Victorian Purchasing Guide
for
MEM05 Metal and Engineering Training Package
Version 11

February 2014

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Victorian Purchasing Guide — Version History

Training Package Version	Date VPG Released	Comments
MEM05 Metals and Engineering Training Package V11	10 February 2014	• One new qualification: MEM20413 Certificate II in Engineering Pathways. • Seven (7) new engineering pathways units of competency.
MEM05 Metals and Engineering Training Package V10	28th October 2013	• 3 new MEM units of competency

MEM05 Metals and Engineering Training Package V9	25th March 2013	• 74 new MEM units of competency
		• 32 existing MEM units replaced/not carried forward
		• Three updated qualifications with the inclusion of a range of additional electives:
		  • MEM50212 Diploma of Engineering – Technical
		  • MEM60112 Advanced Diploma of Engineering
		  • MEM80112 Vocational Graduate Diploma of Engineering

MEM05 Metals and Engineering Training Package V8	15th October 2012	One new qualification: • MEM40412 Certificate IV in Engineering Drafting • 25 new units of competency • 4 existing units replaced • Six additional imported units of competency.
MEM05 Metals and Engineering Training Package V7	27th June 2012	1 new qualification • MEM31112 Certificate III in Engineering - Composites Trade • 21 new units of competency
MEM05 Metals and Engineering Training Package V6	8th May 2012	2 new qualifications • MEM40311 Certificate IV in Advanced Jewellery Manufacture • MEM80111 Vocational Graduate Diploma of Engineering • 46 new units of competency • 32 new imported units

CONTENTS

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 nominal hour range (minimum-maximum) available for each qualification.
- Nominal hours for each unit of competency within the Training Package.
- Sample Training Programs

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 Quality Framework (AQF).

The VRQA is the regulatory authority for Victoria that registers VET training organisations who provide courses to domestic students only and who only offer training in Victoria.

To register to provide training to international students and in other Australian states and territories you will need to apply with ASQA.

QUALIFICATIONS

Code	Title	Qualification Nominal Hour Range	
		Minimum	Maximum
MEM10105	Certificate I in Engineering	280	280
MEM10205	Certificate I in Boating Services	160	250
MEM20105	Certificate II in Engineering	320	390
MEM20205	Certificate II in Engineering – Production Technology	660	700
MEM20305	Certificate II in Boating Services	210	340
MEM20413	Certificate II in Engineering Pathways	390	420
MEM30105	Certificate III in Engineering – Production Systems	960	1000
MEM30205	Certificate III in Engineering – Mechanical Trade	960	1000
MEM30305	Certificate III in Engineering – Fabrication Trade	960	1000
MEM30405	Certificate III in Engineering – Electrical/Electronic Trade	960	1000
MEM30505	Certificate III in Engineering – Technical	230	430
MEM30605	Certificate III in Jewellery Manufacture	960	1000
MEM30705	Certificate III in Marine Craft Construction	960	1000
MEM30805	Certificate III in Locksmithing	960	1000
MEM30905	Certificate III in Boating Services	380	640
MEM31010	Certificate III in Watch and Clock Service and Repair	960	1000
MEM31112	Certificate III in Engineering - Composites Trade	960	1000
MEM40105	Certificate IV in Engineering	1320	1360
MEM40205	Certificate IV in Boating Services	590	890
MEM40311	Certificate IV in Advanced Jewellery Manufacture	1320	1360
MEM40412	Certificate IV in Engineering Drafting	710	750
MEM50105	Diploma of Engineering – Advanced Trade	1580	1620
MEM50212	Diploma of Engineering – Technical	600	1300
MEM50311	Diploma of Jewellery and Object Design	930	1020
MEM60112	Advanced Diploma of Engineering	1200	1900
MEM60211	Advanced Diploma of Jewellery and Object Design	1520	1680
MEM80112	Vocational Graduate Diploma of Engineering	450	630

UNITS OF COMPETENCY AND NOMINAL HOURS

RTOs are advised that there is a mapping inside the Training Package that describes the relationship between new units and superseded or replaced units from the previous version of **MEM05 Metals and Engineering Training Package.** Information regarding transition arrangements can be obtained from the state or national VET Regulating Authority (see Contacts and Links section).

You must be sure that all training and assessment leading to qualifications or Statements of Attainment from the **MEM05 Metals and Engineering Training Package** is conducted against the Training Package units of competency and complies with the requirements in the assessment guidelines.

Listing of the Units of Competency and Nominal Hours

Unit Code	Unit Title	Nominal Hours
MEM03001B	Perform manual production assembly	40
MEM03002B	Perform precision assembly	40
MEM03003B	Perform sheet and plate assembly	40
MEM03004B	Perform electronic/electrical assembly (production)	80
MEM03005B	Rework and repair (electrical/electronic production)	80
MEM03006B	Set assembly stations	20
MEM04001B	Operate melting furnaces	40
MEM04002B	Perform gravity die casting	20
MEM04003B	Operate pressure die casting machine	20
MEM04004B	Prepare and mix sand for metal moulding	40
MEM04005C	Produce moulds and cores by hand (jobbing)	160
MEM04006B	Operate sand moulding and core making machines	80
MEM04007B	Pour molten metal	40
MEM04008B	Fettle and trim metal castings/forgings	40
MEM04010B	Develop and manufacture wood patterns	200
MEM04011B	Produce polymer patterns	80
MEM04012B	Assemble plated patterns	80
MEM04013B	Develop and manufacture polystyrene patterns	20
MEM04014B	Develop and manufacture production patterns	80
MEM04015B	Develop and manufacture vacuum forming moulds and associated equipment	60
MEM04016C	Develop and manufacture precision models	60
MEM04017B	Develop and manufacture gear, conveyor screw and propeller patterns	40
MEM04018B	Perform general woodworking machine operations	40
MEM04019B	Perform refractory installation and repair	40
MEM04020A	Supervise individual ferrous melting and casting operation	40
MEM04021A	Supervise individual non ferrous melting and casting operation	40
MEM04022A	Examine appropriateness of methoding for mould design	40
MEM04023A	Undertake prescribed tests on foundry related materials	40
MEM05001B	Perform manual soldering/desoldering - electrical/electronic components	40

Unit Code	Unit Title	Nominal Hours
MEM05002B	Perform high reliability soldering and desoldering	40
MEM05003B	Perform soft soldering	20
MEM05004C	Perform routine oxy acetylene welding	20
MEM05005B	Carry out mechanical cutting	20
MEM05006C	Perform brazing and/or silver soldering	20
MEM05007C	Perform manual heating and thermal cutting	20
MEM05008C	Perform advanced manual thermal cutting, gouging and shaping	20
MEM05009C	Perform automated thermal cutting	20
MEM05010C	Apply fabrication, forming and shaping techniques	80
MEM05011D	Assemble fabricated components	80
MEM05012C	Perform routine manual metal arc welding	20
MEM05013C	Perform manual production welding	20
MEM05014C	Monitor quality of production welding/fabrications	20
MEM05015D	Weld using manual metal arc welding process	40
MEM05016C	Perform advanced welding using manual metal arc welding process	40
MEM05017D	Weld using gas metal arc welding process	40
MEM05018C	Perform advanced welding using gas metal arc welding process	40
MEM05019D	Weld using gas tungsten arc welding process	40
MEM05020C	Perform advanced welding using gas tungsten arc welding process	40
MEM05022C	Perform advanced welding using oxy acetylene welding process	60
MEM05023C	Weld using submerged arc welding process	40
MEM05024B	Perform welding supervision	120
MEM05025C	Perform welding/fabrication inspection	120
MEM05026C	Apply welding principles	40
MEM05027A	Perform aluminothermic welding	20
MEM05036C	Repair/replace/modify fabrications	40
MEM05037C	Perform geometric development	60
MEM05038B	Perform advanced geometric development - cylindrical/rectangular	20
MEM05039B	Perform advanced geometric development - conical	20
MEM05040B	Perform advanced geometric development - transitions	40
MEM05041B	Weld using powder flame spraying	40
MEM05042B	Perform welds to code standards using flux core arc welding process	60
MEM05043B	Perform welds to code standards using gas metal arc welding process	60
MEM05044B	Perform welds to code standards using gas tungsten arc welding process	60
MEM05045B	Perform pipe welds to code standards using manual metal arc welding process	60
MEM05046B	Perform welds to code standards using manual metal arc welding process	60
MEM05047B	Weld using flux core arc welding process	40
MEM05048B	Perform advanced welding using flux core arc welding process	40
MEM05049B	Perform routine gas tungsten arc welding	20

Unit Code	Unit Title	Nominal Hours
MEM05050B	Perform routine gas metal arc welding	20
MEM05051A	Select welding processes	20
MEM05052A	Apply safe welding practices	40
MEM05053A	Set and edit computer controlled thermal cutting machines	40
MEM05054A	Write basic NC/CNC programs for thermal cutting machines	40
MEM06001B	Perform hand forging	40
MEM06002B	Perform hammer forging	40
MEM06003C	Carry out heat treatment	60
MEM06004B	Select heat treatment processes and test finished product	60
MEM06005B	Perform drop and upset forging	40
MEM06006C	Repair springs	40
MEM06007B	Perform basic incidental heat/quenching, tempering and annealing	20
MEM06008A	Hammer forge complex shapes	40
MEM06009A	Hand forge complex shapes	40
MEM07001B	Perform operational maintenance of machines/equipment	20
MEM07002B	Perform precision shaping/planing/slotting operations	40
MEM07003B	Perform machine setting (routine)	40
MEM07004B	Perform machine setting (complex)	80
MEM07005C	Perform general machining	80
MEM07006C	Perform lathe operations	40
MEM07007C	Perform milling operations	40
MEM07008D	Perform grinding operations	40
MEM07009B	Perform precision jig boring operations	40
MEM07010B	Perform tool and cutter grinding operations	40
MEM07011B	Perform complex milling operations	40
MEM07012B	Perform complex grinding operations	40
MEM07013B	Perform machining operations using horizontal and/or vertical boring machines	40
MEM07014B	Perform electro-discharge (EDM) machining operations	40
MEM07015B	Set computer controlled machines/processes	20
MEM07016C	Set and edit computer controlled machines/processes	40
MEM07018C	Write basic NC/CNC programs	40
MEM07019C	Program NC/CNC machining centre	20
MEM07020C	Program multiple spindle and/or multiple axis NC/CNC machining centre	20
MEM07021B	Perform complex lathe operations	40
MEM07022C	Program CNC wire cut machines	20
MEM07023C	Program and set up CNC manufacturing cell	60
MEM07024B	Operate and monitor machine/process	40
MEM07025B	Perform advanced machine/process operation	60
MEM07026B	Perform advanced plastic processing	60

