

Victorian Purchasing Guide
for
MEM Manufacturing and Engineering
Training Package
Release 2
August 2019

© State of Victoria (Department of Education and Training) 2019.

Copyright of this material is reserved to the Crown in the right of the State of Victoria. This work is licensed under a Creative Commons Attribution-NoDerivs 3.0 Australia licence (more information is available [here](#)). You are free to use, copy and distribute to anyone in its original form as long as you attribute Higher Education and Skills, Department of Education and Training (DET) as the author, and you license any derivative work you make available under the same licence.

Disclaimer

In compiling the information contained in and accessed through this resource, the Department of Education and Training has used its best endeavours to ensure that the information is correct and current at the time of publication but takes no responsibility for any error, omission or defect therein.

To the extent permitted by law, DET, its employees, agents and consultants exclude all liability for any loss or damage (including indirect, special or consequential loss or damage) arising from the use of, or reliance on the information contained herein, whether caused or not by any negligent act or omission. If any law prohibits the exclusion of such liability, DET limits its liability to the extent permitted by law, for the resupply of the information.

Third party sites

This resource may contain links to third party websites and resources. DET is not responsible for the condition or content of these sites or resources as they are not under its control.

Third party material linked from this resource is subject to the copyright conditions of the third party. Users will need to consult the copyright notice of the third party sites for conditions of usage.

Victorian Purchasing Guide — Release History

Note: RTOs should refer to the [National Register](#) for the detail of changes made in each Release.

Training Package Release	Date VPG Approved	Comments
MEM – Manufacturing and Engineering Training Package Release 2	13 August 2019	Summary of Release 2.0 changes: <ul style="list-style-type: none">• 4 new qualifications• 13 transitioned/reviewed qualifications• 1 updated qualification - MEM31219• replacement out-of-date imported units in MEM31219 Certificate in III in Engineering - Industrial Electrician• 19 new units of competence• 446 transitioned units of competence
MEM – Manufacturing and Engineering Training Package Release 1	22 June 2015	Initial Release of the MEM Manufacturing and Engineering Training Package

**MEM Manufacturing and Engineering
Training Package
Release 3
Victorian Purchasing Guide**

CONTENTS

INTRODUCTION	2
What is a Victorian Purchasing Guide?	2
Registration	2
Transition	2
QUALIFICATIONS	3
UNITS OF COMPETENCY AND NOMINAL HOURS	4
CONTACTS AND LINKS	22
GLOSSARY	24



INTRODUCTION

What is a Victorian Purchasing Guide?

The Victorian Purchasing Guide provides information for use by Registered Training Organisations (RTOs) in the provision of Victorian government subsidised training.

Specifically the Victorian Purchasing Guide provides the following information related to the delivery of nationally endorsed Training Packages in Victoria:

- The maximum and minimum payable hours available for each qualification.
- Nominal hours for each unit of competency within the Training Package.

Registration

RTOs must be registered by either the Victorian Registration and Qualifications Authority (VRQA) or the Australian Skills Qualification Authority (ASQA) regulatory body to be eligible to issue qualifications and Statements of Attainment under the Australian Qualifications Framework (AQF).

The VRQA is the regulatory authority in Victoria responsible for the registration of Vocational Education and Training (VET) providers who offer courses to domestic students in Victoria only.

ASQA is the regulatory authority responsible for the registration of VET providers who offer training in Victoria, nationally and / or internationally.

Transition

The relationship between new units and any superseded or replaced units from the previous version of **MEM Manufacturing and Engineering Training Package Release 2** is provided in the Training Package Companion Volume Implementation Guide, available [here](#).

Information regarding transition arrangements can be obtained from the state or national VET Regulatory Authority (see Contacts and Links section).

RTOs must ensure that all training and assessment leading to issuance of qualifications or Statements of Attainment from the **MEM Manufacturing and Engineering Training Package Release 2** is conducted against the Training Package units of competency and complies with the assessment requirements.

QUALIFICATIONS

Code	Title	Minimum Payable Hours	Maximum Payable Hours
MEM10119	Certificate I in Engineering	190	200
MEM20219	Certificate II in Engineering – Production Technology	665	700
MEM30119	Certificate III in Engineering – Production Systems	960	1000
MEM30219	Certificate III in Engineering – Mechanical Trade	960	1000
MEM30319	Certificate III in Engineering – Fabrication Trade	960	1000
MEM30619	Certificate III in Jewellery Manufacture	960	1000
MEM30719	Certificate III in Marine Craft Construction	960	1000
MEM30819	Certificate III in Locksmithing	960	1000
MEM30919	Certificate III in Boating Services	610	640
MEM31019	Certificate III in Watch and Clock Service and Repair	960	1000
MEM31119	Certificate III in Engineering - Composites Trade	960	1000
MEM31219	Certificate III in Engineering - Industrial Electrician	1055	1100
MEM31319	Certificate III in Refrigeration and Air Conditioning	960	1000
MEM31419	Certificate III in Engineering – Fixed and Mobile Plant Mechanic	960	1000
MEM31519	Certificate III in Engineering – Toolmaking Trade	1065	1120
MEM31719	Certificate III in Engineering – Casting and Moulding Trade	960	1000
MEM40119	Certificate IV in Engineering	1290	1360
MEM50119	Diploma of Engineering – Advanced Trade	1540	1620

