



Australian Government

Department of Education, Employment and Workplace Relations

MEM20105 Certificate II in Engineering

Release: 3

MEM20105 Certificate II in Engineering

Modification History

ISC upgrade to include new units in elective banks. Refer to Mapping of Changes.

Description

The minimum requirements for achievement of the Certificate II in Engineering are:

- completion of all of the core units of competency listed below, and
- completion of elective units from the list below to the value of at least 30 points.

Points associated with prerequisites count towards the total (refer to units and prerequisites listing in Appendix 2, Volume 1)

Appropriate elective units to the value of 6 points may be chosen from other endorsed Training Packages and accredited courses where those units are available for inclusion at Certificate II. 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.

Additional qualification descriptors

The following additional descriptors are approved for use with this qualification: Marine craft manufacturing; Surface finishing.

Pathways Information

Not Applicable

Licensing/Regulatory Information

Not Applicable

Entry Requirements

Not Applicable

Employability Skills Summary

EMPLOYABILITY SKILLS QUALIFICATION SUMMARY

Employability Skill	Industry/enterprise requirements for this qualification include:
Communication	<ul style="list-style-type: none"> • Read and interpret routine information on written job instructions and standard operating procedures. May include simple drawings • Follow verbal instructions • Enter routine and familiar information onto proforma and standard workplace forms • Orally report routine information • Use basic numeracy skills for undertaking comparison measurements
Teamwork	<ul style="list-style-type: none"> • Work alone or as part of a team • Identify work roles, communicate and cooperate with others
Problem-solving	<ul style="list-style-type: none"> • Check material/product for conformance to specification • Identify waste and correct procedures for disposal • Identify routine problems/faults in machine/process/equipment operations and act/report as required
Initiative and enterprise	<ul style="list-style-type: none"> • Be capable of applying skills and knowledge to specified situations and contexts • Identify actual and foreseeable workplace hazards/problems during course of work • Minimise wasteful use of resources including materials and services in own work
Planning and organising	<ul style="list-style-type: none"> • Select, prepare and lay out or assemble materials and equipment correctly • Conduct pre-start checks on machinery/equipment • Plan steps required to complete routine task • Identify sequence of activities/operations
Self-management	<ul style="list-style-type: none"> • Adhere to all safety requirements • Perform work in accordance with job instructions and work procedures
Learning	<ul style="list-style-type: none"> • Clarify tasks and required outcomes with appropriate personnel
Technology	<ul style="list-style-type: none"> • Use dedicated tools, equipment and machines

Packaging Rules

Core units

- select all of the units from this list

Unit code	Unit title
MEM13014A	Apply principles of occupational health and safety in the work environment
MEM14004A	Plan to undertake a routine task
MEM15002A	Apply quality systems
MEM15024A	Apply quality procedures
MEM16007A	Work with others in a manufacturing, engineering or related environment

Elective units

- select elective units from this list to the value of at least 30 points, including any prerequisites.

Unit code	Unit title	P
MEM03001B	Perform manual production assembly	4
MEM03002B	Perform precision assembly	4
MEM03003B	Perform sheet and plate assembly	4
MEM03004B	Perform electronic/electrical assembly (production)	8
MEM03005B	Rework and repair (electrical/electronic production)	8
MEM03006B	Set assembly stations	2
MEM04001B	Operate melting furnaces	4
MEM04002B	Perform gravity die casting	2
MEM04003B	Operate pressure die casting machine	4

Unit code	Unit title	P
MEM04004B	Prepare and mix sand for metal moulding	4
MEM04006B	Operate sand moulding and core making machines	8
MEM04007B	Pour molten metal	4
MEM04008B	Fettle and trim metal castings/forgings	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
MEM05012C	Perform routine manual metal arc welding	2
MEM05013C	Perform manual production welding	2
MEM05027A	Perform aluminothermic welding	2
MEM05041B	Weld using powder flame spraying	4
MEM05049B	Perform routine gas tungsten arc welding	2
MEM05050B	Perform routine gas metal arc welding	2
MEM06001B	Perform hand forging	4
MEM06002B	Perform hammer forging	4
MEM06003C	Carry out heat treatment	6

Unit code	Unit title	P
MEM06005B	Perform drop and upset forging	4
MEM06007B	Perform basic incidental heat/quenching, tempering and annealing	2
MEM07001B	Perform operational maintenance of machines/equipment	2
MEM07003B	Perform machine setting (routine)	4
MEM07015B	Set computer controlled machines/processes	2
MEM07024B	Operate and monitor machine/process	4
MEM07025B	Perform advanced machine/process operation	6
MEM07026B	Perform advanced plastic processing	6
MEM07027B	Perform advanced press operations	6
MEM07028B	Operate computer controlled machines/processes	2
MEM07029B	Perform routine sharpening/maintenance of production tools and cutters	4
MEM07030C	Perform metal spinning lathe operations (basic)	8
MEM07031C	Perform metal spinning lathe operations (complex)	4
MEM07032B	Use workshop machines for basic operations	2
MEM07033B	Operate and monitor basic boiler	6
MEM07034A	Operate and monitor intermediate class boiler	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

Unit code	Unit title	P
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
MEM09002B	Interpret technical drawing	4
MEM10002B	Terminate and connect electrical wiring	3
MEM10013A	Install split air conditioning systems and associated pipework	6
MEM11001C	Erect/dismantle scaffolding and equipment	4
MEM11002C	Erect/dismantle complex scaffolding and equipment	4
MEM11004B	Undertake dogging	4
MEM11005B	Pick and process order	4
MEM11006B	Perform production packaging	2