Unit Code	Unit Title	Nominal Hours
MEM07027B	Perform advanced press operations	60
MEM07028B	Operate computer controlled machines/processes	20
MEM07029B	Perform routine sharpening/maintenance of production tools and cutters	40
MEM07030C	Perform metal spinning lathe operations (basic)	80
MEM07031C	Perform metal spinning lathe operations (complex)	40
MEM07032B	Use workshop machines for basic operations	20
MEM07033B	Operate and monitor basic boiler	60
MEM07034A	Operate and monitor intermediate class boiler	40
MEM07039A	Write programs for industrial robots	40
MEM07040A	Set multistage integrated processes	40
MEM07041A	Perform production machining	80
MEM07042A	Undertake corrections and basic maintenance to aluminium extrusion dies and die support systems	40
MEM07043A	Identify causes of faulty aluminium extrusions	60
MEM07044A	Test a new aluminium extrusion die	40
MEM08001B	Perform wire, jig and barrel load/unload work	40
MEM08002C	Pre-treat work for subsequent surface coating	40
MEM08003C	Perform electroplating operations	60
MEM08004B	Finish work using wet, dry and vapour deposition methods	40
MEM08005B	Prepare and produce specialised coatings	40
MEM08006B	Produce clear and/or coloured and/or sealed anodised films on aluminium	20
MEM08007B	Control surface finish production and finished product quality	40
MEM08008B	Operate and control surface finishing waste treatment process	30
MEM08009C	Make up solutions	20
MEM08010B	Manually finish/polish materials	60
MEM08011B	Prepare surfaces using solvents and/or mechanical means	20
MEM08012B	Prepare surfaces by abrasive blasting (basic)	40
MEM08013B	Prepare surfaces by abrasive blasting (advanced)	40
MEM08014B	Apply protective coatings (basic)	40
MEM08015B	Apply protective coatings (advanced)	40
MEM08016B	Control blast coating by-products, materials and emissions	10
MEM08018B	Electroplate engineering coatings	60
MEM08019B	Electroplate protective finishes	60
MEM08020B	Electroplate decorative finishes	60
MEM09002B	Interpret technical drawing	40
MEM09003B	Prepare basic engineering drawing	80
MEM09004B	Perform electrical/electronic detail drafting	80
MEM09005B	Perform basic engineering detail drafting	80
MEM09006B	Perform advanced engineering detail drafting	40

Unit Code	Unit Title	Nominal Hours
MEM09007B	Perform advanced mechanical detail drafting	40
MEM09008B	Perform advanced structural detail drafting	40
MEM09009C	Create 2D drawings using computer aided design system	80
MEM09010C	Create 3D models using computer aided design system	40
MEM09011B	Apply basic engineering design concepts	60
MEM09021B	Interpret and produce curved 3-dimensional shapes	40
MEM09022A	Create 2D code files using computer aided manufacturing system	40
MEM09023A	Create 3D code files using computer aided manufacturing system	60
MEM09143A	Represent aeronautical engineering designs	80
MEM09144A	Represent avionic engineering designs	80
MEM09153A	Apply computer-aided modelling and data management techniques to aeronautical engineering designs	80
MEM09154A	Apply computer-aided modelling and data management techniques to avionic engineering designs	80
MEM09155A	Prepare mechanical models for computer-aided engineering	60
MEM09156A	Prepare mechatronic models for computer-aided engineering	60
MEM09157A	Perform mechanical engineering design drafting	80
MEM09158A	Perform mechatronics engineering design drafting	80
MEM09201A	Work effectively in an engineering drafting workplace	20
MEM09202A	Produce freehand sketches	40
MEM09203A	Measure and sketch site information	40
MEM09204A	Produce engineering detail drawings	80
MEM09205A	Produce electrical schematic drawings	80
MEM09206A	Produce drawings for mechanical services	60
MEM09207A	Produce drawings for reticulated services	60
MEM09208A	Detail fasteners and locking devices in mechanical drawings	40
MEM09209A	Detail bearings, seals and other componentry in mechanical drawings	40
MEM09210A	Create 3-D solid models using computer aided design system	80
MEM09211A	Produce drawings or models for industrial piping	60
MEM09212A	Produce detailed drawings of steel to non-steel connections	60
MEM09213A	Produce schematic drawings for hydraulic and pneumatic fluid power systems	60
MEM09214A	Perform advanced engineering detail drafting	80
MEM09215A	Supervise detail drafting projects	40
MEM09216A	Interpret and produce curved 3-D shapes and patterns	40
MEM09217A	Prepare plans for pipe and duct fabrication	40
MEM09218A	Participate in drafting projects for building services	40
MEM09219A	Prepare drawings for fabricated sheet metal products	40
MEM09220A	Apply surface modelling techniques to 3-D drawings	80
MEM09221A	Create 3-D model assemblies using computer aided design system	80
MEM09222A	Interpret and maintain or restore original drawings	20

Unit Code	Unit Title	Nominal Hours
MEM10001C	Erect structures	40
MEM10002B	Terminate and connect electrical wiring	30
MEM10003B	Install and test electrical wiring and circuits up to 1000 volts a.c. and 1500 volts d.c.	120
MEM10004B	Enter and change programmable controller operational parameters	20
MEM10005B	Commission programmable controller programs	40
MEM10006B	Install machine/plant	40
MEM10007C	Modify control systems	60
MEM10008B	Undertake commissioning procedures for plant and/or equipment	40
MEM10009B	Install refrigeration and air conditioning plant and equipment	40
MEM10010B	Install pipework and pipework assemblies	40
MEM10011B	Terminate and connect specialist cables	30
MEM10013A	Install split air conditioning systems and associated pipework	60
MEM11001C	Erect/dismantle scaffolding and equipment	40
MEM11002C	Erect/dismantle complex scaffolding and equipment	40
MEM11003B	Coordinate erection/dismantling of complex scaffolding/equipment	40
MEM11004B	Undertake dogging	40
MEM11005B	Pick and process order	40
MEM11006B	Perform production packaging	20
MEM11007B	Administer inventory procedures	40
MEM11008B	Package materials (stores and warehouse)	20
MEM11009B	Handle/move bulk fluids/gases	40
MEM11010B	Operate mobile load shifting equipment	40
MEM11011B	Undertake manual handling	20
MEM11012B	Purchase materials	60
MEM11013B	Undertake warehouse receival process	40
MEM11014B	Undertake warehouse dispatch process	40
MEM11015B	Manage warehouse inventory system	40
MEM11016B	Order materials	20
MEM11017B	Organise and lead stocktakes	40
MEM11018B	Organise and maintain warehouse stock receival and/or dispatch system	60
MEM11019B	Undertake tool store procedures	40
MEM11020B	Perform advanced warehouse computer operations	40
MEM11021B	Perform advanced operation of load shifting equipment	20
MEM11022B	Operate fixed/moveable load shifting equipment	40
MEM11023A	Operate a bridge and gantry crane	10
MEM11024A	Undertake basic rigging	10
MEM11025A	Operate a non-slewing mobile crane of greater than three tonnes capacity	10
MEM12001B	Use comparison and basic measuring devices	20

Unit Code	Unit Title	Nominal Hours
MEM12002B	Perform electrical/electronic measurement	20
MEM12003B	Perform precision mechanical measurement	20
MEM12004B	Perform precision electrical/electronic measurement	40
MEM12005B	Calibrate measuring equipment	60
MEM12006C	Mark off/out (general engineering)	40
MEM12007D	Mark off/out structural fabrications and shapes	40
MEM12019B	Measure components using coordinate measuring machines	40
MEM12020B	Set and operate coordinate measuring machines	20
MEM12021B	Program coordinate measuring machines	40
MEM12022B	Program coordinate measuring machines (advanced)	20
MEM12023A	Perform engineering measurements	30
MEM12024A	Perform computations	30
MEM12025A	Use graphical techniques and perform simple statistical computations	20
MEM13001B	Perform emergency first aid	10
MEM13002B	Undertake occupational health and safety activities in the workplace	30
MEM13003B	Work safely with industrial chemicals and materials	20
MEM13004B	Work safely with molten metals/glass	20
MEM13006B	Collect and evaluate occupational health and safety data for an enterprise or section of an enterprise	40
MEM13007B	Maintain water treatment systems for cooling towers	20
MEM13010A	Supervise occupational health and safety in an industrial work environment	40
MEM13013B	Work safely with ionizing radiation	40
MEM13014A	Apply principles of occupational health and safety in the work environment	10
MEM14001B	Schedule material deliveries	80
MEM14002B	Undertake basic process planning	80
MEM14003B	Undertake basic production scheduling	80
MEM14004A	Plan to undertake a routine task	10
MEM14005A	Plan a complete activity	20
MEM14065A	Plan and design aeronautical engineering projects	60
MEM14066A	Plan and design avionic engineering projects	60
MEM14083A	Apply aeronautical engineering fundamentals to support design and development of engineering projects	60
MEM14084A	Apply avionic engineering fundamentals to support design and development of engineering projects	60
MEM14085A	Apply mechanical engineering analysis techniques	60
MEM14086A	Apply mechatronic engineering analysis techniques	60
MEM14087A	Apply manufactured product design techniques	60
MEM14088A	Apply maintenance engineering techniques to equipment and component repairs and modifications	80
MEM14089A	Integrate mechanical fundamentals into an engineering task	60

