting	2
MEM05010C	Apply fabrication, forming and shaping techniques	8
MEM05011D	Assemble fabricated components	8
MEM05012C	Perform routine manual metal arc welding	2
MEM05013C	Perform manual production welding	2
MEM05014C	Monitor quality of production welding/fabrications	2
MEM05015D	Weld using manual metal arc welding process	4
MEM05016C	Perform advanced welding using manual metal arc welding process	4
MEM05017D	Weld using gas metal arc welding process	4
MEM05018C	Perform advanced welding using gas metal arc welding process	4
MEM05019D	Weld using gas tungsten arc welding process	4
MEM05020C	Perform advanced welding using gas tungsten arc welding process	4
MEM05022C	Perform advanced welding using oxy acetylene welding process	6
MEM05023C	Weld using submerged arc welding process	4
MEM05026C	Apply welding principles	4
MEM05036C	Repair/replace/modify fabrications	4
MEM05037C	Perform geometric development	6

Unit code	Unit title	P
MEM05038B	Perform advanced geometric development - cylindrical/rectangular	2
MEM05039B	Perform advanced geometric development - conical	2
MEM05040B	Perform advanced geometric development - transitions	4
MEM05041B	Weld using powder flame spraying	4
MEM05047B	Weld using flux core arc welding process	4
MEM05048B	Perform advanced welding using flux core arc welding process	4
MEM05049B	Perform routine gas tungsten arc welding	2
MEM05050B	Perform routine gas metal arc welding	2
MEM05051A	Select welding processes	2
MEM05052A	Apply safe welding practices	4
MEM05053A	Set and edit computer controlled thermal cutting machines	4
MEM05054A	Write basic NC/CNC programs for thermal cutting machines	4
MEM06001B	Perform hand forging	4
MEM06002B	Perform hammer forging	4
MEM06003C	Carry out heat treatment	6
MEM06004B	Select heat treatment processes and test finished product	6
MEM06005B	Perform drop and upset forging	4
MEM06006C	Repair springs	4

Unit code	Unit title	P
MEM06008A	Hammer forge complex shapes	4
MEM06009A	Hand forge complex shapes	4
MEM08001B	Perform wire, jig and barrel load/unload work	4
MEM08002C	Pre-treat work for subsequent surface coating	4
MEM08003C	Perform electroplating operations	6
MEM08004B	Finish work using wet, dry and vapour deposition methods	4
MEM08005B	Prepare and produce specialised coatings	4
MEM08006B	Produce clear and/or coloured and/or sealed anodised films on aluminium	2
MEM08007B	Control surface finish production and finished product quality	4
MEM08008B	Operate and control surface finishing waste treatment process	3
MEM08009C	Make up solutions	2
MEM08010B	Manually finish/polish materials	6
MEM08011B	Prepare surfaces using solvents and/or mechanical means	2
MEM08012B	Prepare surfaces by abrasive blasting (basic)	4
MEM08013B	Prepare surfaces by abrasive blasting (advanced)	4
MEM08014B	Apply protective coatings (basic)	4
MEM08015B	Apply protective coatings (advanced)	4
MEM08016B	Control blast coating by-products, materials and emissions	1

Unit code	Unit title	P
MEM08018B	Electroplate engineering coatings	6
MEM08019B	Electroplate protective finishes	6
MEM08020B	Electroplate decorative finishes	6
MEM09002B	Interpret technical drawing	4
MEM10001C	Erect structures	4
MEM12007D	Mark off/out structural fabrications and shapes	4
MEM18001C	Use hand tools	2
MEM18002B	Use power tools/hand held operations	2
MEM18098A	Prepare to perform work associated with fuel system installation and servicing*	2

Group B - Trade Specialisation units

Select units from the Certificate III Trade Specialisation units listed in Appendix 1, Volume 1 of MEM05 to bring the total value of units to at least 73 points, including any prerequisites.