UNITS OF COMPETENCY AND NOMINAL HOURS

Unit Code	Unit Title	Nominal Hours
MEM03001	Perform manual production assembly	40
MEM03002	Perform precision assembly	40
MEM03003	Perform sheet and plate assembly	40
MEM03004	Perform electronic/electrical assembly (production)	80
MEM03005	Rework and repair (electrical/electronic production)	80
MEM03006	Set assembly stations	20
MEM04001	Operate melting furnaces	40
MEM04002	Perform gravity die casting	20
MEM04003	Operate pressure die casting machine	20
MEM04004	Prepare and mix sand for metal moulding	40
MEM04006	Operate sand moulding and core making machines	80
MEM04007	Pour molten metal	40
MEM04008	Fettle and trim metal castings/forgings	40
MEM04010	Develop and manufacture wood patterns	200
MEM04011	Produce polymer patterns	80
MEM04012	Assemble plated patterns	80
MEM04013	Develop and manufacture polystyrene patterns	20
MEM04014	Develop and manufacture production patterns	80
MEM04015	Develop and manufacture vacuum forming moulds and associated equipment	60
MEM04016	Develop and manufacture precision models	60
MEM04017	Develop and manufacture gear, conveyor screw and propeller patterns	40
MEM04018	Perform general woodworking machine operations	40
MEM04019	Perform refractory installation and repair	40
MEM04020	Supervise individual ferrous melting and casting operation	40
MEM04021	Supervise individual non-ferrous melting and casting operation	40

Unit Code	Unit Title	Nominal Hours
MEM04022	Examine appropriateness of methoding for mould design	40
MEM04023	Undertake prescribed tests on foundry-related materials	40
MEM04024	Produce moulds and cores by hand	40
MEM04025	Produce moulds and cores by hand (advanced)	120
MEM05001	Perform manual soldering/desoldering - electrical/electronic components	40
MEM05002	Perform high reliability soldering and desoldering	40
MEM05003	Perform soft soldering	20
MEM05004	Perform routine oxy fuel gas welding	20
MEM05005	Carry out mechanical cutting	20
MEM05006	Perform brazing and/or silver soldering	20
MEM05007	Perform manual heating and thermal cutting	20
MEM05008	Perform advanced manual thermal cutting, gouging and shaping	20
MEM05009	Perform automated thermal cutting	20
MEM05010	Apply fabrication, forming and shaping techniques	80
MEM05011	Assemble fabricated components	80
MEM05012	Perform routine manual metal arc welding	20
MEM05013	Perform manual production welding	20
MEM05014	Monitor quality of production welding/fabrications	20
MEM05015	Weld using manual metal arc welding process	40
MEM05016	Perform advanced welding using manual metal arc welding process	40
MEM05017	Weld using gas metal arc welding process	40
MEM05018	Perform advanced welding using gas metal arc welding process	40
MEM05019	Weld using gas tungsten arc welding process	40
MEM05020	Perform advanced welding using gas tungsten arc welding process	40
MEM05022	Perform advanced welding using oxy acetylene welding process	60
MEM05023	Weld using submerged arc welding process	40
MEM05024	Perform welding supervision	120
MEM05025	Perform welding/fabrication inspection	120

Unit Code	Unit Title	Nominal Hours
MEM05026	Apply welding principles	40
MEM05027	Perform aluminothermic welding	20
MEM05036	Repair, replace and/or modify fabrications	40
MEM05037	Perform geometric development	60
MEM05038	Perform advanced geometric development - cylindrical/rectangular	20
MEM05039	Perform advanced geometric development - conical	20
MEM05040	Perform advanced geometric development - transitions	40
MEM05041	Weld using flame powder spraying	40
MEM05042	Perform welds to code standards using flux core arc welding process	60
MEM05043	Perform welds to code standards using gas metal arc welding process	60
MEM05044	Perform welds to code standards using gas tungsten arc welding process	60
MEM05045	Perform pipe welds to code standards using manual metal arc welding process	60
MEM05046	Perform welds to code standards using manual metal arc welding process	60
MEM05047	Weld using flux core arc welding process	40
MEM05048	Perform advanced welding using flux core arc welding process	40
MEM05049	Perform routine gas tungsten arc welding	20
MEM05050	Perform routine gas metal arc welding	20
MEM05051	Select welding processes	20
MEM05052	Apply safe welding practices	40
MEM05053	Set and edit computer controlled thermal cutting machines	40
MEM05054	Write basic NC/CNC programs for thermal cutting machines	40
MEM05055	Weld using oxy fuel gas welding process	40
MEM05056	Perform routine flux core arc welding	20
MEM05057	Perform routine submerged arc welding	20
MEM05058	Perform welds to code standards using oxy fuel gas welding process	60
MEM06001	Perform hand forging	40