Unit Code	Unit Title	Nominal Hours
MEM14090A	Integrate mechatronic fundamentals into an engineering task	60
MEM14091A	Integrate manufacturing fundamentals into an engineering task	60
MEM14092A	Integrate maintenance fundamentals into an engineering task	60
MEM15001B	Perform basic statistical quality control	20
MEM15002A	Apply quality systems	20
MEM15003B	Use improvement processes in team activities	40
MEM15004B	Perform inspection	20
MEM15005B	Select and control inspection processes and procedures	40
MEM15007B	Conduct product and/or process capability studies	60
MEM15008B	Perform advanced statistical quality control	20
MEM15010B	Perform laboratory procedures	80
MEM15011B	Exercise external quality assurance	60
MEM15012B	Maintain/supervise the application of quality procedures	40
MEM15015B	Examine trading practices	50
MEM15016B	Inspect pre-packed articles	80
MEM15017B	Use and maintain reference standards	30
MEM15018B	Investigate consumer complaints	60
MEM15019B	Conduct a field inspection	120
MEM15020C	Perform verification/certification or in-service inspection	120
MEM15021C	Conduct audits of servicing licensees and public weighbridge licensees	40
MEM15022B	Verify reference standards	80
MEM15024A	Apply quality procedures	10
MEM16001B	Give formal presentations and take part in meetings	20
MEM16002C	Conduct formal interviews and negotiations	40
MEM16003B	Provide advanced customer service	20
MEM16004B	Perform internal/external customer service	20
MEM16005A	Operate as a team member to conduct manufacturing, engineering or related activities	20
MEM16006A	Organise and communicate information	20
MEM16007A	Work with others in a manufacturing, engineering or related environment	10
MEM16008A	Interact with computing technology	20
MEM16009A	Research and analyse engineering information	20
MEM16010A	Write reports	20
MEM16011A	Communicate with individuals and small groups	20
MEM16012A	Interpret technical specifications and manuals	40
MEM16013A	Operate in a self-directed team	20
MEM16014A	Report technical information	20
MEM17001B	Assist in development and deliver training in the workplace	20
MEM17002B	Conduct workplace assessment	20

Unit Code	Unit Title	Nominal Hours
MEM17003A	Assist in the provision of on the job training	20
MEM18001C	Use hand tools	20
MEM18002B	Use power tools/hand held operations	20
MEM18003C	Use tools for precision work	40
MEM18004B	Maintain and overhaul mechanical equipment	40
MEM18005B	Perform fault diagnosis, installation and removal of bearings	40
MEM18006C	Repair and fit engineering components	60
MEM18007B	Maintain and repair mechanical drives and mechanical transmission assemblies	40
MEM18008B	Balance equipment	20
MEM18009B	Perform levelling and alignment of machines and engineering components	40
MEM18010C	Perform equipment condition monitoring and recording	40
MEM18011C	Shut down and isolate machines/equipment	20
MEM18012B	Perform installation and removal of mechanical seals	20
MEM18013B	Perform gland packing	20
MEM18014B	Manufacture press tools and gauges	80
MEM18015B	Maintain tools and dies	40
MEM18016B	Analyse plant and equipment condition monitoring results	40
MEM18017C	Modify mechanical systems and equipment	80
MEM18018C	Maintain pneumatic system components	40
MEM18019B	Maintain pneumatic systems	40
MEM18020B	Maintain hydraulic system components	40
MEM18021B	Maintain hydraulic systems	40
MEM18022B	Maintain fluid power controls	80
MEM18023B	Modify fluid power system operation	80
MEM18024B	Maintain engine cooling systems	20
MEM18025B	Service combustion engines	20
MEM18026C	Test compression ignition fuel systems	40
MEM18027C	Overhaul engine fuel system components	80
MEM18028B	Maintain engine lubrication systems	20
MEM18029B	Tune diesel engines	40
MEM18030B	Diagnose and rectify low voltage electrical systems	80
MEM18031B	Diagnose and rectify low voltage starting systems	20
MEM18032B	Maintain induction/exhaust systems	40
MEM18033B	Perform engine bottom-end overhaul	40
MEM18034B	Perform engine top-end overhaul	80
MEM18035B	Diagnose and rectify braking systems	60
MEM18037B	Diagnose and rectify low voltage charging systems	20
MEM18038B	Maintain wheels and tyres	20
MEM18039B	Diagnose and rectify track type undercarriage	40

Unit Code	Unit Title	Nominal Hours
MEM18040B	Maintain suspension systems	40
MEM18041B	Maintain steering systems	40
MEM18042C	Diagnose and rectify manual transmissions	40
MEM18043C	Diagnose and rectify automatic transmissions	80
MEM18044C	Diagnose and rectify drive line and final drives	40
MEM18045B	Fault find/repair electrical equipment/components up to 250 volts single phase supply	40
MEM18046B	Fault find/repair electrical equipment/components up to 1000 volts a.c./1500 volts d.c.	100
MEM18047B	Diagnose and maintain electronic controlling systems on mobile plant	40
MEM18048B	Fault find and repair/rectify basic electrical circuits	120
MEM18049C	Disconnect/reconnect fixed wired equipment up to 1000 volts a.c./1500 volts d.c.	30
MEM18050C	Disconnect/reconnect fixed wired equipment over 1000 volts a.c./1500 volts d.c.	30
MEM18051B	Fault find and repair/rectify complex electrical circuits	60
MEM18052B	Maintain fluid power systems for mobile plant	40
MEM18053B	Modify fluid power control systems	60
MEM18054B	Fault find, test and calibrate instrumentation systems and equipment	80
MEM18055B	Dismantle, replace and assemble engineering components	30
MEM18056B	Diagnose and repair analog equipment and components	100
MEM18057B	Maintain/service analog/digital electronic equipment	60
MEM18058C	Modify electronic equipment	40
MEM18059B	Modify electronic systems	40
MEM18060B	Maintain, repair control instrumentation - single and multiple loop control systems	80
MEM18061B	Maintain/calibrate complex control systems	80
MEM18062B	Install, maintain and calibrate instrumentation sensors, transmitters and final control elements	80
MEM18063B	Terminate signal and data cables	40
MEM18064B	Maintain instrumentation system components	60
MEM18065B	Diagnose and repair digital equipment and components	100
MEM18066B	Diagnose and repair microprocessor-based equipment	60
MEM18067B	Tune control loops - multi controller or multi element systems	60
MEM18069B	Maintain, repair instrumentation process control analysers	60
MEM18070C	Modify complex electrical circuits and systems	60
MEM18071B	Connect/disconnect fluid conveying system components	20
MEM18072B	Manufacture fluid conveying conductor assemblies	40
MEM18073A	Perform advanced equipment testing and diagnostics on mobile plant and equipment	80
MEM18084A	Commission and decommission split air conditioning systems	40
MEM18085A	Install, service and repair domestic air conditioning and refrigeration appliances	60
MEM18086B	Test, recover, evacuate and charge refrigeration systems	40

Unit Code	Unit Title	Nominal Hours
MEM18087B	Service and repair domestic and light commercial refrigeration and air conditioning equipment	60
MEM18088B	Maintain and repair commercial air conditioning systems and components	40
MEM18089B	Maintain and repair central air handling systems	60
MEM18090B	Maintain and repair industrial refrigeration systems and components	60
MEM18091B	Maintain and repair multi stage, cascade and/or ultra-cold industrial refrigeration systems	40
MEM18092B	Maintain and repair commercial and/or industrial refrigeration and/or air conditioning controls	60
MEM18093B	Maintain and repair integrated industrial refrigeration and/or large air handling system controls	80
MEM18094B	Service and repair commercial refrigeration	60
MEM18095A	Maintain and repair cooling towers/evaporative condensers and associated equipment	40
MEM18096A	Maintain, repair/replace and adjust refrigerant flow controls and associated equipment	60
MEM18097A	Manufacture cavity dies	80
MEM18098A	Prepare to perform work associated with fuel system installation and servicing	20
MEM19001B	Perform jewellery metal casting	60
MEM19002B	Prepare jewellery illustrations	40
MEM19003B	Handle gem materials	20
MEM19004B	Handle and examine gemstone materials	60
MEM19005B	Produce three-dimensional precision items	80
MEM19006B	Replace watch batteries	10
MEM19007B	Perform gemstone setting	60
MEM19008B	Prepare jewellery designs	60
MEM19009B	Perform investment procedures for lost wax casting process	10
MEM19010B	Produce rubber moulds for lost wax casting process	20
MEM19011B	Perform wax injection of moulds for lost wax casting process	20
MEM19012B	Produce jewellery wax model	40
MEM19013B	Produce jewellery metal masters	40
MEM19014B	Perform hand engraving	40
MEM19015B	Perform jewellery enamelling	40
MEM19016B	Construct jewellery components	40
MEM19017B	Fabricate jewellery items	60
MEM19018B	Repair jewellery items	60
MEM19020B	Fault-find and maintain micro-mechanisms	40
MEM19021B	Diagnose and service micro-mechanisms	60
MEM19022B	Perform precision micro-mechanism diagnosis and servicing	60
MEM19023A	Apply drawing and rendering techniques to jewellery or object design	40

Unit Code	Unit Title	Nominal Hours
MEM19024A	Use CAD to create and display 3D jewellery and object models	40
MEM19025A	Create and present designs for jewellery and other 3D objects	40
MEM19026A	Investigate quality and application of jewellery materials	20
MEM19027A	Produce life drawings for presenting jewellery and object designs	60
MEM19028A	Select materials and new technologies for jewellery and 3D object design applications	40
MEM19029A	Produce a professional jewellery design and 3D object portfolio	60
MEM19030A	Research and design sustainable objects	40
MEM19031A	Produce renderings and technical drawings for jewellery and object design construction	40
MEM19032A	Design and implement mechanisms in jewellery items	60
MEM19033A	Create silversmithing objects	60
MEM19034A	Apply chain manufacture process	40
MEM19035A	Plan and apply casting techniques for jewellery and object designs	40
MEM19036A	Use specialised techniques to produce jewellery and objects	80
MEM19037A	Plan and implement chenier fabrication process	20
MEM19038A	Apply traditional techniques to jewellery and 3D object production	60
MEM19039A	Plan, conduct and supervise a jewellery and object exhibition	60
MEM19040A	Create and manufacture jewellery or object design prototypes for the mass market	60
MEM19041A	Experiment with jewellery or object designs	60
MEM19042A	Render images using computer graphics software	60
MEM19043A	Oversee jewellery or object design production	80
MEM19044A	Repair and restore antique jewellery	40
MEM19045A	Set gems in channel style settings	40
MEM19046A	Apply grain setting techniques	40
MEM19047A	Set gems in claw and bezel style settings	40
MEM19048A	Develop and apply complex borders and decorations for hand engraving	60
MEM19049A	Develop and apply heraldic designs for hand engraving	60
MEM19050A	Hand carve engraving work	60
MEM19051A	Construct multiple stone settings	40
MEM19052A	Produce complex objects using silversmithing techniques	60
MEM19053A	Create complex findings and mechanisms for jewellery items	60
MEM19054A	Fabricate platinum jewellery items	40
MEM20001A	Produce keys	40
MEM20002A	Assemble and test lock mechanisms	60
MEM20003A	Install and upgrade locks and hardware	40
MEM20004A	Gain entry	40
MEM20005A	Install and maintain door control devices/systems	20

