Australian Government

Department of Education, Employment and Workplace Relations

MEM05 Metal and Engineering Training Package

Release: 4.0

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Modification History

Version Modification History

Version	Release Date	Comments

4	June 2011	Additional components:
		• 17 new aeronautical and avionic units of competency and 14 additional units of competency imported from MEA07 for inclusion in the following revised MEM qualifications:
		  • MEM50211 Diploma of Engineering - Technical
		  • MEM60111 Advanced Diploma of Engineering
		• three new MEM high risk units of competency and nine imported high risk licensing units for inclusion as electives in existing MEM qualifications (refer to mapping for details of packaging and qualifications affected)
		• one new unit of competency for the fuel system installation and service sector, for inclusion as an elective in existing MEM qualifications
		• MEM unit version codes corrected in MEM40105
		Refer to Summary Mapping for details of changes to qualifications.

3	March 2011	The following endorsed components have been included in MEM05v3: • one new qualification – MEM31010 Certificate III in Watch and Clock Service and Repair • 23 new specialist watch and clock service and repair units of competency. The new units will also be available as electives in MEM20205, MEM40105 and MEM50105, and have been included in the Certificate III Trade Specialisation unit list. **ISC Updates** • All qualifications adjusted to comply with flexibility and sustainability requirements (refer to Mapping for details). • Competitive Manufacturing and PMB imported units updated. • Additional imported units – MSAENV272B, 472B and 672B. • Minor errors corrected in units and Volume 1 (refer History for details).

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Version	Release Date	Comments
2.2	30 June 2010	**ISC updates** Qualifications adjusted to comply with flexibility rules: MEM10105, MEM20105, MEM20205, MEM50205 and MEM60105. Refer to History for details.
2.1	June 2010	**PDF reloaded to NTIS with following corrections:** MEM30205 - qualifications notes corrected. No change to packaging rules. Revised unit listed incorrectly as MEM07008D Perform milling operations - changed to MEM07007C Perform milling operations.
2	December 2009	**Summary of changes** Four new metallurgy units of competency and one new imported unit added to elective bank in MEM40105. ISC upgrades to 18 existing units (affecting MEM20205, 30105, 30205, 30305, 30305, 30405, 30605, 30705, 30805, 50105, 50205, 60105) Expanded descriptors for five qualifications (MEM30205, MEM30305, MEM30405, MEM40105 and MEM50105). Refer to History below for details.
1.02	September 2007	**Category 1 changes** A range of minor corrections made including typographical errors, omissions and clarifications **Airconditioning and Refrigeration units of competency** To meet new licensing requirements for installers of split air conditioning systems and domestic air conditioning and refrigeration systems, one existing unit has been modified and two new units included in the elective banks of MEM05: **Modified unit** MEM10013A Install split air conditioning systems and associated pipework to include aspects of evacuation, testing and pipework. This unit replaces and is not equivalent to MEM10012A Install split air conditioning systems. MEM10012A will be discontinued.

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Version	Release Date	Comments
		New units MEM18084A Commission and decommission split air conditioning systems MEM18085A Install, service and repair domestic air conditioning and refrigeration appliances The new and modified units are intended to be available for licensing purposes in MEM20105 Certificate II in Engineering. Due to the flexible and open design of the training package, the units are also available as electives in other qualifications such as those listed below. Discretion should be applied when deciding if the units are suitable for selection within a specific qualification.

MEM20105	Certificate II in Engineering
MEM20205	Certificate II in Engineering - Production Technology
MEM30105	Certificate III in Engineering - Production Systems
MEM30205	Certificate III in Engineering - Mechanical Trade
MEM30305	Certificate III in Engineering - Fabrication Trade
MEM30405	Certificate III in Engineering - Electrical/Electronic Trade
MEM30705	Certificate III in Marine Craft Construction
MEM40105	Certificate IV in Engineering
MEM50105	Diploma of Engineering - Advanced Trade

1.01	October 2006	Decimal points in all MEM05 codes replaced with zero to enable loading to NTIS. Refer to schedule below.
1.00	December 2005	Primary release.

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Training Package Details

Training Package Details

Training Package Code:	**MEM05**
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ISC Name:	Manufacturing Skills Australia
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Training Package Volume Number	Training Package Volume Name
1	Volume 1 of 6
2	Volume 2 of 6
3	Volume 3 of 6
4	Volume 4 of 6
5	Volume 5 of 6
6	Volume 6 of 6

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Training Package Volume Number	Training Package Volume Statement
1	Introduction, Mapping, Qualifications, Appendices
2	MEM Units of Competency (Fields 3 to 7)
3	MEM Units of Competency (Fields 8 to 15)
4	MEM Units of Competency (Fields 16 to 18)
5	MEM Units of Competency (Fields 19 to 50)
6	Imported Units of Competency

Training Package Volume Number	Training Package Volume Description
1	This volume comprises MEM05 background information, Qualifications Framework and Assessment Guidelines. It is not to be used in isolation, but in conjunction with Volumes 2 to 6 which contain the units of competency.
2	This volume comprises MEM05 units of competency (Fields 3 to 7). It is not to be used in isolation, but in conjunction with Volumes 1, 3, 4, 5 and 6.
3	This volume comprises MEM05 units of competency (Fields 8 to 15). It is not to be used in isolation, but in conjunction with Volumes 1, 2, 4, 5 and 6.
4	This volume comprises MEM05 units of competency (Fields 16 to 18). It is not to be used in isolation, but in conjunction with Volumes 1, 2, 3, 5 and 6.
5	This volume comprises MEM05 units of competency (Fields 19 to 50). It is not to be used in isolation, but in conjunction with Volumes 1, 2, 3, 4 and 6.
6	This volume comprises imported units of competency. It is not to be used in isolation, but in conjunction with Volumes 1, 2, 3, 4 and 5.

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Training Package Volume Number **ISBN Number**

MEM05 - Metal and Engineering Training Package

MEM05 Metal and Engineering Training Package

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Preliminary Information

Important Note to Users

Training Packages are not static documents; they are amended periodically to reflect the latest industry practices and are version controlled. It is essential that the latest version is always used.

Check the version number before commencing training or assessment

This Training Package is Version - check whether this is the latest version by going to the National Training Information Service (www.ntis.gov.au) and locating information about the Training Package. Alternatively, contact Manufacturing Industry Skills Council at http://www.mskills.com.au to confirm the latest version number.

Explanation of version number conventions

The primary release Training Package is Version 1. When changes are made to a Training Package, sometimes the version number is changed and sometimes it is not, depending on the extent of the change. When a Training Package is reviewed it is considered to be a new Training Package for the purposes of version control, and is Version 1. Do not confuse the version number with the Training Packages national code (which remains the same during its period of endorsement).

Version modification history

The version details of this endorsed Training Package are in the table below. The latest information is at the top of the table.

Version	Release Date	Comments

4	June 2011	Additional components:
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		  • MEM50211 Diploma of Engineering – Technical
		  • MEM60111 Advanced Diploma of Engineering
		• three new MEM high risk units of competency and nine imported

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		high risk licensing units for inclusion as electives in existing MEM qualifications (refer to mapping for details of packaging and qualifications affected) • one new unit of competency for the fuel system installation and service sector, for inclusion as an elective in existing MEM qualifications • MEM unit version codes corrected in MEM40105 Refer to Summary Mapping for details of changes to qualifications.
3	March 2011	The following endorsed components have been included in MEM05v3: one new qualification - MEM31010 Certificate III in Watch and Clock Service and Repair 23 new specialist watch and clock service and repair units of competency . The new units will also be available as electives in MEM20205, MEM40105 and MEM50105, and have been included in the Certificate III Trade Specialisation unit list. **ISC Updates** All qualifications adjusted to comply with flexibility and sustainability requirements (refer to Mapping for details). Competitive Manufacturing and PMB imported units updated. Additional imported units - MSAENV272B, 472B and 672B. Minor errors corrected in units and Volume 1 (refer History for details).
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		added to elective bank in MEM40105. ISC upgrades to 18 existing units (affecting MEM20205, 30105, 30205, 30305, 30305, 30405, 30605, 30705, 30805, 50105, 50205, 60105) Expanded descriptors for five qualifications (MEM30205, MEM30305, MEM30405, MEM40105 and MEM50105). Refer to History below for details.
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		Certificate III in Engineering - Mechanical Trade MEM30305 Certificate III in Engineering - Fabrication Trade MEM30405 Certificate III in Engineering - Electrical/Electronic Trade MEM30705 Certificate III in Marine Craft Construction MEM40105 Certificate IV in Engineering MEM50105 Diploma of Engineering - Advanced Trade
1.01	October 2006	Decimal points in all MEM05 codes replaced with zero to enable loading to NTIS. Refer to schedule below.
1.00	December 2005	Primary release.

MEM05v4

Mapping to Previous Training Package

Mapping of Changes - Version 4

MEM05v4 Qualifications mapping

Revised qualifications

MEM05v3		MEM05v4		Comment
MEM50205	Diploma of Engineering - Technical	MEM50211	Diploma of Engineering - Technical	Addition of new stream - RTOs will be required to extend scope if they wish to deliver the new aeronautical and avionic units of competency. All other outcomes remain equivalent.
MEM60105	Advanced Diploma of Engineering	MEM60111	Advanced Diploma of Engineering	Addition of new stream - RTOs will be required to extend scope if they wish to deliver the new

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				aeronautical and avionic units of competency. All other outcomes remain equivalent.

Allocation of new electives to existing qualifications

Code	Title	**Change - units added to the elective choice**
MEM20205	Certificate II in Engineering - Production Technology	MEM11023A Operate a bridge and gantry crane MEM11024A Undertake basic rigging MEM11025A Operate a non-slewing mobile crane of greater than three tones capacity MEM18098A Prepare to perform work associated with fuel system installation and servicing TLILIC2001A Licence to operate a forklift truck TLILIC2002A Licence to operate an order picking forklift truck TLILIC3003A Licence to operate a bridge and gantry crane TLILIC3006A Licence to operate a non-slewing mobile crane (greater than 3 tonnes capacity) TLILIC0012A Licence to operate a vehicle loading crane (capacity 10 metre tonnes and above) CPCCLDG3001A Licence to perform dogging CPCCLRG3001A Licence to perform rigging basic level CPCCLSF2001A Licence to erect, alter and dismantle scaffolding basic CPCCLSF3001A Licence to erect, alter and dismantle scaffolding intermediate
MEM20305	Certificate II in Boating Services	TLILIC2001A Licence to operate a forklift truck TLILIC0012A Licence to operate a vehicle loading crane (capacity 10 metre tonnes and above)
MEM30105	Certificate III in Engineering - Production Systems	MEM11023A Operate a bridge and gantry crane MEM11024A Undertake basic rigging MEM11025A Operate a non-slewing mobile crane of greater than three tones capacity MEM18098A Prepare to perform work associated with fuel system installation and servicing TLILIC2001A Licence to operate a forklift truck TLILIC2002A Licence to operate an order picking forklift truck

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		TLILIC3003A Licence to operate a bridge and gantry crane TLILIC3006A Licence to operate a non-slewing mobile crane (greater than 3 tonnes capacity) TLILIC0012A Licence to operate a vehicle loading crane (capacity 10 metre tonnes and above) CPCCLDG3001A Licence to perform dogging CPCCLRG3001A Licence to perform rigging basic level CPCCLSF2001A Licence to erect, alter and dismantle scaffolding basic level CPCCLSF3001A Licence to erect, alter and dismantle scaffolding intermediate level
MEM30205	Certificate III in Engineering - Mechanical Trade	MEM18098A Prepare to perform work associated with fuel system installation and servicing
MEM30305	Certificate III in Engineering - Fabrication Trade	MEM18098A Prepare to perform work associated with fuel system installation and servicing
MEM30405	Certificate III in Engineering - Electrical Trade	MEM18098A Prepare to perform work associated with fuel system installation and servicing
MEM30905	Certificate III in Boating Services	TLILIC2001A Licence to operate a forklift truck TLILIC0012A Licence to operate a vehicle loading crane (capacity 10 metre tonnes and above)
MEM40105	Certificate IV in Engineering	MEM18098A Prepare to perform work associated with fuel system installation and servicing TLILIC2001A Licence to operate a forklift truck TLILIC0012A Licence to operate a vehicle loading crane (capacity 10 metre tonnes and above)
MEM50105	Diploma of Engineering - Advanced Trade	MEM18098A Prepare to perform work associated with fuel system installation and servicing TLILIC2001A Licence to operate a forklift truck TLILIC0012A Licence to operate a vehicle loading crane (capacity 10 metre tonnes and above)
		The following units have also been added to the Certificate III Trade Specialisation Units list for use if required in the qualifications listed below: TLILIC2001A Licence to operate a forklift truck TLILIC0012A Licence to operate a vehicle loading crane (capacity 10 metre tonnes and above).

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		▸ MEM30205 Certificate III in Engineering – Mechanical Trade ▸ MEM30305 Certificate III in Engineering – Fabrication Trade ▸ MEM30405 Certificate III in Engineering – Electrical/Electronic Trade ▸ MEM30605 Certificate III in Jewellery Manufacture ▸ MEM30705 Certificate III in Marine Craft Construction ▸ MEM30805 Certificate III in Locksmithing

Packaging of High Risk Licensing Units

High risk licensing unit	**Points**	Packaging information
TLILIC2001A Licence to operate a forklift truck	0	This unit has been allocated no points and imported as an elective to: ▸ MEM20205 Certificate II in Engineering – Production Technology ▸ MEM20305 Certificate II in Boating Services ▸ MEM30905 Certificate III in Boating Services ▸ MEM30105 Certificate III in Engineering – Production Systems ▸ MM40105 Certificate IV in Engineering ▸ MEM50105 Diploma of Engineering – Advanced Trade The unit is also included in the list of Certificate III trade specialisation units.
TLILIC2002A Licence to operate an order picking forklift truck	0	This unit has been allocated no points and imported as an elective to: ▸ MEM20205 Certificate II in Engineering – Production Technology ▸ MEM30105 Certificate III in Engineering – Production Systems
TLILIC3003A Licence to operate a bridge and gantry crane	0	A new MEM unit has been developed and allocated 4 points to provide MEM required work outcomes for use in conjunction with the licensing unit – MEM11023A Operate a bridge and gantry crane. TLILIC3003A has been imported and allocated no points. MEM11023A and TLILIC3003A have been included as electives in:

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		▸ MEM20205 Certificate II in Engineering – Production Technology ▸ MEM30105 Certificate III in Engineering – Production Systems
TLILIC0012A Licence to operate a vehicle loading crane (capacity 10 metre tonnes and above)	1	Unit has been allocated 1 point and imported as an elective to the following qualifications: ▸ MEM20205 Certificate II in Engineering – Production Technology ▸ MEM20305 Certificate II in Boating Services ▸ MEM30905 Certificate III in Boating Services ▸ MEM30105 Certificate III in Engineering – Production Systems ▸ MEM40105 Certificate IV in Engineering ▸ MEM50105 Diploma of Engineering – Advanced Trade The unit has also been included in the list of Certificate III trade specialisation units.
CPCCLDG3001A - Licence to perform dogging	0	This unit has been allocated no points and imported as an elective to: ▸ MEM20205 Certificate II in Engineering – Production Technology ▸ MEM30105 Certificate III in Engineering – Production Systems
CPCCLRG3001A - Licence to perform rigging basic level	0	A new MEM unit has been developed and allocated 4 points to provide MEM required work outcomes for use in conjunction with the licensing unit – MEM11024A Undertake basic rigging. CPCCLRG3001A has been imported and allocated no points. MEM11024A and CPCCLRG3001A have been included as electives in: ▸ MEM20205 Certificate II in Engineering – Production Technology ▸ MEM30105 Certificate III in Engineering – Production Systems
CPCCLSF2001A - Licence to erect, alter and dismantle scaffolding basic level	0	This unit has been allocated no points and imported as an elective to: ▸ MEM20205 Certificate II in Engineering – Production Technology ▸ MEM30105 Certificate III in Engineering – Production Systems
CPCCLSF3001A - Licence to erect, alter and dismantle scaffolding intermediate level	0	This unit has been allocated no points and imported as an elective to: ▸ MEM20205 Certificate II in Engineering –

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		Production Technology ▸ MEM30105 Certificate III in Engineering – Production Systems
TLILIC3006A Licence to operate a non-slewing mobile crane (greater than 3 tonnes capacity)	0	A new MEM unit has been developed and allocated 4 points to provide MEM required work outcomes for use in conjunction with the licensing unit – MEM11025A Operate a non-slewing mobile crane of greater than 3 tonnes capacity. TLILIC3006A has been imported and allocated no points. MEM11025A and TLILIC3006A have been included as electives in: ▸ MEM20205 Certificate II in Engineering – Production Technology ▸ MEM30105 Certificate III in Engineering – Production Systems

MEM05v4 - New units and additional imported units of competency

High risk rigging	
MEM11023A	Operate a bridge and gantry crane
MEM11024A	Undertake basic rigging
MEM11025A	Operate a non-slewing mobile crane of greater than three tonnes capacity
Fuel system installation and service	
MEM18098A	Prepare to perform work associated with fuel system installation and servicing
Aerospace	
MEM09143A	Represent aeronautical engineering designs
MEM09144A	Represent avionic engineering designs
MEM09153A	Apply computer-aided modelling and data management techniques to aeronautical engineering designs
MEM09154A	Apply computer-aided modelling and data management techniques to avionic engineering designs
MEM14065A	Plan and design aeronautical engineering projects
MEM14066A	Plan and design avionic engineering projects
MEM14083A	Apply aeronautical engineering fundamentals to support design and development of engineering projects
MEM14084A	Apply avionic engineering fundamentals to support design and development of engineering projects
MEM23052A	Apply basic electro and control scientific principles and techniques in

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	aeronautical engineering situations
MEM23073A	Select and apply aeronautical engineering methods, processes and construction techniques
MEM23074A	Select and apply avionic engineering methods, processes and construction techniques
MEM23084A	Apply scientific principles and techniques in aeronautical engineering situations
MEM23085A	Apply scientific principles and techniques in avionic engineering situations
MEM23095A	Apply aeronautical system design principles and techniques in aeronautical engineering situations
MEM23096A	Apply avionic system design principles and techniques in avionic engineering situations
MEM23097A	Apply automated systems principles and techniques in aeronautical engineering situations
MEM23098A	Apply automated systems principles and techniques in avionic engineering situations
Imported units	
	MEA units
MEA101B	Interpret occupational health and safety practices in aviation maintenance
MEA105B	Apply quality standards applicable to aviation maintenance processes
MEA107B	Interpret and use aviation maintenance industry manuals and specifications
MEA108B	Complete aviation maintenance industry documentation
MEA109B	Perform basic hand skills, standard trade practices and fundamentals in aviation maintenance
MEA270A	Lay out avionic systems
MEA271A	Lay out avionic flight management systems
MEA272A	Apply basic scientific principles and techniques in avionic engineering situations
MEA273A	Select and test avionic engineering materials
MEA340A	Lay out and set up aircraft systems
MEA341A	Apply basic aircraft design characteristics
MEA342A	Apply basic aircraft power plant design characteristics
MEA349A	Apply basic scientific principles and techniques in aeronautical engineering situations
MEA350A	Select and test aeronautical engineering materials

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	High Risk Licensing
CPCCLDG3001A	Licence to perform dogging
CPCCLRG3001A	Licence to perform rigging basic level
CPCCLSF2001A	Licence to erect, alter and dismantle scaffolding basic level
CPCCLSF3001A	Licence to erect, alter and dismantle scaffolding intermediate level
TLILIC0012A	Licence to operate a vehicle loading crane (capacity 10 metre tonnes and above)
TLILIC2001A	Licence to operate a forklift truck
TLILIC2002A	Licence to operate an order picking forklift truck
TLILIC3003A	Licence to operate a bridge and gantry crane
TLILIC3006A	Licence to operate a non-slewing mobile crane (greater than 3 tonnes capacity)

MEM05v3

Refer to mapping for details on changes to qualifications and replacement imported units.

Corrections/Category 1 changes

A range of minor corrections including typographical errors, omissions and clarifications. Inconsistencies corrected in the units and prerequisites listing in Volume 1.
Points weighting listed incorrectly in three units:
MEM12007D corrected from 8 to 4 points – points listed in qualifications remains as 4
MEM20001A corrected from 6 to 4 points – points listed in qualifications remains as 4
MEM20010A corrected from 2 to 4 points – points listed in qualifications remains as 4.
Prerequisite listed in MEM25008B corrected to MEM25007B (not 25008C).

Inclusion of metallurgy units in Certificate III Trade Specialisation list

MEM04020A	Supervise individual ferrous melting and casting operation
MEM04021A	Supervise individual non ferrous melting and casting operation
MEM04022A	Examine appropriateness of methoding for mould design
MEM04023A	Undertake prescribed tests on foundry related materials

Following eight units added to Fabrication Trade stream units in MEM30305

MEM06001B	Perform hand forging
MEM06002B	Perform hammer forging
MEM06003C	Carry out heat treatment

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MEM06004B	Select heat treatment processes and test finished product
MEM06005B	Perform drop and upset forging
MEM06006C	Repair springs
MEM06008A	Hammer forge complex shapes
MEM06009A	Hand forge complex shapes

Following 12 units added to Electives Group B in MEM60105

MSACMT280A	Undertake root cause analysis
MSACMT421A	Facilitate a Just in Time (JIT) system
MSACMT430A	Improve cost factors in work practices
MSACMT432A	Analyse manual handling processes
MSACMT440A	Lead 5S in a manufacturing environment
MSACMT450A	Undertake process capability improvements
MSACMT451A	Mistake proof a production process
MSACMT452A	Apply statistics to processes in manufacturing
MSACMT460A	Facilitate the use of planning software systems in manufacturing
MSACMT461A	Facilitate SCADA systems in a manufacturing team or work area
MSACMT481A	Undertake proactive maintenance analyses
MSACMT482A	Assist in implementing a proactive maintenance strategy

Updated imported units

- Competitive Manufacturing unit codes updated from MCM to MSACM.
- PMB units updated to B versions.
- References to units from relevant qualifications updated to current qualification codes.

(Note: all replacement units are equivalent).

MEM05v2.2

Flexibility changes

Importation allowances increased and qualifications reworded to include choice from accredited courses. Elective banks include units approved for selection from other qualifications in MEM.

MEM10105	Certificate I in Engineering	Importation allowance increased from **5 to 7**

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		points
MEM20105	Certificate II in Engineering	Importation allowance increased from **6 to 8 points**
MEM20205	Certificate II in Engineering - Production Technology	Importation allowance increased from **11 to 14 points**
MEM50205	Diploma of Engineering - Technical	Importation allowance increased from **2 to 3 units**
MEM60105	Advanced Diploma of Engineering	Importation allowance increased from **4 to 5 units**

MEM05v2
New MEM units of competency

MEM04020A	Supervise individual ferrous melting and casting operation
MEM04021A	Supervise individual non ferrous melting and casting operation
MEM04022A	Examine appropriateness of methoding for mould design
MEM04023A	Undertake prescribed tests on foundry related materials

New imported unit

MSATCM304A	Interpret binary phase diagrams

Revised existing MEM units

MEM05v1.02	**MEM05v2**	**Unit title**	**Comment**
		Metallurgy	
MEM24012B	MEM24012C	Apply metallurgy principles	Minor edits to include reference to alloys.
		Critical Trade Units	
MEM04005B	MEM04005C	Produce moulds and cores by hand (jobbing)	Redefined and updated Evidence Guides
MEM05010B	MEM05010C	Apply fabrication, forming and shaping techniques	Redefined and updated Evidence Guides
MEM05011C	MEM05011D	Assemble fabricated components	Redefined and updated Evidence Guides
MEM05015C	MEM05015D	Weld using manual metal arc welding process	Redefined and updated Evidence Guides

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MEM05017C	MEM05017D	Weld using gas metal arc welding process	Redefined and updated Evidence Guides
MEM05019C	MEM05019D	Weld using gas tungsten arc welding process	Redefined and updated Evidence Guides
MEM05026B	MEM05026C	Apply welding principles	Redefined and updated Evidence Guides
MEM05037B	MEM05037C	Perform geometric development	Redefined and updated Evidence Guides
MEM07005B	MEM07005C	Perform general machining	Redefined and updated Evidence Guides
MEM07006B	MEM07006C	Perform lathe operations	Redefined and updated Evidence Guides
MEM07007B	MEM07007C	Perform milling operations	Redefined and updated Evidence Guides
MEM07008C	MEM07008D	Perform grinding operations	Redefined and updated Evidence Guides
MEM12006B	MEM12006C	Mark off/out (general engineering)	Redefined and updated Evidence Guides
MEM12007C	MEM12007D	Mark off/out structural fabrications and shapes	Redefined and updated Evidence Guides
MEM18006B	MEM18006C	Repair and fit engineering components	Redefined and updated Evidence Guides
		Circuit testing	
MEM18049B	MEM18049C	Disconnect/reconnect fixed wired equipment up to 1000 volts a.c./1500 volts d.c.	Redefined skills and knowledge for circuit testing - equivalent
MEM18050B	MEM18050C	Disconnect/reconnect fixed wired equipment over 1000 volts a.c./1500 volts d.c.	Redefined skills and knowledge for circuit testing - equivalent

Qualifications affected

MEM05v2	Qualification name	Comment
MEM40105	Certificate IV in Engineering	Addition of four metallurgy units to Specialisation Group 1 electives and one imported unit added to

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		Specialisation Group 2 electives.
MEM30205	Certificate III in Engineering -Mechanical	Expanded qualification descriptor
MEM30305	Certificate III in Engineering -Fabrication	Expanded qualification descriptor
MEM30405	Certificate III in Engineering -Electrical/Electronic Trade	Expanded qualification descriptor
MEM40105	Certificate IV in Engineering	Expanded qualification descriptor
MEM50105	Diploma of Engineering -Advanced Trade	Expanded qualification descriptor

Summary of AQF Qualifications in this Package

Qualification Code	Title
MEM10105	Certificate I in Engineering
MEM10205	Certificate I in Boating Services
MEM20105	Certificate II in Engineering
MEM20205	Certificate II in Engineering - Production Technology
MEM20305	Certificate II in Boating Services
MEM30105	Certificate III in Engineering - Production Systems
MEM30205	Certificate III in Engineering - Mechanical Trade
MEM30305	Certificate III in Engineering - Fabrication Trade
MEM30405	Certificate III in Engineering - Electrical/Electronic Trade
MEM30505	Certificate III in Engineering - Technical
MEM30605	Certificate III in Jewellery Manufacture
MEM30705	Certificate III in Marine Craft Construction
MEM30805	Certificate III in Locksmithing
MEM30905	Certificate III in Boating Services

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Qualification Code	Title
MEM31010	Certificate III in Watch and Clock Service and Repair
MEM40105	Certificate IV in Engineering
MEM40205	Certificate IV in Boating Services
MEM50105	Diploma of Engineering - Advanced Trade
MEM50211	Diploma of Engineering - Technical
MEM60111	Advanced Diploma of Engineering

List of MEM Units within Training Package

List of ALL Units within Training Package

Code	Name
MEM03001B	Perform manual production assembly
MEM03002B	Perform precision assembly
MEM03003B	Perform sheet and plate assembly
MEM03004B	Perform electronic/electrical assembly (production)
MEM03005B	Rework and repair (electrical/electronic production)
MEM03006B	Set assembly stations
MEM04001B	Operate melting furnaces
MEM04002B	Perform gravity die casting
MEM04003B	Operate pressure die casting machine
MEM04004B	Prepare and mix sand for metal moulding
MEM04005C	Produce moulds and cores by hand (jobbing)
MEM04006B	Operate sand moulding and core making machines
MEM04007B	Pour molten metal

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Code	Name
MEM04008B	Fettle and trim metal castings/forgings
MEM04010B	Develop and manufacture wood patterns
MEM04011B	Produce polymer patterns
MEM04012B	Assemble plated patterns
MEM04013B	Develop and manufacture polystyrene patterns
MEM04014B	Develop and manufacture production patterns
MEM04015B	Develop and manufacture vacuum forming moulds and associated equipment
MEM04016C	Develop and manufacture precision models
MEM04017B	Develop and manufacture gear, conveyor screw and propeller patterns
MEM04018B	Perform general woodworking machine operations
MEM04019B	Perform refractory installation and repair
MEM04020A	Supervise individual ferrous melting and casting operation
MEM04021A	Supervise individual non ferrous melting and casting operation
MEM04022A	Examine appropriateness of methoding for mould design
MEM04023A	Undertake prescribed tests on foundry related materials
MEM05001B	Perform manual soldering/desoldering - electrical/electronic components
MEM05002B	Perform high reliability soldering and desoldering
MEM05003B	Perform soft soldering
MEM05004C	Perform routine oxy acetylene welding
MEM05005B	Carry out mechanical cutting
MEM05006B	Perform brazing and/or silver soldering
MEM05007C	Perform manual heating and thermal cutting
MEM05008C	Perform advanced manual thermal cutting, gouging and shaping

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Code	Name
MEM05009C	Perform automated thermal cutting
MEM05010C	Apply fabrication, forming and shaping techniques
MEM05011D	Assemble fabricated components
MEM05012C	Perform routine manual metal arc welding
MEM05013C	Perform manual production welding
MEM05014C	Monitor quality of production welding/fabrications
MEM05015D	Weld using manual metal arc welding process
MEM05016C	Perform advanced welding using manual metal arc welding process
MEM05017D	Weld using gas metal arc welding process
MEM05018C	Perform advanced welding using gas metal arc welding process
MEM05019D	Weld using gas tungsten arc welding process
MEM05020C	Perform advanced welding using gas tungsten arc welding process
MEM05022C	Perform advanced welding using oxy acetylene welding process
MEM05023C	Weld using submerged arc welding process
MEM05024B	Perform welding supervision
MEM05025C	Perform welding/fabrication inspection
MEM05026C	Apply welding principles
MEM05036C	Repair/replace/modify fabrications
MEM05037C	Perform geometric development
MEM05038B	Perform advanced geometric development - cylindrical/rectangular
MEM05039B	Perform advanced geometric development - conical
MEM05040B	Perform advanced geometric development - transitions
MEM05041B	Weld using powder flame spraying
MEM05042B	Perform welds to code standards using flux core arc welding process