Unit Code	Unit Title	Nominal Hours
MEM06002	Perform hammer forging	40
MEM06003	Carry out heat treatment	60
MEM06004	Select heat treatment processes and test finished product	60
MEM06005	Perform drop and upset forging	40
MEM06006	Repair springs	40
MEM06007	Perform basic incidental heat/quenching, tempering and annealing	20
MEM06008	Hammer forge complex shapes	40
MEM06009	Hand forge complex shapes	40
MEM07001	Perform operational maintenance of machines/equipment	20
MEM07002	Perform precision shaping/planing/slotting operations	40
MEM07003	Perform routine machine setting	40
MEM07004	Perform complex machine setting	80
MEM07005	Perform general machining	80
MEM07006	Perform lathe operations	40
MEM07007	Perform milling operations	40
MEM07008	Perform grinding operations	40
MEM07009	Perform precision jig boring operations	40
MEM07010	Perform tool and cutter grinding operations	40
MEM07011	Perform complex milling operations	40
MEM07012	Perform complex grinding operations	40
MEM07013	Perform machining operations using horizontal and vertical boring machines	40
MEM07014	Perform electro-discharge machining (EDM) operations	40
MEM07015	Set computer controlled machines and processes	20
MEM07016	Set and edit computer controlled machines and processes	40
MEM07018	Write basic NC and CNC programs	40
MEM07019	Program NC and CNC machining centre	20
MEM07020	Program multiple spindle and multiple axis NC and CNC machining centre	20
MEM07021	Perform complex lathe operations	40

Unit Code	Unit Title	Nominal Hours
MEM07022	Program CNC wire cut machines	20
MEM07023	Program and set up CNC manufacturing cell	60
MEM07024	Operate and monitor machine and process	40
MEM07025	Perform advanced machine and process operation	60
MEM07026	Perform advanced plastic processing	60
MEM07027	Perform advanced press operations	60
MEM07028	Operate computer controlled machines and processes	20
MEM07029	Perform routine sharpening and maintenance of production tools and cutters	40
MEM07030	Perform basic metal spinning lathe operations	80
MEM07031	Perform complex metal spinning lathe operations	40
MEM07032	Use workshop machines for basic operations	20
MEM07033	Operate and monitor basic boiler	60
MEM07039	Write programs for industrial robots	40
MEM07040	Set multistage integrated processes	40
MEM07041	Perform production machining	80
MEM07042	Undertake corrections and basic maintenance to aluminium extrusion dies and die support systems	40
MEM07043	Identify causes of faulty aluminium extrusions	60
MEM07044	Test a new aluminium extrusion die	40
MEM08001	Perform wire, jig and barrel load/unload work	40
MEM08002	Pre-treat work for subsequent surface coating	40
MEM08003	Perform electroplating operations	60
MEM08004	Finish work using wet, dry and vapour deposition methods	40
MEM08005	Prepare and produce specialised coatings	40
MEM08006	Produce clear and/or coloured and/or sealed anodised films on aluminium	20
MEM08007	Control surface finish production and finished product quality	40
MEM08008	Operate and control surface finishing waste treatment process	30
MEM08009	Make up solutions	20