Unit Code	Unit Title	Nominal Hours
MEM20006A	Maintain and service mechanical locking devices	60
MEM20007A	Plan and prepare a masterkey system	60
MEM20008A	Develop and implement a masterkey system	40
MEM20009A	Gain entry and reinstate fire and security containers	40
MEM20010A	Gain entry and reinstate automotive locking systems	40
MEM20011A	Service and repair fire and security containers	60
MEM20012A	Service and repair mechanical automotive locking systems	60
MEM20013A	Service automotive transponder systems	20
MEM20014A	Perform a site security survey	20
MEM21001A	Replace watch batteries, capacitors and bands	20
MEM21002A	Perform watch movement exchange	20
MEM21003A	Perform watch case servicing, repair and refurbishment	40
MEM21004A	Clean watch and clock components	20
MEM21005A	Diagnose faults in quartz watches	20
MEM21006A	Service quartz watches	40
MEM21007A	Service complex quartz watches	40
MEM21008A	Service mechanical watches	40
MEM21009A	Inspect, diagnose, adjust and repair mechanical watches	40
MEM21010A	Service watch power generating systems	20
MEM21011A	Service calendar and other dial indication mechanisms for watches	40
MEM21012A	Service and repair mechanical watch oscillating systems	40
MEM21013A	Service, test and adjust watch escapements	40
MEM21014A	Service mechanical chronograph watches	60
MEM21015A	Perform precision watch timing and adjustment	60
MEM21016A	Install and set up clocks	20
MEM21017A	Service and repair clock timepieces	60
MEM21018A	Service clock escapements and oscillating systems	40
MEM21019A	Service and repair clock striking mechanisms	40
MEM21020A	Service and repair clock chiming mechanisms	60
MEM21021A	Restore clockwork mechanisms	60
MEM21022A	Manufacture watch and clock components	60
MEM21023A	Plan, set up and operate horological workshop or service centre	40
MEM22001A	Perform engineering activities	60
MEM22002A	Manage self in the engineering environment	40
MEM22007A	Manage environmental effects of engineering activities	60
MEM22012A	Coordinate resources for an engineering project or operation	60
MEM22013A	Coordinate engineering projects	60
MEM22014A	Coordinate engineering-related manufacturing operations	60
MEM22015A	Source and estimate engineering materials requirements	40

Unit Code	Unit Title	Nominal Hours
MEM22017A	Coordinate continuous improvement and technical development in an engineering-related project or operation	40
MEM22018A	Coordinate sales and promotion of engineering-related products or services	60
MEM23003A	Operate and program computers and/or controllers in engineering situations	80
MEM23004A	Apply technical mathematics	80
MEM23005A	Apply statistics and probability techniques to engineering tasks	40
MEM23006A	Apply fluid and thermodynamics principles in engineering	80
MEM23007A	Apply calculus to engineering tasks	80
MEM23008A	Apply advanced algebra and numerical methods to engineering tasks	120
MEM23052A	Apply basic electro and control scientific principles and techniques in aeronautical engineering situations	60
MEM23063A	Select and test mechanical engineering materials	60
MEM23064A	Select and test mechatronic engineering materials	60
MEM23073A	Select and apply aeronautical engineering methods, processes and construction techniques	60
MEM23074A	Select and apply avionic engineering methods, processes and construction techniques	60
MEM23084A	Apply scientific principles and techniques in aeronautical engineering situations	60
MEM23086A	Apply scientific principles and techniques in avionic engineering situations	60
MEM23095A	Apply aeronautical system design principles and techniques in aeronautical engineering situations	60
MEM23096A	Apply avionic system design principles and techniques in avionic engineering situations	60
MEM23097A	Apply automated systems principles and techniques in aeronautical engineering situations	60
MEM23098A	Apply automated systems principles and techniques in avionic engineering situations	60
MEM23109A	Apply engineering mechanic principles	60
MEM23111A	Select electrical equipment and components for engineering applications	40
MEM23112A	Investigate electrical and electronic controllers in engineering applications	40
MEM23113A	Evaluate hydrodynamic systems and system components	60
MEM23114A	Evaluate thermodynamic systems and components	60
MEM23115A	Evaluate fluid power systems	60
MEM23116A	Evaluate programmable logic controller and related control system component applications	60
MEM23117A	Evaluate microcontrollers applications	60
MEM23118A	Apply production and service control techniques	80
MEM23119A	Evaluate continuous improvement processes	80
MEM23120A	Select mechanical machine and equipment components	80
MEM23121A	Analyse loads on frames and mechanisms	80
MEM23122A	Evaluate computer integrated manufacturing systems	80
MEM23123A	Evaluate manufacturing processes	60

Unit Code	Unit Title	Nominal Hours
MEM23124A	Measure and analyse noise and vibration	60
MEM23125A	Evaluate maintenance systems	60
MEM23126A	Evaluate industrial robotic applications	60
MEM23129A	Evaluate thermal loads in heating, ventilation, air conditioning and refrigeration	80
MEM23130A	Co-ordinate servicing and fault finding of HVAC/R control systems	60
MEM23131A	Evaluate rapid prototyping applications	60
MEM23132A	Evaluate rapid manufacturing processes	60
MEM23133A	Evaluate rapid tooling applications	60
MEM23134A	Evaluate jigs and fixtures	40
MEM23135A	Evaluate moulding tools and processes	40
MEM23136A	Evaluate stamping and forging tools	40
MEM23137A	Evaluate rolling tools and processes	40
MEM23138A	Evaluate suitability of materials for engineering related applications	40
MEM23139A	Design of a basic single zone duct distribution system	40
MEM23140A	Determine operational parameters for building HVAC hydronic systems	40
MEM23141A	Complete a building thermal performance survey	80
MEM23142A	Determine psychrometric processes and system performance	60
MEM23143A	Apply energy management principles	80
MEM23144A	Contribute to the design of a commercial refrigeration system	100
MEM23145A	Apply codes and regulations to air conditioning designs	80
MEM23146A	Contribute to the design of industrial refrigeration systems	80
MEM23147A	Contribute to the design of hydronic systems	40
MEM23148A	Develop energy management solutions	40
MEM23149A	Contribute to the design of commercial and industrial exhaust systems	40
MEM23150A	Contribute to the design of heating systems	40
MEM23151A	Commission and optimise performance of HVAC/R systems	40
MEM23152A	Apply principles of refrigeration food storage technology	40
MEM23153A	Contribute to the design of heat exchanger systems	40
MEM23154A	Analyse and service HVAC/R control systems	80
MEM234001A	Plan and manage engineering-related projects or operations	40
MEM234002A	Integrate engineering technologies	40
MEM234003A	Design machines and ancillary equipment	60
MEM234004A	Design for engineering-related noise and vibration mitigation	60
MEM234005A	Design hydrodynamic pumping systems	60
MEM234006A	Evaluate and select thermodynamic systems or sub-systems	40
MEM234007A	Design fluid power systems	40
MEM234008A	Design plant using computer simulations	40
MEM234009A	Design computer-integrated manufacturing systems	60
MEM234010A	Design microcontroller applications	40

Unit Code	Unit Title	Nominal Hours
MEM234011A	Design programmable logic controller applications	60
MEM234012A	Design integrated maintenance management systems	60
MEM234013A	Plan and design engineering-related manufacturing processes	60
MEM234014A	Design a robotic system	40
MEM234015A	Design hydronic heat exchanger systems	40
MEM234016A	Design refrigeration systems	40
MEM234017A	Design exhaust, ventilation and dust collection systems	40
MEM234018A	Design heating, ventilation, air conditioning and refrigeration control systems	60
MEM234019A	Apply finite element analysis in engineering design	40
MEM234020A	Coordinate small lot manufacture using rapid manufacture processes	40
MEM234021A	Apply statistics to technology problems	40
MEM234022A	Apply advanced calculus to technology problems	40
MEM234023A	Apply differential equations to technology problems	40
MEM234024A	Apply advanced mathematics in technology problems	40
MEM234025A	Apply numerical methods to technology problems	40
MEM234026A	Develop and coordinate engineering-related contingency plans	40
MEM234027A	Plan and manage materials supply for an engineering project or manufacturing operation	40
MEM234028A	Produce and manage technical documentation	40
MEM234029A	Produce and manage technical publications	40
MEM234030A	Provide specialised technical and engineering guidance to other technical employees	40
MEM234031A	Manage installation, commissioning or modification of machines and equipment	60
MEM234032A	Manage fluid power related technologies in an enterprise	40
MEM234033A	Lead engineering-related quality operations in an enterprise	40
MEM234034A	Manage heating, ventilation, air conditioning and refrigeration systems or projects	40
MEM234035A	Maintain and apply technical and engineering skills	40
MEM234036A	Apply configuration management procedures in engineering project management	80
MEM234037A	Perform maintenance-related integrated logistic support management activities	80
MEM234038A	Apply systems engineering procedures to engineering design project management	80
MEM24001B	Perform basic penetrant testing	20
MEM24002B	Perform penetrant testing	40
MEM24003B	Perform basic magnetic particle testing	20
MEM24004B	Perform magnetic particle testing	40
MEM24005B	Perform basic eddy current testing	20
MEM24006B	Perform eddy current testing	60
MEM24007B	Perform ultrasonic thickness testing	20
MEM24008B	Perform ultrasonic testing	60
MEM24009B	Perform basic radiographic testing	20