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Code	Name
MEM05043B	Perform welds to code standards using gas metal arc welding process
MEM05044B	Perform welds to code standards using gas tungsten arc welding process
MEM05045B	Perform pipe welds to code standards using manual metal arc welding process
MEM05046B	Perform welds to code standards using manual metal arc welding process
MEM05047B	Weld using flux core arc welding process
MEM05048B	Perform advanced welding using flux core arc welding process
MEM05049B	Perform routine gas tungsten arc welding
MEM05050B	Perform routine gas metal arc welding
MEM05051A	Select welding processes
MEM05052A	Apply safe welding practices
MEM05053A	Set and edit computer controlled thermal cutting machines
MEM05054A	Write basic NC/CNC programs for thermal cutting machines
MEM06001B	Perform hand forging
MEM06002B	Perform hammer forging
MEM06003C	Carry out heat treatment
MEM06004B	Select heat treatment processes and test finished product
MEM06005B	Perform drop and upset forging
MEM06006C	Repair springs
MEM06007B	Perform basic incidental heat/quenching, tempering and annealing
MEM06008A	Hammer forge complex shapes
MEM06009A	Hand forge complex shapes
MEM07001B	Perform operational maintenance of machines/equipment
MEM07002B	Perform precision shaping/planing/slotting operations

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Code	Name
MEM07003B	Perform machine setting (routine)
MEM07004B	Perform machine setting (complex)
MEM07005C	Perform general machining
MEM07006C	Perform lathe operations
MEM07007C	Perform milling operations
MEM07008D	Perform grinding operations
MEM07009B	Perform precision jig boring operations
MEM07010B	Perform tool and cutter grinding operations
MEM07011B	Perform complex milling operations
MEM07012B	Perform complex grinding operations
MEM07013B	Perform machining operations using horizontal and/or vertical boring machines
MEM07014B	Perform electro-discharge (EDM) machining operations
MEM07015B	Set computer controlled machines/processes
MEM07016C	Set and edit computer controlled machines/processes
MEM07018C	Write basic NC/CNC programs
MEM07019C	Program NC/CNC machining centre
MEM07020C	Program multiple spindle and/or multiple axis NC/CNC machining centre
MEM07021B	Perform complex lathe operations
MEM07022C	Program CNC wire cut machines
MEM07023C	Program and set up CNC manufacturing cell
MEM07024B	Operate and monitor machine/process
MEM07025B	Perform advanced machine/process operation
MEM07026B	Perform advanced plastic processing

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Code	Name
MEM07027B	Perform advanced press operations
MEM07028B	Operate computer controlled machines/processes
MEM07029B	Perform routine sharpening/maintenance of production tools and cutters
MEM07030C	Perform metal spinning lathe operations (basic)
MEM07031C	Perform metal spinning lathe operations (complex)
MEM07032B	Use workshop machines for basic operations
MEM07033B	Operate and monitor basic boiler
MEM07034A	Operate and monitor intermediate class boiler
MEM07039A	Write programs for industrial robots
MEM07040A	Set multistage integrated processes
MEM08001B	Perform wire, jig and barrel load/unload work
MEM08002C	Pre-treat work for subsequent surface coating
MEM08003C	Perform electroplating operations
MEM08004B	Finish work using wet, dry and vapour deposition methods
MEM08005B	Prepare and produce specialised coatings
MEM08006B	Produce clear and/or coloured and/or sealed anodised films on aluminium
MEM08007B	Control surface finish production and finished product quality
MEM08008B	Operate and control surface finishing waste treatment process
MEM08009C	Make up solutions
MEM08010B	Manually finish/polish materials
MEM08011B	Prepare surfaces using solvents and/or mechanical means
MEM08012B	Prepare surfaces by abrasive blasting (basic)
MEM08013B	Prepare surfaces by abrasive blasting (advanced)
MEM08014B	Apply protective coatings (basic)

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Code	Name
MEM08015B	Apply protective coatings (advanced)
MEM08016B	Control blast coating by-products, materials and emissions
MEM08018B	Electroplate engineering coatings
MEM08019B	Electroplate protective finishes
MEM08020B	Electroplate decorative finishes
MEM09002B	Interpret technical drawing
MEM09003B	Prepare basic engineering drawing
MEM09004B	Perform electrical/electronic detail drafting
MEM09005B	Perform basic engineering detail drafting
MEM09006B	Perform advanced engineering detail drafting
MEM09007B	Perform advanced mechanical detail drafting
MEM09008B	Perform advanced structural detail drafting
MEM09009C	Create 2D drawings using computer aided design system
MEM09010C	Create 3D models using computer aided design system
MEM09011B	Apply basic engineering design concepts
MEM09021B	Interpret and produce curved 3-dimensional shapes
MEM09022A	Create 2D code files using computer aided manufacturing system
MEM09023A	Create 3D code files using computer aided manufacturing system
MEM09141A	Represent mechanical engineering designs
MEM09142A	Represent mechatronic engineering designs
MEM09143A	Represent aeronautical engineering designs
MEM09144A	Represent avionic engineering designs
MEM09151A	Apply computer aided modelling and data management techniques to mechanical engineering designs
MEM09152A	Apply computer aided modelling and data management techniques to

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Code	Name
	mechatronic engineering designs
MEM09153A	Apply computer-aided modelling and data management techniques to aeronautical engineering designs
MEM09154A	Apply computer-aided modelling and data management techniques to avionic engineering designs
MEM10001C	Erect structures
MEM10002B	Terminate and connect electrical wiring
MEM10003B	Install and test electrical wiring and circuits up to 1000 volts a.c. and 1500 volts d.c.
MEM10004B	Enter and change programmable controller operational parameters
MEM10005B	Commission programmable controller programs
MEM10006B	Install machine/plant
MEM10007C	Modify control systems
MEM10008B	Undertake commissioning procedures for plant and/or equipment
MEM10009B	Install refrigeration and air conditioning plant and equipment
MEM10010B	Install pipework and pipework assemblies
MEM10011B	Terminate and connect specialist cables
MEM10013A	Install split air conditioning systems and associated pipework
MEM11001C	Erect/dismantle scaffolding and equipment
MEM11002C	Erect/dismantle complex scaffolding and equipment
MEM11003B	Coordinate erection/dismantling of complex scaffolding/equipment
MEM11004B	Undertake dogging
MEM11005B	Pick and process order
MEM11006B	Perform production packaging
MEM11007B	Administer inventory procedures
MEM11008B	Package materials (stores and warehouse)

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Code	Name
MEM11009B	Handle/move bulk fluids/gases
MEM11010B	Operate mobile load shifting equipment
MEM11011B	Undertake manual handling
MEM11012B	Purchase materials
MEM11013B	Undertake warehouse receival process
MEM11014B	Undertake warehouse dispatch process
MEM11015B	Manage warehouse inventory system
MEM11016B	Order materials
MEM11017B	Organise and lead stocktakes
MEM11018B	Organise and maintain warehouse stock receival and/or dispatch system
MEM11019B	Undertake tool store procedures
MEM11020B	Perform advanced warehouse computer operations
MEM11021B	Perform advanced operation of load shifting equipment
MEM11022B	Operate fixed/moveable load shifting equipment
MEM11023A	Operate a bridge and gantry crane
MEM11024A	Undertake basic rigging
MEM11025A	Operate a non-slewing mobile crane of greater than three tonnes capacity
MEM12001B	Use comparison and basic measuring devices
MEM12002B	Perform electrical/electronic measurement
MEM12003B	Perform precision mechanical measurement
MEM12004B	Perform precision electrical/electronic measurement
MEM12005B	Calibrate measuring equipment
MEM12006C	Mark off/out (general engineering)
MEM12007D	Mark off/out structural fabrications and shapes

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Code	Name
MEM12019B	Measure components using coordinate measuring machines
MEM12020B	Set and operate coordinate measuring machines
MEM12021B	Program coordinate measuring machines
MEM12022B	Program coordinate measuring machines (advanced)
MEM12023A	Perform engineering measurements
MEM12024A	Perform computations
MEM12025A	Use graphical techniques and perform simple statistical computations
MEM13001B	Perform emergency first aid
MEM13002B	Undertake occupational health and safety activities in the workplace
MEM13003B	Work safely with industrial chemicals and materials
MEM13004B	Work safely with molten metals/glass
MEM13006B	Collect and evaluate occupational health and safety data for an enterprise or section of an enterprise
MEM13007B	Maintain water treatment systems for cooling towers
MEM13010A	Supervise occupational health and safety in an industrial work environment.
MEM13013B	Work safely with ionizing radiation
MEM13014A	Apply principles of occupational health and safety in the work environment
MEM14001B	Schedule material deliveries
MEM14002B	Undertake basic process planning
MEM14003B	Undertake basic production scheduling
MEM14004A	Plan to undertake a routine task
MEM14005A	Plan a complete activity
MEM14061A	Plan and design mechanical engineering projects

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Code	Name
MEM14062A	Plan and design mechatronic engineering projects
MEM14063A	Plan and design manufacturing engineering projects
MEM14064A	Plan and design maintenance engineering projects
MEM14065A	Plan and design aeronautical engineering projects
MEM14066A	Plan and design avionic engineering projects
MEM14081A	Apply mechanical engineering fundamentals to support design and development of projects
MEM14082A	Apply mechatronics fundamentals to support design and development of engineering projects
MEM14083A	Apply aeronautical engineering fundamentals to support design and development of engineering projects
MEM14084A	Apply avionic engineering fundamentals to support design and development of engineering projects
MEM15001B	Perform basic statistical quality control
MEM15002A	Apply quality systems
MEM15003B	Use improvement processes in team activities
MEM15004B	Perform inspection
MEM15005B	Select and control inspection processes and procedures
MEM15007B	Conduct product and/or process capability studies
MEM15008B	Perform advanced statistical quality control
MEM15010B	Perform laboratory procedures
MEM15011B	Exercise external quality assurance
MEM15012B	Maintain/supervise the application of quality procedures
MEM15015B	Examine trading practices
MEM15016B	Inspect pre-packed articles
MEM15017B	Use and maintain reference standards
MEM15018B	Investigate consumer complaints

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Code	Name
MEM15019B	Conduct a field inspection
MEM15020C	Perform verification/certification or in-service inspection
MEM15021C	Conduct audits of servicing licensees and public weighbridge licensees
MEM15022B	Verify reference standards
MEM15024A	Apply quality procedures
MEM16001B	Give formal presentations and take part in meetings
MEM16002C	Conduct formal interviews and negotiations
MEM16003B	Provide advanced customer service
MEM16004B	Perform internal/external customer service
MEM16005A	Operate as a team member to conduct manufacturing, engineering or related activities
MEM16006A	Organise and communicate information
MEM16007A	Work with others in a manufacturing, engineering or related environment
MEM16008A	Interact with computing technology
MEM16009A	Research and analyse engineering information
MEM16010A	Write reports
MEM16011A	Communicate with individuals and small groups
MEM16012A	Interpret technical specifications and manuals
MEM16013A	Operate in a self-directed team
MEM16014A	Report technical information
MEM17001B	Assist in development and deliver training in the workplace
MEM17002B	Conduct workplace assessment
MEM17003A	Assist in the provision of on the job training
MEM18001C	Use hand tools

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Code	Name
MEM18002B	Use power tools/hand held operations
MEM18003C	Use tools for precision work
MEM18004B	Maintain and overhaul mechanical equipment
MEM18005B	Perform fault diagnosis, installation and removal of bearings
MEM18006C	Repair and fit engineering components
MEM18007B	Maintain and repair mechanical drives and mechanical transmission assemblies
MEM18008B	Balance equipment
MEM18009B	Perform levelling and alignment of machines and engineering components
MEM18010C	Perform equipment condition monitoring and recording
MEM18011C	Shut down and isolate machines/equipment
MEM18012B	Perform installation and removal of mechanical seals
MEM18013B	Perform gland packing
MEM18014B	Manufacture press tools and gauges
MEM18015B	Maintain tools and dies
MEM18016B	Analyse plant and equipment condition monitoring results
MEM18017C	Modify mechanical systems and equipment
MEM18018C	Maintain pneumatic system components
MEM18019B	Maintain pneumatic systems
MEM18020B	Maintain hydraulic system components
MEM18021B	Maintain hydraulic systems
MEM18022B	Maintain fluid power controls
MEM18023B	Modify fluid power system operation
MEM18024B	Maintain engine cooling systems

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Code	Name
MEM18025B	Service combustion engines
MEM18026C	Test compression ignition fuel systems
MEM18027C	Overhaul engine fuel system components
MEM18028B	Maintain engine lubrication systems
MEM18029B	Tune diesel engines
MEM18030B	Diagnose and rectify low voltage electrical systems
MEM18031B	Diagnose and rectify low voltage starting systems
MEM18032B	Maintain induction/exhaust systems
MEM18033B	Perform engine bottom-end overhaul
MEM18034B	Perform engine top-end overhaul
MEM18035B	Diagnose and rectify braking systems
MEM18037B	Diagnose and rectify low voltage charging systems
MEM18038B	Maintain wheels and tyres
MEM18039B	Diagnose and rectify track type undercarriage
MEM18040B	Maintain suspension systems
MEM18041B	Maintain steering systems
MEM18042C	Diagnose and rectify manual transmissions
MEM18043C	Diagnose and rectify automatic transmissions
MEM18044C	Diagnose and rectify drive line and final drives
MEM18045B	Fault find/repair electrical equipment/components up to 250 volts single phase supply
MEM18046B	Fault find/repair electrical equipment/components up to 1000 volts a.c./1500 volts d.c.
MEM18047B	Diagnose and maintain electronic controlling systems on mobile plant
MEM18048B	Fault find and repair/rectify basic electrical circuits

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Code	Name
MEM18049C	Disconnect/reconnect fixed wired equipment up to 1000 volts a.c./1500 volts d.c.
MEM18050C	Disconnect/reconnect fixed wired equipment over 1000 volts a.c./1500 volts d.c.
MEM18051B	Fault find and repair/rectify complex electrical circuits
MEM18052B	Maintain fluid power systems for mobile plant
MEM18053B	Modify fluid power control systems
MEM18054B	Fault find, test and calibrate instrumentation systems and equipment
MEM18055B	Dismantle, replace and assemble engineering components
MEM18056B	Diagnose and repair analog equipment and components
MEM18057B	Maintain/service analog/digital electronic equipment
MEM18058C	Modify electronic equipment
MEM18059B	Modify electronic systems
MEM18060B	Maintain, repair control instrumentation - single and multiple loop control systems
MEM18061B	Maintain/calibrate complex control systems
MEM18062B	Install, maintain and calibrate instrumentation sensors, transmitters and final control elements
MEM18063B	Terminate signal and data cables
MEM18064B	Maintain instrumentation system components
MEM18065B	Diagnose and repair digital equipment and components
MEM18066B	Diagnose and repair microprocessor-based equipment
MEM18067B	Tune control loops - multi controller or multi element systems
MEM18069B	Maintain, repair instrumentation process control analysers
MEM18070C	Modify complex electrical circuits and systems
MEM18071B	Connect/disconnect fluid conveying system components

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Code	Name
MEM18072B	Manufacture fluid conveying conductor assemblies
MEM18073A	Perform advanced equipment testing and diagnostics on mobile plant and equipment
MEM18084A	Commission and decommission split air conditioning systems
MEM18085A	Install, service and repair domestic air conditioning and refrigeration appliances
MEM18086B	Test, recover, evacuate and charge refrigeration systems
MEM18087B	Service and repair domestic and light commercial refrigeration and air conditioning equipment
MEM18088B	Maintain and repair commercial air conditioning systems and components
MEM18089B	Maintain and repair central air handling systems
MEM18090B	Maintain and repair industrial refrigeration systems and components
MEM18091B	Maintain and repair multi stage, cascade and/or ultra-cold industrial refrigeration systems
MEM18092B	Maintain and repair commercial and/or industrial refrigeration and/or air conditioning controls
MEM18093B	Maintain and repair integrated industrial refrigeration and/or large air handling system controls
MEM18094B	Service and repair commercial refrigeration
MEM18095A	Maintain and repair cooling towers/evaporative condensers and associated equipment
MEM18096A	Maintain, repair/replace and adjust refrigerant flow controls and associated equipment
MEM18097A	Manufacture cavity dies
MEM18098A	Prepare to perform work associated with fuel system installation and servicing
MEM19001B	Perform jewellery metal casting
MEM19002B	Prepare jewellery illustrations

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Code	Name
MEM19003B	Handle gem materials
MEM19004B	Handle and examine gemstone materials
MEM19005B	Produce three-dimensional precision items
MEM19006B	Replace watch batteries
MEM19007B	Perform gemstone setting
MEM19008B	Prepare jewellery designs
MEM19009B	Perform investment procedures for lost wax casting process
MEM19010B	Produce rubber moulds for lost wax casting process
MEM19011B	Perform wax injection of moulds for lost wax casting process
MEM19012B	Produce jewellery wax model
MEM19013B	Produce jewellery metal masters
MEM19014B	Perform hand engraving
MEM19015B	Perform jewellery enamelling
MEM19016B	Construct jewellery components
MEM19017B	Fabricate jewellery items
MEM19018B	Repair jewellery items
MEM19020B	Fault-find and maintain micro-mechanisms
MEM19021B	Diagnose and service micro-mechanisms
MEM19022B	Perform precision micro-mechanism diagnosis and servicing
MEM20001A	Produce keys
MEM20002A	Assemble and test lock mechanisms
MEM20003A	Install and upgrade locks and hardware
MEM20004A	Gain entry
MEM20005A	Install and maintain door control devices/systems

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Code	Name
MEM20006A	Maintain and service mechanical locking devices
MEM20007A	Plan and prepare a masterkey system
MEM20008A	Develop and implement a masterkey system
MEM20009A	Gain entry and reinstate fire and security containers
MEM20010A	Gain entry and reinstate automotive locking systems
MEM20011A	Service and repair fire and security containers
MEM20012A	Service and repair mechanical automotive locking systems
MEM20013A	Service automotive transponder systems
MEM20014A	Perform a site security survey
MEM21001A	Replace watch batteries, capacitors and bands
MEM21002A	Perform watch movement exchange
MEM21003A	Perform watch case servicing, repair and refurbishment
MEM21004A	Clean watch and clock components
MEM21005A	Diagnose faults in quartz watches
MEM21006A	Service quartz watches
MEM21007A	Service complex quartz watches
MEM21008A	Service mechanical watches
MEM21009A	Inspect, diagnose, adjust and repair mechanical watches
MEM21010A	Service watch power generating systems
MEM21011A	Service calendar and other dial indication mechanisms for watches
MEM21012A	Service and repair mechanical watch oscillating systems
MEM21013A	Service, test and adjust watch escapements
MEM21014A	Service mechanical chronograph watches
MEM21015A	Perform precision watch timing and adjustment

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Code	Name
MEM21016A	Install and set up clocks
MEM21017A	Service and repair clock timepieces
MEM21018A	Service clock escapements and oscillating systems
MEM21019A	Service and repair clock striking mechanisms
MEM21020A	Service and repair clock chiming mechanisms
MEM21021A	Restore clockwork mechanisms
MEM21022A	Manufacture watch and clock components
MEM21023A	Plan, set up and operate horological workshop or service centre
MEM22001A	Perform engineering activities
MEM22002A	Manage self in the engineering environment
MEM22003A	Manage engineering resources
MEM22004A	Manage engineering projects
MEM22005A	Manage engineering operations
MEM22006A	Source and estimate materials
MEM22007A	Manage environmental effects of engineering activities
MEM22008A	Manage change and technical development
MEM22009A	Manage technical sales and promotion
MEM23001A	Apply advanced mathematical techniques in a manufacturing engineering or related environment
MEM23002A	Apply calculus in engineering situations
MEM23003A	Operate and program computers and/or controllers in engineering situations
MEM23041A	Apply basic scientific principles and techniques in mechanical engineering situations
MEM23051A	Apply basic electro and control scientific principles and techniques in mechanical and manufacturing engineering situations

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Code	Name
MEM23052A	Apply basic electro and control scientific principles and techniques in aeronautical engineering situations
MEM23061A	Select and test mechanical engineering materials
MEM23062A	Select and test mechatronic engineering materials
MEM23071A	Select and apply mechanical engineering methods, processes and construction techniques
MEM23072A	Select and apply mechatronic engineering methods, processes and construction techniques
MEM23073A	Select and apply aeronautical engineering methods, processes and construction techniques
MEM23074A	Select and apply avionic engineering methods, processes and construction techniques
MEM23081A	Apply scientific principles and techniques in mechanical engineering situations
MEM23082A	Apply scientific principles and techniques in mechatronic engineering situations
MEM23083A	Apply industrial engineering principles and techniques in competitive manufacturing engineering situations
MEM23084A	Apply scientific principles and techniques in aeronautical engineering situations
MEM23085A	Apply scientific principles and techniques in avionic engineering situations
MEM23091A	Apply mechanical system design principles and techniques in mechanical engineering situations
MEM23092A	Apply automated systems principles and techniques in engineering situations
MEM23093A	Apply plant and process design principles and techniques in engineering situations
MEM23094A	Apply maintenance systems principles and techniques in engineering situations
MEM23095A	Apply aeronautical system design principles and techniques in aeronautical engineering situations

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Code	Name
MEM23096A	Apply avionic system design principles and techniques in avionic engineering situations
MEM23097A	Apply automated systems principles and techniques in aeronautical engineering situations
MEM23098A	Apply automated systems principles and techniques in avionic engineering situations
MEM24001B	Perform basic penetrant testing
MEM24002B	Perform penetrant testing
MEM24003B	Perform basic magnetic particle testing
MEM24004B	Perform magnetic particle testing
MEM24005B	Perform basic eddy current testing
MEM24006B	Perform eddy current testing
MEM24007B	Perform ultrasonic thickness testing
MEM24008B	Perform ultrasonic testing
MEM24009B	Perform basic radiographic testing
MEM24010B	Perform radiographic testing
MEM24011B	Establish non-destructive tests
MEM24012C	Apply metallurgy principles
MEM25001B	Apply fibre-reinforced materials
MEM25002B	Form and integrate fibre-reinforced structures
MEM25003B	Set up marine vessel structures
MEM25004B	Fair and shape surfaces
MEM25005B	Construct and assemble marine vessel timber components
MEM25006B	Undertake marine sheathing operations
MEM25007B	Maintain marine vessel surfaces
MEM25008B	Repair marine vessel surfaces and structures

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Code	Name
MEM25009B	Form timber shapes using hot processes
MEM25010B	Perform fitout procedures
MEM25011B	Install marine systems
MEM25012B	Install and test operations of marine auxiliary systems
MEM25013B	Produce three-dimensional plugs/moulds
MEM25014B	Perform marine slipping operations
MEM25015A	Assemble and install equipment and accessories/ancillaries
MEM30001A	Use computer aided drafting systems to produce basic engineering drawings
MEM30002A	Produce basic engineering graphics
MEM30003A	Produce detailed engineering drawings
MEM30004A	Use CAD to create and display 3D models
MEM30005A	Calculate force systems within simple beam structures
MEM30006A	Calculate stresses in simple structures
MEM30007A	Select common engineering materials
MEM30008A	Apply basic economic and ergonomic concepts to evaluate engineering applications
MEM30009A	Contribute to the design of basic mechanical systems
MEM30010A	Set up basic hydraulic circuits
MEM30011A	Set up basic pneumatic circuits
MEM30012A	Apply mathematical techniques in a manufacturing engineering or related environment
MEM30013A	Assist in the preparation of a basic workplace layout
MEM30014A	Apply basic just in time systems to the reduction of waste
MEM30015A	Develop recommendations for basic set up time improvements

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Code	Name
MEM30016A	Assist in the analysis of a supply chain
MEM30017A	Use basic preventative maintenance techniques and tools
MEM30018A	Undertake basic process planning
MEM30019A	Use resource planning software systems in manufacturing
MEM30020A	Develop and manage a plan for a simple manufacturing related project
MEM30021A	Prepare a simple production schedule
MEM30022A	Undertake supervised procurement activities
MEM30023A	Prepare a simple cost estimate for a manufactured product
MEM30024A	Participate in quality assurance techniques
MEM30025A	Analyse a simple electrical system circuit
MEM30026A	Select and test components for simple electronic switching and timing circuits
MEM30027A	Prepare basic programs for programmable logic controllers
MEM30028A	Assist in sales of technical products/systems
MEM50001B	Classify recreational boating technologies and features
MEM50002B	Work safely on marine craft
MEM50003B	Follow work procedures to maintain the marine environment
MEM50004B	Maintain quality of environment by following marina codes
MEM50005B	Refuel vessels
MEM50006B	Check operational capability of marine craft
MEM50007B	Check operational capability of sails and sail operating equipment
MEM50008B	Carry out trip preparation and planning
MEM50009B	Safely operate a mechanically powered recreational boat
MEM50010B	Respond to boating emergencies and incidents

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Code	Name
AURV225908A	Carry out panel repairs
BSBOHS502B	Participate in the management of the OHS information and data systems
BSBOHS601B	Develop a systematic approach to managing OHS
BSBOHS602B	Develop OHS information and data analysis and reporting and recording processes
BSBOHS603B	Analyse and evaluate OHS risk
CPCCLDG3001A	Licence to perform dogging
CPCCLRG3001A	Licence to perform rigging basic level
CPCCLSF2001A	Licence to erect, alter and dismantle scaffolding basic level
CPCCLSF3001A	Licence to erect, alter and dismantle scaffolding intermediate level
ICTTC136B	Install, maintain and modify customer premises communications cabling: ACA Restricted Rule
ICTTC137B	Install, maintain and modify customer premises communications cabling: ACA Open Rule
MEA101B	Interpret occupational health and safety practices in aviation maintenance
MEA105B	Apply quality standards applicable to aviation maintenance processes
MEA107B	Interpret and use aviation maintenance industry manuals and specifications
MEA108B	Complete aviation maintenance industry documentation
MEA109B	Perform basic hand skills, standard trade practices and fundamentals in aviation maintenance
MEA270A	Lay out avionic systems
MEA271A	Lay out avionic flight management systems
MEA272A	Apply basic scientific principles and techniques in avionic engineering situations
MEA273A	Select and test avionic engineering materials
MEA340A	Lay out and set up aircraft systems
MEA341A	Apply basic aircraft design characteristics
MEA342A	Apply basic aircraft power plant design characteristics
MEA349A	Apply basic scientific principles and techniques in aeronautical

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Code	Name
	engineering situations
MEA350A	Select and test aeronautical engineering materials
MEA405B	Repair/modify aircraft composite material structure/components
MSACMC210A	Manage the impact of change on own work
MSACMC410A	Lead change in a manufacturing environment
MSACMC610A	Manage relationships with non-customer external organisations
MSACMC611A	Manage people relationships
MSACMC612A	Manage workplace learning
MSACMS200A	Apply competitive manufacturing practices
MSACMS201A	Sustain process improvements
MSACMS400A	Implement a competitive manufacturing system
MSACMS401A	Ensure process improvements are sustained
MSACMS600A	Develop a competitive manufacturing system
MSACMS601A	Analyse and map a value chain
MSACMS602A	Manage a value chain
MSACMS603A	Develop manufacturing related business plans
MSACMT220A	Apply quick changeover procedures
MSACMT221A	Apply Just in Time (JIT) procedures
MSACMT230A	Apply cost factors to work practices
MSACMT231A	Interpret product costs in terms of customer requirements
MSACMT240A	Apply 5S procedures in a manufacturing environment
MSACMT250A	Monitor process capability
MSACMT251A	Apply quality standards
MSACMT260A	Use planning software systems in manufacturing

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Code	Name
MSACMT261A	Use SCADA systems in manufacturing
MSACMT270A	Use sustainable energy practices
MSACMT271A	Use sustainable environmental practices
MSACMT280A	Undertake root cause analysis
MSACMT281A	Contribute to the application of a proactive maintenance strategy
MSACMT421A	Facilitate a Just in Time (JIT) system
MSACMT430A	Improve cost factors in work practices
MSACMT432A	Analyse manual handling processes
MSACMT440A	Lead 5S in a manufacturing environment
MSACMT450A	Undertake process capability improvements
MSACMT451A	Mistake proof a production process
MSACMT452A	Apply statistics to processes in manufacturing
MSACMT452A	Apply statistics to processes in manufacturing
MSACMT460A	Facilitate the use of planning software systems in manufacturing
MSACMT461A	Facilitate SCADA systems in a manufacturing team or work area
MSACMT481A	Undertake proactive maintenance analyses
MSACMT482A	Assist in implementing a proactive maintenance strategy
MSACMT620A	Develop quick changeover procedures
MSACMT621A	Develop a Just in Time (JIT) system
MSACMT630A	Optimise cost of product
MSACMT631A	Undertake value analysis of product costs in terms of customer requirements
MSACMT640A	Manage 5S system in a manufacturing environment
MSACMT650A	Determine and improve process capability

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Code	Name
MSACMT660A	Develop the application of enterprise systems in manufacturing
MSACMT661A	Determine and establish information collection requirements and processes
MSACMT670A	Develop and manage sustainable energy practices
MSACMT671A	Develop and manage sustainable environmental practices
MSACMT675A	Facilitate the development of a new product
MSACMT681A	Develop a proactive maintenance strategy
MSAENV272B	Participate in environmentally sustainable work practices
MSAENV472B	Implement and monitor environmentally sustainable work practices
MSAENV672B	Develop workplace policy and procedures for environmental sustainability
MSATCM304A	Interpret basic binary phase diagrams
PMBPROD291B	Operate resin infusion moulding equipment
PMBPROD291B	Operate resin infusion moulding equipment
PMBPROD294B	Operate resin transfer moulding equipment
PMBPROD294B	Operate resin transfer moulding equipment
PMBPROD298B	Operate equipment using pre-pregs material
PMBPROD298B	Operate equipment using pre-pregs material
PMBPROD391B	Produce composites using resin infusion
PMBPROD394B	Produce composites using resin transfer moulding
PMBPROD398B	Produce composites using pre-pregs
PRSTS202A	Install security equipment/system
PRSTS302A	Program security equipment/system
PRSTS303A	Test installed security equipment/system
PRSTS304A	Commission/decommission security equipment/system

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Code	Name
PRSTS305A	Identify and diagnose electronic security equipment/ system fault
PRSTS307A	Maintain and service security equipment/system
PRSTS317A	Provide estimate and quote
PRSTS319A	Modify and repair security equipment/system
TLILIC0012A	Licence to operate a vehicle loading crane (capacity 10 metre tonnes and above)
TLILIC2001A	Licence to operate a forklift truck
TLILIC2002A	Licence to operate an order picking forklift truck
TLILIC3003A	Licence to operate a bridge and gantry crane
TLILIC3006A	Licence to operate a non-slewing mobile crane (greater than 3 tonnes capacity)

MEM05v3 Mapping of Changes

MEM05v3 Qualifications – summary of changes

Note:

- All qualifications have been adjusted to include sustainability units of competency and to comply with the 1/3 elective and 1/6 importation requirements.
- MSAENV sustainability units added to core and/or electives – all qualifications. MSAENV472B has been included in the Certificate III Trade Specialisation list of units.
- Points allocated to MSAENV units: MSAENV272B = 3, MSAENV472B = 4.
- For points based qualifications, where MSAENV272B has been added to core units, the total elective points required have been reduced by three to accommodate inclusion of the extra unit in the core. Similarly, other qualifications have had the elective choice reduced by one unit. Note that all MEM qualifications already exceeded the requirement that at least 1/3 of the total must be electives.
- **Total points to achieve a qualification have been based on points required in industrial instruments and have not been altered.***
- All qualification outcomes remain equivalent.