Unit code	Unit title	P
MEM11007B	Administer inventory procedures	4
MEM11008B	Package materials (stores and warehouse)	2
MEM11009B	Handle/move bulk fluids/gases	4
MEM11010B	Operate mobile load shifting equipment	4
MEM11011B	Undertake manual handling	2
MEM11012B	Purchase materials	6
MEM11013B	Undertake warehouse receival process	4
MEM11014B	Undertake warehouse dispatch process	4
MEM11016B	Order materials	2
MEM11017B	Organise and lead stocktakes	4
MEM11018B	Organise and maintain warehouse stock receival and/or dispatch system	6
MEM11019B	Undertake tool store procedures	4
MEM11020B	Perform advanced warehouse computer operations	4
MEM11021B	Perform advanced operation of load shifting equipment	2
MEM11022B	Operate fixed/moveable load shifting equipment	4
MEM12001B	Use comparison and basic measuring devices	2
MEM12002B	Perform electrical/electronic measurement	2
MEM12019B	Measure components using coordinate measuring machine	4
MEM12023A	Perform engineering measurements	5
MEM12024A	Perform computations	3
MEM13001B	Perform emergency first aid	1

Unit code	Unit title	P
MEM13002B	Undertake occupational health and safety activities in the workplace	3
MEM13003B	Work safely with industrial chemicals and materials	2
MEM13004B	Work safely with molten metals/glass	2
MEM13007B	Maintain water treatment systems for cooling towers	2
MEM13013B	Work safely with ionizing radiation	4
MEM14005A	Plan a complete activity	4
MEM15001B	Perform basic statistical quality control	2
MEM15003B	Use improvement processes in team activities	4
MEM16002C	Conduct formal interviews and negotiations	4
MEM16004B	Perform internal/external customer service	2
MEM16005A	Operate as a team member to conduct manufacturing, engineering or related activities	2
MEM16006A	Organise and communicate information	2
MEM16008A	Interact with computing technology	2
MEM17001B	Assist in development and deliver training in the workplace	2
MEM17002B	Conduct workplace assessment	2
MEM17003A	Assist in the provision of on the job training	2
MEM18001C	Use hand tools	2
MEM18002B	Use power tools/hand held operations	2
MEM18013B	Perform gland packing	2
MEM18024B	Maintain engine cooling systems	2
MEM18025B	Service combustion engines	2

Unit code	Unit title	P
MEM18026C	Test compression ignition fuel systems	4
MEM18027C	Overhaul engine fuel system components	8
MEM18028B	Maintain engine lubrication systems	2
MEM18029B	Tune diesel engines	4
MEM18038B	Maintain wheels and tyres	2
MEM18055B	Dismantle, replace and assemble engineering components	3
MEM18071B	Connect/disconnect fluid conveying system components	2
MEM18072B	Manufacture fluid conveying conductor assemblies	4
MEM18084A	Commission and decommission split air conditioning systems	4
MEM18085A	Install, service and repair domestic air conditioning and refrigeration appliances	6
MEM18086B	Test, recover, evacuate and charge refrigeration systems	4
MEM19001B	Perform jewellery metal casting	6
MEM19002B	Prepare jewellery illustrations	4
MEM19003B	Handle gem materials	2
MEM19004B	Handle and examine gemstone materials	6
MEM19006B	Replace watch batteries	1
MEM19007B	Perform gemstone setting	6
MEM19009B	Perform investment procedures for lost wax casting process	1
MEM19010B	Produce rubber moulds for lost wax casting process	2
MEM19011B	Perform wax injection of moulds for lost wax	2

Unit code	Unit title	P
	casting process	
MEM19014B	Perform hand engraving	4
MEM19015B	Perform jewellery enamelling	4
MEM19016B	Construct jewellery components	4
MEM19017B	Fabricate jewellery items	6
MEM19020B	Fault-find and maintain micro-mechanisms	4
MEM19021B	Diagnose and service micro-mechanisms	6
MEM20001A	Produce keys	4
MEM20002A	Assemble and test lock mechanisms	6
MEM20003A	Install and upgrade locks and hardware	4
MEM20004A	Gain entry	4
MEM21001A	Replace watch batteries, capacitors and bands	2
MEM21002A	Perform watch movement exchange	2
MEM21003A	Perform watch case servicing, repair and refurbishment	4
MEM21004A	Clean watch and clock components	2
MEM21005A	Diagnose faults in quartz watches	2
MEM21006A	Service quartz watches	4
MEM21007A	Service complex quartz watches	4
MEM21008A	Service mechanical watches	4
MEM25001B	Apply fibre-reinforced materials	2
MEM25002B	Form and integrate fibre-reinforced structures	4
MEM25004B	Fair and shape surfaces	2
MEM25006B	Undertake marine sheathing operations	2

Unit code	Unit title	P
MEM25007B	Maintain marine vessel surfaces	4
MEM25011B	Install marine systems	8
MEM25012B	Install and test operations of marine auxiliary systems	6
MEM25014B	Perform marine slipping operations	2
MEM25015A	Assemble and install equipment and accessories/ancillaries	2
MEM26007A	Select and use reinforcing appropriate for product	4
MEM26008A	Select and use resin systems appropriate for product	4
MEM26009A	Select and use cores and fillers appropriate for product	2
MEM50002B	Work safely on marine craft	1
MEM50003B	Follow work procedures to maintain the marine environment	1
MEM50004B	Maintain quality of environment by following marina codes	1
MEM50009B	Safely operate a mechanically powered recreational boat	2
MSAENV272B	Participate in environmentally sustainable work practices	3
PMBPROD291B	Operate resin infusion moulding equipment	2
PMBPROD294B	Operate resin transfer moulding equipment	2
PMBPROD298B	Operate equipment using pre-pregs material	2