Unit Code	Unit Title	Nominal Hours
MEM08010	Manually finish/polish materials	60
MEM08011	Prepare surfaces using solvents and/or mechanical means	20
MEM08012	Prepare surfaces by abrasive blasting (basic)	40
MEM08013	Prepare surfaces by abrasive blasting (advanced)	40
MEM08014	Apply protective coatings (basic)	40
MEM08015	Apply protective coatings (advanced)	40
MEM08016	Control blast coating by-products, materials and emissions	10
MEM08018	Electroplate engineering coatings	60
MEM08019	Electroplate protective finishes	60
MEM08020	Electroplate decorative finishes	60
MEM09002	Interpret technical drawing	40
MEM09003	Prepare basic engineering drawing	80
MEM09004	Perform electrical or electronic detail drafting	80
MEM09005	Perform basic engineering detail drafting	80
MEM09006	Perform advanced engineering detail drafting	40
MEM09007	Perform advanced mechanical detail drafting	40
MEM09008	Perform advanced structural detail drafting	40
MEM09009	Create 2-D drawings using computer-aided design system	80
MEM09010	Create 3-D models using computer-aided design system	40
MEM09011	Apply basic engineering design concepts	60
MEM09021	Interpret and produce drawings of curved 3-D shapes	40
MEM09022	Create 2-D code files using computer-aided manufacturing system	40
MEM09023	Create 3-D code files using computer-aided manufacturing system	60
MEM10001	Erect structures	40
MEM10002	Terminate and connect electrical wiring	30
MEM10003	Install and test electrical wiring and circuits up to 1000 volts a.c. and 1500 volts d.c.	120
MEM10004	Enter and change programmable controller operational parameters	20
MEM10005	Commission programmable controller programs	40

Unit Code	Unit Title	Nominal Hours
MEM10006	Install machine/plant	40
MEM10007	Modify control systems	60
MEM10008	Undertake commissioning procedures for plant and/or equipment	40
MEM10009	Install refrigeration and air conditioning plant and equipment	40
MEM10010	Install pipework and pipework assemblies	40
MEM10011	Terminate and connect specialist cables	30
MEM10013	Install split air conditioning systems and associated pipework	60
MEM10016	Terminate and test electrical wiring and accessories	40
MEM10018	Select cable types and sizes to suit loads and electrical installation environment	40
MEM10019	Select circuit protection devices by type and rating, fit to switchboards and install earthing	40
MEM10020	Install low voltage cabling and fit-off accessories, appliances and equipment	40
MEM10021	Inspect, test and verify electrical installations	40
MEM10022	Commission and decommission high and low voltage equipment or installations	40
MEM10023	Design and connect control switching of circuits for building services and industrial equipment	40
MEM10024	Install and troubleshoot luminaires and ancillary equipment	40
MEM10025	Undertake a capstone assessment	10
MEM11001	Erect/dismantle scaffolding and equipment	40
MEM11002	Erect/dismantle intermediate scaffolding and equipment	40
MEM11003	Coordinate erection/dismantling of complex scaffolding/equipment	40
MEM11004	Undertake dogging	40
MEM11005	Pick and process order	40
MEM11006	Perform production packaging	20
MEM11007	Administer inventory procedures	40
MEM11008	Package materials (stores and warehouse)	20
MEM11009	Handle/move bulk fluids/gases	40
MEM11010	Operate mobile load shifting equipment	40

Unit Code	Unit Title	Nominal Hours
MEM11011	Undertake manual handling	20
MEM11012	Purchase materials	60
MEM11013	Undertake warehouse receival process	40
MEM11014	Undertake warehouse dispatch process	40
MEM11015	Manage warehouse inventory system	40
MEM11016	Order materials	20
MEM11017	Organise and lead stocktakes	40
MEM11018	Organise and maintain warehouse stock receival and dispatch system	60
MEM11019	Undertake tool store procedures	40
MEM11020	Perform advanced warehouse computer operations	40
MEM11021	Perform advanced operation of load shifting equipment	20
MEM11022	Operate fixed/moveable load shifting equipment	40
MEM11023	Operate a bridge and gantry crane	10
MEM11024	Undertake basic rigging	10
MEM11025	Operate a non-slewing mobile crane of greater than three tonnes capacity	10
MEM12001	Use comparison and basic measuring devices	20
MEM12002	Perform electrical/electronic measurement	20
MEM12003	Perform precision mechanical measurement	20
MEM12004	Perform precision electrical/electronic measurement	40
MEM12005	Calibrate measuring equipment	60
MEM12006	Mark off/out (general engineering)	40
MEM12007	Mark off/out structural fabrications and shapes	40
MEM12019	Measure components using coordinate measuring machines	40
MEM12020	Set and operate coordinate measuring machines	20
MEM12021	Program coordinate measuring machines	40
MEM12022	Program coordinate measuring machines (advanced)	20
MEM12023	Perform engineering measurements	30
MEM12024	Perform computations	30