Unit Code	Unit Title	Nominal Hours
MEM24010B	Perform radiographic testing	60
MEM24011B	Establish non-destructive tests	120
MEM24012C	Apply metallurgy principles	40
MEM25001B	Apply fibre-reinforced materials	20
MEM25002B	Form and integrate fibre-reinforced structures	40
MEM25003B	Set up marine vessel structures	40
MEM25004B	Fair and shape surfaces	20
MEM25005B	Construct and assemble marine vessel timber components	80
MEM25006B	Undertake marine sheathing operations	20
MEM25007B	Maintain marine vessel surfaces	40
MEM25008B	Repair marine vessel surfaces and structures	40
MEM25009B	Form timber shapes using hot processes	20
MEM25010B	Perform fitout procedures	40
MEM25011B	Install marine systems	80
MEM25012B	Install and test operations of marine auxiliary systems	60
MEM25013B	Produce three-dimensional plugs/moulds	120
MEM25014B	Perform marine slipping operations	20
MEM25015A	Assemble and install equipment and accessories/ancillaries	20
MEM26001A	Lay up composites using open moulding techniques	60
MEM26002A	Lay up composites using vacuum closed moulding techniques	60
MEM26003A	Lay up composites using pressure closed moulding techniques	80
MEM26004A	Make basic plugs for composites fabrication	30
MEM26005A	Make basic moulds for composites fabrications	30
MEM26006A	Mark and cut out sheets for composite use	40
MEM26007A	Select and use reinforcing appropriate for product	40
MEM26008A	Select and use resin systems appropriate for product	40
MEM26009A	Select and use cores and fillers appropriate for product	20
MEM26010A	Store and handle composite materials	20
MEM26011A	Determine materials and techniques for a composite component or product	60
MEM26012A	Record and trial work processes for one-off composite products	60
MEM26013A	Select and use composite processes or systems appropriate for product	40
MEM26014A	Adjust resin chemicals for current conditions	40
MEM26015A	Select and apply repair techniques	60
MEM26016A	Select and use joining techniques	60
MEM26017A	Prepare composite or other substrate surfaces	40
MEM26018A	Organise composite trials	40
MEM26019A	Finish a composite product	40
MEM26020A	Identify and interpret required standards for composites	20
MEM30005A	Calculate force systems within simple beam structures	40

Unit Code	Unit Title	Nominal Hours
MEM30006A	Calculate stresses in simple structures	40
MEM30007A	Select common engineering materials	40
MEM30008A	Apply basic economic and ergonomic concepts to evaluate engineering applications	40
MEM30009A	Contribute to the design of basic mechanical systems	40
MEM30010A	Set up basic hydraulic circuits	40
MEM30011A	Set up basic pneumatic circuits	40
MEM30012A	Apply mathematical techniques in a manufacturing engineering or related environment	40
MEM30013A	Assist in the preparation of a basic workplace layout	20
MEM30014A	Apply basic just in time systems to the reduction of waste	40
MEM30015A	Develop recommendations for basic set up time improvements	20
MEM30016A	Assist in the analysis of a supply chain	20
MEM30017A	Use basic preventative maintenance techniques and tools	40
MEM30018A	Undertake basic process planning	20
MEM30019A	Use resource planning software systems in manufacturing	40
MEM30020A	Develop and manage a plan for a simple manufacturing related project	30
MEM30021A	Prepare a simple production schedule	20
MEM30022A	Undertake supervised procurement activities	20
MEM30023A	Prepare a simple cost estimate for a manufactured product	20
MEM30024A	Participate in quality assurance techniques	30
MEM30025A	Analyse a simple electrical system circuit	40
MEM30026A	Select and test components for simple electronic switching and timing circuits	20
MEM30027A	Prepare basic programs for programmable logic controllers	20
MEM30028A	Assist in sales of technical products/systems	20
MEM30029A	Use workshop equipment and processes to complete an engineering project	60
MEM30031A	Operate computer-aided design (CAD) system to produce basic drawing elements	40
MEM30032A	Produce basic engineering drawings	80
MEM30033A	Use computer-operated design (CAD) to create and display 3-D models	40
MEM50001B	Classify recreational boating technologies and features	20
MEM50002B	Work safely on marine craft	10
MEM50003B	Follow work procedures to maintain the marine environment	10
MEM50004B	Maintain quality of environment by following marina codes	10
MEM50005B	Refuel vessels	40
MEM50006B	Check operational capability of marine craft	40
MEM50007B	Check operational capability of sails and sail operating equipment	20
MEM50008B	Carry out trip preparation and planning	40
MEM50009B	Safely operate a mechanically powered recreational boat	20
MEM50010B	Respond to boating emergencies and incidents	40

Unit Code	Unit Title	Nominal Hours
MEMPE001A	Use engineering workshop machines	60
MEMPE002A	Use electric welding machines	40
MEMPE003A	Use oxy-acetylene and soldering equipment	40
MEMPE004A	Use fabrication equipment	40
MEMPE005A	Develop a career plan for the engineering and manufacturing industry	20
MEMPE006A	Undertake a basic engineering project	80
MEMPE007A	Pull apart and re-assemble engineering mechanisms	30

SAMPLE TRAINING PROGRAMS

A range of Sample Training Plans have been provided to demonstrate the flexibility of qualifications contained in the **MEM05 Metal and Engineering Training Package**, but are by no means mandatory.

Occupation / Work Function	Assistant Operator	
Qualification Title	Certificate I in Engineering	
Qualification Code	MEM10105	
Description	Appropriate for a person working in the fabrication sector of the industry.	
Notes	For advice on how to choose electives others than those listed below, please refer to the **Metals and Engineering Training Package (MEM05)** and its Qualifications Packaging Rules or contact the CMM Engineering Industries on (03) 9286 9934.	
Unit Code	**Unit Title**	**Unit Code**
Core		**Core**
MEM13014A	Apply principles of occupational health and safety in the work environment	10
MEM14004A	Plan to undertake a routine task	10
MEM15024A	Apply quality procedures	10
MEM16007A	Work with others in a manufacturing, engineering or related environment	10
Electives		
MEM03001B	Perform manual production assembly	40
MEM03003B	Perform sheet and plate assembly	40
MEM07001B	Perform operational maintenance of machines/equipment	20
MEM07024B	Operate and monitor machine/process	40
MEM13003B	Work safely with industrial chemicals and materials	20
MEM16005A	Operate as a team member to conduct manufacturing, engineering or related activities	20
MEM16006A	Organise and communicate information	20
MEM18001C	Use hand tools	20
MEM18002B	Use power tools / hand held operations	20
	Total	**280**

Occupation / Work Function	Boat Operator Assistant
Qualification Title	Certificate I in Boating Services
Qualification Code	MEM10205
Description	Appropriate for a person working as an operator assistant in the boating industry.
Notes	For advice on how to choose electives others than those listed below, please refer to the **Metals and Engineering Training Package (MEM05)** and its Qualifications Packaging Rules or contact the CMM Engineering Industries on (03) 9286 9934.

Unit Code	Unit Title	Hours
Core		
MEM13014A	Apply principles of occupational health and safety in the work environment	10
MEM14004A	Plan to undertake a routine task	10
MEM15024A	Apply quality procedures	10
MEM16007A	Work with others in a manufacturing, engineering or related environment	10
MEM50001B	Classify recreational boating technologies and features	20
MEM50002B	Work safely on marine craft	10
MEM50003B	Follow work procedures to maintain the marine environment	10
Electives		
MEM50005B	Refuel vessels	40
MEM50006B	Check operational capability of marine craft	40
MEM50010B	Respond to boating emergencies and incidents	40
	Total	**200**

Occupation / Work Function	Production Operator
Qualification Title	Certificate II in Engineering
Qualification Code	MEM20105
Description	Appropriate for a person working as a production operator in the automotive component industry.
Notes	For advice on how to choose electives others than those listed below, please refer to the **Metals and Engineering Training Package (MEM05)** and its Qualifications Packaging Rules or contact the CMM Engineering Industries on (03) 9286 9934.

Unit Code	Unit Title	Hours
Core		
MEM13014A	Apply principles of occupational health and safety in the work environment	10
MEM14004A	Plan to undertake a routine task	10
MEM15002A	Apply quality systems	20
MEM15024A	Apply quality procedures	10
MEM16007A	Work with others in a manufacturing, engineering or related environment	10
Electives		
MEM07003B	Perform machine setting (routine)	40
MEM07015B	Set computer controlled machines/processes	20
MEM07024B	Operate and monitor machine/process	40
MEM07028B	Operate computer controlled machines/processes	20
MEM09002B	Interpret technical drawing	40
MEM12023A	Perform engineering measurements	30
MEM12024A	Perform computations	30
MEM16006A	Organise and communicate information	20
MEM18001C	Use hand tools	20
MEM18002B	Use power tools/hand held operations	20
	Total	**340**

Occupation / Work Function	Boating Operator	
Qualification Title	Certificate II in Boating Services	
Qualification Code	MEM20305	
Description	Appropriate for a person working as a boating operator.	
Notes	For advice on how to choose electives others than those listed below, please refer to the **Metals and Engineering Training Package (MEM05)** and its Qualifications Packaging Rules or contact the CMM Engineering Industries on (03)9286 9934.	
Unit Code	**Unit Title**	**Hours**
Core		
MEM13014A	Apply principles of occupational health and safety in the work environment	10
MEM14004A	Plan to undertake a routine task	10
MEM15024A	Apply quality procedures	10
MEM16006A	Organise and communicate information	20
MEM16007A	Work with others in a manufacturing, engineering or related environment	10
MEM50001B	Classify recreational boating technologies and features	20
MEM50002B	Work safely on marine craft	10
MEM50003B	Follow work procedures to maintain the marine environment	10
Electives		
MEM11010B	Operate mobile load shifting equipment	40
MEM50010B	Respond to boating emergencies and incidents	40
MEM25007B	Maintain marine vessel surfaces	40
MEM50005B	Refuel vessels	40
MEM50006B	Check operational capability of marine craft	40
MSAENV272B	Participate in environmentally sustainable work practices	30
	Total	**330**

Occupation	Students wishing to articulate to Higher Education or Apprenticeship	
Qualification Title	Certificate II in Engineering Pathways	
Qualification Code	MEM20413	
Description	Appropriate for a Students undertaking VET in schools and other full time learners in preparatory programs	
Notes	For advice on how to choose electives others than those listed below, please refer to the Metal and Engineering Training Package (MEM05) and its Qualifications Packaging Rules or contact the CMM Engineering Industries on (03)9286 9934	
Unit Code	**Unit Title**	**Hours**
Core		
MEM13014A	Apply principles of occupational health and safety in the work environment	10
MEMPE005A	Develop a career plan for the engineering and manufacturing industry	20
MEMPE006A	Undertake a basic engineering project	80
MSAENV272B	Participate in environmentally sustainable work practices	30
Electives		
MEM18001C	Use hand tools	20
MEM18002B	Use power tools/hand held operations	20
MEMPE001A	Use engineering workshop machines	60
MEMPE002A	Use electric welding machines	40
MEMPE003A	Use oxy-acetylene and soldering equipment	40
MEMPE004A	Use fabrication equipment	40
MEMPE007A	Pull apart and re-assemble engineering mechanisms	30
MSAPMSUP106A	Work in a team	30
	Total	**420**

Occupation / Work Function	Production Operator/Leading Hand
Qualification Title	Certificate III in Engineering — Production Systems
Qualification Code	MEM30105
Description	Appropriate for a person working as an operator/leading hand in engineering production.
Notes	For advice on how to choose electives others than those listed below, please refer to the **Metals and Engineering Training Package (MEM05)** and its Qualifications Packaging Rules or contact the CMM Engineering Industries on (03) 9286 9934.