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Code	Title	MSAENV unit/s	MEM05v2 elective points/ units required	MEM05v3 elective points/ units required	*Total points or units	1/3 elective requirement	1/6 import requirement	Comments
MEM10105	Certificate I in Engineering	MSAENV272B (electives)	24 pts	24 pts	24 pts	8 pts	4 pts	**Import allowance reverts to 5 points** as in MEM05v2 (incorrectly changed to 7 points June 2010, based on wrong points calculations).
MEM10205	Certificate I in Boating Services	MSAENV272B (electives)	3 units	3 units	10 units	3 units	2 units	Imports increased from nil to 2 units.
MEM20105	Certificate II in Engineering	MSAENV272B (electives)	30 pts	30 pts	32 pts	11 pts	5 pts	**Import allowance reverts to 6 points** as in MEM05v2 (incorrectly changed to 8 points June

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Code	Title	MSAENV unit/s	MEM05v2 elective points/ units required	MEM05v3 elective points/ units required	*Total points or units	1/3 elective requirement	1/6 import requirement	Comments
								2010, based on wrong points calculations)
MEM20205	Certificate II in Engineering – Production Technology	MSAENV 272B (core)	53 pts	50 pts	64 pts	21 pts	11 pts	Sustainability unit added to core and elective points adjusted. **Import allowance reverts to 11 points** (incorrectly changed to 14 points June 2010, based on wrong points calculations)
MEM20305	Certificate II in Boating Services	MSAENV 272B (electives)	6 units	6 units	14 units	5 units	2 units	Import allowance increased from one to two to meet 1/6 rule

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Code	Title	MSAENV unit/s	MEM05v2 elective points/ units required	MEM05v3 elective points/ units required	*Total points or units	1/3 elective requirement	1/6 import requirement	Comments
MEM30105	Certificate III in Engineering – Production Systems	MSAENV272B (core) MSAENV472B (specialisation electives)	76 pts	73 pts	96 pts	32 pts	16 pts	Sustainability unit added to core. Total elective points adjusted to 73. Import allowance increased from 15 to 16 to meet 1/6 rule.
MEM30205	Certificate III in Engineering – Mechanical Trade	MSAENV272B (core) MSAENV472B (specialisation electives)	76 pts	73 pts	96 pts	32 pts	16 pts	Sustainability unit added to core. Total elective points adjusted to 73. Import allowance increased from 15 to 16 to meet 1/6 rule.
MEM30305	Certificate III in Engineering – Fabrication Trade	MSAENV272B (core) MSAENV472B	76 pts	73 pts	96 pts	32 pts	16 pts	Sustainability unit added to core. Total

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Code	Title	MSAENV unit/s	MEM05v2 elective points/ units required	MEM05v3 elective points/ units required	*Total points or units	1/3 elective requirement	1/6 import requirement	Comments
		(specialisation electives)						elective points adjusted to 73. Import allowance increased from 15 to 16 to meet 1/6 rule. Eight MEM 06 series units added to fabrication trade stream.
MEM30405	Certificate III in Engineering – Electrical/Electronic Trade	MSAENV272B (core) MSAENV472B (specialisation electives)	76 pts	73 pts	96 pts	32 pts	16 pts	Sustainability unit added to core. Total elective points adjusted to 73. Import allowance increased from 15 to 16 to meet 1/6 rule.
MEM30505	Certificate III in	MSAENV272B	8 units	7 units	10 unit	3 units	2 units	Sustainability unit

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Code	Title	MSAENV unit/s	MEM05v2 elective points/ units required	MEM05v3 elective points/ units required	*Total points or units	1/3 elective requirement	1/6 import requirement	Comments
	Engineering – Technical	(core)			s			added to core. Elective choice reduced to 7 units. Import allowance increased from nil to two units to meet 1/6 rule.
MEM30605	Certificate III in Jewellery Manufacture	MSAENV272B (core) MSAENV472B (specialisation electives)	76 pts	73 pts	96 pts	32 pts	16 pts	Sustainability unit added to core. Total elective points adjusted to 73. Import allowance increased from 15 to 16 to meet 1/6 rule.
MEM30705	Certificate III in Marine Craft Construction	MSAENV272B (core) MSAENV472B (specialisation	76 pts	73 pts	96 pts	32 pts	16 pts	Sustainability unit added to core. Total elective points adjusted

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Code	Title	MSAENV unit/s	MEM05v2 elective points/ units required	MEM05v3 elective points/ units required	*Total points or units	1/3 elective requirement	1/6 import requirement	Comments
		electives)						to 73. Import allowance increased from 15 to 16 to meet 1/6 rule.
MEM30805	Certificate III in Locksmithing	MSAENV272B (core) MSAENV472B (specialisation electives)	76 pts	73 pts	96 pts	32 pts	16 pts	Sustainability unit added to core. Total elective points adjusted to 73. Import allowance increased from 15 to 16 to meet 1/6 rule.
MEM30905	Certificate III in Boating Services	MSAENV272B (core)	14 units	13 units	21 units	7 units	4 units	Sustainability unit added to core. Elective choice reduced to 13 units. Import allowance increased from 3 to 4 units to

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Code	Title	MSAENV unit/s	MEM05v2 elective points/ units required	MEM05v3 elective points/ units required	*Total points or units	1/3 elective requirement	1/6 import requirement	Comments
								meet 1/6 rule.
MEM31010	Certificate III in Watch and Clock Service and Repair	MSAENV272B (core) MSAENV472B (specialisation electives)	n/a	73 pts	96 pts	32 pts	16 pts	New qualification. Includes sustainability units and meets 1/3 and 1/6 requirements.
MEM40105	Certificate IV in Engineering	MSAENV272B (core) MSAENV472B (specialisation electives)	112 pts	109 pts	132 pts	44 pts	22 pts	Sustainability unit added to core. Total elective points adjusted to 109. No change to import allowance.
MEM40205	Certificate IV in Boating Services	MSAENV272B (core) MSAENV472B (electives)	20 units	19 units	29 units	10 units	5 units	Sustainability unit added to core. Elective choice reduced to 19 units. Import

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Code	Title	MSAENV unit/s	MEM05v2 elective points/ units required	MEM05v3 elective points/ units required	*Total points or units	1/3 elective requirement	1/6 import requirement	Comments
								allowance increased from 4 to 5 units to meet 1/6 rule.
MEM50105	Diploma of Engineering – Advanced Trade	MSAENV272B (core) MSAENV472B (electives)	120 pts*	117 pts	156 pts	52 pts	26 pts	Sustainability unit added to core. Elective choice adjusted to 117. Import allowance increased from 24 to 26 to meet 1/6 requirement. **Note: error in MEM05v2* packaging rules *corrected from 136 to 120 points.*
MEM50205	Diploma of Engineering – Technical	MSAENV272B (core) MSAENV472B	16 units	15 units	20 units	7 units	3 units	Sustainability unit added to core. Elective choice

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Code	Title	MSAENV unit/s	MEM05v2 elective points/ units required	MEM05v3 elective points/ units required	*Total points or units	1/3 elective requirement	1/6 import requirement	Comments
		(electives)						reduced to 15 units. Import allowance = 3 units (no change from MEM05v2.2 version, June 2010)
MEM60105	Advanced Diploma of Engineering	MSAENV272B (core) MSAENV472B and 672B (electives)	24 units	23 units	30 units	10 units	5 units	Sustainability unit added to core. Elective choice reduced to 23. Import allowance = 5 units (no change from MEM05v2.2 version, June 2010). Addition of 12 Competitive Manufact

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Code	Title	MSAENV unit/s	MEM05v2 elective points/ units required	MEM05v3 elective points/ units required	*Total points or units	1/3 elective requirement	1/6 import requirement	Comments
								uring units to Elective Group B.

MEM05v3 - new units

Unit code	Unit title	Points
MEM21001A	Replace watch batteries, capacitors and bands	2
MEM21002A	Perform watch movement exchange	2
MEM21003A	Perform watch case servicing, repair and refurbishment	4
MEM21004A	Clean watch and clock components	2
MEM21005A	Diagnose faults in quartz watches	2
MEM21006A	Service quartz watches	4
MEM21007A	Service complex quartz watches	4
MEM21008A	Service mechanical watches	4
MEM21009A	Inspect, diagnose, adjust and repair mechanical watches	4
MEM21010A	Service watch power generating systems	2
MEM21011A	Service calendar and other dial indication mechanisms for watches	4
MEM21012A	Service and repair mechanical watch oscillating systems	4
MEM21013A	Service, test and adjust watch escapements	4
MEM21014A	Service mechanical chronograph watches	6
MEM21015A	Perform precision watch timing and adjustment	6

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MEM21016A	Install and set up clocks	2
MEM21017A	Service and repair clock timepieces	6
MEM21018A	Service clock escapements and oscillating systems	4
MEM21019A	Service and repair clock striking mechanisms	4
MEM21020A	Service and repair clock chiming mechanisms	6
MEM21021A	Restore clockwork mechanisms	6
MEM21022A	Manufacture watch and clock components	6
MEM21023A	Plan, set up and operate horological workshop or service centre	4

MEM05v2 Qualifications mapping V1.02 to V2

MEM05v1.02	MEM05v2	Qualification name	Comment
MEM40105	MEM40105	Certificate IV in Engineering	Addition of four metallurgy units to Specialisation Group 1 electives and one imported unit added to Specialisation Group 2 electives.
MEM30205	MEM30205	Certificate III in Engineering-Mechanical	Expanded qualification descriptor - equivalent
MEM30305	MEM30305	Certificate III in Engineering-Fabrication	Expanded qualification descriptor - equivalent
MEM30405	MEM30405	Certificate III in Engineering-Electrical/Electronic Trade	Expanded qualification descriptor - equivalent
MEM40105	MEM40105	Certificate IV in Engineering	Expanded qualification descriptor - equivalent
MEM50105	MEM50105	Diploma of Engineering-Advanced Trade	Expanded qualification descriptor - equivalent

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MEM05 Qualifications mapping V1.01 to V1.02

Following is a summary list of qualification codes for the MEM05 V1.02 Metal and Engineering Training Package. Qualifications have been mapped to show their relationship to the previous version MEM05 V1.01

V1.02	V1.01	Nature of relationship	Change to qualification outcome
MEM10105	MEM10105	Equivalent qualification	No change
MEM10205	MEM10205	Equivalent qualification	No change
MEM20105	MEM20105	Equivalent qualification	No change
MEM20205	MEM20205	Equivalent qualification	No change
MEM20305	MEM20305	Equivalent qualification	No change
MEM30105	MEM30105	Equivalent qualification	No change
MEM30205	MEM30205	Equivalent qualification	No change
MEM30305	MEM30305	Equivalent qualification	No change
MEM30405	MEM30405	Equivalent qualification	No change
MEM30505	MEM30505	Equivalent qualification	No change
MEM30605	MEM30605	Equivalent qualification	No change
MEM30705	MEM30705	Equivalent qualification	No change
MEM30805	MEM30805	Equivalent qualification	No change
MEM30905	MEM30905	Equivalent qualification	No change
MEM40105	MEM40105	Equivalent qualification	No change
MEM40205	MEM40205	Equivalent qualification	No change
MEM50105	MEM50105	Equivalent qualification	No change
MEM50205	MEM50205	Equivalent qualification	No change
MEM60105	MEM60105	Equivalent qualification	No change

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Unit mapping MEM05 V2 to V1.02

The letter 'Y' in the prerequisite column (labeled P) of the mapping table below indicates that a unit of competency has one or more prerequisites. Refer to Appendix 1 for details of pre-requisite units.

MEM05v1.02	MEM05v2	Unit title	P	Comment
		Metallurgy		
	MEM04020A	Supervise individual ferrous melting and casting operation	Y	New unit
	MEM04021A	Supervise individual non ferrous melting and casting operation	Y	New unit
	MEM04022A	Examine appropriateness of methoding for mould design	Y	New unit
	MEM04023A	Undertake prescribed tests on foundry related materials	Y	New unit
MEM24012B	MEM24012C	Apply metallurgy principles		Minor edits to include reference to alloys. Equivalent.
		Critical trade		
MEM04005B	MEM04005C	Produce moulds and cores by hand (jobbing)	Y	Redefined and updated Evidence Guides. Equivalent.
MEM05010B	MEM05010C	Apply fabrication, forming and shaping techniques	Y	Redefined and updated Evidence Guides. Equivalent.
MEM05011C	MEM05011D	Assemble fabricated components	Y	Redefined and updated Evidence Guides. Equivalent.
MEM05015C	MEM05015D	Weld using manual metal arc welding process	Y	Redefined and updated Evidence Guides. Equivalent.
MEM05017C	MEM05017D	Weld using gas metal arc welding process	Y	Redefined and updated Evidence Guides. Equivalent.
MEM05019C	MEM05019D	Weld using gas tungsten arc	Y	Redefined and

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		welding process		updated Evidence Guides. Equivalent.
MEM05026B	MEM05026C	Apply welding principles		Redefined and updated Evidence Guides. Equivalent.
MEM05037B	MEM05037C	Perform geometric development	Y	Redefined and updated Evidence Guides. Equivalent.
MEM07005B	MEM07005C	Perform general machining	Y	Redefined and updated Evidence Guides. Equivalent.
MEM07006B	MEM07006C	Perform lathe operations	Y	Redefined and updated Evidence Guides. Equivalent.
MEM07007B	MEM07007C	Perform milling operations	Y	Redefined and updated Evidence Guides. Equivalent.
MEM07008C	MEM07008D	Perform grinding operations	Y	Redefined and updated Evidence Guides. Equivalent.
MEM12006B	MEM12006C	Mark off/out (general engineering)	Y	Redefined and updated Evidence Guides. Equivalent.
MEM12007C	MEM12007D	Mark off/out structural fabrications and shapes	Y	Redefined and updated Evidence Guides. Equivalent.
MEM18006B	MEM18006C	Repair and fit engineering components	Y	Redefined and updated Evidence Guides. Equivalent.
		Circuit testing		
MEM18049B	MEM18049C	Disconnect/reconnect fixed wired equipment up to 1000 volts a.c./1500 volts d.c.	Y	Redefined skills and knowledge for circuit testing – equivalent
MEM18050B	MEM18050C	Disconnect/recommect fixed wired equipment over 1000 volts a.c./1500 volts d.c.	Y	Redefined skills and knowledge for circuit testing – equivalent

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Unit mapping MEM05 V1.01 to V1.02

The letter 'Y' in the prerequisite column (labeled P) of the mapping table below indicates that a unit of competency has one or more prerequisites. Refer to Appendix 1 for details of pre-requisite units.

MEM05 Unit code	MEM05 Unit title	P	Relationship to previous training package version
MEM03001B	Perform manual production assembly		No change. Equivalent unit
MEM03002B	Perform precision assembly	Y	No change. Equivalent unit
MEM03003B	Perform sheet and plate assembly	Y	Corrected title of MEM05003B in pre req pathway. Cat 1 change. Unit equivalent.
MEM03004B	Perform electronic/electrical assembly (production)		No change. Equivalent unit
MEM03005B	Rework and repair (electrical/electronic production)	Y	No change. Equivalent unit
MEM03006B	Set assembly stations	Y	No change. Equivalent unit
MEM04001B	Operate melting furnaces	Y	No change. Equivalent unit
MEM04002B	Perform gravity die casting	Y	No change. Equivalent unit
MEM04003B	Operate pressure die casting machine	Y	No change. Equivalent unit
MEM04004B	Prepare and mix sand for metal moulding		No change. Equivalent unit
MEM04005B	Produce moulds and cores by hand (jobbing)	Y	No change. Equivalent unit
MEM04006B	Operate sand moulding and core making machines		No change. Equivalent unit

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MEM05 Unit code	MEM05 Unit title	P	Relationship to previous training package version
MEM04007B	Pour molten metal	Y	No change. Equivalent unit
MEM04008B	Fettle and trim metal castings/forgings	Y	No change. Equivalent unit
MEM04010B	Develop and manufacture wood patterns	Y	No change. Equivalent unit
MEM04011B	Produce polymer patterns	Y	No change. Equivalent unit
MEM04012B	Assemble plated patterns	Y	No change. Equivalent unit
MEM04013B	Develop and manufacture polystyrene patterns	Y	No change. Equivalent unit
MEM04014B	Develop and manufacture production patterns	Y	No change. Equivalent unit
MEM04015B	Develop and manufacture vacuum forming moulds and associated equipment	Y	No change. Equivalent unit
MEM04016C	Develop and manufacture precision models	Y	No change. Equivalent unit
MEM04017B	Develop and manufacture gear, conveyor screw and propeller patterns	Y	No change. Equivalent unit
MEM04018B	Perform general woodworking machine operations	Y	No change. Equivalent unit
MEM04019B	Perform refractory installation and repair	Y	No change. Equivalent unit
MEM05001B	Perform manual soldering/desoldering – electrical/electronic components		No change. Equivalent unit
MEM05002B	Perform high reliability soldering and desoldering	Y	No change. Equivalent unit
MEM05003B	Perform soft soldering		No change. Equivalent unit

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MEM05 Unit code	MEM05 Unit title	P	Relationship to previous training package version
MEM05004C	Perform routine oxy acetylene welding		No change. Equivalent unit
MEM05005B	Carry out mechanical cutting	Y	No change. Equivalent unit
MEM05006B	Perform brazing and/or silver soldering		No change. Equivalent unit
MEM05007C	Perform manual heating and thermal cutting		Correction to unit title Correction to PC numbering Cat 1 change. Cat 1 change. Unit equivalent.
MEM05008C	Perform advanced manual thermal cutting, gouging and shaping	Y	No change. Equivalent unit
MEM05009C	Perform automated thermal cutting	Y	No change. Equivalent unit
MEM05010B	Apply fabrication, forming and shaping techniques	Y	No change. Equivalent unit
MEM05011C	Assemble fabricated components	Y	No change. Equivalent unit
MEM05012C	Perform routine manual metal arc welding		No change. Equivalent unit
MEM05013C	Perform manual production welding		No change. Equivalent unit
MEM05014C	Monitor quality of production welding/fabrications	Y	No change. Equivalent unit
MEM05015C	Weld using manual metal arc welding process	Y	No change. Equivalent unit
MEM05016C	Perform advanced welding using manual metal arc welding process	Y	No change. Equivalent unit
MEM05017C	Weld using gas metal arc welding process	Y	No change. Equivalent unit

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MEM05 Unit code	MEM05 Unit title	P	Relationship to previous training package version
MEM05018C	Perform advanced welding using gas metal arc welding process	Y	Application and range statement clarified. Cat 1 change. Unit equivalent.
MEM05019C	Weld using gas tungsten arc welding process	Y	No change. Equivalent unit
MEM05020C	Perform advanced welding using gas tungsten arc welding process	Y	No change. Equivalent unit
MEM05022C	Perform advanced welding using oxy acetylene welding process	Y	No change. Equivalent unit
MEM05023C	Weld using submerged arc welding process	Y	Deleted incorrect references in knowledge list. Cat 1 change. Unit equivalent.
MEM05024B	Perform welding supervision	Y	No change. Equivalent unit
MEM05025C	Perform welding/fabrication inspection	Y	No change. Equivalent unit
MEM05026B	Apply welding principles		No change. Equivalent unit
MEM05036C	Repair/replace/modify fabrications	Y	No change. Equivalent unit
MEM05037B	Perform geometric development	Y	No change. Equivalent unit
MEM05038B	Perform advanced geometric development - cylindrical/rectangular	Y	Application statement clarified. Cat 1 change. Unit equivalent.
MEM05039B	Perform advanced geometric development - conical	Y	Application statement clarified. Cat 1 change. Unit equivalent.
MEM05040B	Perform advanced geometric development - transitions	Y	Application statement clarified. Cat 1 change. Unit equivalent.
MEM05041B	Weld using powder flame spraying	Y	

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MEM05 Unit code	MEM05 Unit title	P	Relationship to previous training package version
MEM05042B	Perform welds to code standards using flux core arc welding process	Y	Corrected missing pre-requisite. Cat 1 change. Unit equivalent.
MEM05043B	Perform welds to code standards using gas metal arc welding process	Y	No change. Equivalent unit
MEM05044B	Perform welds to code standards using gas tungsten arc welding process	Y	No change. Equivalent unit
MEM05045B	Perform pipe welds to code standards using manual metal arc welding process	Y	No change. Equivalent unit
MEM05046B	Perform welds to code standards using manual metal arc welding process	Y	No change. Equivalent unit
MEM05047B	Weld using flux core arc welding process	Y	Corrected missing pre-requisite. Cat 1 change. Unit equivalent.
MEM05048B	Perform advanced welding using flux core arc welding process	Y	Corrected missing pre-requisite. Cat 1 change. Unit equivalent.
MEM05049B	Perform routine gas tungsten arc welding		No change. Equivalent unit
MEM05050B	Perform routine gas metal arc welding		No change. Equivalent unit
MEM05051A	Select welding processes		No change. Equivalent unit
MEM05052A	Apply safe welding practices		No change. Equivalent unit
MEM05053A	Set and edit computer controlled thermal cutting machines	Y	No change. Equivalent unit
MEM05054A	Write basic NC/CNC programs for thermal cutting machines	Y	No change. Equivalent unit
MEM06001B	Perform hand forging	Y	No change. Equivalent unit
MEM06002B	Perform hammer forging		No change. Equivalent

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MEM05 Unit code	MEM05 Unit title	P	Relationship to previous training package version
			unit
MEM06003C	Carry out heat treatment		No change. Equivalent unit
MEM06004B	Select heat treatment processes and test finished product	Y	No change. Equivalent unit
MEM06005B	Perform drop and upset forging	Y	No change. Equivalent unit
MEM06006C	Repair springs	Y	No change. Equivalent unit
MEM06007B	Perform basic incidental heat/quenching, tempering and annealing		No change. Equivalent unit
MEM06008A	Hammer forge complex shapes	Y	No change. Equivalent unit
MEM06009A	Hand forge complex shapes	Y	No change. Equivalent unit
MEM07001B	Perform operational maintenance of machines/equipment	Y	No change. Equivalent unit
MEM07002B	Perform precision shaping/planing/slotting operations	Y	No change. Equivalent unit
MEM07003B	Perform machine setting (routine)	Y	No change. Equivalent unit
MEM07004B	Perform machine setting (complex)	Y	No change. Equivalent unit
MEM07005B	Perform general machining	Y	Application statement clarified. Cat 1 change. Unit equivalent.
MEM07006B	Perform lathe operations	Y	No change. Equivalent unit
MEM07007B	Perform milling operations	Y	No change. Equivalent unit
MEM07008C	Perform grinding operations	Y	No change. Equivalent

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MEM05 Unit code	MEM05 Unit title	P	Relationship to previous training package version
			unit
MEM07009B	Perform precision jig boring operations	Y	No change. Equivalent unit
MEM07010B	Perform tool and cutter grinding operations	Y	No change. Equivalent unit
MEM07011B	Perform complex milling operations	Y	No change. Equivalent unit
MEM07012B	Perform complex grinding operations	Y	No change. Equivalent unit
MEM07013B	Perform machining operations using horizontal and/or vertical boring machines	Y	No change. Equivalent unit
MEM07014B	Perform electro-discharge machining operations (EDM)	Y	No change. Equivalent unit
MEM07015B	Set computer controlled machines/processes	Y	No change. Equivalent unit
MEM07016C	Set and edit computer controlled machines/processes	Y	No change. Equivalent unit
MEM07018C	Write basic NC/CNC programs	Y	No change. Equivalent unit
MEM07019C	Program NC/CNC machining centre	Y	No change. Equivalent unit
MEM07020C	Program multiple spindle and/or multiple axis NC/CNC machining centre	Y	No change. Equivalent unit
MEM07021B	Perform complex lathe operations	Y	No change. Equivalent unit
MEM07022C	Program CNC wire cut machines	Y	No change. Equivalent unit
MEM07023C	Program and set up CNC manufacturing cell	Y	No change. Equivalent unit
MEM07024B	Operate and monitor machine/process		No change. Equivalent

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MEM05 Unit code	MEM05 Unit title	P	Relationship to previous training package version
			unit
MEM07025B	Perform advanced machine/process operation	Y	No change. Equivalent unit
MEM07026B	Perform advanced plastic processing	Y	No change. Equivalent unit
MEM07027B	Perform advanced press operations	Y	No change. Equivalent unit
MEM07028B	Operate computer controlled machines/processes	Y	No change. Equivalent unit
MEM07029B	Perform routine sharpening/maintenance of production tools and cutters	Y	No change. Equivalent unit
MEM07030C	Perform metal spinning lathe operations (basic)	Y	No change. Equivalent unit
MEM07031C	Perform metal spinning lathe operations (complex)	Y	Corrected title of MEM05003B in pre req pathway. Cat 1 change. Unit equivalent.
MEM07032B	Use workshop machines for basic operations	Y	No change. Equivalent unit
MEM07033B	Operate and monitor basic boiler		No change. Equivalent unit
MEM07034A	Operate and monitor intermediate class boiler	Y	No change. Equivalent unit
MEM07039A	Write programs for industrial robots	Y	No change. Equivalent unit
MEM07040A	Set multistage integrated processes	Y	No change. Equivalent unit
MEM08001B	Perform wire, jig and barrel load/unload work		No change. Equivalent unit
MEM08002C	Pre-treat work for subsequent surface coating	Y	No change. Equivalent unit

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MEM05 Unit code	MEM05 Unit title	P	Relationship to previous training package version
MEM08003C	Perform electroplating operations	Y	No change. Equivalent unit
MEM08004B	Finish work using wet, dry and vapour deposition methods	Y	No change. Equivalent unit
MEM08005B	Prepare and produce specialised coatings	Y	No change. Equivalent unit
MEM08006B	Produce clear and/or coloured and/or sealed anodised films on aluminium	Y	No change. Equivalent unit
MEM08007B	Control surface finish production and finished product quality		No change. Equivalent unit
No change. Equivalent unit MEM08008B	Operate and control surface finishing waste treatment process	Y	No change. Equivalent unit
MEM08009C	Make up solutions	Y	No change. Equivalent unit
MEM08010B	Manually finish/polish materials	Y	No change. Equivalent unit
MEM08011B	Prepare surfaces using solvents and/or mechanical means	Y	No change. Equivalent unit
MEM08012B	Prepare surfaces by abrasive blasting (basic)	Y	No change. Equivalent unit
MEM08013B	Prepare surfaces by abrasive blasting (advanced)	Y	No change. Equivalent unit
MEM08014B	Apply protective coatings (basic)	Y	No change. Equivalent unit
MEM08015B	Apply protective coatings (advanced)	Y	No change. Equivalent unit
MEM08016B	Control blast coating by-products, materials and emissions	Y	No change. Equivalent unit
MEM08018B	Electroplate engineering coatings	Y	No change. Equivalent unit

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MEM05 Unit code	MEM05 Unit title	P	Relationship to previous training package version
MEM08019B	Electroplate protective finishes	Y	No change. Equivalent unit
MEM08020B	Electroplate decorative finishes	Y	No change. Equivalent unit
MEM09002B	Interpret technical drawing		No change. Equivalent unit
MEM09003B	Prepare basic engineering drawing	Y	No change. Equivalent unit
MEM09004B	Perform electrical/electronic detail drafting	Y	No change. Equivalent unit
MEM09005B	Perform basic engineering detail drafting	Y	No change. Equivalent unit
MEM09006B	Perform advanced engineering detail drafting	Y	No change. Equivalent unit
MEM09007B	Perform advanced mechanical detail drafting	Y	No change. Equivalent unit
MEM09008B	Perform advanced structural detail drafting	Y	No change. Equivalent unit
MEM09009C	Create 2D drawings using computer aided design system	Y	No change. Equivalent unit
MEM09010C	Create 3D models using computer aided design system	Y	No change. Equivalent unit
MEM09011B	Apply basic engineering design concepts	Y	No change. Equivalent unit
MEM09021B	Interpret and produce curved 3-dimensional shapes		No change. Equivalent unit
MEM09022A	Create 2D code file using computer aided manufacturing system	Y	Correction to unit title Cat 1 change. Unit equivalent.
MEM09023A	Create 3D code files using computer aided manufacturing system	Y	Correction to MEM09022 unit title in pre-req pathway. Cat 1 change.