Unit Code	Unit Title	Nominal Hours
MEM12025	Use graphical techniques and perform simple statistical computations	20
MEM12026	Perform advanced trade calculations in a manufacturing, engineering or related environment	40
MEM13001	Perform emergency first aid	10
MEM13002	Undertake work health and safety activities in the workplace	30
MEM13003	Work safely with industrial chemicals and materials	20
MEM13004	Work safely with molten metals/glass	20
MEM13006	Collect and evaluate work health and safety data for an enterprise or section of an enterprise	40
MEM13007	Maintain water treatment systems for cooling towers	20
MEM13010	Supervise work health and safety in an industrial work environment	40
MEM13013	Work safely with ionizing radiation	40
MEM13015	Work safely and effectively in manufacturing and engineering	40
MEM13016	Work in hazardous areas	20
MEM13017	Apply safety practices, procedures and compliance standards associated with licensed electrical work	20
MEM14001	Schedule material deliveries	80
MEM14002	Undertake basic process planning	80
MEM14003	Undertake production scheduling	80
MEM14006	Plan work activities	40
MEM15001	Perform basic statistical quality control	20
MEM15003	Use improvement processes in team activities	40
MEM15004	Perform inspection	20
MEM15005	Select and control inspection processes and procedures	40
MEM15007	Conduct product and/or process capability studies	60
MEM15008	Perform advanced statistical quality control	20
MEM15010	Perform laboratory procedures	80
MEM15011	Exercise external quality assurance	60
MEM15012	Maintain/supervise the application of quality procedures	40
MEM16001	Give formal presentations and take part in meetings	20

Unit Code	Unit Title	Nominal Hours
MEM16002	Conduct formal interviews and negotiations	40
MEM16003	Provide advanced customer service	20
MEM16004	Perform internal/external customer service	20
MEM16005	Operate as a team member to conduct manufacturing, engineering or related activities	20
MEM16006	Organise and communicate information	20
MEM16008	Interact with computing technology	20
MEM16009	Research and analyse engineering information	20
MEM16010	Write reports	20
MEM16011	Communicate with individuals and small groups	20
MEM16012	Interpret technical specifications and manuals	40
MEM16013	Operate in a self-directed team	20
MEM16014	Report technical information	20
MEM17001	Assist in development and deliver training in the workplace	20
MEM17002	Conduct workplace assessment	20
MEM17003	Assist in the provision of on-the-job training	20
MEM18001	Use hand tools	20
MEM18002	Use power tools/hand held operations	20
MEM18003	Use tools for precision work	40
MEM18004	Maintain and overhaul mechanical equipment	40
MEM18005	Perform fault diagnosis, installation and removal of bearings	40
MEM18006	Perform precision fitting of engineering components	60
MEM18007	Maintain and repair mechanical drives and mechanical transmission assemblies	40
MEM18008	Balance equipment	20
MEM18009	Perform precision levelling and alignment of machines and engineering components	40
MEM18010	Perform equipment condition monitoring and recording	40
MEM18011	Shut down and isolate machines/equipment	20
MEM18012	Perform installation and removal of mechanical seals	20

Unit Code	Unit Title	Nominal Hours
MEM18013	Perform gland packing	20
MEM18014	Manufacture press tools and gauges	80
MEM18015	Maintain tools and dies	40
MEM18016	Analyse plant and equipment condition monitoring results	40
MEM18017	Modify mechanical systems and equipment	80
MEM18018	Maintain pneumatic system components	40
MEM18019	Maintain pneumatic systems	40
MEM18020	Maintain hydraulic system components	40
MEM18021	Maintain hydraulic systems	40
MEM18022	Maintain fluid power controls	80
MEM18023	Modify fluid power system operation	80
MEM18045	Fault find and repair electrical equipment/components up to 250 volts single phase supply	40
MEM18046	Fault find and repair electrical equipment/components up to 1000 volts a.c./1500 volts d.c.	100
MEM18048	Fault find and repair/rectify basic electrical circuits	120
MEM18049	Disconnect/reconnect fixed wired equipment up to 1000 volts a.c./1500 volts d.c.	30
MEM18050	Disconnect/reconnect fixed wired equipment over 1000 volts a.c./1500 volts d.c.	30
MEM18051	Fault find and repair/rectify complex electrical circuits	60
MEM18053	Modify fluid power control systems	60
MEM18054	Fault find, test and calibrate instrumentation systems and equipment	80
MEM18055	Dismantle, replace and assemble engineering components	30
MEM18056	Diagnose and repair analog equipment and components	100
MEM18057	Maintain/service analog/digital electronic equipment	60
MEM18058	Modify electronic equipment	40
MEM18059	Modify electronic systems	40
MEM18060	Maintain, repair control instrumentation - single and multiple loop control systems	80
MEM18061	Maintain/calibrate complex control systems	80