Unit Code	Unit Title	Hours
Core		
MEM12023A	Perform engineering measurements	30
MEM12024A	Perform computations	30
MEM13014A	Apply principles of occupational health and safety in the work environment	10
MEM14004A	Plan to undertake a routine task	10
MEM14005A	Plan a complete activity	20
MEM15002A	Apply quality systems	20
MEM15024A	Apply quality procedures	10
MEM16006A	Organise and communicate information	20
MEM16007A	Work with others in a manufacturing, engineering or related environment	10
MEM16008A	Interact with computing technology	20
MEM17003A	Assist in the provision of on the job training	20
MSAENV272B	Participate in environmentally sustainable work practices	30
Electives	**Production stream units**	
MEM03001B	Perform manual production assembly	40
MEM03002B	Perform precision assembly	40
MEM03003B	Perform sheet and plate assembly	40
MEM03006B	Set assembly stations	20
MEM07001B	Perform operational maintenance of machines/equipment	20
MEM07003B	Perform machine setting (routine)	40
MEM07004B	Perform machine setting (complex)	80
MEM07024B	Operate and monitor machine/process	40
MEM09002B	Interpret technical drawing	40
MEM18001C	Use hand tools	20
MEM18002B	Use power tools/hand held operations	20

MEM30105	Certificate III in Engineering — Production Systems (continued)	
Unit Code	**Unit Title**	**Hours**
	Specialisation units	
MEM07005C	Perform general machining	80
MEM07006C	Perform lathe operations	40
MEM07028B	Operate computer controlled machine/processes	20
MEM07029B	Perform routine sharpening/maintenance of production tools and cutters	40
MEM07015B	Set computer controlled machines/processes	20
MEM07016C	Set and edit computer controlled machines/processes	40
MEM07018C	Write basic NC/CNC programs	40
MEM12003B	Perform precision mechanical measurement	20
MEM13001B	Perform emergency first aid	10
MEM13003B	Work safely with industrial chemicals and materials	20
	Total	**960**

Occupation / Work Function	Engineering Trades Person (Mechanical)
Qualification Title	Certificate III in Engineering — Mechanical Trade
Qualification Code	MEM30205
Description	Appropriate for a person working as a mechanical engineering trades person.
Notes	For advice on how to choose electives others than those listed below, please refer to the **Metal and Engineering Training Package (MEM05)** and its Qualifications Packaging Rules or contact the CMM Engineering Industries on (03) 9286 9934.

Unit Code	Unit Title	Hours
Core		
MEM12023A	Perform engineering measurements	30
MEM12024A	Perform computations	30
MEM13014A	Apply principles of occupational health and safety in the work environment	10
MEM14004A	Plan to undertake a routine task	10
MEM14005A	Plan a complete activity	20
MEM15002A	Apply quality systems	20
MEM15024A	Apply quality procedures	10
MEM16006A	Organise and communicate information	20
MEM16007A	Work with others in a manufacturing, engineering or related environment	10
MEM16008A	Interact with computing technology	20
MEM17003A	Assist in the provision of on the job training	20
MSAENV272B	Participate in environmentally sustainable work practices	30
Electives	**Mechanical stream units**	
MEM07005C	Perform general machining	80
MEM07006C	Perform lathe operations	40
MEM07007C	Perform milling operations	40
MEM07008C	Perform grinding operations	40
MEM09002B	Interpret technical drawing	40
MEM12003B	Perform precision mechanical measurement	20
MEM12006C	Mark off/out (general engineering)	40
MEM18001C	Use hand tools	20
MEM18002B	Use power tools/hand held operations	20
MEM18003C	Use tools for precision work	40
MEM18004B	Maintain and overhaul mechanical equipment	40
MEM18005B	Perform fault diagnosis, installation and removal of bearings	40
MEM18006C	Repair and fit engineering components	60
MEM18007B	Maintain and repair mechanical drives and mechanical transmission assemblies	40

MEM30205	Certificate III in Engineering — Mechanical Trade (continued)	
Occupation / Work Function	**Unit Title**	**Hours**
MEM18009B	Perform levelling and alignment of machines and engineering components	40
MEM18010C	Perform equipment condition monitoring and recording	40
MEM18055B	Dismantle, replace and assemble engineering components	30
	Specialisation units	
MEM11011B	Undertake manual handling	20
MEM13001B	Perform emergency first aid	10
MEM13002B	Undertake occupational health and safety activities in the workplace	30
	Total	**960**

Occupation / Work Function	Engineering Trades Person (Fabrication)
Qualification Title	Certificate III in Engineering — Fabrication Trade
Qualification Code	MEM30305
Description	Appropriate for a person working as a fabrication engineering trades person.
Notes	For advice on how to choose electives others than those listed below, please refer to the **Metal and Engineering Training Package (MEM05)** and its Qualifications Packaging Rules or contact the CMM Engineering Industries on (03)9286 9934.

Unit Code	Unit Title	Hours
Core		
MEM12023A	Perform engineering measurements	30
MEM12024A	Perform computations	30
MEM13014A	Apply principles of occupational health and safety in the work environment	10
MEM14004A	Plan to undertake a routine task	10
MEM14005A	Plan a complete activity	20
MEM15002A	Apply quality systems	20
MEM15024A	Apply quality procedures	10
MEM16006A	Organise and communicate information	20
MEM16007A	Work with others in a manufacturing, engineering or related environment	10
MEM16008A	Interact with computing technology	20
MEM17003A	Assist in the provision of on the job training	20
MSAENV272B	Participate in environmentally sustainable work practices	30
Electives	**Fabrication stream units**	
MEM05005B	Carry out mechanical cutting	20
MEM05007C	Perform manual heating and thermal cutting	20
MEM05008C	Perform advanced manual thermal cutting, gouging and shaping	20
MEM05010C	Apply fabrication, forming and shaping techniques	80
MEM05011D	Assemble fabricated components	80
MEM05012C	Perform routine manual metal arc welding	20
MEM05013C	Perform manual production welding	20
MEM05014C	Monitor quality of production welding/fabrications	20
MEM05015D	Weld using manual metal arc welding process	40
MEM05017D	Weld using gas metal arc welding process	40
MEM05019D	Weld using gas tungsten arc welding process	40
MEM05026C	Apply welding principles	40
MEM05037C	Perform geometric development	60
MEM05047B	Weld using flux core arc welding process	40
MEM05049B	Perform routine gas tungsten arc welding	20
MEM05050B	Perform routine gas metal arc welding	20

MEM30305	Certificate III in Engineering — Fabrication Trade (continued)	
Unit Code	**Unit Title**	**Hours**
MEM05051A	Select welding processes	20
MEM05052A	Apply safe welding practices	40
MEM09002B	Interpret technical drawing	40
MEM13001B	Perform emergency first aid	10
MEM18001C	Use hand tools	20
MEM18002B	Use power tools/hand held operations	20
	Total	**960**

Occupation / Work Function	Engineering Assistant Technician
Qualification Title	Certificate III in Engineering — Technical
Qualification Code	MEM30505
Description	Suitable for a person working as an Engineering Assistant Technician.
Notes	For advice on how to choose electives others than those listed below, please refer to the **Metal and Engineering Training Package (MEM05)** and its Qualifications Packaging Rules or contact the CMM Engineering Industries on (03) 9286 9934.

Unit Code	Unit Title	Hours
Core		
MEM16006A	Organise and communicate information	20
MEM16008A	Interact with computing technology	20
MSAENV272B	Participate in environmentally sustainable work practices	30
Electives		
MEM09002B	Interpret technical drawing	40
MEM30031A	Operate computer-aided design (CAD) system to produce basic drawing elements	40
MEM30032A	Produce basic engineering drawings	80
MEM30012A	Apply mathematical techniques in a manufacturing engineering or related environment	40
MEM30006A	Calculate stresses in simple structures	40
MEM30019A	Use resource planning software systems in manufacturing	40
MEM30020A	Develop and manage a plan for a simple manufacturing related project	30
	Total	**380**

Occupation / Work Function	Marine Craft Construction and Maintenance Trades Person
Qualification Title	Certificate III in Marine Craft Construction
Qualification Code	MEM30705
Description	Appropriate for a person working as marine craft construction and maintenance trades person.
Notes	For advice on how to choose electives others than those listed below, please refer to the **Metal and Engineering Training Package (MEM05)** and its Qualifications Packaging Rules or contact the CMM Engineering Industries on (03)9286 9880.