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MEM05 Unit code	MEM05 Unit title	P	Relationship to previous training package version
			Unit equivalent.
MEM09141A	Represent mechanical engineering designs	Y	No change. Equivalent unit
MEM09142A	Represent mechatronic engineering designs	Y	No change. Equivalent unit
MEM09151A	Apply computer aided modelling and data management techniques to mechanical engineering designs	Y	No change. Equivalent unit
MEM09152A	Apply computer aided modelling and data management techniques to mechatronic engineering designs	Y	No change. Equivalent unit
MEM10001C	Erect structures	Y	No change. Equivalent unit
MEM10002B	Terminate and connect electrical wiring	Y	No change. Equivalent unit
MEM10003B	Install and test electrical wiring and circuits up to 1000 volts a.c. and 1500 volts d.c.	Y	No change. Equivalent unit
MEM10004B	Enter and change programmable controller operational parameters	Y	No change. Equivalent unit
MEM10005B	Commission programmable controller programs	Y	No change. Equivalent unit
MEM10006B	Install machine/plant	Y	No change. Equivalent unit
MEM10007C	Modify control systems	Y	No change. Equivalent unit
MEM10008B	Undertake commissioning procedures for plant and/or equipment	Y	No change. Equivalent unit
MEM10009B	Install refrigeration and air conditioning plant and equipment	Y	No change. Equivalent unit
MEM10010B	Install pipework and pipework assemblies	Y	No change. Equivalent unit

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MEM05 Unit code	MEM05 Unit title	P	Relationship to previous training package version
MEM10011B	Terminate and connect specialist cables	Y	No change. Equivalent unit
MEM10012A	Install split air conditioning system	Y	Deleted unit.
MEM10013A	Install split air conditioning systems and associated pipework	Y	New unit. Replaces and is not equivalent to MEM10012A
MEM11001C	Erect/dismantle scaffolding and equipment	Y	No change. Equivalent unit
MEM11002C	Erect/dismantle complex scaffolding and equipment	Y	No change. Equivalent unit
MEM11003B	Coordinate erection/dismantling of complex scaffolding/equipment	Y	No change. Equivalent unit
MEM11004B	Undertake dogging	Y	No change. Equivalent unit
MEM11005B	Pick and process order		No change. Equivalent unit
MEM11006B	Perform production packaging		No change. Equivalent unit
MEM11007B	Administer inventory procedures		No change. Equivalent unit
MEM11008B	Package materials (stores and warehouse)		No change. Equivalent unit
MEM11009B	Handle/move bulk fluids/gases		No change. Equivalent unit
MEM11010B	Operate mobile load shifting equipment		No change. Equivalent unit
MEM11011B	Undertake manual handling		No change. Equivalent unit
MEM11012B	Purchase materials		No change. Equivalent unit
MEM11013B	Undertake warehouse receival process	Y	No change. Equivalent

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MEM05 Unit code	MEM05 Unit title	P	Relationship to previous training package version
			unit
MEM11014B	Undertake warehouse dispatch process	Y	No change. Equivalent unit
MEM11015B	Manage warehouse inventory system	Y	No change. Equivalent unit
MEM11016B	Order materials		No change. Equivalent unit
MEM11017B	Organise and lead stocktakes	Y	No change. Equivalent unit
MEM11018B	Organise and maintain warehouse stock receival and/or dispatch system	Y	No change. Equivalent unit
MEM11019B	Undertake tool store procedures	Y	No change. Equivalent unit
MEM11020B	Perform advanced warehouse computer operations	Y	No change. Equivalent unit
MEM11021B	Perform advanced operation of load shifting equipment	Y	No change. Equivalent unit
MEM11022B	Operate fixed/moveable load shifting equipment		No change. Equivalent unit
MEM12001B	Use comparison and basic measuring devices		No change. Equivalent unit
MEM12002B	Perform electrical/electronic measurement		No change. Equivalent unit
MEM12003B	Perform precision mechanical measurement	Y	No change. Equivalent unit
MEM12004B	Perform precision electrical/electronic measurement		No change. Equivalent unit
MEM12005B	Calibrate measuring equipment	Y	No change. Equivalent unit
MEM12006B	Mark off/out (general engineering)	Y	No change. Equivalent unit

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MEM05 Unit code	MEM05 Unit title	P	Relationship to previous training package version
MEM12007C	Mark off/out structural fabrications and shapes	Y	No change. Equivalent unit
MEM12019B	Measure components using coordinate measuring machines		Minor correction to unit title and descriptor. Cat 1 change. Unit equivalent.
MEM12020B	Set and operate coordinate measuring machines		Minor correction to unit title and descriptor. Cat 1 change. Unit equivalent.
MEM12021B	Program coordinate measuring machines	Y	Minor correction to unit title and descriptor. Cat 1 change. Unit equivalent.
MEM12022B	Program coordinate measuring machines (advanced)	Y	Minor correction to unit title and descriptor. Cat 1 change. Unit equivalent.
MEM12023A	Perform engineering measurements		No change. Equivalent unit
MEM12024A	Perform computations		No change. Equivalent unit
MEM12025A	Use graphical techniques and perform simple statistical computations	Y	No change. Equivalent unit
MEM13001B	Perform emergency first aid		No change. Equivalent unit
MEM13002B	Undertake occupational health and safety activities in the workplace		No change. Equivalent unit
MEM13003B	Work safely with industrial chemicals and materials		No change. Equivalent unit
MEM13004B	Work safely with molten metals/glass		No change. Equivalent unit

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MEM05 Unit code	MEM05 Unit title	P	Relationship to previous training package version
MEM13006B	Collect and evaluate occupational health and safety data for an enterprise or section of an enterprise		No change. Equivalent unit
MEM13007B	Maintain water treatment systems for cooling towers	Y	No change. Equivalent unit
MEM13010A	Supervise occupational health and safety in an industrial work environment.	Y	No change. Equivalent unit
MEM13013B	Work safely with ionizing radiation		No change. Equivalent unit
MEM13014A	Apply principles of occupational health and safety in the work environment		No change. Equivalent unit
MEM14001B	Schedule material deliveries		No change. Equivalent unit
MEM14002B	Undertake basic process planning		No change. Equivalent unit
MEM14003B	Undertake basic production scheduling		No change. Equivalent unit
MEM14004A	Plan to undertake a routine task		No change. Equivalent unit
MEM14005A	Plan a complete activity		No change. Equivalent unit
MEM14061A	Plan and design mechanical engineering projects	Y	No change. Equivalent unit
MEM14062A	Plan and design mechatronic engineering projects	Y	No change. Equivalent unit
MEM14063A	Plan and design manufacturing engineering projects	Y	No change. Equivalent unit
MEM14064A	Plan and design maintenance engineering projects	Y	No change. Equivalent unit
MEM14081A	Apply mechanical engineering fundamentals to support design and development of projects	Y	No change. Equivalent unit

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MEM05 Unit code	MEM05 Unit title	P	Relationship to previous training package version
MEM14082A	Apply mechatronics fundamentals to support design and development of engineering projects	Y	No change. Equivalent unit
MEM15001B	Perform basic statistical quality control		No change. Equivalent unit
MEM15002A	Apply quality systems		No change. Equivalent unit
MEM15003B	Use improvement processes in team activities	Y	No change. Equivalent unit
MEM15004B	Perform inspection		No change. Equivalent unit
MEM15005B	Select and control inspection processes and procedures	Y	No change. Equivalent unit
MEM15007B	Conduct product and/or process capability studies	Y	No change. Equivalent unit
MEM15008B	Perform advanced statistical quality control	Y	No change. Equivalent unit
MEM15010B	Perform laboratory procedures		No change. Equivalent unit
MEM15011B	Exercise external quality assurance	Y	No change. Equivalent unit
MEM15012B	Maintain/supervise the application of quality procedures	Y	No change. Equivalent unit
MEM15015B	Examine trading practices	Y	No change. Equivalent unit
MEM15016B	Inspect pre-packed articles	Y	No change. Equivalent unit
MEM15017B	Use and maintain reference standards	Y	No change. Equivalent unit
MEM15018B	Investigate consumer complaints	Y	No change. Equivalent unit

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MEM05 Unit code	MEM05 Unit title	P	Relationship to previous training package version
MEM15019B	Conduct a field inspection	Y	No change. Equivalent unit
MEM15020C	Perform verification/certification or in-service inspection	Y	No change. Equivalent unit
MEM15021C	Conduct audits of servicing licensees and public weighbridge licensees	Y	No change. Equivalent unit
MEM15022B	Verify reference standards	Y	No change. Equivalent unit
MEM15024A	Apply quality procedures		No change. Equivalent unit
MEM16001B	Give formal presentations and take part in meetings		No change. Equivalent unit
MEM16002C	Conduct formal interviews and negotiations		No change. Equivalent unit
MEM16003B	Provide advanced customer service		Correction to PC numbering. Cat 1 change. Unit equivalent.
MEM16004B	Perform internal/external customer service		No change. Equivalent unit
MEM16005A	Operate as a team member to conduct manufacturing, engineering or related activities		No change. Equivalent unit
MEM16006A	Organise and communicate information		No change. Equivalent unit
MEM16007A	Work with others in a manufacturing, engineering or related environment		No change. Equivalent unit
MEM16008A	Interact with computing technology		No change. Equivalent unit
MEM16009A	Research and analyse engineering information	Y	No change. Equivalent unit
MEM16010A	Write reports	Y	No change. Equivalent unit

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MEM05 Unit code	MEM05 Unit title	P	Relationship to previous training package version
MEM16011A	Communicate with individuals and small groups	Y	No change. Equivalent unit
MEM16012A	Interpret technical specifications and manuals		No change. Equivalent unit
MEM16013A	Operate in a self-directed team	Y	No change. Equivalent unit
MEM16014A	Report technical information	Y	No change. Equivalent unit
MEM17001B	Assist in development and deliver training in the workplace		No change. Equivalent unit
MEM17002B	Conduct workplace assessment		No change. Equivalent unit
MEM17003A	Assist in the provision of on the job training		No change. Equivalent unit
MEM18001C	Use hand tools		No change. Equivalent unit
MEM18002B	Use power tools/hand held operations		No change. Equivalent unit
MEM18003C	Use tools for precision work	Y	No change. Equivalent unit
MEM18004B	Maintain and overhaul mechanical equipment	Y	Correction to PC numbering. Cat 1 change. Unit equivalent.
MEM18005B	Perform fault diagnosis, installation and removal of bearings	Y	No change. Equivalent unit
MEM18006B	Repair and fit engineering components	Y	No change. Equivalent unit
MEM18007B	Maintain and repair mechanical drives and mechanical transmission assemblies	Y	No change. Equivalent unit
MEM18008B	Balance equipment	Y	No change. Equivalent unit

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MEM05 Unit code	MEM05 Unit title	P	Relationship to previous training package version
MEM18009B	Perform levelling and alignment of machines and engineering components	Y	No change. Equivalent unit
MEM18010C	Perform equipment condition monitoring and recording	Y	No change. Equivalent unit
MEM18011C	Shut down and isolate machines/equipment		No change. Equivalent unit
MEM18012B	Perform installation and removal of mechanical seals	Y	No change. Equivalent unit
MEM18013B	Perform gland packing	Y	No change. Equivalent unit
MEM18014B	Manufacture press tools and gauges	Y	No change. Equivalent unit
MEM18015B	Maintain tools and dies	Y	No change. Equivalent unit
MEM18016B	Analyse plant and equipment condition monitoring results	Y	No change. Equivalent unit
MEM18017C	Modify mechanical systems and equipment	Y	No change. Equivalent unit
MEM18018C	Maintain pneumatic system components	Y	No change. Equivalent unit
MEM18019B	Maintain pneumatic systems	Y	No change. Equivalent unit
MEM18020B	Maintain hydraulic system components	Y	No change. Equivalent unit
MEM18021B	Maintain hydraulic systems	Y	No change. Equivalent unit
MEM18022B	Maintain fluid power controls	Y	No change. Equivalent unit
MEM18023B	Modify fluid power system operation	Y	No change. Equivalent unit
MEM18024B	Maintain engine cooling systems	Y	No change. Equivalent

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MEM05 Unit code	MEM05 Unit title	P	Relationship to previous training package version
			unit
MEM18025B	Service combustion engines	Y	No change. Equivalent unit
MEM18026C	Test compression ignition fuel systems	Y	No change. Equivalent unit
MEM18027C	Overhaul engine fuel system components	Y	No change. Equivalent unit
MEM18028B	Maintain engine lubrication systems	Y	No change. Equivalent unit
MEM18029B	Tune diesel engines	Y	No change. Equivalent unit
MEM18030B	Diagnose and rectify low voltage electrical systems	Y	No change. Equivalent unit
MEM18031B	Diagnose and rectify low voltage starting systems	Y	No change. Equivalent unit
MEM18032B	Maintain induction/exhaust systems	Y	No change. Equivalent unit
MEM18033B	Perform engine bottom-end overhaul	Y	No change. Equivalent unit
MEM18034B	Perform engine top-end overhaul	Y	No change. Equivalent unit
MEM18035B	Diagnose and rectify braking systems	Y	No change. Equivalent unit
MEM18037B	Diagnose and rectify low voltage charging systems	Y	No change. Equivalent unit
MEM18038B	Maintain wheels and tyres	Y	No change. Equivalent unit
MEM18039B	Diagnose and rectify track type undercarriage	Y	No change. Equivalent unit
MEM18040B	Maintain suspension systems	Y	No change. Equivalent unit

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MEM05 Unit code	MEM05 Unit title	P	Relationship to previous training package version
MEM18041B	Maintain steering systems	Y	No change. Equivalent unit
MEM18042C	Diagnose and rectify manual transmissions	Y	No change. Equivalent unit
MEM18043C	Diagnose and rectify automatic transmissions	Y	No change. Equivalent unit
MEM18044C	Diagnose and rectify drive line and final drives	Y	No change. Equivalent unit
MEM18045B	Fault find/repair electrical equipment/components up to 250 volts single phase supply	Y	No change. Equivalent unit
MEM18046B	Fault find/repair electrical equipment/components up to 1000 volts a.c./1500 volts d.c.	Y	No change. Equivalent unit
MEM18047B	Diagnose and maintain electronic controlling systems on mobile plant	Y	No change. Equivalent unit
MEM18048B	Fault find and repair/rectify basic electrical circuits	Y	No change. Equivalent unit
MEM18049B	Disconnect/reconnect fixed wired equipment up to 1000 volts a.c./1500 volts d.c.	Y	No change. Equivalent unit
MEM18050B	Disconnect/reconnect fixed wired equipment over 1000 volts a.c./1500 volts d.c.	Y	Minor title correction. Cat 1 change. Unit equivalent.
MEM18051B	Fault find and repair/rectify complex electrical circuits	Y	No change. Equivalent unit
MEM18052B	Maintain fluid power systems for mobile plant	Y	No change. Equivalent unit
MEM18053B	Modify fluid power control systems	Y	No change. Equivalent unit
MEM18054B	Fault find, test and calibrate instrumentation systems and equipment	Y	No change. Equivalent unit

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MEM05 Unit code	MEM05 Unit title	P	Relationship to previous training package version
MEM18055B	Dismantle, replace and assemble engineering components	Y	No change. Equivalent unit
MEM18056B	Diagnose and repair analog equipment and components	Y	No change. Equivalent unit
MEM18057B	Maintain/service analog/digital electronic equipment	Y	No change. Equivalent unit
MEM18058C	Modify electronic equipment	Y	No change. Equivalent unit
MEM18059B	Modify electronic systems	Y	No change. Equivalent unit
MEM18060B	Maintain, repair control instrumentation - single and multiple loop control systems	Y	No change. Equivalent unit
MEM18061B	Maintain/calibrate complex control systems	Y	No change. Equivalent unit
MEM18062B	Install, maintain and calibrate instrumentation sensors, transmitters and final control elements	Y	No change. Equivalent unit
MEM18063B	Terminate signal and data cables	Y	No change. Equivalent unit
MEM18064B	Maintain instrumentation system components	Y	No change. Equivalent unit
MEM18065B	Diagnose and repair digital equipment and components	Y	No change. Equivalent unit
MEM18066B	Diagnose and repair microprocessor-based equipment	Y	No change. Equivalent unit
MEM18067B	Tune control loops - multi controller or multi element systems	Y	No change. Equivalent unit
MEM18069B	Maintain, repair instrumentation process control analysers	Y	No change. Equivalent unit
MEM18070C	Modify complex electrical circuits and systems	Y	No change. Equivalent unit

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MEM05 Unit code	MEM05 Unit title	P	Relationship to previous training package version
MEM18071B	Connect/disconnect fluid conveying system components	Y	No change. Equivalent unit
MEM18072B	Manufacture fluid conveying conductor assemblies	Y	No change. Equivalent unit
MEM18073A	Perform advanced equipment testing and diagnostics on mobile plant and equipment	Y	No change. Equivalent unit
MEM18084A	Commission and decommission split air conditioning systems	Y	New unit. No equivalent.
MEM18085A	Install, service and repair domestic air conditioning and refrigeration appliances	Y	New unit. No equivalent.
MEM18086B	Test, recover, evacuate and charge refrigeration systems	Y	No change. Equivalent unit
MEM18087B	Service and repair domestic and light commercial refrigeration and air conditioning equipment	Y	No change. Equivalent unit
MEM18088B	Maintain and repair commercial air conditioning systems and components	Y	No change. Equivalent unit
MEM18089B	Maintain and repair central air handling systems	Y	No change. Equivalent unit
MEM18090B	Maintain and repair industrial refrigeration systems and components	Y	No change. Equivalent unit
MEM18091B	Maintain and repair multi stage, cascade and/or ultra-cold industrial refrigeration systems	Y	No change. Equivalent unit
MEM18092B	Maintain and repair commercial and/or industrial refrigeration and/or air conditioning controls	Y	No change. Equivalent unit
MEM18093B	Maintain and repair integrated industrial refrigeration and/or large air handling system controls	Y	No change. Equivalent unit
MEM18094B	Service and repair commercial refrigeration	Y	No change. Equivalent unit

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MEM05 Unit code	MEM05 Unit title	P	Relationship to previous training package version
MEM18095A	Maintain and repair cooling towers/evaporative condensers and associated equipment	Y	No change. Equivalent unit
MEM18096A	Maintain, repair/replace and adjust refrigerant flow controls and associated equipment	Y	No change. Equivalent unit
MEM18097A	Manufacture cavity dies	Y	No change. Equivalent unit
MEM19001B	Perform jewellery metal casting	Y	No change. Equivalent unit
MEM19002B	Prepare jewellery illustrations	Y	No change. Equivalent unit
MEM19003B	Handle gem materials		No change. Equivalent unit
MEM19004B	Handle and examine gemstone materials	Y	No change. Equivalent unit
MEM19005B	Produce three-dimensional precision items	Y	No change. Equivalent unit
MEM19006B	Replace watch batteries	Y	No change. Equivalent unit
MEM19007B	Perform gemstone setting	Y	No change. Equivalent unit
MEM19008B	Prepare jewellery designs	Y	No change. Equivalent unit
MEM19009B	Perform investment procedures for lost wax casting process	Y	No change. Equivalent unit
MEM19010B	Produce rubber moulds for lost wax casting process		No change. Equivalent unit
MEM19011B	Perform wax injection of moulds for lost wax casting process		No change. Equivalent unit
MEM19012B	Produce jewellery wax model	Y	No change. Equivalent unit

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MEM05 Unit code	MEM05 Unit title	P	Relationship to previous training package version
MEM19013B	Produce jewellery metal masters	Y	No change. Equivalent unit
MEM19014B	Perform hand engraving	Y	No change. Equivalent unit
MEM19015B	Perform jewellery enamelling	Y	No change. Equivalent unit
MEM19016B	Construct jewellery components	Y	No change. Equivalent unit
MEM19017B	Fabricate jewellery items	Y	No change. Equivalent unit
MEM19018B	Repair jewellery items	Y	No change. Equivalent unit
MEM19020B	Fault-find and maintain micro-mechanisms	Y	No change. Equivalent unit
MEM19021B	Diagnose and service micro-mechanisms	Y	No change. Equivalent unit
MEM19022B	Perform precision micro-mechanism diagnosis and servicing	Y	No change. Equivalent unit
MEM20001A	Produce keys		No change. Equivalent unit
MEM20002A	Assemble and test lock mechanisms	Y	No change. Equivalent unit
MEM20003A	Install and upgrade locks and hardware	Y	No change. Equivalent unit
MEM20004A	Gain entry	Y	No change. Equivalent unit
MEM20005A	Install and maintain door control devices/systems	Y	No change. Equivalent unit
MEM20006A	Maintain and service mechanical locking devices	Y	No change. Equivalent unit
MEM20007A	Plan and prepare a masterkey system	Y	Pre-requisite correction.

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MEM05 Unit code	MEM05 Unit title	P	Relationship to previous training package version
			Cat 1 change. Unit equivalent.
MEM20008A	Develop and implement a masterkey system	Y	Pre-requisite correction. Cat 1 change. Unit equivalent.
MEM20009A	Gain entry and reinstate fire and security containers	Y	No change. Equivalent unit
MEM20010A	Gain entry and reinstate automotive locking systems	Y	No change. Equivalent unit
MEM20011A	Service and repair fire and security containers	Y	No change. Equivalent unit
MEM20012A	Service and repair mechanical automotive locking systems	Y	No change. Equivalent unit
MEM20013A	Service automotive transponder systems	Y	No change. Equivalent unit
MEM20014A	Perform a site security survey		No change. Equivalent unit
MEM22001A	Perform engineering activities	Y	No change. Equivalent unit
MEM22002A	Manage self in the engineering environment	Y	No change. Equivalent unit
MEM22003A	Manage engineering resources	Y	No change. Equivalent unit
MEM22004A	Manage engineering projects	Y	No change. Equivalent unit
MEM22005A	Manage engineering operations	Y	No change. Equivalent unit
MEM22006A	Source and estimate materials	Y	No change. Equivalent unit
MEM22007A	Manage environmental effects of engineering activities	Y	No change. Equivalent unit

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MEM05 Unit code	MEM05 Unit title	P	Relationship to previous training package version
MEM22008A	Manage change and technical development	Y	No change. Equivalent unit
MEM22009A	Manage technical sales and promotion	Y	No change. Equivalent unit
MEM23001A	Apply advanced mathematical techniques in a manufacturing engineering or related environment	Y	No change. Equivalent unit
MEM23002A	Apply calculus in engineering situations	Y	No change. Equivalent unit
MEM23003A	Operate and program computers and/or controllers in engineering situations	Y	No change. Equivalent unit
MEM23041A	Apply basic scientific principles and techniques in mechanical engineering situations		No change. Equivalent unit
MEM23051A	Apply basic electro and control scientific principles and techniques in mechanical and manufacturing engineering situations		No change. Equivalent unit
MEM23061A	Select and test mechanical engineering materials		Updated reference to National Measurement Institute. Cat 1 change. Unit equivalent.
MEM23062A	Select and test mechatronic engineering materials		Updated reference to National Measurement Institute. Cat 1 change. Unit equivalent.
MEM23071A	Select and apply mechanical engineering methods, processes and construction techniques		No change. Equivalent unit
MEM23072A	Select and apply mechatronic engineering methods, processes and construction techniques		No change. Equivalent unit
MEM23081A	Apply scientific principles and techniques in mechanical engineering situations	Y	No change. Equivalent unit

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MEM05 Unit code	MEM05 Unit title	P	Relationship to previous training package version
MEM23082A	Apply scientific principles and techniques in mechatronic engineering situations	Y	No change. Equivalent unit
MEM23083A	Apply industrial engineering principles and techniques in competitive manufacturing engineering situations	Y	No change. Equivalent unit
MEM23091A	Apply mechanical system design principles and techniques in mechanical engineering situations	Y	No change. Equivalent unit
MEM23092A	Apply automated systems principles and techniques in engineering situations	Y	Corrected "automotive" to "automated" Cat 1 change. Unit equivalent.
MEM23093A	Apply plant and process design principles and techniques in engineering situations	Y	Corrected reference to "no" prerequisites. Cat 1 change. Unit equivalent.
MEM23094A	Apply maintenance systems principles and techniques in engineering situations	Y	No change. Equivalent unit
MEM24001B	Perform basic penetrant testing	Y	No change. Equivalent unit
MEM24002B	Perform penetrant testing	Y	No change. Equivalent unit
MEM24003B	Perform basic magnetic particle testing	Y	No change. Equivalent unit
MEM24004B	Perform magnetic particle testing	Y	No change. Equivalent unit
MEM24005B	Perform basic eddy current testing	Y	No change. Equivalent unit
MEM24006B	Perform eddy current testing	Y	No change. Equivalent unit
MEM24007B	Perform ultrasonic thickness testing	Y	No change. Equivalent unit
MEM24008B	Perform ultrasonic testing	Y	No change. Equivalent unit

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MEM05 Unit code	MEM05 Unit title	P	Relationship to previous training package version
MEM24009B	Perform basic radiographic testing	Y	No change. Equivalent unit
MEM24010B	Perform radiographic testing	Y	No change. Equivalent unit
MEM24011B	Establish non-destructive tests	Y	No change. Equivalent unit
MEM24012B	Apply metallurgy principles		No change. Equivalent unit
MEM25001B	Apply fibre-reinforced materials	Y	No change. Equivalent unit
MEM25002B	Form and integrate fibre-reinforced structures	Y	No change. Equivalent unit
MEM25003B	Set up marine vessel structures	Y	No change. Equivalent unit
MEM25004B	Fair and shape surfaces	Y	No change. Equivalent unit
MEM25005B	Construct and assemble marine vessel timber components	Y	No change. Equivalent unit
MEM25006B	Undertake marine sheathing operations	Y	No change. Equivalent unit
MEM25007B	Maintain marine vessel surfaces	Y	No change. Equivalent unit
MEM25008B	Repair marine vessel surfaces and structures	Y	No change. Equivalent unit
MEM25009B	Form timber shapes using hot processes	Y	No change. Equivalent unit
MEM25010B	Perform fitout procedures	Y	No change. Equivalent unit
MEM25011B	Install marine systems	Y	No change. Equivalent unit
MEM25012B	Install and test operations of marine	Y	No change. Equivalent

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MEM05 Unit code	MEM05 Unit title	P	Relationship to previous training package version
	auxiliary systems		unit
MEM25013B	Produce three-dimensional plugs/moulds	Y	No change. Equivalent unit
MEM25014B	Perform marine slipping operations	Y	No change. Equivalent unit
MEM25015A	Assemble and install equipment and accessories/ancillaries		No change. Equivalent unit
MEM30001A	Use computer aided drafting systems to produce basic engineering drawings	Y	No change. Equivalent unit
MEM30002A	Produce basic engineering graphics	Y	No change. Equivalent unit
MEM30003A	Produce detailed engineering drawings	Y	No change. Equivalent unit
MEM30004A	Use CAD to create and display 3D models	Y	Corrected pre-requisite. Cat 1 change. Unit equivalent.
MEM30005A	Calculate force systems within simple beam structures	Y	No change. Equivalent unit
MEM30006A	Calculate stresses in simple structures	Y	No change. Equivalent unit
MEM30007A	Select common engineering materials		No change. Equivalent unit
MEM30008A	Apply basic economic and ergonomic concepts to evaluate engineering applications		No change. Equivalent unit
MEM30009A	Contribute to the design of basic mechanical systems	Y	No change. Equivalent unit
MEM30010A	Set up basic hydraulic circuits		No change. Equivalent unit
MEM30011A	Set up basic pneumatic circuits		No change. Equivalent unit

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MEM05 Unit code	MEM05 Unit title	P	Relationship to previous training package version
MEM30012A	Apply mathematical techniques in a manufacturing, engineering or related environment		No change. Equivalent unit
MEM30013A	Assist in the preparation of a basic workplace layout		No change. Equivalent unit
MEM30014A	Apply basic just in time systems to the reduction of waste		No change. Equivalent unit
MEM30015A	Develop recommendations for basic set up time improvements		No change. Equivalent unit
MEM30016A	Assist in the analysis of a supply chain		No change. Equivalent unit
MEM30017A	Use basic preventative maintenance techniques and tools		No change. Equivalent unit
MEM30018A	Undertake basic process planning		No change. Equivalent unit
MEM30019A	Use resource planning software systems in manufacturing	Y	No change. Equivalent unit
MEM30020A	Develop and manage a plan for a simple manufacturing related project		No change. Equivalent unit
MEM30021A	Prepare a simple production schedule		No change. Equivalent unit
MEM30022A	Undertake supervised procurement activities		No change. Equivalent unit
MEM30023A	Prepare a simple cost estimate for a manufactured product		No change. Equivalent unit
MEM30024A	Participate in quality assurance techniques	Y	No change. Equivalent unit
MEM30025A	Analyse a simple electrical system circuit	Y	No change. Equivalent unit
MEM30026A	Select and test components for simple electronic switching and timing circuits	Y	No change. Equivalent unit

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MEM05 Unit code	MEM05 Unit title	P	Relationship to previous training package version
MEM30027A	Prepare basic programs for programmable logic controllers		No change. Equivalent unit
MEM30028A	Assist in sales of technical products/systems		No change. Equivalent unit
MEM50001B	Classify recreational boating technologies and features		No change. Equivalent unit
MEM50002B	Work safely on marine craft		No change. Equivalent unit
MEM50003B	Follow work procedures to maintain the marine environment		No change. Equivalent unit
MEM50004B	Maintain quality of environment by following marina codes	Y	No change. Equivalent unit
MEM50005B	Refuel vessels	Y	No change. Equivalent unit
MEM50006B	C0heck operational capability of marine craft	Y	No change. Equivalent unit
MEM50007B	Check operational capability of sails and sail operating equipment	Y	No change. Equivalent unit
MEM50008B	Carry out trip preparation and planning		No change. Equivalent unit
MEM50009B	Safely operate a mechanically powered recreational boat		No change. Equivalent unit
MEM50010B	Respond to boating emergencies and incidents		No change. Equivalent unit

Explanation of the review date

The review date (shown on the title page and in the header of each page) indicates when the Training Package is expected to be reviewed in the light of changes such as changing technologies and circumstances. The review date is not an expiry date. Endorsed Training Packages and their components remain current until they are reviewed or replaced.