Unit Code	Unit Title	Nominal Hours
MEM18062	Install, maintain and calibrate instrumentation sensors, transmitters and final control elements	80
MEM18063	Terminate signal and data cables	40
MEM18064	Maintain instrumentation system components	60
MEM18065	Diagnose and repair digital equipment and components	100
MEM18066	Diagnose and repair microprocessor-based equipment	60
MEM18067	Tune control loops - multi controller or multi element systems	60
MEM18069	Maintain, repair instrumentation process control analysers	60
MEM18071	Connect and disconnect fluid conveying system components	20
MEM18072	Manufacture fluid conveying conductor assemblies	40
MEM18083	Handle fluorocarbon refrigerants according to regulations	20
MEM18084	Commission and decommission split air conditioning systems	40
MEM18085	Install, service and repair domestic air conditioning and refrigeration appliances	60
MEM18086	Test, recover, evacuate and charge refrigeration systems	40
MEM18087	Service and repair domestic and light commercial refrigeration and air conditioning equipment	60
MEM18088	Maintain and repair commercial air conditioning systems and components	40
MEM18089	Maintain and repair central air handling systems	60
MEM18090	Maintain and repair industrial refrigeration systems and components	60
MEM18091	Maintain and repair multi stage, cascade and/or ultra-cold industrial refrigeration systems	40
MEM18092	Maintain and repair commercial and/or industrial refrigeration and/or air conditioning controls	60
MEM18093	Maintain and repair integrated industrial refrigeration and/or large air handling system controls	80
MEM18094	Service and repair commercial refrigeration	60
MEM18095	Maintain and repair cooling towers/evaporative condensers and associated equipment	40
MEM18096	Maintain, repair/replace and adjust refrigerant flow controls and associated equipment	60
MEM18097	Manufacture cavity dies	80

Unit Code	Unit Title	Nominal Hours
MEM18098	Prepare to perform work associated with fuel system installation and servicing	20
MEM18100	Fault-find, test and rectify AC machines and circuits	40
MEM18102	Fault-find, test and rectify single and three-phase transformers	40
MEM18103	Fault-find, test and rectify electrical circuits and equipment	40
MEM18104	Dismantle, replace and assemble electrical components and equipment	40
MEM18105	Disconnect and reconnect high voltage fixed wired equipment	40
MEM18106	Terminate communication and data cables	40
MEM18108	Troubleshoot analog and digital electronic equipment	40
MEM18109	Troubleshoot instrumentation systems and equipment	40
MEM19001	Perform jewellery metal casting	60
MEM19002	Prepare jewellery illustrations	40
MEM19003	Handle gem materials	20
MEM19004	Handle and examine gemstone materials	60
MEM19005	Produce three-dimensional precision items	80
MEM19006	Replace watch batteries	10
MEM19007	Perform gemstone setting	60
MEM19008	Prepare jewellery designs	60
MEM19009	Perform investment procedures for lost wax casting process	10
MEM19010	Produce rubber moulds for lost wax casting process	20
MEM19011	Perform wax injection of moulds for lost wax casting process	20
MEM19012	Produce jewellery wax model	40
MEM19013	Produce jewellery metal masters	40
MEM19014	Perform hand engraving	40
MEM19015	Perform jewellery enamelling	40
MEM19016	Construct jewellery components	40
MEM19017	Fabricate jewellery items	60
MEM19018	Repair jewellery items	60
MEM19020	Fault find and maintain micro-mechanisms	40

Unit Code	Unit Title	Nominal Hours
MEM19021	Diagnose and service micro-mechanisms	60
MEM19022	Perform precision micro-mechanism diagnosis and servicing	60
MEM20001	Produce keys	40
MEM20002	Assemble and test lock mechanisms	60
MEM20003	Install and upgrade locks and hardware	40
MEM20004	Gain entry	40
MEM20005	Install and maintain door control devices/systems	20
MEM20006	Maintain and service mechanical locking devices	60
MEM20007	Plan and prepare a masterkey system	60
MEM20008	Develop and implement a masterkey system	40
MEM20009	Gain entry and reinstate fire and security containers	40
MEM20010	Gain entry and reinstate automotive locking systems	40
MEM20011	Service and repair fire and security containers	60
MEM20012	Service and repair mechanical automotive locking systems	60
MEM20013	Service automotive transponder systems	20
MEM20014	Perform a site security survey	20
MEM21001	Replace watch batteries, capacitors and bands	20
MEM21002	Perform watch movement exchange	20
MEM21003	Perform watch case servicing, repair and refurbishment	40
MEM21004	Clean watch and clock components	20
MEM21005	Diagnose faults in quartz watches	20
MEM21006	Service quartz watches	40
MEM21007	Service complex quartz watches	40
MEM21008	Service mechanical watches	40
MEM21009	Inspect, diagnose, adjust and repair mechanical watches	40
MEM21010	Service watch power generating systems	20
MEM21011	Service calendar and other dial indication mechanisms for watches	40
MEM21012	Service and repair mechanical watch oscillating systems	40
MEM21013	Service, test and adjust watch escapements	40