Unit Code	Unit Title	Hours
Core		
MEM12023A	Perform engineering measurements	30
MEM12024A	Perform computations	30
MEM13014A	Apply principles of occupational health and safety in the work environment	10
MEM14004A	Plan to undertake a routine task	10
MEM14005A	Plan a complete activity	20
MEM15002A	Apply quality systems	20
MEM15024A	Apply quality procedures	10
MEM16006A	Organise and communicate information	20
MEM16007A	Work with others in a manufacturing, engineering or related environment	10
MEM16008A	Interact with computing technology	20
MEM17003A	Assist in the provision of on the job training	20
MSAENV272B	Participate in environmentally sustainable work practices	30
Electives		
MEM04018B	Perform general woodworking machine operations	40
MEM08014B	Apply protective coatings (basic)	40
MEM09002B	Interpret technical drawing	40
MEM09021B	Interpret and produce curved 3-dimensional shapes	40
MEM12007D	Mark off/out structural fabrications and shapes	40
MEM13001B	Perform emergency first aid	10
MEM13003B	Work safely with industrial chemicals and materials	20
MEM18001C	Use hand tools	20
MEM18002B	Use power tools/hand held operations	20
MEM25001B	Apply fibre-reinforced materials	20
MEM25002B	Form and integrate fibre-reinforced structures	40
MEM25003B	Set up marine vessel structures	40
MEM25004B	Fair and shape surfaces	20
MEM25005B	Construct and assemble marine vessel timber components	80
MEM25007B	Maintain marine vessel surfaces	40
MEM25008B	Repair marine vessel surfaces and structures	40

MEM30705	Certificate III in Engineering — Marine Craft Construction (continued)	
Unit Code	**Unit Title**	**Hours**
MEM25009B	Form timber shapes using hot processes	20
MEM25013B	Produce three-dimensional plugs/moulds	120
MEM25014B	Perform marine slipping operations	20
MEM25015A	Assemble and install equipment and accessories/ancillaries	20
	Total	**960**

Occupation	Composites worker.
Qualification Title	Certificate III in Engineering - Composites Trade
Qualification Code	MEM31112
Description	Appropriate for a person working with composites within the metal, engineering, manufacturing and associated industries
Notes	For advice on how to choose electives others than those listed below, please refer to the **Metal and Engineering Training Package (MEM05)** and its Qualifications Packaging Rules or contact the CMM Engineering Industries on (03)9286 9934

Unit Code	Unit Title	Hours
Core		
MEM12023A	Perform engineering measurements	30
MEM12024A	Perform computations	30
MEM13014A	Apply principles of occupational health and safety in the work environment	10
MEM14004A	Plan to undertake a routine task	10
MEM14005A	Plan a complete activity	20
MEM15002A	Apply quality systems	20
MEM15024A	Apply quality procedures	10
MEM16006A	Organise and communicate information	20
MEM16007A	Work with others in a manufacturing, engineering or related environment	10
MEM16008A	Interact with computing technology	20
MEM17003A	Assist in the provision of on the job training	20
MSAENV272B	Participate in environmentally sustainable work practices	30
Electives Group A		
MEM26001A	Lay up composites using open moulding techniques	60
MEM26002A	Lay up composites using vacuum closed moulding techniques	60
Electives Group B		
MEM26004A	Make basic plugs for composites fabrication	30
MEM26005A	Make basic moulds for composites fabrications	30
MEM26006A	Mark and cut out sheets for composite use	40
MEM26007A	Select and use reinforcing appropriate for product	40
MEM26008A	Select and use resin systems appropriate for product	40
MEM26009A	Select and use cores and fillers appropriate for product	20
MEM26010A	Store and handle composite materials	20
MEM26012A	Record and trial work processes for one-off composite products	40
MEM26013A	Select and use composite processes or systems appropriate for product	40

MEM31112	Certificate III in Engineering - Composites Trade (continued)	
Unit Code	**Unit Title**	**Hours**
Electives Group C - Specialisation units		
MEM09002B	Interpret technical drawing	40
MEM26011A	Determine materials and techniques for a composite component or product*	60
MEM26014A	Adjust resin chemicals for current conditions	40
MEM26015A	Select and apply repair techniques	60
MEM26016A	Select and use joining techniques	60
MEM26017A	Prepare composite or other substrate surfaces	40
MEM26019A	Finish a composite product	40
	Total	**990**

Occupation / Work Function	Engineering Trades Person
Qualification Title	Certificate IV in Engineering
Qualification Code	MEM40105
Description	Appropriate for a person working as an engineering trades person with additional specialist skills.
Notes	For advice on how to choose electives others than those listed below, please refer to the **Metal and Engineering Training Package (MEM05**) and it's Qualifications Packaging Rules or contact the CMM Engineering Industries on (03)9286 9934.

Unit Code	Unit Title	Hours
Core		
MEM12023A	Perform engineering measurements	30
MEM12024A	Perform computations	30
MEM13014A	Apply principles of occupational health and safety in the work environment	10
MEM14004A	Plan to undertake a routine task	10
MEM14005A	Plan a complete activity	20
MEM15002A	Apply quality systems	20
MEM15024A	Apply quality procedures	10
MEM16006A	Organise and communicate information	20
MEM16007A	Work with others in a manufacturing, engineering or related environment	10
MEM16008A	Interact with computing technology	20
MEM17003A	Assist in the provision of on the job training	20
MSAENV272B	Participate in environmentally sustainable work practices	30
Electives	**Group A Specialisation units**	
MEM07016C	Set and edit computer controlled machines/processes	40
MEM07018C	Write basic NC/CNC programs	40
MEM07019C	Program NC/CNC machining centre	20
MEM07020C	Program multiple spindle and/or multiple axis NC/CNC machining centre	20
MEM07023C	Program and set up CNC manufacturing cell	60
MEM12003B	Perform precision mechanical measurement	20
	Group B Specialisation units	
MEM07001B	Perform operational maintenance of machines/equipment	20
MEM07003B	Perform machine setting (routine)	40
MEM07004B	Perform machine setting (complex)	80
MEM07005C	Perform general machining	80
MEM07006C	Perform lathe operations	40
MEM07007C	Perform milling operations	40

MEM40105	Certificate IV in Engineering (continued)	
Unit Code	**Unit Title**	**Hours**
MEM07008D	Perform grinding operations	40
MEM07011B	Perform complex milling operations	40
MEM07012B	Perform complex grinding operations	40
MEM07013B	Perform machining operations using horizontal and/or vertical boring machines	40
MEM07015B	Set computer controlled machines/processes	20
MEM07024B	Operate and monitor machine/process	40
MEM07025B	Perform advanced machine/process operation	60
MEM07026B	Perform advanced plastic processing	60
MEM07027B	Perform advanced press operations	60
MEM07028B	Operate computer controlled machine/processes	20
MEM09002B	Interpret technical drawing	40
MEM09022A	Create 2D code files using computer aided manufacture system	40
MEM10004B	Enter and change programmable controller operational parameters	20
MEM13001B	Perform emergency first aid	10
MEM13003B	Work safely with industrial chemicals and materials	20
MEM18001C	Use hand tools	20
MEM18002B	Use power tools/hand held operations	20
	Total	**1320**

Occupation	Engineering Draftsman
Qualification Title	Certificate IV in Engineering Drafting
Qualification Code	MEM40412
Description	Appropriate for a person working as a detail draftsperson producing specialist engineering drawings within an engineering or manufacturing work environment.
Notes	For advice on how to choose electives others than those listed below, please refer to the **Metal and Engineering Training Package (MEM05)** and its Qualifications Packaging Rules or contact the CMM Engineering Industries on (03) 9286 9934

Unit Code	Unit Title	Hours
Core		
MEM16006A	Organise and communicate information	20
MEM16008A	Interact with computing technology	20
MEM30012A	Apply mathematical techniques in a manufacturing engineering or related environment	40
MSAENV272B	Participate in environmentally sustainable work practices	30
Electives		
MEM09002B	Interpret technical drawing	40
MEM09202A	Produce freehand sketches	40
MEM09204A	Produce engineering detail drawings	80
MEM09208A	Detail fasteners and locking devices in mechanical drawings	40
MEM09209A	Detail bearings, seals and other componentry in mechanical drawings	40
MEM09210A	Create 3-D solid models using computer aided design system	80
MEM09220A	Apply surface modelling techniques to 3-D drawings	80
MEM09221A	Create 3-D model assemblies using computer aided design system	80
MEM30031A	Operate computer-aided design (CAD) system to produce basic drawing elements	40
MEM30032A	Produce basic engineering drawings	80
MEM30033A	Use computer-operated design (CAD) to create and display 3-D models	40
	Total	**750**

Occupation / Work Function	Engineering Technician
Qualification Title	Diploma of Engineering — Technical
Qualification Code	MEM50212
Description	Appropriate for a person working as an engineering technician in engineering manufacturing.
Notes	For advice on how to choose electives others than those listed below, please refer to the **Metal and Engineering Training Package (MEM05)** and its Qualifications Packaging Rules or contact the CMM Engineering Industries on (03) 9286 9934.

Unit Code	Unit Title	Hours
Core		
MEM16006A	Organise and communicate information	20
MEM16008A	Interact with computing technology	20
MEM30007A	Select common engineering materials	40
MEM30012A	Apply mathematical techniques in a manufacturing engineering or related environment	40
MSAENV272B	Participate in environmentally sustainable work practices	30
Electives	**Group A**	
MEM09002B	Interpret technical drawing	40
MEM12024A	Perform computations	30
MEM30031A	Operate computer-aided design (CAD) system to produce basic drawing elements	40
MEM30032A	Produce basic engineering drawings	80
MEM30033A	Use computer-operated design (CAD) to create and display 3-D models	40
MEM30009A	Contribute to the design of basic mechanical systems	40
MEM30008A	Apply basic economic and ergonomic concepts to evaluate engineering applications	40
Electives	**Group B**	
MEM09157A	Perform mechanical engineering design drafting	80
MEM12025A	Use graphical techniques and perform simple statistical computations	20
MEM14089A	Integrate mechanical fundamentals into an engineering task	60
MEM22002A	Manage self in the engineering environment	40
MEM23003A	Operate and program computers and/or controllers in engineering situations	80
MEM23109A	Apply engineering mechanic principles	60
MEM23112A	Investigate electrical and electronic controllers in engineering applications	40
MEM23063A	Select and test mechanical engineering materials	60
	Total	**900**

Occupation	Avionics Technician
Qualification Title	Diploma of Engineering – Technical
Qualification Code	MEM50212
Description	Appropriate for a person working as an avionics technician in aerospace maintenance
Notes	For advice on how to choose electives others than those listed below, please refer to the Metal and Engineering Training Package (MEM05) and its Qualifications Packaging Rules or contact the CMM Engineering Industries on (03) 9286 9934.