Overview

What is a Training Package?

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A Training Package is an integrated set of nationally endorsed competency standards, assessment guidelines and Australian Qualifications Framework (AQF) qualifications for a specific industry, industry sector or enterprise.

Each Training Package:

- provides a consistent and reliable set of components for training, recognising and assessing peoples skills, and may also have optional support materials
- enables nationally recognised qualifications to be awarded through direct assessment of workplace competencies
- encourages the development and delivery of flexible training which suits individual and industry requirements
- encourages learning and assessment in a work-related environment which leads to verifiable workplace outcomes.

How do Training Packages fit within the National Skills Framework?

The National Skills Framework applies nationally, is endorsed by the Ministerial Council for Vocational and Technical Education, and comprises the Australian Quality Training Framework 2010 (AQTF 2010), and Training Packages endorsed by the National Quality Council (NQC).

How are Training Packages developed?

Training Packages are developed by Industry Skills Councils or enterprises to meet the identified training needs of specific industries or industry sectors. To gain national endorsement of Training Packages, developers must provide evidence of extensive research, consultation and support within the industry area or enterprise.

How do Training Packages encourage flexibility?

Training Packages describe the skills and knowledge needed to perform effectively in the workplace without prescribing how people should be trained. Training Packages acknowledge that people can achieve vocational competency in many ways by emphasising what the learner can do, not how or where they learned to do it. For example, some experienced workers might be able to demonstrate competency against the units of competency, and even gain a qualification, without completing a formal training program.

With Training Packages, assessment and training may be conducted at the workplace, off-the-job, at a training organisation, during regular work, or through work experience, work placement, work simulation or any combination of these.

Who can deliver and assess using Training Packages?

Training and assessment using Training Packages must be conducted by a Registered Training Organisation (RTO) that has the qualifications or specific units of competency on its scope of registration, or that works in partnership with another RTO, as specified in the AQTF 2010.

Training Package Components

Training Packages are made up of mandatory components endorsed by the NQC, and optional support materials.

Training Package Endorsed Components

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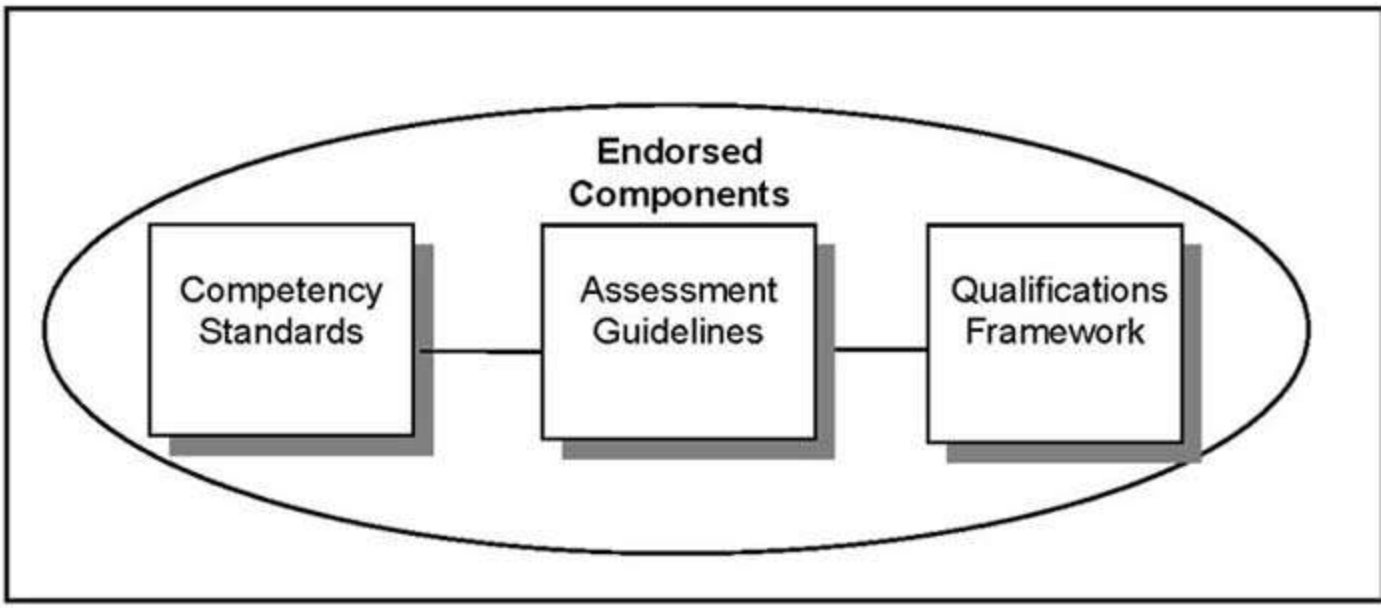
The nationally endorsed components include the Competency Standards, Assessment Guidelines and Qualifications Framework. These form the basis of training and assessment in the Training Package and, as such, they must be used.



Competency Standards

Each unit of competency identifies a discrete workplace requirement and includes the knowledge and skills that underpin competency as well as language, literacy and numeracy; and occupational health and safety requirements. The units of competency must be adhered to in training and assessment to ensure consistency of outcomes.

Assessment Guidelines

The Assessment Guidelines provide an industry framework to ensure all assessments meet industry needs and nationally agreed standards as expressed in the Training Package and the AQTF 2010. The Assessment Guidelines must be followed to ensure the integrity of assessment leading to nationally recognised qualifications.

Qualifications Framework

Each Training Package provides details of those units of competency that must be achieved to award AQF qualifications. The rules around which units of competency can be combined to make up a valid AQF qualification in the Training Package are referred to as the "packaging rules". The packaging rules must be followed to ensure the integrity of nationally recognised qualifications issued.

Training Package Support Materials

The endorsed components of Training Packages are complemented and supported by optional support materials that provide for choice in the design of training and assessment to meet the needs of industry and learners.

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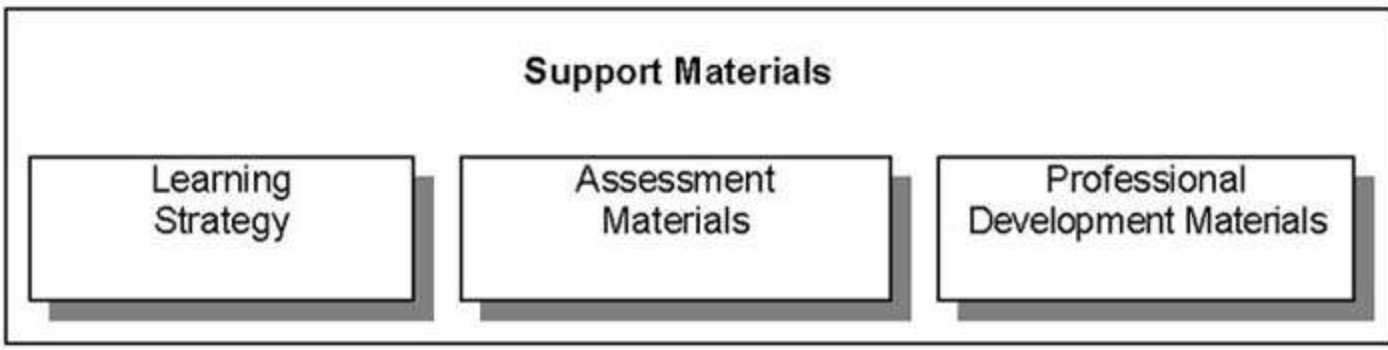
Training Package support materials can relate to single or multiple units of competency, an industry sector, a qualification or the whole Training Package. They tend to fall into one or more of the categories illustrated below.



Training Package support materials are produced "by a range of stakeholders such as RTOs, individual trainers and assessors, private and commercial developers and Government agencies.

Where such materials have been quality assured through a process of "noting" by the NQC, they display the following official logo. Noted support materials are listed on the National Training Information Service (NTIS), together with a detailed description and information on the type of product and its availability < www.ntis.gov.au>.

It is not compulsory to submit support materials for noting; any resources that meet the requirements of the Training Package can be used.

Training Package, Qualification and Unit of Competency Codes

There are agreed conventions for the national codes used for Training Packages and their components. Always use the correct codes, exactly as they appear in the Training Package, **and with the code always before the title**.

Training Package Codes

Each Training Package has a unique five-character national code assigned when the Training Package is endorsed, for example MEM05. The first three characters are letters identifying the Training Package industry coverage and the last two characters are numbers identifying the year of endorsement.

Qualification Codes

Within each Training Package, each qualification has a unique eight-character code, for example MEM10105. Qualification codes are developed as follows:

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- the first three letters identify the Training Package;
- the first number identifies the qualification level (noting that, in the qualification titles themselves, arabic numbers are **not** used);
- the next two numbers identify the position in the sequence of the qualification at that level; and
- the last two numbers identify the year in which the qualification was endorsed. (Where qualifications are added after the initial Training Package endorsement, the last two numbers may differ from other Training Package qualifications as they identify the year in which those particular qualifications were endorsed.)
-

Unit of Competency Codes

Within each Training Package, each unit of competency has a unique code. Unit of competency codes are assigned when the Training Package is endorsed, or when new units of competency are added to an existing endorsed Training Package. Unit codes are developed as follows:

- a typical code is made up of 12 characters, normally a mixture of uppercase letters and numbers, as in MEM04020A;
- the first three characters signify the Training Package - MEM05 - in the above example and up to eight characters, relating to an industry sector, function or skill area, follow;
- the last character is always a letter and identifies the unit of competency version. An "A" at the end of the code indicates that this is the original unit of competency. "B", or another incremented version identifier means that minor changes have been made. Typically this would mean that wording has changed in the range statement or evidence guide, providing clearer intent; and
- where changes are made that alter the outcome, a new code is assigned and the title is changed.

Training Package, Qualification and Unit of Competency Titles

There are agreed conventions for titling Training Packages and their components. Always use the correct titles, exactly as they appear in the Training Package, and with the code always placed before the title.

Training Package Titles

The title of each endorsed Training Package is unique and relates the Training Packages broad industry coverage.

Qualification Titles

The title of each endorsed Training Package qualification is unique. Qualification titles use the following sequence:

- first, the qualification is identified as either Certificate I, Certificate II, Certificate III, Certificate IV, Diploma, Advanced Diploma, Vocational Graduate Certificate, or Vocational Graduate Diploma;
- this is followed by the words "in" for Certificates I to IV, and "of" for Diploma, Advanced Diploma, Vocational Graduate Certificate and Vocational Graduate Diploma;
- then, the industry descriptor, for example Telecommunications;
- and then, if applicable, the occupational or functional stream in brackets, for example (Computer Systems).

For example:

- MEM10105 Certificate I in Engineering

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Unit of Competency Titles

Each unit of competency title is unique. Unit of competency titles describe the competency outcome concisely, and are written in sentence case.

For example:

- MEM03001B Perform manual production assembly

The revised MEM05 Metal and Engineering Training Package

The MEM05 Metal and Engineering Training Package was developed to replace the MEM98 Metal and Engineering Training Package. The Training Package is designed to meet the training and skills recognition needs of the Australian engineering industry sector. It covers the competencies used by people employed in the manufacturing, engineering and related services industries.

It also provides access to the apprenticeship streams provided by the National Metal and Engineering Industry Competency Standards leading to national qualifications, with traineeship pathways also available. It also enables further career advancement beyond trade apprenticeship and technical traineeship, with progression to Advanced Diploma.

New qualifications for technical workers were added to MEM05 to more accurately reflect the nature of their work. These qualifications make a distinction between technical work and that of tradespersons. In particular, a new Diploma and Advanced Diploma of Engineering were developed to meet the needs of technical workers and para-professionals in the engineering field. For the current Training Package, four disciplines were selected as priority areas. These disciplines are as follows:

- Mechanical
- Mechatronics
- Maintenance
- Manufacturing

Other disciplines will be added to the qualifications over the life of the training package.

There occurred a simplification of some of the qualification titles, as well as changes to the list of qualification descriptors that may be added by RTOs.

The bank of units of competency was revised and extended. Part of the revision included bringing all units to the current approved format. Further information was added to each unit to assist users.

The metal and engineering industry

The various sectors of the metal and engineering industry comprise about 50% of Australia's manufacturing industry in terms of value added share. In general, 85% of these industry sectors are comprised of small to medium enterprises. Each sector is involved in the manufacture, service and repair, and maintenance of products, tooling and equipment, as well as processes.

Engineering installation, repair and maintenance is also applied across most Australian industries. This aspect of applied engineering includes significant numbers of workers. Workforce numbers counted by industry and occupational classifications alone are misleading and unreliable. The current estimate of numbers of workers across Australian industries who are using engineering and manufacturing-engineering skills is approximately 650,000. The majority of these workers are not clearly identified in industry data and many are recorded as workers in other industries such as hospitals, retail etc.

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Qualifications Framework

The Australian Qualifications Framework

What is the Australian Qualifications Framework?

A brief overview of the Australian Qualifications Framework (AQF) follows. For a full explanation of the AQF, see the *AQF Implementation Handbook*.
http://www.aqf.edu.au/Portals/0/Documents/Handbook/AQF_Handbook_07.pdf
The AQF provides a comprehensive, nationally consistent framework for all qualifications in post-compulsory education and training in Australia. In the vocational education and training (VET) sector it assists national consistency for all trainees, learners, employers and providers by enabling national recognition of qualifications and Statements of Attainment.
Training Package qualifications in the VET sector must comply with the titles and guidelines of the AQF. Endorsed Training Packages provide a unique title for each AQF qualification which must always be reproduced accurately.

Qualifications

Training Packages can incorporate the following eight AQF qualifications.

- Certificate I in ...
- Certificate II in ...
- Certificate III in ...
- Certificate IV in ...
- Diploma of ...
- Advanced Diploma of ...
- Vocational Graduate Certificate of ...
- Vocational Graduate Diploma of ...

On completion of the requirements defined in the Training Package, a Registered Training Organisation (RTO) may issue a nationally recognised AQF qualification. Issuance of AQF qualifications must comply with the advice provided in the *AQF Implementation Handbook* and the AQTF 2010 *Essential Standards for Initial and Continuing Registration*.

Statement of Attainment

A Statement of Attainment is issued by a Registered Training Organisation when an individual has completed one or more units of competency from nationally recognised qualification(s)/courses(s). Issuance of Statements of Attainment must comply with the advice provided in the current *AQF Implementation Handbook* and the AQTF 2010 *Essential Standards for Initial and Continuing Registration*.
Under the AQTF 2010, RTOs must recognise the achievement of competencies as recorded on a qualification or Statement of Attainment issued by other RTOs. Given this, recognised competencies can progressively build towards a full AQF qualification.

AQF Guidelines and Learning Outcomes

The *AQF Implementation Handbook* provides a comprehensive guideline for each AQF qualification. A summary of the learning outcome characteristics and their distinguishing features for each VET related AQF qualification is provided below.

Certificate I

Characteristics of Learning Outcomes

Breadth, depth and complexity of knowledge and skills would prepare a person to perform a defined range of activities most of which may be routine and predictable.

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Applications may include a variety of employment related skills including preparatory access and participation skills, broad-based induction skills and/or specific workplace skills. They may also include participation in a team or work group.

Distinguishing Features of Learning Outcomes

Do the competencies enable an individual with this qualification to:

- demonstrate knowledge by recall in a narrow range of areas;
- demonstrate basic practical skills, such as the use of relevant tools;
- perform a sequence of routine tasks given clear direction
- receive and pass on messages/information.

Certificate II

Characteristics of Learning Outcomes

Breadth, depth and complexity of knowledge and skills would prepare a person to perform in a range of varied activities or knowledge application where there is a clearly defined range of contexts in which the choice of actions required is usually clear and there is limited complexity in the range of operations to be applied.

Performance of a prescribed range of functions involving known routines and procedures and some accountability for the quality of outcomes.

Applications may include some complex or non-routine activities involving individual responsibility or autonomy and/or collaboration with others as part of a group or team.

Distinguishing Features of Learning Outcomes

Do the competencies enable an individual with this qualification to:

- demonstrate basic operational knowledge in a moderate range of areas;
- apply a defined range of skills;
- apply known solutions to a limited range of predictable problems;
- perform a range of tasks where choice between a limited range of options is required;
- assess and record information from varied sources;
- take limited responsibility for own outputs in work and learning.

Certificate III

Characteristics of Learning Outcomes

Breadth, depth and complexity of knowledge and competencies would cover selecting, adapting and transferring skills and knowledge to new environments and providing technical advice and some leadership in resolution of specified problems. This would be applied across a range of roles in a variety of contexts with some complexity in the extent and choice of options available.

Performance of a defined range of skilled operations, usually within a range of broader related activities involving known routines, methods and procedures, where some discretion and judgement is required in the section of equipment, services or contingency measures and within known time constraints.

Applications may involve some responsibility for others. Participation in teams including group or team co-ordination may be involved.

Distinguishing Features of Learning Outcomes

Do the competencies enable an individual with this qualification to:

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- demonstrate some relevant theoretical knowledge
- apply a range of well-developed skills
- apply known solutions to a variety of predictable problems
- perform processes that require a range of well-developed skills where some discretion and judgement is required
- interpret available information, using discretion and judgement
- take responsibility for own outputs in work and learning
- take limited responsibility for the output of others.

Certificate IV

Characteristics of Learning Outcomes
Breadth, depth and complexity of knowledge and competencies would cover a broad range of varied activities or application in a wider variety of contexts most of which are complex and non-routine. Leadership and guidance are involved when organising activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature. Performance of a broad range of skilled applications including the requirement to evaluate and analyse current practices, develop new criteria and procedures for performing current practices and provision of some leadership and guidance to others in the application and planning of the skills. Applications involve responsibility for, and limited organisation of, others.
Distinguishing Features of Learning Outcomes
Do the competencies enable an individual with this qualification to:

- demonstrate understanding of a broad knowledge base incorporating some theoretical concepts
- apply solutions to a defined range of unpredictable problems
- identify and apply skill and knowledge areas to a wide variety of contexts, with depth in some areas
- identify, analyse and evaluate information from a variety of sources
- take responsibility for own outputs in relation to specified quality standards
- take limited responsibility for the quantity and quality of the output of others.

Diploma

Characteristics of Learning Outcomes
Breadth, depth and complexity covering planning and initiation of alternative approaches to skills or knowledge applications across a broad range of technical and/or management requirements, evaluation and co-ordination.
The self directed application of knowledge and skills, with substantial depth in some areas where judgment is required in planning and selecting appropriate equipment, services and techniques for self and others.
Applications involve participation in development of strategic initiatives as well as personal responsibility and autonomy in performing complex technical operations or organising others. It may include participation in teams including teams concerned with planning and evaluation functions. Group or team co-ordination may be involved.
The degree of emphasis on breadth as against depth of knowledge and skills may vary between qualifications granted at this level.
Distinguishing Features of Learning Outcomes
Do the competencies or learning outcomes enable an individual with this qualification to:

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- demonstrate understanding of a broad knowledge base incorporating theoretical concepts, with substantial depth in some areas
- analyse and plan approaches to technical problems or management requirements
- transfer and apply theoretical concepts and/or technical or creative skills to a range of situations
- evaluate information, using it to forecast for planning or research purposes
- take responsibility for own outputs in relation to broad quantity and quality parameters
- take some responsibility for the achievement of group outcomes.

Advanced Diploma

Characteristics of Learning Outcomes
Breadth, depth and complexity involving analysis, design, planning, execution and evaluation across a range of technical and/or management functions including development of new criteria or applications or knowledge or procedures.
The application of a significant range of fundamental principles and complex techniques across a wide and often unpredictable variety of contexts in relation to either varied or highly specific functions. Contribution to the development of a broad plan, budget or strategy is involved and accountability and responsibility for self and others in achieving the outcomes is involved.
Applications involve significant judgement in planning, design, technical or leadership/guidance functions related to products, services, operations or procedures.
The degree of emphasis on breadth as against depth of knowledge and skills may vary between qualifications granted at this level.
Distinguishing Features of Learning Outcomes
Do the competencies or learning outcomes enable an individual with this qualification to:

- demonstrate understanding of specialised knowledge with depth in some areas
- analyse, diagnose, design and execute judgements across a broad range of technical or management functions
- generate ideas through the analysis of information and concepts at an abstract level
- demonstrate a command of wide-ranging, highly specialised technical, creative or conceptual skills
- demonstrate accountability for personal outputs within broad parameters
- demonstrate accountability for personal and group outcomes within broad parameters.

Vocational Graduate Certificate

Characteristics of competencies or learning outcomes

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- The self-directed development and achievement of broad and specialised areas of knowledge and skills, building on prior knowledge and skills.
- Substantial breadth and complexity involving the initiation, analysis, design, planning, execution and evaluation of technical and management functions in highly varied and highly specialised contexts.
- Applications involve making significant, high-level, independent judgements in major broad or planning, design, operational, technical and management functions in highly varied and specialised contexts. They may include responsibility and broad-ranging accountability for the structure, management and output of the work or functions of others.
- The degree of emphasis on breadth, as opposed to depth, of knowledge and skills may vary between qualifications granted at this level.

Distinguishing features of learning outcomes

- Demonstrate the self-directed development and achievement of broad and specialised areas of knowledge and skills, building on prior knowledge and skills.
- Initiate, analyse, design, plan, execute and evaluate major broad or technical and management functions in highly varied and highly specialised contexts.
- Generate and evaluate ideas through the analysis of information and concepts at an abstract level.
- Demonstrate a command of wide-ranging, highly specialised technical, creative or conceptual skills in complex contexts.
- Demonstrate responsibility and broad-ranging accountability for the structure, management and output of the work or functions of others.

Vocational Graduate Diploma

Characteristics of competencies or learning outcomes

- The self-directed development and achievement of broad and specialised areas of knowledge and skills, building on prior knowledge and skills.
- Substantial breadth, depth and complexity involving the initiation, analysis, design, planning, execution and evaluation of major functions, both broad and highly specialised, in highly varied and highly specialised contexts.
- Further specialisation within a systematic and coherent body of knowledge.
- Applications involve making high-level, fully independent, complex judgements in broad planning, design, operational, technical and management functions in highly varied and highly specialised contexts. They may include full responsibility and accountability for all aspects of work and functions of others, including planning, budgeting and strategy development.
- The degree of emphasis on breadth, as opposed to depth, of knowledge and skills may vary between qualifications granted at this level.

Distinguishing features of learning outcomes

Demonstrate the self-directed development and achievement of broad and highly specialised areas of knowledge and skills, building on prior knowledge and skills.

• Initiate, analyse, design, plan, execute and evaluate major functions, both broad and within highly varied and highly specialised contexts.

• Generate and evaluate complex ideas through the analysis of information and concepts at an abstract level.

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• Demonstrate an expert command of wide-ranging, highly specialised, technical, creative or conceptual skills in complex and highly specialised or varied contexts.
• Demonstrate full responsibility and accountability for personal outputs.
• Demonstrate full responsibility and accountability for all aspects of the work or functions of others, including planning, budgeting and strategy.

Qualification Pathways

Approved occupational or functional pathway descriptors for use in qualification titles are listed in the section below - **Qualification titles - additional descriptors.**

qualifications that are possible with this Training Package. For more information about qualifications and pathways contact Manufacturing Industry Skills Council (http://www.mskills.com.au).

Approved occupational or functional pathway descriptors for use in qualification titles are listed in the section below - **Qualification titles - additional descriptors.**

Reference to other occupational or functional pathways may be included on any qualification statement that is issued. This could be achieved by adding a pathway descriptor below the formal title of the qualification as shown in example 1 or by an additional sentence as shown in example 2 below.

Example 1

The following pathways charts are provided to show the types of pathways into and from qualifications that are possible with this Training Package. For more information about qualifications and pathways contact Manufacturing Industry Skills Council (http://www.mskills.com.au).

Approved occupational or functional pathway descriptors for use in qualification titles are listed in the section below - **Qualification titles - additional descriptors.**

Reference to other occupational or functional pathways may be included on any qualification statement that is issued. This could be achieved by adding a pathway descriptor below the formal title of the qualification as shown in example 1 or by an additional sentence as shown in example 2 below

The following pathways charts are provided to show the types of pathways into and from qualifications that are possible with this Training Package. For more information about qualifications and pathways contact Manufacturing Industry Skills Council (http://www.mskills.com.au)

Approved occupational or functional pathway descriptors for use in qualification titles are listed

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in the section below - Qualification titles - additional descriptors.

Reference to other occupational or functional pathways may be included on any qualification statement that is issued. This could be achieved by adding a pathway descriptor below the formal title of the qualification as shown in example 1 or by an additional sentence as shown in example 2 below.

Example 1

Certificate III in Engineering - Production Systems

CNC machine operations pathway

Example 2

Certificate III in Engineering - Production Systems

Achieved through the CNC machine operations pathway

Competency 'fields' may give some guidance when selecting units of competency to suit a particular qualification industry descriptor and/or occupational or functional descriptor. For instance, the Maintenance and Diagnostics field contains units that may be suitable for the qualification in the above example focussing on Mechanical Trade (Refrigeration and Air-conditioning).

Note that fields do not set up barriers to accessing the various qualifications. Units may be drawn from a number of fields to form a qualification. More information on competency fields can be found in the section Competency standards overview.

Prerequisite Units and Paths

The prerequisite units section within a unit of competency indicates whether other specific competencies are required to support those competencies included in that particular unit.

For example: A person must have the competencies included in the unit MEM13004B Work safely with molten metals/glass before they can acquire the competencies required by a number of other units in the Casting and Moulding field, such as MEM04001B Operate melting furnaces.

Where there are options within the pre-requisites then separate combinations or paths are shown. Where multiple paths (path 1, path 2 etc) are shown then the most appropriate path should be chosen.

Qualification Pathways

There are many ways in which a person can gain a national qualification. Existing employees, trainees, apprentices, or pre-employment students may obtain qualifications. The achievement of competence is what matters, not the way in which it is achieved.

Possible pathways may include:

- assessment only pathway
- combination of on-the-job and institution-based training
- institution-based training programs
- on-the-job training

Skills recognition pathways including New Apprenticeships

The Metal and Engineering Training Package provides national qualification outcomes based on

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recognition of competency achievement. These qualifications can be accessed through traineeship and apprenticeship pathways available under the New Apprenticeship System.

These qualifications may also be achieved through other pathways which do not involve a contract of training, such as recognition of prior learning.

However in all cases, achievement or recognition of competence is necessary in all of the required units of competency to be awarded a national qualification.

Customisation of qualifications

Selection and use of Units of Competency

All qualifications in the Metal and Engineering Training Package have the capacity for customisation to suit the needs of enterprises and learners. Options for selecting units of competency are included to enable customised training pathways to be followed and recognised by a qualification. In addition, the Range of Variables in the units of competency are designed to provide sufficient scope for the application of the units across the spectrum of work performed in Metal and Engineering and related industries.

There is further scope for customisation of each qualification through the inclusion of units of competency drawn from other endorsed Training Packages. RTOs should exercise care to ensure that those units do not duplicate existing MEM05 units. The packaging rules for each qualification provide further information on how much of each qualification can be comprised of non-MEM05 units of competency. The selection of the units of competency applies where the non-MEM05 units are available for inclusion at the same qualification level.

Note: MEM05 also contains "imported" units of competency. These units are formally introduced by MSA into MEM05 from other training packages. Imported units form part of the bank of available units in selected qualifications. They do not relate to the customisation guidelines in the preceding paragraph.

It is the responsibility of the RTO to determine the relative points value of any units drawn from other Training Packages. When determining the equivalent points value of non-MEM05 units the following factors should be considered:

- the complexity of the skill
- the amount of required knowledge and experience needed
- the amount of on and off the job training required
- the 'size' of the unit in terms of its use in the source qualification
- the relative 'value' of the unit in comparison with other units selected.

Recognition of a person's existing competencies is accommodated through the relevant processes described in the Assessment Guidelines section of this Training Package.

Qualification titles - additional descriptors

An additional descriptor may be added to some qualification titles to illustrate a particular skills profile. This may be achieved by the addition of an occupational/functional pathway descriptor after the qualification title as shown on the qualification and/or transcript. This additional descriptor must be drawn from the approved list provided for each qualification and must be shown in brackets. For example, Certificate III in Engineering - Mechanical Trade (Refrigeration and Air-conditioning). There are no specific requirements associated with the use of these descriptors other than their use should reflect the choice of units of competency in the

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qualification. No other changes may be made to the qualification titles. Note that the addition of one of these descriptors to a qualification does not change the qualification's formal title or unique national code.