Unit Code	Unit Title	Nominal Hours
MEM21014	Service mechanical chronograph watches	60
MEM21015	Perform precision watch timing and adjustment	60
MEM21016	Install and set up clocks	20
MEM21017	Service and repair clock timepieces	60
MEM21018	Service clock escapements and oscillating systems	40
MEM21019	Service and repair clock striking mechanisms	40
MEM21020	Service and repair clock chiming mechanisms	60
MEM21021	Restore clockwork mechanisms	60
MEM21022	Manufacture watch and clock components	60
MEM21023	Plan, set up and operate horological workshop or service centre	40
MEM25001	Apply fibre-reinforced materials	20
MEM25002	Form and integrate fibre-reinforced structures	40
MEM25003	Set up marine vessel structures	40
MEM25004	Fair and shape surfaces	20
MEM25005	Construct and assemble marine vessel timber components	80
MEM25006	Undertake marine sheathing operations	20
MEM25007	Maintain marine vessel surfaces	40
MEM25008	Repair marine vessel surfaces and structures	40
MEM25009	Form timber shapes using hot processes	20
MEM25010	Perform fitout procedures	40
MEM25011	Install marine systems	80
MEM25012	Install and test operations of marine auxiliary systems	60
MEM25013	Produce three-dimensional plugs/moulds	120
MEM25014	Perform marine slipping operations	20
MEM25015	Assemble and install equipment and accessories/ancillaries	20
MEM26001	Lay up composites using open moulding techniques	60
MEM26002	Lay up composites using vacuum closed moulding techniques	60
MEM26003	Lay up composites using pressure closed moulding techniques	80
MEM26004	Make basic plugs for composites fabrication	30

Unit Code	Unit Title	Nominal Hours
MEM26005	Make basic moulds for composites fabrications	30
MEM26006	Mark and cut out sheets for composite use	40
MEM26007	Select and use reinforcing appropriate for product	40
MEM26008	Select and use resin systems appropriate for product	40
MEM26009	Select and use cores and fillers appropriate for product	20
MEM26010	Store and handle composite materials	20
MEM26011	Determine materials and techniques for a composite component or product	60
MEM26012	Record and trial work processes for one-off composite products	40
MEM26013	Select and use composite processes or systems appropriate for product	40
MEM26014	Adjust resin chemicals for current conditions	40
MEM26015	Select and apply repair techniques	60
MEM26016	Select and use joining techniques	60
MEM26017	Prepare composite or other substrate surfaces	40
MEM26018	Organise composite trials	40
MEM26019	Finish a composite product	40
MEM26020	Identify and interpret required standards for composites	20
MEM27001	Maintain and repair stationary and mobile plant engine cooling systems	40
MEM27002	Test and repair compression ignition systems	40
MEM27003	Overhaul engine fuel system components	40
MEM27004	Maintain and repair engine lubrication systems	20
MEM27005	Tune diesel engines	40
MEM27006	Diagnose and rectify batteries, low voltage sensors and circuits	40
MEM27007	Diagnose and rectify low voltage starting systems	20
MEM27008	Maintain induction, exhaust and emission control system	30
MEM27009	Diagnose and rectify braking system	40
MEM27010	Diagnose and rectify low voltage charging systems	20
MEM27011	Maintain track type undercarriage on mobile plant	20

Unit Code	Unit Title	Nominal Hours
MEM27012	Maintain mobile plant suspension systems	40
MEM27013	Maintain steering systems	20
MEM27014	Diagnose and rectify automatic transmission	20
MEM27015	Diagnose and rectify drive line and final drives	40
MEM27016	Diagnose and maintain electronic controlling systems on mobile and stationary plant	30
MEM27017	Maintain, fault find and rectify hydraulic systems for mobile plant	60
MEM27018	Test, diagnose and rectify mobile and stationary plant external monitoring and control systems	40
MEM27019	Diagnose, repair and replace diesel engines in stationary and mobile plant	50
MEM27020	Apply knowledge of large combustion engine operations to service and maintenance tasks	20
MEM27021	Maintain, fault find and repair stationary plant gas turbine engine	60
MEM27022	Maintain, fault find and repair traction drive mechanics	40
MEM27023	Diagnose and rectify fieldbus circuits in mobile and stationary plant and equipment	40
MEM27024	Diagnose and rectify mobile plant hydrostatic systems	40
MEM27025	Maintain, diagnose and rectify fluid power controls in mobile equipment	60
MEM27026	Service and repair mobile plant air conditioning systems	40
MEM27027	Install or modify mobile plant air conditioning systems	40
MEM27028	Diagnose and rectify manual transmissions	60
MEM27029	Maintain wheels and tyres	40
MEM27030	Perform engine bottom-end overhaul	40
MEM27031	Perform engine top-end overhaul	80
MEM27032	Service combustion engines	20
MEM27033	Perform advanced equipment testing and diagnostics on mobile plant and equipment	80
MEM50001	Classify recreational boating technologies and features	20
MEM50002	Work safely on marine craft	10
MEM50003	Follow work procedures to maintain the marine environment	10