Unit Code	Unit Title	Hours
Core		
MEM16006A	Organise and communicate information	20
MEM16008A	Interact with computing technology	20
MEM30007A	Select common engineering materials	40
MEM30012A	Apply mathematical techniques in a manufacturing engineering or related environment	40
MSAENV272B	Participate in environmentally sustainable work practices	30
Electives	**Group A**	
MEA101B	Interpret occupational health and safety practices in aviation maintenance	40
MEA105C	Apply quality standards applicable to aviation maintenance processes	20
MEA107B	Interpret and use aviation maintenance industry manuals and specifications	20
MEA108B	Complete aviation maintenance industry documentation	20
MEA109B	Perform basic hand skills, standard trade practices and fundamentals in aviation maintenance	80
MEA270A	Lay out avionic systems	120
MEA271A	Lay out avionic flight management systems	120
MEM30032A	Produce basic engineering drawings	80
	Group B	
MEA272B	Apply basic scientific principles and techniques in avionic engineering situations	80
MEA273A	Select and test avionic engineering materials	60
MEM09144A	Represent avionic engineering designs	80
MEM14084A	Apply avionic engineering fundamentals to support design and development of engineering projects	60
MEM23074A	Select and apply avionic engineering methods, processes and construction techniques	60
MEA340A	Lay out and set up aircraft systems	120
MEA341A	Apply basic aircraft design characteristics	120
	Total	**1230**

Occupation / Work Function	Engineering Technical Officer
Qualification Title	Advanced Diploma of Engineering
Qualification Code	MEM60112
Description	Appropriate for a person working as an engineering technician in engineering manufacturing.
Notes	For advice on how to choose electives others than those listed below, please refer to the **Metal and Engineering Training Package (MEM05)** and its Qualifications Packaging Rules or contact the CMM Engineering Industries on (03) 9286 9934.

Unit Code	Unit Title	Hours
Core		
MEM16006A	Organise and communicate information	20
MEM16008A	Interact with computing technology	20
MEM22001A	Perform engineering activities	60
MEM22002A	Manage self in the engineering environment	40
MEM30007A	Select common engineering materials	40
MEM30012A	Apply mathematical techniques in a manufacturing engineering or related environment	40
MSAENV272B	Participate in environmentally sustainable work practices	30
Electives	**Group A**	
MEM30005A	Calculate force systems within simple beam structures	40
MEM30006A	Calculate stresses in simple structures	40
MEM30009A	Contribute to the design of basic mechanical systems	40
MEM30031A	Operate computer-aided design (CAD) system to produce basic drawing elements	40
MEM30032A	Produce basic engineering drawings	80
MEM30033A	Use computer-operated design (CAD) to create and display 3-D models	40
MEM12024A	Perform computations	30
Electives	**Group B**	
MEM09157A	Perform mechanical engineering design drafting	80
MEM12025A	Use graphical techniques and perform simple statistical computations	20
MEM14089A	Integrate mechanical fundamentals into an engineering task	60
MEM14090A	Integrate mechatronic fundamentals into an engineering task	40
MEM15001B	Perform basic statistical quality control	20
MEM22007A	Manage environmental effects of engineering activities	60
MEM22013A	Coordinate engineering projects	60
MEM22014A	Coordinate engineering-related manufacturing operations	60
MEM22017A	Coordinate continuous improvement and technical development in an engineering-related project or operation	40

MEM60112	Advanced Diploma of Engineering (continued)	
Unit Code	**Unit Title**	**Hours**
MEM23007A	Apply calculus to engineering tasks	80
MEM23109A	Apply engineering mechanic principles	60
MEM23111A	Select electrical equipment and components for engineering applications	40
MEM23063A	Select and test mechanical engineering materials	60
MEM23118A	Apply production and service control techniques	60
MEM23122A	Evaluate computer integrated manufacturing systems	60
MSACMT670A	Develop and manage sustainable energy practices	70
	Total	**1430**

Occupation	Aeronautical Technical Officer
Qualification Title	Advanced Diploma of Engineering
Qualification Code	MEM60112
Description	Appropriate for a person working as an aeronautical technician in aerospace maintenance
Notes	For advice on how to choose electives others than those listed below, please refer to the Metal and Engineering Training Package (MEM05) and its Qualifications Packaging Rules or contact the CMM Engineering Industries on (03) 9286 9934

Unit Code	Unit Title	Hours
Core		
MEM16006A	Organise and communicate information	20
MEM16008A	Interact with computing technology	20
MEM22001A	Perform engineering activities	60
MEM22002A	Manage self in the engineering environment	40
MEM30007A	Select common engineering materials	40
MEM30012A	Apply mathematical techniques in a manufacturing engineering or related environment	40
MSAENV272B	Participate in environmentally sustainable work practices	30
Electives A		
MEA101B	Interpret occupational health and safety practices in aviation maintenance	40
MEA105C	Apply quality standards applicable to aviation maintenance processes	20
MEA107B	Interpret and use aviation maintenance industry manuals and specifications	20
MEA108B	Complete aviation maintenance industry documentation	20
MEA109B	Perform basic hand skills, standard trade practices and fundamentals in aviation maintenance	80
MEA340A	Lay out and set up aircraft systems	120
MEA341A	Apply basic aircraft design characteristics	120
MEM30032A	Produce basic engineering drawings	80
Electives B		
MEA342A	Apply basic aircraft power plant design characteristics	120
MEA349B	Apply basic scientific principles and techniques in aeronautical engineering situations	120
MEA350A	Select and test aeronautical engineering materials	80
MEM09143A	Represent aeronautical engineering designs	80
MEM09153A	Apply computer-aided modelling and data management techniques to aeronautical engineering designs	80

MEM60112	Advanced Diploma of Engineering (continued)	
Unit Code	**Unit Title**	**Hours**
MEM14065A	Plan and design aeronautical engineering projects	60
MEM14083A	Apply aeronautical engineering fundamentals to support design and development of engineering projects	60
MEM23052A	Apply basic electro and control scientific principles and techniques in aeronautical engineering situations	60
MEM23073A	Select and apply aeronautical engineering methods, processes and construction techniques	60
MEM23084A	Apply scientific principles and techniques in aeronautical engineering situations	60
MEM23095A	Apply aeronautical system design principles and techniques in aeronautical engineering situations	60
MEM23097A	Apply automated systems principles and techniques in aeronautical engineering situations	60
MEM23004A	Apply technical mathematics	80
MEM23007A	Apply calculus to engineering tasks	80
MEM23003A	Operate and program computers and/or controllers in engineering situations	80
	Total	**1890**

Occupation	Project Manager	
Qualification Title	Vocational Graduate Diploma of Engineering	
Qualification Code	MEM80112	
Description	Appropriate for a person working in a Project Management role.	
Notes	For advice on how to choose electives others than those listed below, please refer to the Metal and Engineering Training Package (MEM05) and its Qualifications Packaging Rules or contact the CMM Engineering Industries on (03) 9286 9934	
Unit Code	**Unit Title**	**Hours**
Core		
MEM234002A	Integrate engineering technologies	40
MEM234035A	Maintain and apply technical and engineering skills	40
MSAENV672B	Develop workplace policy and procedures for environmental sustainability	50
Electives A		
MEM234003A	Design machines and ancillary equipment	60
MEM234009A	Design computer-integrated manufacturing systems	60
MEM234013A	Plan and design engineering-related manufacturing processes	60
MSACMG712A	Lead a problem solving process to determine and solve root cause	80
Electives B		
MSACMG702A	Review manufacturing practice tools and techniques	80
MSACMG706A	Build relationships between teams in a manufacturing environment	80
MSACMT622A	Design a process layout	80
	Total	**630**

CONTACTS AND LINKS

Industry Skills Council (ISC)		
Manufacturing Skills Australia Industry Skills Council	This ISC is responsible for developing this **MEM05 Metal and Engineering Training Package** and can be contacted for further information. You can also source copies of the Training Package and support material.	Level 8, 80 Arthur Street North Sydney NSW 2060 Postal Address: PO Box 289 North Sydney NSW 2059 Phone: 1800 242 830 Email: info@mskills.com.au Web: Manufacturing Skills Australia
National Register for VET in Australia		
Training.gov.au (TGA)	TGA is the Australian governments' official National Register of information on Training Packages, qualifications, courses, units of competency and RTOs.	training.gov.au
Australian Government		
The Department of Industry, Innovation, Science, Research and Tertiary Education (DIISRTE)	DIISRTE provides a range of services and resources to assist in delivery of Training Packages. Search the DIISRTE website for links to a range of relevant resources and publications.	http://www.innovation.gov.au You may also find Department of Education Employment and Workplace Relations website of use. http://www.deewr.gov.au
State Government		
Skills Victoria	Skills Victoria is responsible for funding and the implementation of Vocational Education and Training (VET) in Victoria, including Apprenticeships and Traineeships.	www.skills.vic.gov.au
Curriculum Maintenance Manager (CMM)		
Engineering Industries	The CMM service is provided by Executive Officers located within Victorian TAFE institutes on behalf of Skills Victoria.	Dennis Crowley Box Hill Institute of TAFE, Private Bag 2014, Box Hill, Victoria, 3128 Phone: (03) 9286 9934 Fax: (03) 9286 9838 Email: D.Crowley@bhtafe.edu.au Web: http://trainingsupport.skills.vic.gov.au/cmminf.cfm

State VET Regulatory Authority		
Victorian Registration and Qualifications Authority (VRQA)	The VRQA is a statutory authority responsible for the registration of education and training providers in Victoria to ensure the delivery of quality education and training.	www.vrqa.vic.gov.au Phone: 03 9637 2806
National VET Regulatory Authority		
Australian Skills Quality Authority (ASQA)	ASQA is the national regulator for Australia's VET sector vocational education and training sector. ASQA regulates courses and training providers to ensure nationally approved quality standards are met.	www.asqa.gov.au Info line: 1300 701 801
WorkSafe		
WorkSafe Victoria	WorkSafe needs to provide written verification before High Risk Work Units can be added to an RTO's scope of registration.	www.worksafe.vic.gov.au Info line: 1800 136 089

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.
Nominal Hours	The anticipated hours of supervised learning or training deemed necessary to conduct training and assessment activities associated with the program of study. These hours are determined by the Victorian State Training Authority. Nominal hours may vary for a qualification depending on the units of competency selected.
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.