Reference to other occupational or functional pathways may be included on any qualification statement that is issued. This could be achieved by adding a pathway descriptor or sentence below the formal title of the qualification.

A summary of approved additional descriptors for qualification titles is shown below.

Summary of approved additional descriptors for qualification titles

Code	Title	Approved additional descriptors
MEM10105	Certificate I in Engineering	There are no approved additional descriptors for this qualification
MEM10205	Certificate I in Boating Services	There are no approved additional descriptors for this qualification
MEM20105	Certificate II in Engineering	Marine craft manufacturing; Surface finishing.
MEM20205	Certificate II in Engineering - Production Technology	Marine craft manufacturing; Surface finishing, Marine Craft Surface Finishing
MEM20305	Certificate II in Boating Services	There are no approved additional descriptors for this qualification
MEM30105	Certificate III in Engineering - Production Systems	Surface finishing, Marine Craft Surface Finishing
MEM30205	Certificate III in Engineering - Mechanical Trade	Refrigeration and Air-conditioning; Instrumentation; Maintenance; Patternmaking, Toolmaking; Watchmaking Machining.
MEM30305	Certificate III in Engineering - Fabrication Trade	Casting and Moulding; Heavy Fabrication; Light Fabrication; Maintenance; Patternmaking; Surface Finishing; Welding.
MEM30405	Certificate III in Engineering - Electrical/Electronic Trade	Refrigeration and Air-conditioning; Instrumentation; Maintenance; Marine Electronics.
MEM30505	Certificate III in Engineering - Technical	There are no approved additional descriptors for this qualification
MEM30605	Certificate III in Jewellery	There are no approved additional

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	Manufacture	descriptors for this qualification
MEM30705	Certificate III in Marine Craft Construction	There are no approved additional descriptors for this qualification
MEM30805	Certificate III in Locksmithing	There are no approved additional descriptors for this qualification
MEM30905	Certificate III in Boating Services	There are no approved additional descriptors for this qualification
MEM31010	Certificate III in Watch and Clock Service and Repair	There are no approved additional descriptors for this qualification
MEM40105	Certificate IV in Engineering	Refrigeration and Air-conditioning; Casting and Moulding; CNC programming; Fluid Power; Heavy Fabrication; Instrumentation; Maintenance; Marine Electronics; Mechatronics; Patternmaking; Robotics; Toolmaking; Welding, Watch and Clock Service and Repair
MEM40205	Certificate IV in Boating Services	There are no approved additional descriptors for this qualification
MEM50105	Diploma of Engineering - Advanced Trade	Refrigeration and Air conditioning; Casting and Moulding; CNC programming; Fluid Power; Heavy Fabrication; Instrumentation; Maintenance; Marine Electronics; Mechatronics; Metrology; Non-Destructive Testing; Patternmaking; Robotics; Toolmaking; Welding, Watch and Clock Service and Repair
MEM50205	Diploma of Engineering - Technical	Mechanical, Mechatronics, Manufacturing, Maintenance.
MEM60105	Advanced Diploma of Engineering	Mechanical, Mechatronics, Manufacturing, Maintenance.

Pathways to a career through the Metal and Engineering Training Package Qualifications

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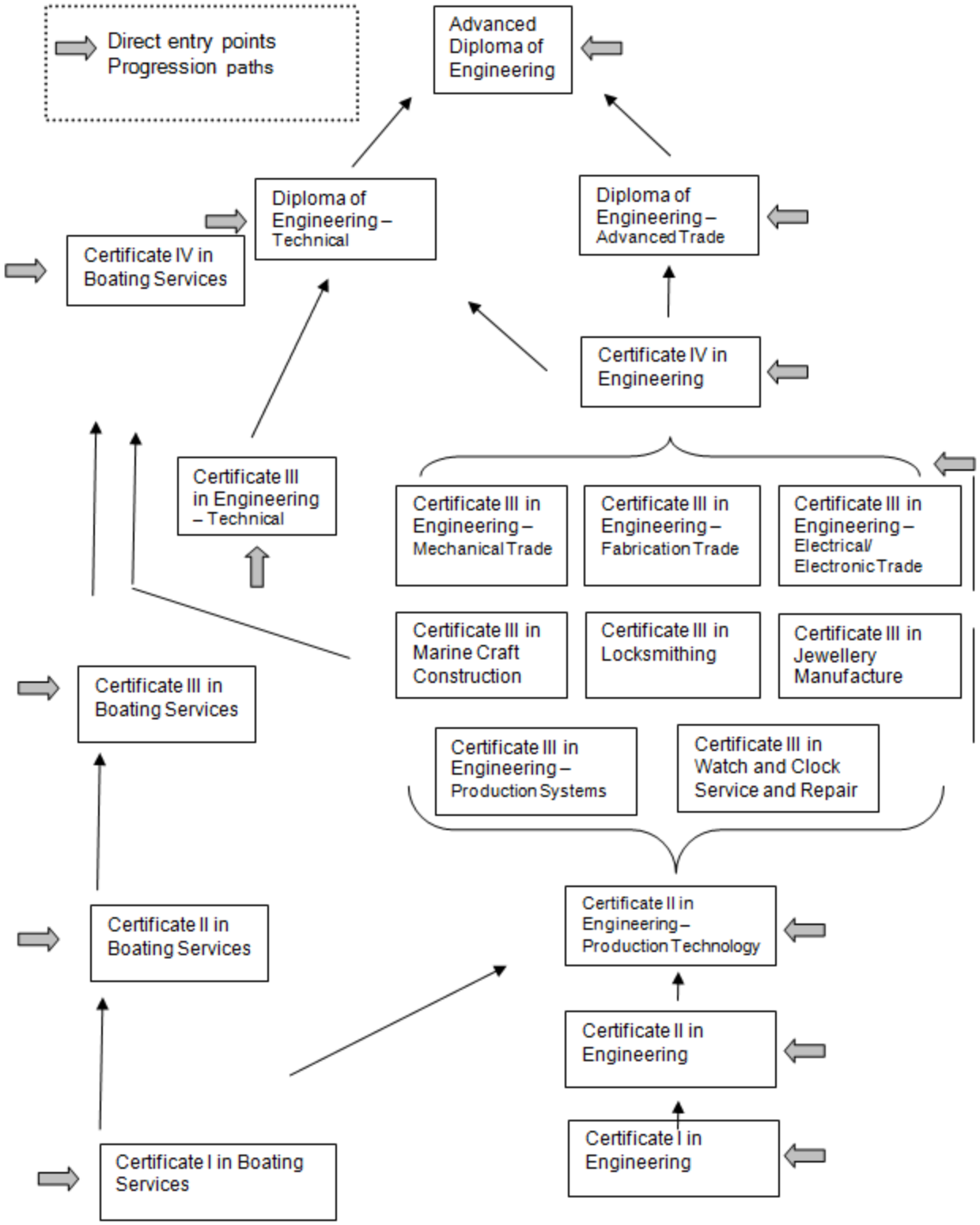

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Skill Sets

Definition

Skill sets are defined as single units of competency, or combinations of units of competency from an endorsed Training Package, which link to a licence or regulatory requirement, or defined industry need.

Wording on Statements of Attainment

Skill sets are a way of publicly identifying logical groupings of units of competency which meet an identified need or industry outcome. Skill sets are not qualifications.

Where skill sets are identified in a Training Package, the Statement of Attainment can set out the competencies a person has achieved in a way that is consistent and clear for employers and others. This is done by including the wording "these competencies meet [insert skill set title or identified industry area] need" on the Statement of Attainment. This wording applies only to skill sets that are formally identified as such in the endorsed Training Package. See the 2010 edition of the AQF Implementation Handbook for advice on wording on Statements of Attainment. http://www.aqf.edu.au/Portals/0/Documents/Handbook/AQF_Handbook_07.pdf

Skill Sets in this Training Package

No Skill Sets have been developed for MEM05 at this time

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Historical and General Information

Historical and General Information

The revised MEM05 Metal and Engineering Training Package

The MEM05 Metal and Engineering Training Package was developed to replace the MEM98 Metal and Engineering Training Package. The Training Package is designed to meet the training and skills recognition needs of the Australian engineering industry sector. It covers the competencies used by people employed in the manufacturing, engineering and related services industries.

It also provides access to the apprenticeship streams provided by the National Metal and Engineering Industry Competency Standards leading to national qualifications, with traineeship pathways also available. It also enables further career advancement beyond trade apprenticeship and technical traineeship, with progression to Advanced Diploma.

New qualifications for technical workers were added to MEM05 to more accurately reflect the nature of their work. These qualifications make a distinction between technical work and that of tradespersons. In particular, a new Diploma and Advanced Diploma of Engineering were developed to meet the needs of technical workers and para-professionals in the engineering field. For the current Training Package, four disciplines were selected as priority areas. These disciplines are as follows:

- Mechanical
- Mechatronics
- Maintenance
- Manufacturing

Other disciplines will be added to the qualifications over the life of the training package.

There occurred a simplification of some of the qualification titles, as well as changes to the list of qualification descriptors that may be added by RTOs.

The bank of units of competency was revised and extended. Part of the revision included bringing all units to the current approved format. Further information was added to each unit to assist users.

Employability Skills

Employability Skills replacing Key Competency information from 2006

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In May 2005, the approach to incorporate Employability Skills within Training Package qualifications and units of competency was endorsed. As a result, from 2006 Employability Skills will progressively replace Key Competency information in Training Packages.

Background to Employability Skills

Employability Skills are also sometimes referred to as generic skills, capabilities or Key Competencies. The Employability Skills discussed here build on the Mayer Committee's Key Competencies, which were developed in 1992 and attempted to describe generic competencies for effective participation in work.

The Business Council of Australia (BCA) and the Australian Chamber of Commerce and Industry (ACCI), produced the *Employability Skills for the Future* report in 2002 in consultation with other peak employer bodies and with funding provided by the Department of Education, Science and Training (DEST) and the Australian National Training Authority (ANTA). Officially released by Dr Nelson (Minister for Education, Science and Training) on 23 May 2002, copies of the report are available from the DEST website at: http://www.dest.gov.au/archive/ty/publications/employability_skills/index.htm.

The report indicated that business and industry now require a broader range of skills than the Mayer Key Competencies Framework and featured an Employability Skills Framework identifying eight Employability Skills*:

- communication
- teamwork
- problem solving
- initiative and enterprise
- planning and organising
- self-management
- learning
- technology.

The report demonstrated how Employability Skills can be further described for particular occupational and industry contexts by sets of facets. The facets listed in the report are the aspects of the Employability Skills that the sample of employers surveyed identified as being important work skills. These facets were seen by employers as being dependent both in their nature and priority on an enterprise's business activity.

*Personal attributes that contribute to employability were also identified in the report but are not part of the Employability Skills Framework.

Employability Skills Framework

The following table contains the Employability Skills facets identified in the report *Employability Skills for the Future*.

Skill	**Facets** Aspects of the skill that employers identify as important. The nature and application of these facets will vary depending on industry and job type.
Communication that contributes to productive and harmonious relations across employees and customers	• listening and understanding • speaking clearly and directly • writing to the needs of the audience

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	• negotiating responsively • reading independently • empathising • using numeracy effectively • understanding the needs of internal and external customers • persuading effectively • establishing and using networks • being assertive • sharing information • speaking and writing in languages other than English
Teamwork that contributes to productive working relationships and outcomes	• working across different ages irrespective of gender, race, religion or political persuasion • working as an individual and as a member of a team • knowing how to define a role as part of the team • applying teamwork to a range of situations e.g. futures planning and crisis problem solving • identifying the strengths of team members • coaching and mentoring skills, including giving feedback
Problem solving that contributes to productive outcomes	• developing creative, innovative and practical solutions • showing independence and initiative in identifying and solving problems • solving problems in teams • applying a range of strategies to problem solving • using mathematics, including budgeting and financial management to solve problems • applying problem-solving strategies across a range of areas • testing assumptions, taking into account the context of data and circumstances

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	• resolving customer concerns in relation to complex project issues
Initiative and enterprise that contribute to innovative outcomes	• adapting to new situations • developing a strategic, creative and long-term vision • being creative • identifying opportunities not obvious to others • translating ideas into action • generating a range of options • initiating innovative solutions
Planning and organising that contribute to long and short-term strategic planning	• managing time and priorities - setting time lines, coordinating tasks for self and with others • being resourceful • taking initiative and making decisions • adapting resource allocations to cope with contingencies • establishing clear project goals and deliverables • allocating people and other resources to tasks • planning the use of resources, including time management • participating in continuous improvement and planning processes • developing a vision and a proactive plan to accompany it predicting - weighing up risk, evaluating alternatives and applying evaluation criteria • collecting, analysing and organising information • understanding basic business systems and their relationships
Self-management that contributes to employee satisfaction and growth	• having a personal vision and goals • evaluating and monitoring own performance • having knowledge and confidence in own ideas and visions

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	• articulating own ideas and visions • taking responsibility
Learning that contributes to ongoing improvement and expansion in employee and company operations and outcomes	• managing own learning • contributing to the learning community at the workplace • using a range of mediums to learn - mentoring, peer support and networking, IT and courses • applying learning to technical issues (e.g. learning about products) and people issues (e.g. interpersonal and cultural aspects of work) • having enthusiasm for ongoing learning • being willing to learn in any setting - on and off the job • being open to new ideas and techniques • being prepared to invest time and effort in learning new skills • acknowledging the need to learn in order to accommodate change
Technology that contributes to the effective carrying out of tasks	• having a range of basic IT skills • applying IT as a management tool • using IT to organise data • being willing to learn new IT skills • having the OHS knowledge to apply technology • having the appropriate physical capacity

Employability Skills Summary

An Employability Skills Summary exists for each qualification. Summaries provide a lens through which to view Employability Skills at the qualification level and capture the key aspects or facets of the Employability Skills that are important to the job roles covered by the qualification. Summaries are designed to assist trainers and assessors to identify and include important industry application of Employability Skills in learning and assessment strategies. The following is important information for trainers and assessors about Employability Skills Summaries.

• Employability Skills Summaries provide examples of how each skill is applicable to the job roles covered by the qualification.

• Employability Skills Summaries contain general information about industry context which is further explained as measurable outcomes of performance in the units of competency in each qualification.

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• The detail in each Employability Skills Summary will vary depending on the range of job roles covered by the qualification in question.
• Employability Skills Summaries are not exhaustive lists of qualification requirements or checklists of performance (which are separate assessment tools that should be designed by trainers and assessors after analysis at the unit level).
• Employability Skills Summaries contain information that may also assist in building learners' understanding of industry and workplace expectations.

Assessment Guidelines

Licensing/Registration Requirements
Licensing requirements – MEM05 Specific licenses may be required in some jobs. The local regulations should be checked for details. The industry is generally subject to a range of regulatory control. These vary with the nature of the work and to some extent on its location as most regulations are State based and some are enforced by local government. This Training Package allows for these differences without mandating them to specific units of competency which would not be appropriate. Selected units of competency and qualifications in this Training Package have been designed to satisfy or partly satisfy the licensing requirements of various industry sectors. This Metal and Engineering Training Package publication provides advisory information based on discussions with representatives of industry and regulators. All possible care has been taken in the preparation of this material, however, persons should not rely solely on this publication on matters involving industry specific current or proposed licensing requirements or arrangements.
Requirements for Assessors
Requirements for Candidates
Requirements for RTOs

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Industry Assessment Contextualisation 1

MEM05 Assessment Advice

It is important that assessors are familiar with the use of the Metal and Engineering Competency Standards and the agreed industrial processes for their implementation in workplaces. Manufacturing Skills Australia can provide a list of approved organisations that provide an Implementing Competency Standards Program that will assist assessors.

Advice on integrated assessment

The Metal and Engineering Training Package is comprised of units of competency that will rarely be used in isolation. All units will form part of a person's job role. No single unit of competency can be acquired in isolation and therefore opportunities for integrated learning and assessment activities should always be explored. Careful consideration of the profile of competencies will identify groups of units where integrated assessment (or co-assessment) can be applied.

Adoption of integrated assessment can provide significant savings in time, cost and effort of assessors and candidates. Assessment tools should be designed so that assessment evidence can be gathered for a group of units and the outcomes identified with those units. This approach can be quite adequately used to also deal with prerequisites.

Advice on assessment of Prerequisite Units

The Metal and Engineering Training Package units of competency are built on a structure of accumulated skills and knowledge. This means that there are hierarchies of skills and knowledge that are built up from a range of competencies. Any units of competency that underpin others are listed as prerequisites.

The use of the term 'prerequisite' has been used for many years in the Metal and Engineering units of competency. In terms of training delivery and assessment, the term 'prerequisite' means that a person cannot be deemed 'competent' in the higher level unit until they are deemed competent in the prerequisite units. An RTO may choose an integrated assessment approach (see above). In this case the actual assessment of prerequisites may occur concurrently with other units.

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Employability Skills in the industry context

Industry Assessment Contextualisation 2

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Competency Standards

What is competency?

The broad concept of industry competency concerns the ability to perform particular tasks and duties to the standard of performance expected in the workplace. Competency requires the application of specified skills, knowledge and attitudes relevant to effective participation in an industry, industry sector or enterprise.

Competency covers all aspects of workplace performance and involves performing individual tasks; managing a range of different tasks; responding to contingencies or breakdowns; and, dealing with the responsibilities of the workplace, including working with others. Workplace competency requires the ability to apply relevant skills, knowledge and attitudes consistently over time and in the required workplace situations and environments. In line with this concept of competency Training Packages focus on what is expected of a competent individual in the workplace as an outcome of learning, rather than focussing on the learning process itself.

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Competency standards in Training Packages are determined by industry to meet identified industry skill needs. Competency standards are made up of a number of units of competency each of which describes a key function or role in a particular job function or occupation. Each unit of competency within a Training Package is linked to one or more AQF qualifications.

Contextualisation of Units of Competency by RTOs

Registered Training Organisation (RTOs) may contextualise units of competency to reflect local outcomes required. Contextualisation could involve additions or amendments to the unit of competency to suit particular delivery methods, learner profiles, specific enterprise equipment requirements, or to otherwise meet local needs. However, the integrity of the overall intended outcome of the unit of competency must be maintained.

Any contextualisation of units of competency in this endorsed Training Package must be within the bounds of the following advice. In contextualising units of competency, RTOs:

- must not remove or add to the number and content of elements and performance criteria
- may add specific industry terminology to performance criteria where this does not distort or narrow the competency outcomes
- may make amendments and additions to the range statement as long as such changes do not diminish the breadth of application of the competency and reduce its portability, and/or
- may add detail to the evidence guide in areas such as the critical aspects of evidence or resources and infrastructure required where these expand the breadth of the competency but do not limit its use.

Components of Units of Competency

The components of units of competency are summarised below, in the order in which they appear in each unit of competency.

Unit Title

The unit title is a succinct statement of the outcome of the unit of competency. Each unit of competency title is unique, both within and across Training Packages.

Unit Descriptor

The unit descriptor broadly communicates the content of the unit of competency and the skill area it addresses. Where units of competency have been contextualised from units of competency from other endorsed Training Packages, summary information is provided. There may also be a brief second paragraph that describes its relationship with other units of competency, and any licensing requirements.

Employability Skills statement

A standard Employability Skills statement appears in each unit of competency. This statement directs trainers and assessors to consider the information contained in the Employability Skills Summary in which the unit of competency is packaged.

Prerequisite Units (optional)

If there are any units of competency that must be completed before the unit, these will be listed.

Application of the Unit

This sub-section fleshes out the unit of competency's scope, purpose and operation in different contexts, for example, by showing how it applies in the workplace.

Competency Field (Optional)

The competency field either reflects the way the units of competency are categorised in the Training Package or denotes the industry sector, specialisation or function. It is an optional component of the unit of competency.

Sector (optional)

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The industry sector is a further categorisation of the competency field and identifies the next classification, for example an elective or supervision field.

Elements of Competency

The elements of competency are the basic building blocks of the unit of competency. They describe in terms of outcomes the significant functions and tasks that make up the competency.

Performance Criteria

The performance criteria specify the required performance in relevant tasks, roles, skills and in the applied knowledge that enables competent performance. They are usually written in passive voice. Critical terms or phrases may be written in bold italics and then defined in range statement, in the order of their appearance in the performance criteria.

Required Skills and Knowledge

The essential skills and knowledge are either identified separately or combined. Knowledge identifies what a person needs to know to perform the work in an informed and effective manner. Skills describe the application of knowledge to situations where understanding is converted into a workplace outcome.

Range Statement

The range statement provides a context for the unit of competency, describing essential operating conditions that may be present with training and assessment, depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts. As applicable, the meanings of key terms used in the performance criteria will also be explained in the range statement.

Evidence Guide

The evidence guide is critical in assessment as it provides information to the Registered Training Organisation (RTO) and assessor about how the described competency may be demonstrated. The evidence guide does this by providing a range of evidence for the assessor to make determinations, and by providing the assessment context. The evidence guide describes:

- conditions under which competency must be assessed including variables such as the assessment environment or necessary equipment
- relationships with the assessment of any other units of competency
- suitable methodologies for conducting assessment including the potential for workplace simulation
- resource implications, for example access to particular equipment, infrastructure or situations
- how consistency in performance can be assessed over time, various contexts and with a range of evidence, and expectations at the AQF qualification level involved

Employability Skills in units of competency

The detail and application of Employability Skills facets will vary according to the job-role requirements of each industry. In developing Training Packages, industry stakeholders are consulted to identify appropriate facets of Employability Skills which are incorporated into the relevant units of competency and qualifications.

Employability Skills are not a discrete requirement contained in units of competency (as was the case with Key Competencies). Employability Skills are specifically expressed in the context of the work outcomes described in units of competency and will appear in elements, performance criteria, range statements and evidence guides. As a result, users of Training Packages are required to review the entire unit of competency in order to accurately determine Employability Skills requirements.

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How Employability Skills relate to the Key Competencies

The eight nationally agreed Employability Skills now replace the seven Key Competencies in Training Packages. Trainers and assessors who have used Training Packages prior to the introduction of Employability Skills may find the following comparison useful.

Employability Skills	Mayer Key Competencies
Communication	Communicating ideas and information
Teamwork	Working with others and in teams
Problem solving	Solving problems Using mathematical ideas and techniques
Initiative and enterprise	
Planning and organising	Collecting, analysing and organising information Planning and organising activities
Self-management	
Learning	
Technology	Using technology

When analysing the above table it is important to consider the relationship and natural overlap of Employability Skills. For example, using technology may involve communication skills and combine the understanding of mathematical concepts.

Explicitly embedding Employability Skills in units of competency

This Training Package seeks to ensure that industry-endorsed Employability Skills are explicitly embedded in units of competency. The application of each skill and the level of detail included in each part of the unit will vary according to industry requirements and the nature of the unit of competency.

Employability Skills must be both explicit and embedded within units of competency. This means that Employability Skills will be:

- embedded in units of competency as part of the other performance requirements that make up the competency as a whole
- explicitly described within units of competency to enable Training Packages users to identify accurately the performance requirements of each unit with regards to Employability Skills.

This Training Package also seeks to ensure that Employability Skills are well-defined and written into units of competency so that they are apparent, clear and can be delivered and assessed as an essential component of unit work outcomes.

The following table contains examples of embedded Employability Skills for each component of a unit of competency. Please note that in the examples below the bracketed skills are provided only for clarification and will not be present in units of competency within this Training Package.

Example Employability Skills unit

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Unit component	Example of embedded Employability Skill
Unit Title	Manufacture watch and clock components
Unit Descriptor	This unit competency covers manufacturing watch and clock components using a range of general and specialist machines and engineering techniques.
Element	Plan and organise the project
Performance Criteria	Select appropriate equipment and tools to undertake process Plan suitable method of production Undertake measurements to task tolerances
Range Statement	Working drawings may include sketch or illustration by hand, including dimensions Replacement parts may include wheels and pinions, arbors and pivots, click springs, ratchet wheel, setting lever springs.
Required Skills and Knowledge	Interpreting watch and clock drawings, manuals and other documentation that provide information of part design and tolerances Performing milling operations using milling attachment on a watch and clockmaker's lathe or a bench mill.
	Knowledge of typical materials used in watch and clock making Selecting and preparing cutting tools.
Evidence Guide	Manufacture, finish and fit replacement watch or clock components to original tolerances. Select and use appropriate hand tools.

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Competency Standards - Industry Contextualisation

Prerequisite Units and Prerequisite Pathways – MEM05

The Metal and Engineering Training Package units of competency are built on a structure of accumulated skills and knowledge. This means that there are hierarchies of skills and knowledge that are built up from a range of competencies. This may have an impact on training and assessment delivery strategies.

Any units of competency that underpin others are listed as prerequisites. In some cases there are options within the prerequisites. These combinations reflect the fact that different "skill paths" may be taken to reach a unit of competency. Where multiple paths (path 1, path 2 etc.) are shown, then the most appropriate path should be chosen. Unless indicated otherwise, the prerequisite units should be counted in the total number of units (and points) that contribute towards the qualification.

Competency Field

The competency standards are divided into 'fields' as convenient groupings of units to assist the organisation of the standards and to help users in the selection of relevant competency standards. The fields do not set up barriers to accessing any competency units in a field, or between fields.

Application of the Competency

This sub-section describes more of the unit of competency's scope and limitation as well as purpose and operation in different contexts, for example, by showing how it applies in the workplace.

Related units

This section provides an indication of other units that may also be required in particular circumstances as well as indications of alternatives.

Band

Many of the units of competency are also divided into 'bands', with some overlap between them. The allocation of units to different bands recognises the inherent differences in the level of difficulty of skills used in the industry. For example, band B skills are more difficult than band A skills. At the same time the large range of units in each band allows enterprises a wide choice. Band E units are independent units developed for the boating services qualifications.

Some units are regarded as both band A and band B units. Use of these dual band units is limited. These units are identified in the units themselves by way of a note.

Unit Weight

Many units of competency have an allocated weight shown as 'unit weight'. This weighting is usually referred to as 'points'. These points weightings are used in the packaging rules for some of the qualifications. The units selected for the qualification must have a combined points value no less than the points value specified for the various components of the qualification. These combined points totals also include the points for any prerequisite units involved.

Note that the points for any particular unit can only be counted once in each qualification. For example, if a unit is selected to be part of a qualification and it is also a prerequisite for another selected unit, then the points for that unit can only be counted once.

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Notes

Special notes are included in some units, for example, where the unit is a dual band unit.

Examples from this Training Package of Employability Skills

Examples from this Training Package of Employability Skills embedded within unit components

Unit component	Example of embedded Employability Skill
Unit Title	Manufacture watch and clock components
Unit Descriptor	This unit competency covers manufacturing watch and clock components using a range of general and specialist machines and engineering techniques.
Element	Plan and organise the project
Performance Criteria	Select appropriate equipment and tools to undertake process Plan suitable method of production Undertake measurements to task tolerances
Range Statement	Working drawings may include sketch or illustration by hand, including dimensions Replacement parts may include wheels and pinions, arbors and pivots, click springs, ratchet wheel, setting lever springs.
Required Skills and Knowledge	Interpreting watch and clock drawings, manuals and other documentation that provide information of part design and tolerances Performing milling operations using milling attachment on a watch and clockmaker's lathe or a bench mill. Knowledge of typical materials used in watch and clock making Selecting and preparing cutting tools.
Evidence Guide	Manufacture, finish and fit replacement watch or clock components to original tolerances. Select and use appropriate hand tools.