Unit Code	Unit Title	Nominal Hours
MEM50004	Maintain quality of environment by following marina codes	10
MEM50005	Refuel vessels	40
MEM50006	Check operational capability of marine craft	40
MEM50007	Check operational capability of sails and sail operating equipment	20
MEM50008	Carry out trip preparation and planning	40
MEM50009	Safely operate a mechanically powered recreational boat	20
MEM50010	Respond to boating emergencies and incidents	40

CONTACTS AND LINKS

Curriculum Maintenance Manager (CMM)		
Engineering Industries	The CMM Service is provided on behalf of Higher Education and Skills. CMM Service Executive Officers can assist with questions on payable and nominal hours.	George Adda Box Hill Institute of TAFE, Private Bag 2014, Box Hill, Victoria, 3128 Phone: (03) 9286 9880 Fax: (03) 9286 9800 Email: g.adda@bhtafe.edu.au
Service Skills Organisation (SSO)		
Innovation & Business Skills Australia (IBSA)	This SSO is responsible for developing this MEM Manufacturing and Engineering Training Package and can be contacted for further information.	Address: Level 11, 176 Wellington Parade, East Melbourne, VIC 3002. Phone: 03 9815 7099 Email: manufacturing@ibsa.org.au The IBSA website can be found here .
National Register for VET in Australia		
Training.gov.au (TGA)	TGA is the Australian government's official National Register of information on Training Packages, qualifications, courses, units of competency and RTOs.	National Register website can be found here .
Australian Government		
Department of Employment, Skills, Small and Family Business	The Commonwealth Department is responsible for national policies and programmes that help Australians access quality vocational education and training.	The Commonwealth Department of Employment, Skills, Small and Family Business website can be found here
State Government		
Department of Education and Training (DET)	DET is the State Training Authority responsible for supporting implementation of Vocational Education and Training (VET) in Victoria.	(03) 9637 2000 The Victorian Department of Education and Training website can be found here
National VET Regulatory Authority		
Australian Skills Quality Authority (ASQA)	ASQA is the national regulator for Australia's VET sector.	Info line: 1300 701 801 ASQA's website can be found here
Victorian VET Regulatory Authority		
Victorian Registration and Qualifications Authority (VRQA)	The VRQA is a statutory authority responsible for the registration and regulation of Victorian RTOs and for the regulation of apprenticeships and traineeships in Victoria.	(03) 9637 2806 VRQA's website can be found here

Industry Regulatory Bodies		
Energy Safe Victoria	The industry Regulatory body can provide advice on licensing, legislative or regulatory requirements which may impact on the delivery of training or the issuance of qualifications in this Training Package.	Phone: (03) 9203 9700 Fax: (03) 9686 2197 Email: info@esv.vic.gov.au ESV website can be found here
WorkSafe Victoria	WorkSafe needs to provide written verification before High Risk Work Units can be added to an RTO's scope of registration.	Info line: 1800 136 089 WorkSafe Victoria website can be found here

GLOSSARY

Code	Nationally endorsed Training Package qualification code.
Title	Nationally endorsed Training Package qualification title.
Unit Code	Nationally endorsed Training Package unit code.
Unit Title	Nationally endorsed Training Package unit title.
Maximum Payable Hours	<p>The maximum number of hours the Victorian Government will subsidise under Skills First funding for the achievement of the minimum realistic vocational outcome of the qualification, as determined by the qualification packaging rules. The Maximum Payable Hours do not cover every possible combination of core and elective units available for a specific qualification.</p> <p>Minimum payable hours reflect a calculated minimum number of hours that could deliver a minimum realistic vocational outcome, based on efficiencies of contextualisation and integration.</p>
Scope of Registration	Scope of registration specifies the AQF qualifications and/or units of competency the training organisation is registered to issue and the industry training and/or assessment services it is registered to provide.
Nominal Hours	Nominal hours reflect the anticipated time taken to deliver and assess the outcomes of a unit of competency excluding unsupervised delivery or the time taken for repeated practical application of skills. Nominal hours are determined by the Victorian State Training Authority (DET) and are primarily developed for funding purposes in Victoria.