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MEM05v3 - Appendices

Appendix 1: Certificate III Trade Specialisation Units

Appendix 2: MEM05v3 units of competency, unit weightings and prerequisites

Appendix 3: Imported units of competency and points weighting

Appendix 4: Revised MEM unit codes 2006 (historical reference only)

Appendix 5: MEM05 Qualifications mapping against MEM98 (historical reference only)

Appendix 6: Units of competency mapping against MEM98 (historical reference only)

Appendix 7: Key Competencies in MEM05 (historical information)

Appendix 1: Certificate III Trade Specialisation Units

Units from the Trade Specialisation units list below may be selected to bring the total value of Stream and Specialisation units to at least 73 points, including any prerequisites for the following certificates:

MEM30205 Certificate III in Engineering - Mechanical Trade

MEM30305 Certificate III in Engineering - Fabrication Trade

MEM30405 Certificate III in Engineering - Electrical/Electronic Trade

MEM30605 Certificate III in Jewellery Manufacture

MEM30705 Certificate III in Marine Craft Construction

MEM30805 Certificate III in Locksmithing

MEM31010 Certificate III in Watch and Clock Service and Repair

Specialisation units

Unit code	Unit title	P
MEM03001B	Perform manual production assembly	4
MEM03002B	Perform precision assembly	4
MEM03003B	Perform sheet and plate assembly	4
MEM03004B	Perform electronic/electrical assembly (production)	8

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Unit code	Unit title	P
MEM03005B	Rework and repair (electrical/electronic production)	8
MEM03006B	Set assembly stations	2
MEM04001B	Operate melting furnaces	4
MEM04002B	Perform gravity die casting	2
MEM04003B	Operate pressure die casting machine	4
MEM04004B	Prepare and mix sand for metal moulding	4
MEM04005C	Produce moulds and cores by hand (jobbing)	16
MEM04006B	Operate sand moulding and core making machines	8
MEM04007B	Pour molten metal	4
MEM04008B	Fettle and trim metal castings/forgings	4
MEM04010B	Develop and manufacture wood patterns	20
MEM04011B	Produce polymer patterns	8
MEM04012B	Assemble plated patterns	8
MEM04013B	Develop and manufacture polystyrene patterns	2
MEM04014B	Develop and manufacture production patterns	8
MEM04015B	Develop and manufacture vacuum forming moulds and associated equipment	6
MEM04016C	Develop and manufacture precision models	6
MEM04017B	Develop and manufacture gear, conveyor screw and propeller patterns	4
MEM04018B	Perform general woodworking machine operations	4
MEM04019B	Perform refractory installation and repair	4
MEM04020A	Supervise individual ferrous melting and casting operation	4
MEM04021A	Supervise individual non ferrous melting and casting operation	4
MEM04022A	Examine appropriateness of methoding for mould design	4

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Unit code	Unit title	P
MEM04023A	Undertake prescribed tests on foundry related materials	4
MEM05001B	Perform manual soldering/desoldering – electrical/electronic components	4
MEM05002B	Perform high reliability soldering and desoldering	4
MEM05003B	Perform soft soldering	2
MEM05004C	Perform routine oxy acetylene welding	2
MEM05005B	Carry out mechanical cutting	2
MEM05006B	Perform brazing and/or silver soldering	2
MEM05007C	Perform manual heating and thermal cutting	2
MEM05008C	Perform advanced manual thermal cutting, gouging and shaping	2
MEM05009C	Perform automated thermal cutting	2
MEM05010C	Apply fabrication, forming and shaping techniques	8
MEM05011D	Assemble fabricated components	8
MEM05012C	Perform routine manual metal arc welding	2
MEM05013C	Perform manual production welding	2
MEM05014C	Monitor quality of production welding/fabrications	2
MEM05015D	Weld using manual metal arc welding process	4
MEM05016C	Perform advanced welding using manual metal arc welding process	4
MEM05017D	Weld using gas metal arc welding process	4
MEM05018C	Perform advanced welding using gas metal arc welding process	4
MEM05019D	Weld using gas tungsten arc welding process	4
MEM05020C	Perform advanced welding using gas tungsten arc welding process	4
MEM05022C	Perform advanced welding using oxy acetylene welding process	6

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Unit code	Unit title	P
MEM05023C	Weld using submerged arc welding process	4
MEM05036C	Repair/replace/modify fabrications	4
MEM05037C	Perform geometric development	6
MEM05038B	Perform advanced geometric development – cylindrical/rectangular	2
MEM05039B	Perform advanced geometric development – conical	2
MEM05040B	Perform advanced geometric development – transitions	4
MEM05041B	Weld using powder flame spraying	4
MEM05047B	Weld using flux core arc welding process	4
MEM05048B	Perform advanced welding using flux core arc welding process	4
MEM05049B	Perform routine gas tungsten arc welding	2
MEM05050B	Perform routine gas metal arc welding	2
MEM05051A	Select welding processes	2
MEM05052A	Apply safe welding practices	4
MEM05053A	Set and edit computer controlled thermal cutting machines	4
MEM05054A	Write basic NC/CNC programs for thermal cutting machines	4
MEM06001B	Perform hand forging	4
MEM06002B	Perform hammer forging	4
MEM06003C	Carry out heat treatment	6
MEM06004B	Select heat treatment processes and test finished product	6
MEM06005B	Perform drop and upset forging	4
MEM06006C	Repair springs	4
MEM06007B	Perform basic incidental heat/quenching, tempering and annealing	2
MEM06008A	Hammer forge complex shapes	4

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Unit code	Unit title	P
MEM06009A	Hand forge complex shapes	4
MEM07001B	Perform operational maintenance of machines/equipment	2
MEM07002B	Perform precision shaping/planing/slotting operations	4
MEM07003B	Perform machine setting (routine)	4
MEM07004B	Perform machine setting (complex)	8
MEM07005C	Perform general machining	8
MEM07006C	Perform lathe operations	4
MEM07007C	Perform milling operations	4
MEM07008D	Perform grinding operations	4
MEM07009B	Perform precision jig boring operations	4
MEM07010B	Perform tool and cutter grinding operations	4
MEM07011B	Perform complex milling operations	4
MEM07012B	Perform complex grinding operations	4
MEM07013B	Perform machining operations using horizontal and/or vertical boring machines	4
MEM07014B	Perform electro-discharge (EDM) machining operations	4
MEM07015B	Set computer controlled machines/processes	2
MEM07016C	Set and edit computer controlled machines/processes	4
MEM07018C	Write basic NC/CNC programs	4
MEM07019C	Program NC/CNC machining centre	2
MEM07020C	Program multiple spindle and/or multiple axis NC/CNC machining centre	2
MEM07021B	Perform complex lathe operations	4
MEM07022C	Program CNC wire cut machines	2
MEM07024B	Operate and monitor machine/process	4

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Unit code	Unit title	P
MEM07025B	Perform advanced machine/process operation	6
MEM07026B	Perform advanced plastic processing	6
MEM07027B	Perform advanced press operations	6
MEM07028B	Operate computer controlled machines/processes	2
MEM07029B	Perform routine sharpening/maintenance of production tools and cutters	4
MEM07030C	Perform metal spinning lathe operations (basic)	8
MEM07031C	Perform metal spinning lathe operations (complex)	4
MEM07032B	Use workshop machines for basic operations	2
MEM07033B	Operate and monitor basic boiler	6
MEM07034A	Operate and monitor intermediate class boiler	4
MEM07040A	Set multistage integrated processes	6
MEM08001B	Perform wire, jig and barrel load/unload work	4
MEM08002C	Pre-treat work for subsequent surface coating	4
MEM08003C	Perform electroplating operations	6
MEM08004B	Finish work using wet, dry and vapour deposition methods	4
MEM08005B	Prepare and produce specialised coatings	4
MEM08006B	Produce clear and/or coloured and/or sealed anodised films on aluminium	2
MEM08007B	Control surface finish production and finished product quality	4
MEM08008B	Operate and control surface finishing waste treatment process	3
MEM08009C	Make up solutions	2
MEM08010B	Manually finish/polish materials	6
MEM08011B	Prepare surfaces using solvents and/or mechanical means	2
MEM08012B	Prepare surfaces by abrasive blasting (basic)	4

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Unit code	Unit title	P
MEM08013B	Prepare surfaces by abrasive blasting (advanced)	4
MEM08014B	Apply protective coatings (basic)	4
MEM08015B	Apply protective coatings (advanced)	4
MEM08016B	Control blast coating by-products, materials and emissions	1
MEM08018B	Electroplate engineering coatings	6
MEM08019B	Electroplate protective finishes	6
MEM08020B	Electroplate decorative finishes	6
MEM09002B	Interpret technical drawing	4
MEM09003B	Prepare basic engineering drawing	8
MEM09005B	Perform basic engineering detail drafting	8
MEM09011B	Apply basic engineering design concepts	6
MEM09021B	Interpret and produce curved 3-dimensional shapes	4
MEM09022A	Create 2D code files using computer aided manufacturing system	4
MEM10001C	Erect structures	4
MEM10002B	Terminate and connect electrical wiring	3
MEM10003B	Install and test electrical wiring and circuits up to 1000 volts a.c. and 1500 volts d.c.	12
MEM10004B	Enter and change programmable controller operational parameters	2
MEM10005B	Commission programmable controller programs	4
MEM10006B	Install machine/plant	4
MEM10009B	Install refrigeration and air conditioning plant and equipment	4
MEM10010B	Install pipework and pipework assemblies	4
MEM10011B	Terminate and connect specialist cables	3
MEM10013A	Install split air conditioning systems and associated pipework	6

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Unit code	Unit title	P
MEM11001C	Erect/dismantle scaffolding and equipment	4
MEM11002C	Erect/dismantle complex scaffolding and equipment	4
MEM11003B	Coordinate erection/dismantling of complex scaffolding/equipment	4
MEM11004B	Undertake dogging	4
MEM11005B	Pick and process order	4
MEM11006B	Perform production packaging	2
MEM11007B	Administer inventory procedures	4
MEM11008B	Package materials (stores and warehouse)	2
MEM11009B	Handle/move bulk fluids/gases	4
MEM11010B	Operate mobile load shifting equipment	4
MEM11011B	Undertake manual handling	2
MEM11012B	Purchase materials	6
MEM11013B	Undertake warehouse receival process	4
MEM11014B	Undertake warehouse dispatch process	4
MEM11015B	Manage warehouse inventory system	6
MEM11016B	Order materials	2
MEM11017B	Organise and lead stocktakes	4
MEM11018B	Organise and maintain warehouse stock receival and/or dispatch system	6
MEM11019B	Undertake tool store procedures	4
MEM11020B	Perform advanced warehouse computer operations	4
MEM11021B	Perform advanced operation of load shifting equipment	2
MEM11022B	Operate fixed/moveable load shifting equipment	4
MEM12001B	Use comparison and basic measuring devices	2

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Unit code	Unit title	P
MEM12002B	Perform electrical/electronic measurement	2
MEM12003B	Perform precision mechanical measurement	2
MEM12004B	Perform precision electrical/electronic measurement	4
MEM12006C	Mark off/out (general engineering)	4
MEM12007D	Mark off/out structural fabrications and shapes	4
MEM12019B	Measure components using coordinate measuring machine	4
MEM12020B	Set and operate coordinate measuring machine	2
MEM12021B	Program coordinate measuring machine	4
MEM12022B	Program coordinate measuring machine (advanced)	2
MEM12025A	Use graphical techniques and perform simple statistical computations	2
MEM13001B	Perform emergency first aid	1
MEM13002B	Undertake occupational health and safety activities in the workplace	3
MEM13003B	Work safely with industrial chemicals and materials	2
MEM13004B	Work safely with molten metals/glass	2
MEM13006B	Collect and evaluate occupational health and safety data for an enterprise or section of an enterprise	4
MEM13007B	Maintain water treatment systems for cooling towers	2
MEM13010A	Supervise occupational health and safety in an industrial work environment.	4
MEM13013B	Work safely with ionizing radiation	4
MEM15001B	Perform basic statistical quality control	2
MEM15003B	Use improvement processes in team activities	4
MEM15004B	Perform inspection	2
MEM15005B	Select and control inspection processes and procedures	4

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Unit code	Unit title	P
MEM15015B	Examine trading practices	5
MEM15016B	Inspect pre-packed articles	8
MEM15022B	Verify reference standards	8
MEM16001B	Give formal presentations and take part in meetings	2
MEM16002C	Conduct formal interviews and negotiations	4
MEM16004B	Perform internal/external customer service	2
MEM16005A	Operate as a team member to conduct manufacturing, engineering or related activities	2
MEM16011A	Communicate with individuals and small groups	2
MEM16013A	Operate in a self-directed team	2
MEM17001B	Assist in development and deliver training in the workplace	2
MEM17002B	Conduct workplace assessment	2
MEM18001C	Use hand tools	2
MEM18002B	Use power tools/hand held operations	2
MEM18003C	Use tools for precision work	4
MEM18004B	Maintain and overhaul mechanical equipment	4
MEM18005B	Perform fault diagnosis, installation and removal of bearings	4
MEM18006C	Repair and fit engineering components	6
MEM18007B	Maintain and repair mechanical drives and mechanical transmission assemblies	4
MEM18008B	Balance equipment	2
MEM18009B	Perform levelling and alignment of machines and engineering components	4
MEM18010C	Perform equipment condition monitoring and recording	4
MEM18011C	Shut down and isolate machines/equipment	2

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Unit code	Unit title	P
MEM18012B	Perform installation and removal of mechanical seals	2
MEM18013B	Perform gland packing	2
MEM18014B	Manufacture press tools and gauges	8
MEM18015B	Maintain tools and dies	4
MEM18018C	Maintain pneumatic system components	4
MEM18019B	Maintain pneumatic systems	4
MEM18020B	Maintain hydraulic system components	4
MEM18021B	Maintain hydraulic systems	4
MEM18022B	Maintain fluid power controls	8
MEM18024B	Maintain engine cooling systems	2
MEM18025B	Service combustion engines	2
MEM18026C	Test compression ignition fuel systems	4
MEM18027C	Overhaul engine fuel system components	8
MEM18028B	Maintain engine lubrication systems	2
MEM18029B	Tune diesel engines	4
MEM18030B	Diagnose and rectify low voltage electrical systems	8
MEM18031B	Diagnose and rectify low voltage starting systems	2
MEM18032B	Maintain induction/exhaust systems	4
MEM18033B	Perform engine bottom-end overhaul	4
MEM18034B	Perform engine top-end overhaul	8
MEM18035B	Diagnose and rectify braking systems	6
MEM18037B	Diagnose and rectify low voltage charging systems	2
MEM18038B	Maintain wheels and tyres	2
MEM18039B	Diagnose and rectify track type undercarriage	4

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Unit code	Unit title	P
MEM18040B	Maintain suspension systems	4
MEM18041B	Maintain steering systems	4
MEM18042C	Diagnose and rectify manual transmissions	4
MEM18043C	Diagnose and rectify automatic transmissions	8
MEM18044C	Diagnose and rectify drive line and final drives	4
MEM18045B	Fault find/repair electrical equipment/components up to 250 volts single phase supply	4
MEM18046B	Fault find/repair electrical equipment/components up to 1000 volts a.c./1500 volts d.c.	10
MEM18047B	Diagnose and maintain electronic controlling systems on mobile plant	4
MEM18048B	Fault find and repair/rectify basic electrical circuits	12
MEM18049C	Disconnect/reconnect fixed wired equipment up to 1000 volts a.c./1500 volts d.c.	3
MEM18050C	Disconnect/reconnect fixed wired equipment over 1000 volts a.c./1500 volts d.c.	3
MEM18051B	Fault find and repair/rectify complex electrical circuits	6
MEM18052B	Maintain fluid power systems for mobile plant	4
MEM18054B	Fault find, test and calibrate instrumentation systems and equipment	8
MEM18055B	Dismantle, replace and assemble engineering components	3
MEM18056B	Diagnose and repair analog equipment and components	10
MEM18057B	Maintain/service analog/digital electronic equipment	6
MEM18058C	Modify electronic equipment	4
MEM18060B	Maintain, repair control instrumentation – single and multiple loop control systems	8
MEM18062B	Install, maintain and calibrate instrumentation sensors, transmitters and final control elements	8

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Unit code	Unit title	P
MEM18063B	Terminate signal and data cables	4
MEM18064B	Maintain instrumentation system components	6
MEM18065B	Diagnose and repair digital equipment and components	10
MEM18066B	Diagnose and repair microprocessor-based equipment	6
MEM18067B	Tune control loops – multi controller or multi element systems	6
MEM18071B	Connect/disconnect fluid conveying system components	2
MEM18072B	Manufacture fluid conveying conductor assemblies	4
MEM18084A	Commission and decommission split air conditioning systems	4
MEM18085A	Install, service and repair domestic air conditioning and refrigeration appliances	6
MEM18086B	Test, recover, evacuate and charge refrigeration systems	4
MEM18087B	Service and repair domestic and light commercial refrigeration and air conditioning equipment	6
MEM18088B	Maintain and repair commercial air conditioning systems and components	4
MEM18089B	Maintain and repair central air handling systems	6
MEM18090B	Maintain and repair industrial refrigeration systems and components	6
MEM18091B	Maintain and repair multi stage, cascade and/or ultra-cold industrial refrigeration systems	4
MEM18092B	Maintain and repair commercial and/or industrial refrigeration and/or air conditioning controls	6
MEM18094B	Service and repair commercial refrigeration	6
MEM18095A	Maintain and repair cooling towers/evaporative condensers and associated equipment	4
MEM18096A	Maintain, repair/replace and adjust refrigerant flow controls and associated equipment	6
MEM18097A	Manufacture cavity dies	8

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Unit code	Unit title	P
MEM18098A	Prepare to perform work associated with fuel system installation and servicing	2
MEM19001B	Perform jewellery metal casting	6
MEM19002B	Prepare jewellery illustrations	4
MEM19003B	Handle gem materials	2
MEM19004B	Handle and examine gemstone materials	6
MEM19005B	Produce three-dimensional precision items	8
MEM19006B	Replace watch batteries	1
MEM19007B	Perform gemstone setting	6
MEM19008B	Prepare jewellery designs	6
MEM19009B	Perform investment procedures for lost wax casting process	1
MEM19010B	Produce rubber moulds for lost wax casting process	2
MEM19011B	Perform wax injection of moulds for lost wax casting process	2
MEM19012B	Produce jewellery wax model	4
MEM19013B	Produce jewellery metal masters	4
MEM19014B	Perform hand engraving	4
MEM19015B	Perform jewellery enamelling	4
MEM19016B	Construct jewellery components	4
MEM19017B	Fabricate jewellery items	6
MEM19018B	Repair jewellery items	6
MEM19020B	Fault-find and maintain micro-mechanisms	4
MEM19021B	Diagnose and service micro-mechanisms	6
MEM19022B	Perform precision micro-mechanism diagnosis and servicing	6
MEM20001A	Produce Keys	4

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Unit code	Unit title	P
MEM20002A	Assemble and test lock mechanisms	6
MEM20003A	Install and upgrade locks and hardware	4
MEM20004A	Gain entry	4
MEM20005A	Install and maintain door control devices/systems	2
MEM20006A	Maintain and service mechanical locking devices	6
MEM20007A	Plan and prepare a masterkey system	4
MEM20008A	Develop and implement a masterkey system	6
MEM20009A	Gain entry and reinstate fire and security containers	4
MEM20010A	Gain entry and reinstate automotive locking systems	4
MEM20011A	Service and repair fire and security containers	6
MEM20012A	Service and repair mechanical automotive locking systems	4
MEM20013A	Service automotive transponder systems	2
MEM20014A	Perform a site security survey	2
MEM21001A	Replace watch batteries, capacitors and bands	2
MEM21002A	Perform watch movement exchange	2
MEM21003A	Perform watch case servicing, repair and refurbishment	4
MEM21004A	Clean watch and clock components	2
MEM21005A	Diagnose faults in quartz watches	2
MEM21006A	Service quartz watches	4
MEM21007A	Service complex quartz watches	4
MEM21008A	Service mechanical watches	4
MEM21009A	Inspect, diagnose, adjust and repair mechanical watches	4
MEM21010A	Service watch power generating systems	2
MEM21011A	Service calendar and other dial indication mechanisms for	4

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Unit code	Unit title	P
	watches	
MEM21012A	Service and repair mechanical watch oscillating systems	4
MEM21013A	Service, test and adjust watch escapements	4
MEM21014A	Service mechanical chronograph watches	6
MEM21015A	Perform precision watch timing and adjustment	6
MEM21016A	Install and set up clocks	2
MEM21017A	Service and repair clock timepieces	6
MEM21018A	Service clock escapements and oscillating systems	4
MEM21019A	Service and repair clock striking mechanisms	4
MEM21020A	Service and repair clock chiming mechanisms	6
MEM21021A	Restore clockwork mechanisms	6
MEM21022A	Manufacture watch and clock components	6
MEM21023A	Plan, set up and operate horological workshop or service centre	4
MEM24001B	Perform basic penetrant testing	2
MEM24002B	Perform penetrant testing	4
MEM24003B	Perform basic magnetic particle testing	2
MEM24004B	Perform magnetic particle testing	4
MEM24005B	Perform basic eddy current testing	2
MEM24006B	Perform eddy current testing	6
MEM24007B	Perform ultrasonic thickness testing	2
MEM24008B	Perform ultrasonic testing	6
MEM24009B	Perform basic radiographic testing	2
MEM24010B	Perform radiographic testing	6
MEM24012C	Apply metallurgy principles	4

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Unit code	Unit title	P
MEM25001B	Apply fibre-reinforced materials	2
MEM25002B	Form and integrate fibre-reinforced structures	4
MEM25003B	Set up marine vessel structures	4
MEM25004B	Fair and shape surfaces	2
MEM25005B	Construct and assemble marine vessel timber components	8
MEM25006B	Undertake marine sheathing operations	2
MEM25007B	Maintain marine vessel surfaces	4
MEM25008B	Repair marine vessel surfaces and structures	4
MEM25009B	Form timber shapes using hot processes	2
MEM25010B	Perform fitout procedures	4
MEM25011B	Install marine systems	8
MEM25012B	Install and test operations of marine auxiliary systems	6
MEM25013B	Produce three-dimensional plugs/moulds	12
MEM25014B	Perform marine slipping operations	2
MEM25015A	Assemble and install equipment and accessories/ancillaries	2
MEM30012A	Apply mathematical techniques in a manufacturing, engineering or related environment	4
MEM50002B	Work safely on marine craft	1
MEM50003B	Follow work procedures to maintain the marine environment	1
MEM50004B	Maintain quality of environment by following marina codes	1
MEM50009B	Safely operate a mechanically powered recreational boat	2
AURV225908A	Carry out panel repairs	4
ICTTC136B	Install, maintain and modify customer premises communications cabling: ACA Restricted Rule	6
ICTTC137B	Install, maintain and modify customer premises communications	6

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Unit code	Unit title	P
	cabling: ACA Open Rule	
TLILIC2001A	Licence to operate a forklift truck	0
TLILIC0012A	Licence to operate a vehicle loading crane (capacity 10 metre tonnes and above)	1
MSAENV472B	Implement and monitor environmentally sustainable work practices	4
MSATCM304A	Interpret basic binary phase diagrams	4
PMBPROD291B	Operate resin infusion moulding equipment	2
PMBPROD294B	Operate resin transfer moulding equipment	2
PMBPROD298B	Operate equipment using pre-pregs material	2
PMBPROD391B	Produce composites using resin infusion	4
PMBPROD394B	Produce composites using resin transfer moulding	4
PMBPROD398B	Produce composites using pre-pregs	4
PRSTS202A	Install security equipment/system	4
PRSTS302A	Program security equipment/system	2
PRSTS303A	Test installed security equipment/system	2
PRSTS304A	Commission/decommission security equipment/system	2
PRSTS305A	Identify and diagnose electronic security equipment/ system fault	2
PRSTS307A	Maintain and service security equipment/system	4
PRSTS317A	Provide estimate and quote	4
PRSTS319A	Modify and repair security equipment/system	4

Appendix 2: MEM05v3 units of competency, unit weightings and prerequisites

Appendix 2:
MEM05v4 units of competency, unit weightings and prerequisites

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(any prerequisites are shown below the unit title)

Unit code	Unit title	P
MEM03001B	Perform manual production assembly	4
MEM03002B	Perform precision assembly	4
	Path: 1 Total Path Weight:6	
	MEM18001C Use hand tools	2
MEM03003B	Perform sheet and plate assembly	4
	Path: 1 Total Path Weight: 8	
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
MEM03004B	Perform electronic/electrical assembly (production)	8
MEM03005B	Rework and repair (electrical/electronic production)	8
	Path: 1 Total Path Weight: 22	
	MEM03004B Perform electronic/electrical assembly (production)	8
	MEM05001B Perform manual soldering/desoldering - electrical electronic components /	4
	MEM18001C Use hand tools	2
MEM03006B	Set assembly stations	2
	Path: 1 Total Path Weight: 8	
	MEM03001B Perform manual production assembly	4
	MEM18001C Use hand tools	2
	Path: 2 Total Path Weight: 10	
	MEM03003B Perform sheet and plate assembly	4
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2

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Unit code	Unit title	P
	Path: 3 Total Path Weight: 12	
	MEM03004B Perform electronic/electrical assembly (production)	8
	MEM18001C Use hand tools	2
MEM04001B	Operate melting furnaces	4
	Path: 1 Total Path Weight: 6	
	MEM13004B Work safely with molten metals/glass	2
MEM04002B	Perform gravity die casting	2
	Path: 1 Total Path Weight: 4	
	MEM13004B Work safely with molten metals/glass	2
MEM04003B	Operate pressure die casting machine	4
	Path: 1 Total Path Weight: 6	
	MEM13004B Work safely with molten metals/glass	2
MEM04004B	Prepare and mix sand for metal moulding	4
MEM04005C	Produce moulds and cores by hand (jobbing)	16
	Path: 1 Total Path Weight: 22	
	MEM09002B Interpret technical drawing	4
	MEM18001C Use hand tools	2
MEM04006B	Operate sand moulding and core making machines	8
MEM04007B	Pour molten metal	4
	Path: 1 Total Path Weight: 6	
	MEM13004B Work safely with molten metals/glass	2
MEM04008B	Fettle and trim metal castings/forgings	4
	Path: 1 Total Path Weight: 8	
	MEM18001C Use hand tools	2

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Unit code	Unit title	P
	MEM18002B Use power tools/hand held operations	2
MEM04010B	Develop and manufacture wood patterns	20
	Path: 1 Total Path Weight: 48	
	MEM04018B Perform general woodworking machine operations	4
	MEM09002B Interpret technical drawing	4
	MEM12006C Mark off/out (general engineering)	4
	MEM12023A Perform engineering measurements	5
	MEM12024A Perform computations	3
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM30012A Apply mathematical techniques in a manufacturing engineering or related environment	4
MEM04011B	Produce polymer patterns	8
	Path: 1 Total Path Weight: 29	
	MEM07005C Perform general machining	8
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM13003B Work safely with industrial chemicals and materials	2
	MEM18001C Use hand tools	2
MEM04012B	Assemble plated patterns	8
	Path: 1 Total Path Weight: 56	
	MEM04010B Develop and manufacture wood patterns	20
	MEM04018B Perform general woodworking machine operations	4
	MEM09002B Interpret technical drawing	4

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Unit code	Unit title	P
	MEM12006C Mark off/out (general engineering)	4
	MEM12023A Perform engineering measurements	5
	MEM12024A Perform computations	3
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM30012A Apply mathematical techniques in a manufacturing engineering or related environment	4
MEM04013B	Develop and manufacture polystyrene patterns	2
	Path: 1 Total Path Weight: 50	
	MEM04010B Develop and manufacture wood patterns	20
	MEM04018B Perform general woodworking machine operations	4
	MEM09002B Interpret technical drawing	4
	MEM12006C Mark off/out (general engineering)	4
	MEM12023A Perform engineering measurements	5
	MEM12024A Perform computations	3
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM30012A Apply mathematical techniques in a manufacturing engineering or related environment	4
MEM04014B	Develop and manufacture production patterns	8
	Path: 1 Total Path Weight: 72	
	MEM04010B Develop and manufacture wood patterns	20
	MEM04012B Assemble plated patterns	8
	MEM04018B Perform general woodworking machine operations	4
	MEM07005C Perform general machining	8

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Unit code	Unit title	P
	MEM09002B Interpret technical drawing	4
	MEM12006C Mark off/out (general engineering)	4
	MEM12023A Perform engineering measurements	5
	MEM12024A Perform computations	3
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM30012A Apply mathematical techniques in a manufacturing engineering or related environment	4
MEM04015B	Develop and manufacture vacuum forming moulds and associated equipment	6
	Path: 1 Total Path Weight: 72	
	MEM04010B Develop and manufacture wood patterns	20
	MEM04011B Produce polymer patterns	8
	MEM04018B Perform general woodworking machine operations	4
	MEM07005C Perform general machining	8
	MEM09002B Interpret technical drawing	4
	MEM12006C Mark off/out (general engineering)	4
	MEM12023A Perform engineering measurements	5
	MEM12024A Perform computations	3
	MEM13003B Work safely with industrial chemicals and materials	2
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM30012A Apply mathematical techniques in a manufacturing engineering or related environment	4
MEM04016C	Develop and manufacture precision models	6

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Unit code	Unit title	P
	Path: 1 Total Path Weight: 98	
	MEM04010B Develop and manufacture wood patterns	20
	MEM04011B Produce polymer patterns	8
	MEM04012B Assemble plated patterns	8
	MEM04013B Develop and manufacture polystyrene patterns	2
	MEM04014B Develop and manufacture production patterns	8
	MEM04015B Develop and manufacture vacuum forming moulds and associated equipment	6
	MEM04018B Perform general woodworking machine operations	4
	MEM07005C Perform general machining	8
	MEM09002B Interpret technical drawing	4
	MEM12003B Perform precision mechanical measurement	2
	MEM12006C Mark off/out (general engineering)	4
	MEM12023A Perform engineering measurements	5
	MEM12024A Perform computations	3
	MEM13003B Work safely with industrial chemicals and materials	2
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM30012A Apply mathematical techniques in a manufacturing engineering or related environment	4
MEM04017B	Develop and manufacture gear, conveyor screw and propeller patterns	4
	Path: 1 Total Path Weight: 52	
	MEM04010B Develop and manufacture wood patterns	20
	MEM04018B Perform general woodworking machine operations	4

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Unit code	Unit title	P
	MEM09002B Interpret technical drawing	4
	MEM12006C Mark off/out (general engineering)	4
	MEM12023A Perform engineering measurements	5
	MEM12024A Perform computations	3
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM30012A Apply mathematical techniques in a manufacturing engineering or related environment	4
MEM04018B	Perform general woodworking machine operations	4
	Path: 1 Total Path Weight: 11	
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
MEM04019B	Perform refractory installation and repair	4
	Path: 1 Total Path Weight: 8	
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
MEM04020A	Supervise individual ferrous melting and casting operation	4
	Path: 1 Total Path Weight: 40	
	MEM04001B Operate melting furnaces	4
	MEM04004B Prepare and mix sand for metal moulding	4
	MEM04005C Produce moulds and cores by hand (jobbing)	16
	MEM04007B Pour molten metal	4
	MEM09002B Interpret technical drawing	4
	MEM13004B Work safely with molten metals/glass	2

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Unit code	Unit title	P
	MEM18001C Use hand tools	2
MEM04021A	Supervise individual non ferrous melting and casting operation	4
	Path: 1 Total Path Weight: 43	
	MEM04001B Operate melting furnaces	4
	MEM04004B Prepare and mix sand for metal moulding	4
	MEM04005C Produce moulds and cores by hand (jobbing)	16
	MEM04007B Pour molten metal	4
	MEM09002B Interpret technical drawing	4
	MEM13004B Work safely with molten metals/glass	2
	MEM18001C Use hand tools	2
MEM04022A	Examine appropriateness of methoding for mould design	4
	Path: 1 Total Path Weight: 30	
	MSATCM304A Interpret basic binary phase diagrams	4
	MEM04005C Produce moulds and cores by hand (jobbing)	16
	MEM09002B Interpret technical drawing	4
	MEM18001C Use hand tools	2
MEM04023A	Undertake prescribed tests on foundry related materials	4
	Path: 1 Total Path Weight: 8	
	MEM30012A Apply mathematical techniques in a manufacturing engineering or related environment	4
MEM05001B	Perform manual soldering/desoldering - electrical/electronic components	4
MEM05002B	Perform high reliability soldering and desoldering	4
	Path: 1 Total Path Weight: 8	
	MEM05001B Perform manual soldering/desoldering -	4

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Unit code	Unit title	P
	electrical/electronic components	
MEM05003B	Perform soft soldering	2
MEM05004C	Perform routine oxy acetylene welding	2
MEM05005B	Carry out mechanical cutting	2
	Path: 1 Total Path Weight: 9	
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
MEM05006B	Perform brazing and/or silver soldering	2
MEM05007C	Perform manual heating and thermal cutting	2
MEM05008C	Perform advanced manual thermal cutting, gouging and shaping	2
	Path: 1 Total Path Weight: 4	
	MEM05007C Perform manual heating and thermal cutting	2
MEM05009C	Perform automated thermal cutting	2
	Path: 1 Total Path Weight: 7	
	MEM12023A Perform engineering measurements	5
MEM05010C	Apply fabrication, forming and shaping techniques	8
	Path: 1 Total Path Weight: 28	
	MEM05037C Perform geometric development	6
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM12024A Perform computations	3
	MEM18001C Use hand tools	2
MEM05011D	Assemble fabricated components	8
	Path: 1 Total Path Weight: 37	

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Unit code	Unit title	P
	MEM05005B Carry out mechanical cutting	2
	MEM05007C Perform manual heating and thermal cutting	2
	MEM05012C Perform routine manual metal arc welding	2
	MEM05015D Weld using manual metal arc welding process	4
	MEM05051A Select welding processes	2
	MEM05052A Apply safe welding practices	4
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	Path: 2 Total Path Weight: 37	
	MEM05005B Carry out mechanical cutting	2
	MEM05007C Perform manual heating and thermal cutting	2
	MEM05019D Weld using gas tungsten arc welding process	4
	MEM05049B Perform routine gas tungsten arc welding	2
	MEM05051A Select welding processes	2
	MEM05052A Apply safe welding practices	4
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	Path: 3 Total Path Weight: 39	
	MEM05004C Perform routine oxy acetylene welding	2
	MEM05005B Carry out mechanical cutting	2

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Unit code	Unit title	P
	MEM05007C Perform manual heating and thermal cutting	2
	MEM05022C Perform advanced welding using oxy acetylene welding	6
	MEM05051A Select welding processes	2
	MEM05052A Apply safe welding practices	4
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	Path: 4 Total Path Weight: 37	
	MEM05005B Carry out mechanical cutting	2
	MEM05007C Perform manual heating and thermal cutting	2
	MEM05017D Weld using gas metal arc welding process	4
	MEM05050B Perform routine gas metal arc welding	2
	MEM05051A Select welding processes	2
	MEM05052A Apply safe welding practices	4
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
MEM05012C	Perform routine manual metal arc welding	2
MEM05013C	Perform manual production welding	2
MEM05014C	Monitor quality of production welding/fabrications	2
	Path: 1 Total Path Weight: 23	

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Unit code	Unit title	P
	MEM05012C Perform routine manual metal arc welding	2
	MEM05015D Weld using manual metal arc welding process	4
	MEM05051A Select welding processes	2
	MEM05052A Apply safe welding practices	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	Path: 2 Total Path Weight: 23	
	MEM05017D Weld using gas metal arc welding process	4
	MEM05050B Perform routine gas metal arc welding	2
	MEM05051A Select welding processes	2
	MEM05052A Apply safe welding practices	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	Path: 3 Total Path Weight: 23	
	MEM05019D Weld using gas tungsten arc welding process	4
	MEM05049B Perform routine gas tungsten arc welding	2
	MEM05051A Select welding processes	2
	MEM05052A Apply safe welding practices	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	Path: 4 Total Path Weight: 21	

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Unit code	Unit title	P
	MEM05004C Perform routine oxy acetylene welding	2
	MEM05007C Perform manual heating and thermal cutting	2
	MEM05051A Select welding processes	2
	MEM05052A Apply safe welding practices	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
MEM05015D	Weld using manual metal arc welding process	4
	Path: 1 Total Path Weight: 21	
	MEM05012C Perform routine manual metal arc welding	2
	MEM05051A Select welding processes	2
	MEM05052A Apply safe welding practices	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
MEM05016C	Perform advanced welding using manual metal arc welding process	4
	Path: 1 Total Path Weight: 31	
	MEM05007C Perform manual heating and thermal cutting	2
	MEM05012C Perform routine manual metal arc welding	2
	MEM05015D Weld using manual metal arc welding process	4
	MEM05051A Select welding processes	2
	MEM05052A Apply safe welding practices	4
	MEM09002B Interpret technical drawing	4

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Unit code	Unit title	P
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
MEM05017D	Weld using gas metal arc welding process	4
	Path: 1 Total Path Weight: 21	
	MEM05050B Perform routine gas metal arc welding	2
	MEM05051A Select welding processes	2
	MEM05052A Apply safe welding practices	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
MEM05018C	Perform advanced welding using gas metal arc welding process	4
	Path: 1 Total Path Weight: 31	
	MEM05007C Perform manual heating and thermal cutting	2
	MEM05017D Weld using gas metal arc welding process	4
	MEM05050B Perform routine gas metal arc welding	2
	MEM05051A Select welding processes	2
	MEM05052A Apply safe welding practices	4
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
MEM05019D	Weld using gas tungsten arc welding process	4
	Path: 1 Total Path Weight: 21	

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Unit code	Unit title	P
	MEM05049B Perform routine gas tungsten arc welding	2
	MEM05051A Select welding processes	2
	MEM05052A Apply safe welding practices	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
MEM05020C	Perform advanced welding using gas tungsten arc welding process	4
	Path: 1 Total Path Weight: 31	
	MEM05007C Perform manual heating and thermal cutting	2
	MEM05019D Weld using gas tungsten arc welding process	4
	MEM05049B Perform routine gas tungsten arc welding	2
	MEM05051A Select welding processes	2
	MEM05052A Apply safe welding practices	4
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
MEM05022C	Perform advanced welding using oxy acetylene welding process	6
	Path: 1 Total Path Weight: 24	
	MEM05004C Perform routine oxy acetylene welding	2
	MEM05007C Perform manual heating and thermal cutting	2
	MEM05051A Select welding processes	2
	MEM05052A Apply safe welding practices	4

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Unit code	Unit title	P
	MEM09002B Interpret technical drawing	4
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
MEM05023C	Weld using submerged arc welding process	4
	Path: 1 Total Path Weight: 9	
	MEM12023A Perform engineering measurements	5
MEM05024B	Perform welding supervision	12
	Path: 1 Total Path Weight: 16	
	MEM05026C Apply welding principles	4
MEM05025C	Perform welding/fabrication inspection	12
	Path: 1 Total Path Weight: 21	
	MEM05026C Apply welding principles	4
	MEM12023A Perform engineering measurements	5
MEM05026C	Apply welding principles	4
MEM05036C	Repair/replace/modify fabrications	4
	Path: 1 Total Path Weight: 41	
	MEM05005B Carry out mechanical cutting	2
	MEM05007C Perform manual heating and thermal cutting	2
	MEM05011D Assemble fabricated components	8
	MEM05012C Perform routine manual metal arc welding	2
	MEM05015D Weld using manual metal arc welding process	4
	MEM05051A Select welding processes	2
	MEM05052A Apply safe welding practices	4
	MEM09002B Interpret technical drawing	4

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Unit code	Unit title	P
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	Path: 2 Total Path Weight: 41	
	MEM05005B Carry out mechanical cutting	2
	MEM05007C Perform manual heating and thermal cutting	2
	MEM05011D Assemble fabricated components	8
	MEM05017D Weld using gas metal arc welding process	4
	MEM05050B Perform routine gas metal arc welding	2
	MEM05051A Select welding processes	2
	MEM05052A Apply safe welding practices	4
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	Path: 3 Total Path Weight: 43	
	MEM05004C Perform routine oxy acetylene welding	2
	MEM05005B Carry out mechanical cutting	2
	MEM05007C Perform manual heating and thermal cutting	2
	MEM05011D Assemble fabricated components	8
	MEM05022C Perform advanced welding using oxy acetylene welding	6
	MEM05051A Select welding processes	2
	MEM05052A Apply safe welding practices	4

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Unit code	Unit title	P
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	Path: 4 Total Path Weight: 41	
	MEM05005B Carry out mechanical cutting	2
	MEM05007C Perform manual heating and thermal cutting	2
	MEM05011D Assemble fabricated components	8
	MEM05019D Weld using gas tungsten arc welding process	4
	MEM05049B Perform routine gas tungsten arc welding	2
	MEM05051A Select welding processes	2
	MEM05052A Apply safe welding practices	4
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
MEM05037C	Perform geometric development	6
	Path: 1 Total Path Weight: 18	
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM12024A Perform computations	3
MEM05038B	Perform advanced geometric development - cylindrical/rectangular	2
	Path: 1 Total Path Weight: 24	

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Unit code	Unit title	P
	MEM05037C Perform geometric development	6
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM12024A Perform computations	3
	MEM30012A Apply mathematical techniques in a manufacturing engineering or related environment	4
MEM05039B	Perform advanced geometric development - conical	2
	Path: 1 Total Path Weight: 24	
	MEM05037C Perform geometric development	6
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM12024A Perform computations	3
	MEM30012A Apply mathematical techniques in a manufacturing engineering or related environment	4
MEM05040B	Perform advanced geometric development - transitions	4
	Path: 1 Total Path Weight: 26	
	MEM05037C Perform geometric development	6
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM12024A Perform computations	3
	MEM30012A Apply mathematical techniques in a manufacturing engineering or related environment	4
MEM05041B	Weld using powder flame spraying	4
	Path: 1 Total Path Weight: 11	
	MEM05004C Perform routine oxy acetylene welding	2

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Unit code	Unit title	P
	MEM12023A Perform engineering measurements	5
MEM05042B	Perform welds to code standards using flux core arc welding process	6
	Path: 1 Total Path Weight: 41	
	MEM05007C Perform manual heating and thermal cutting	2
	MEM05026C Apply welding principles	4
	MEM05047B Weld using flux core arc welding process	4
	MEM05048B Perform advanced welding using flux core arc welding process	4
	MEM05050B Perform routine gas metal arc welding	2
	MEM05051A Select welding processes	2
	MEM05052A Apply safe welding practices	4
	MEM09002B Interpret technical drawing	4
	MEM12023 Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
MEM05043B	Perform welds to code standards using gas metal arc welding process	6
	Path: 1 Total Path Weight: 41	
	MEM05007C Perform manual heating and thermal cutting	2
	MEM05017D Weld using gas metal arc welding process	4
	MEM05018C Perform advanced welding using gas metal arc welding	4
	MEM05026C Apply welding principles	4
	MEM05050B Perform routine gas metal arc welding	2
	MEM05051A Select welding processes	2

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Unit code	Unit title	P
	MEM05052A Apply safe welding practices	4
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
MEM05044B	Perform welds to code standards using gas tungsten arc welding process	6
	Path: 1 Total Path Weight: 41	
	MEM05007C Perform manual heating and thermal cutting	2
	MEM05019D Weld using gas tungsten arc welding process	4
	MEM05020C Perform advanced welding using gas tungsten arc welding process	4
	MEM05026C Apply welding principles	4
	MEM05049B Perform routine gas tungsten arc welding	2
	MEM05051A Select welding processes	2
	MEM05052A Apply safe welding practices	4
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
MEM05045B	Perform pipe welds to code standards using manual metal arc welding process	6
	Path: 1 Total Path Weight: 41	
	MEM05007C Perform manual heating and thermal cutting	2
	MEM05012C Perform routine manual metal arc welding	2

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Unit code	Unit title	P
	MEM05015D Weld using manual metal arc welding process	4
	MEM05016C Perform advanced welding using manual metal arc welding process	4
	MEM05026C Apply welding principles	4
	MEM05051A Select welding processes	2
	MEM05052A Apply safe welding practices	4
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
MEM05046B	Perform welds to code standards using manual metal arc welding process	6
	Path: 1 Total Path Weight: 41	
	MEM05007C Perform manual heating and thermal cutting	2
	MEM05012C Perform routine manual metal arc welding	2
	MEM05015D Weld using manual metal arc welding process	4
	MEM05016C Perform advanced welding using manual metal arc welding process	4
	MEM05026C Apply welding principles	4
	MEM05051A Select welding processes	2
	MEM05052A Apply safe welding practices	4
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2

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Unit code	Unit title	P
MEM05047B	Weld using flux core arc welding process	4
	Path: 1 Total Path Weight: 21	
	MEM05050B Perform routine gas metal arc welding	2
	MEM05051A Select welding processes	2
	MEM05052A Apply safe welding practices	4
	MEM12023 Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
MEM05048B	Perform advanced welding using flux core arc welding process	4
	Path: 1 Total Path Weight: 31	
	MEM05007C Perform manual heating and thermal cutting	2
	MEM05047B Weld using flux core arc welding process	4
	MEM05050B Perform routine gas metal arc welding	2
	MEM05051A Select welding processes	2
	MEM05052A Apply safe welding practices	4
	MEM09002B Interpret technical drawing	4
	MEM12023 Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
MEM05049B	Perform routine gas tungsten arc welding	2
MEM05050B	Perform routine gas metal arc welding	2
MEM05051A	Select welding processes	2
MEM05052A	Apply safe welding practices	4
MEM05053A	Set and edit computer controlled thermal cutting machines	4

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Unit code	Unit title	P
	Path: 1 Total Path Weight: 21	
	MEM05007C Perform manual heating and thermal cutting	2
	MEM05008C Perform advanced manual thermal cutting, gouging and	2
	MEM05009C Perform automated thermal cutting	2
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
MEM05054A	Write basic NC/CNC programs for thermal cutting machines	4
	Path: 1 Total Path Weight: 25	
	MEM05007C Perform manual heating and thermal cutting	2
	MEM05008C Perform advanced manual thermal cutting, gouging and	2
	MEM05009C Perform automated thermal cutting	2
	MEM05053A Set and edit computer controlled thermal cutting machines	4
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
MEM06001B	Perform hand forging	4
	Path: 1 Total Path Weight: 6	
	MEM18001C Use hand tools	2
MEM06002B	Perform hammer forging	4
MEM06003C	Carry out heat treatment	6
MEM06004B	Select heat treatment processes and test finished product	6

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Unit code	Unit title	P
	Path: 1 Total Path Weight: 12	
	MEM06003C Carry out heat treatment	6
MEM06005B	Perform drop and upset forging	4
	Path: 1 Total Path Weight: 8	
	MEM06002B Perform hammer forging	4
MEM06006C	Repair springs 4	4
	Path: 1 Total Path Weight: 16	
	MEM06001B Perform hand forging	4
	MEM06003C Carry out heat treatment	6
	MEM18001C Use hand tools	2
MEM06007B	Perform basic incidental heat/quenching, tempering and annealing	2
MEM06008A	Hammer forge complex shapes	4
	Path: 1 Total Path Weight: 8	
	MEM06002B Perform hammer forging	4
MEM06009A	Hand forge complex shapes	4
	Path: 1 Total Path Weight: 8	
	MEM06001B Perform hand forging	4
MEM07001B	Perform operational maintenance of machines/equipment	2
	Path: 1 Total Path Weight: 4	
	MEM18001C Use hand tools	2
MEM07002B	Perform precision shaping/planing/slotting operations	4
	Path: 1 Total Path Weight: 25	
	MEM07005C Perform general machining	8

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Unit code	Unit title	P
	MEM09002B Interpret technical drawing	4
	MEM12003B Perform precision mechanical measurement	2
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
MEM07003B	Perform machine setting (routine)	4
	Path: 1 Total Path Weight: 17	
	MEM07024B Operate and monitor machine/process	4
	MEM12023A Perform engineering measurements	5
	MEM16006A Organise and communicate information	2
	MEM18001C Use hand tools	2
MEM07004B	Perform machine setting (complex)	8
	Path: 1 Total Path Weight: 33	
	MEM07005C Perform general machining	8
	MEM07006C Perform lathe operations	4
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM16006A Organise and communicate information	2
	MEM18001C Use hand tools	2
	Path: 2 Total Path Weight: 33	
	MEM07005C Perform general machining	8
	MEM07007C Perform milling operations	4
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM16006A Organise and communicate information	2

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Unit code	Unit title	P
	MEM18001C Use hand tools	2
	Path: 3 Total Path Weight: 33	
	MEM07005C Perform general machining	8
	MEM07008D Perform grinding operations	4
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM16006A Organise and communicate information	2
	MEM18001C Use hand tools	2
	Path: 4 Total Path Weight: 33	
	MEM07005C Perform general machining	8
	MEM07013B Perform machining operations using horizontal and/or vertical boring machines	4
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM16006A Organise and communicate information	2
	MEM18001C Use hand tools	2
	Path: 5 Total Path Weight: 37	
	MEM07001B Perform operational maintenance of machines/equipment	2
	MEM07003B Perform machine setting (routine)	4
	MEM07024B Operate and monitor machine/process	4
	MEM07025B Perform advanced machine/process operation	6
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM16006A Organise and communicate information	2

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Unit code	Unit title	P
	MEM18001C Use hand tools	2
	Path: 6 Total Path Weight: 37	
	MEM07001B Perform operational maintenance of machines/equipment	2
	MEM07003B Perform machine setting (routine)	4
	MEM07024B Operate and monitor machine/process	4
	MEM07026B Perform advanced plastic processing	6
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM16006A Organise and communicate information	2
	MEM18001C Use hand tools	2
	Path: 7 Total Path Weight: 37	
	MEM07001B Perform operational maintenance of machines/equipment	2
	MEM07003B Perform machine setting (routine)	4
	MEM07024B Operate and monitor machine/process	4
	MEM07027B Perform advanced press operations	6
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM16006A Organise and communicate information	2
	MEM18001C Use hand tools	2
MEM07005C	Perform general machining	8
	Path: 1 Total Path Weight: 19	
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5

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Unit code	Unit title	P
	MEM18001C Use hand tools	2
MEM07006C	Perform lathe operations	4
	Path: 1 Total Path Weight: 23	
	MEM07005C Perform general machining	8
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
MEM07007C	Perform milling operations	4
	Path: 1 Total Path Weight: 23	
	MEM07005C Perform general machining	8
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
MEM07008D	Perform grinding operations	4
	Path: 1 Total Path Weight: 23	
	MEM07005C Perform general machining	8
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
MEM07009B	Perform precision jig boring operations	4
	Path: 1 Total Path Weight: 29	
	MEM07005C Perform general machining	8
	MEM07007C Perform milling operations	4
	MEM09002B Interpret technical drawing	4

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Unit code	Unit title	P
	MEM12003B Perform precision mechanical measurement	2
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
MEM07010B	Perform tool and cutter grinding operations	4
	Path: 1 Total Path Weight: 29	
	MEM07005C Perform general machining	8
	MEM07008D Perform grinding operations	4
	MEM09002B Interpret technical drawing	4
	MEM12003B Perform precision mechanical measurement	2
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
MEM07011B	Perform complex milling operations	4
	Path: 1 Total Path Weight: 32	
	MEM07005C Perform general machining	8
	MEM07007C Perform milling operations	4
	MEM09002B Interpret technical drawing	4
	MEM12003B Perform precision mechanical measurement	2
	MEM12023A Perform engineering measurements	5
	MEM12024A Perform computations	3
	MEM18001C Use hand tools	2
MEM07012B	Perform complex grinding operations	4
	Path: 1 Total Path Weight: 29	
	MEM07005C Perform general machining	8
	MEM07008D Perform grinding operations	4

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Unit code	Unit title	P
	MEM09002B Interpret technical drawing	4
	MEM12003B Perform precision mechanical measurement	2
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
MEM07013B	Perform machining operations using horizontal and/or vertical boring machines	4
	Path: 1 Total Path Weight: 23	
	MEM07005C Perform general machining	8
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
MEM07014B	Perform electro-discharge (EDM) machining operations	4
	Path: 1 Total Path Weight: 23	
	MEM07005C Perform general machining	8
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	Path: 2 Total Path Weight: 14	
	MEM07024B Operate and monitor machine/process	4
	MEM09002B Interpret technical drawing	4
	MEM18001C Use hand tools	2
MEM07015B	Set computer controlled machines/processes	2
	Path: 1 Total Path Weight: 19	
	MEM07024B Operate and monitor machine/process	4

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Unit code	Unit title	P
	MEM07028B Operate computer controlled machines/processes	2
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	Path: 2 Total Path Weight: 21	
	MEM07005C Perform general machining	8
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
MEM07016C	Set and edit computer controlled machines/processes	4
	Path: 1 Total Path Weight: 23	
	MEM07015B Set computer controlled machines/processes	2
	MEM07024B Operate and monitor machine/process	4
	MEM07028B Operate computer controlled machines/processes	2
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	Path: 2 Total Path Weight: 25	
	MEM07005C Perform general machining	8
	MEM07015B Set computer controlled machines/processes	2
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
MEM07018C	Write basic NC/CNC programs	4

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Unit code	Unit title	P
	Path: 1 Total Path Weight: 27	
	MEM07015B Set computer controlled machines/processes	2
	MEM07016C Set and edit computer controlled machines/processes	4
	MEM07024B Operate and monitor machine/process	4
	MEM07028B Operate computer controlled machines/processes	2
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	Path: 2 Total Path Weight: 29	
	MEM07005C Perform general machining	8
	MEM07015B Set computer controlled machines/processes	2
	MEM07016C Set and edit computer controlled machines/processes	4
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
MEM07019C	Program NC/CNC machining centre	2
	Path: 1 Total Path Weight: 29	
	MEM07015B Set computer controlled machines/processes	2
	MEM07016C Set and edit computer controlled machines/processes	4
	MEM07018C Write basic NC/CNC programs	4
	MEM07024B Operate and monitor machine/process	4
	MEM07028B Operate computer controlled machines/processes	2

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Unit code	Unit title	P
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	Path: 2 Total Path Weight: 31	
	MEM07005C Perform general machining	8
	MEM07015B Set computer controlled machines/processes	2
	MEM07016C Set and edit computer controlled machines/processes	4
	MEM07018C Write basic NC/CNC programs	4
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
MEM07020C	Program multiple spindle and/or multiple axis NC/CNC machining centre	2
	Path: 1 Total Path Weight: 31	
	MEM07015B Set computer controlled machines/processes	2
	MEM07016C Set and edit computer controlled machines/processes	4
	MEM07018C Write basic NC/CNC programs	4
	MEM07019C Program NC/CNC machining centre	2
	MEM07024B Operate and monitor machine/process	4
	MEM07028B Operate computer controlled machines/processes	2
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2

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Unit code	Unit title	P
	Path: 2 Total Path Weight: 33	
	MEM07005C Perform general machining	8
	MEM07015B Set computer controlled machines/processes	2
	MEM07016C Set and edit computer controlled machines/processes	4
	MEM07018C Write basic NC/CNC programs	4
	MEM07019C Program NC/CNC machining centre	2
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
MEM07021B	Perform complex lathe operations	4
	Path: 1 Total Path Weight: 32	
	MEM07005C Perform general machining	8
	MEM07006C Perform lathe operations	4
	MEM09002B Interpret technical drawing	4
	MEM12003B Perform precision mechanical measurement	2
	MEM12023A Perform engineering measurements	5
	MEM12024A Perform computations	3
	MEM18001C Use hand tools	2
MEM07022C	Program CNC wire cut machines	2
	Path: 1 Total Path Weight: 31	
	MEM07005C Perform general machining	8
	MEM07015B Set computer controlled machines/processes	2
	MEM07016C Set and edit computer controlled machines/processes	4

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Unit code	Unit title	P
	MEM07018C Write basic NC/CNC programs	4
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	Path: 2 Total Path Weight: 29	
	MEM07015B Set computer controlled machines/processes	2
	MEM07016C Set and edit computer controlled machines/processes	4
	MEM07018C Write basic NC/CNC programs	4
	MEM07024B Operate and monitor machine/process	4
	MEM07028B Operate computer controlled machine/processes	2
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
MEM07023C	Program and set up CNC manufacturing cell	6
	Path: 1 Total Path Weight: 37	
	MEM07015B Set computer controlled machines/processes	2
	MEM07016C Set and edit computer controlled machines/processes	4
	MEM07018C Write basic NC/CNC programs	4
	MEM07019C Program NC/CNC machining centre	2
	MEM07020C Program multiple spindle and/or multiple axis NC/CNC	2
	machining centre	
	MEM07024B Operate and monitor machine/process	4

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Unit code	Unit title	P
	MEM07028B Operate computer controlled machines/processes	2
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	Path: 2 Total Path Weight: 47	
	MEM07005C Perform general machining	8
	MEM07006C Perform lathe operations	4
	MEM07007C Perform milling operations	4
	MEM07015B Set computer controlled machines/processes	2
	MEM07016C Set and edit computer controlled machines/processes	4
	MEM07018C Write basic NC/CNC programs	4
	MEM07019C Program NC/CNC machining centre	2
	MEM07020C Program multiple spindle and/or multiple axis NC/CNC	2
	machining centre	
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
MEM07024B	Operate and monitor machine/process	4
MEM07025B	Perform advanced machine/process operation	6
	Path: 1 Total Path Weight: 25	
	MEM07001B Perform operational maintenance of machines/equipment	2
	MEM07024B Operate and monitor machine/process	4

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Unit code	Unit title	P
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM16006A Organise and communicate information	2
	MEM18001C Use hand tools	2
MEM07026B	Perform advanced plastic processing	6
	Path: 1 Total Path Weight: 25	
	MEM07001B Perform operational maintenance of machines/equipment	2
	MEM07024B Operate and monitor machine/process	4
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM16006A Organise and communicate information	2
	MEM18001C Use hand tools	2
MEM07027B	Perform advanced press operations	6
	Path: 1 Total Path Weight: 25	
	MEM07001B Perform operational maintenance of machines/equipment	2
	MEM07024B Operate and monitor machine/process	4
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM16006A Organise and communicate information	2
	MEM18001C Use hand tools	2
MEM07028B	Operate computer controlled machines/processes	2
	Path: 1 Total Path Weight: 6	
	MEM07024B Operate and monitor machine/process	4

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Unit code	Unit title	P
MEM07029B	Perform routine sharpening/maintenance of production tools and cutters	4
	Path: 1 Total Path Weight: 11	
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
MEM07030C	Perform metal spinning lathe operations (basic)	8
	Path: 1 Total Path Weight: 17	
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
MEM07031C	Perform metal spinning lathe operations (complex)	4
	Path: 1 Total Path Weight: 27	
	MEM07030C Perform metal spinning lathe operations (basic)	8
	MEM07032B Use workshop machines for basic operations	2
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
MEM07032B	Use workshop machines for basic operations	2
	Path: 1 Total Path Weight: 4	
	MEM18001C Use hand tools	2
MEM07033B	Operate and monitor basic boiler	6
MEM07034A	Operate and monitor intermediate class boiler	4
	Path: 1 Total Path Weight: 10	

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Unit code	Unit title	P
	MEM07033B Operate and monitor basic boiler	6
MEM07039A	Write programs for industrial robots	4
	Path: 1 Total Path Weight: 17	
	MEM09002B Interpret technical drawing	4
	MEM10004B Enter and change programmable controller operational	2
	parameters	
	MEM12023A Perform engineering measurements	5
	MEM16008A Interact with computing technology	2
MEM07040A	Set multistage integrated processes	6
	Path: 1 Total Path Weight: 25	
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM14005A Plan a complete activity	4
	MEM16006A Organise and communicate information	2
	MEM16008A Interact with computing technology	2
	MEM18001C Use hand tools	2
MEM08001B	Perform wire, jig and barrel load/unload work	4
MEM08002C	Pre-treat work for subsequent surface coating	4
	Path: 1 Total Path Weight: 6	
	MEM13003B Work safely with industrial chemicals and materials	2
MEM08003C	Perform electroplating operations	6
	Path: 1 Total Path Weight: 16	
	MEM07001B Perform operational maintenance of	2

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Unit code	Unit title	P
	machines/equipment	
	MEM08001B Perform wire, jig and barrel load/unload work	4
	MEM13003B Work safely with industrial chemicals and materials	2
	MEM18001C Use hand tools	2
MEM08004B	Finish work using wet, dry and vapour deposition methods	4
	Path: 1 Total Path Weight: 10	
	MEM08002C Pre-treat work for subsequent surface coating	4
	MEM13003B Work safely with industrial chemicals and materials	2
MEM08005B	Prepare and produce specialised coatings	4
	Path: 1 Total Path Weight: 10	
	MEM08002C Pre-treat work for subsequent surface coating	4
	MEM13003B Work safely with industrial chemicals and materials	2
MEM08006B	Produce clear and/or coloured and/or sealed anodised films on aluminium	2
	Path: 1 Total Path Weight: 6	
	MEM08002C Pre-treat work for subsequent surface coating	4
MEM08007B	Control surface finish production and finished product quality	4
MEM08008B	Operate and control surface finishing waste treatment process	3
	Path: 1 Total Path Weight: 5	
	MEM13003B Work safely with industrial chemicals and materials	2
MEM08009C	Make up solutions	2
	Path: 1 Total Path Weight: 4	
	MEM13003B Work safely with industrial chemicals and	2

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Unit code	Unit title	P
	materials	
MEM08010B	Manually finish/polish materials	6
	Path: 1 Total Path Weight: 8	
	MEM18001C Use hand tools	2
MEM08011B	Prepare surfaces using solvents and/or mechanical means	2
	Path: 1 Total Path Weight: 8	
	MEM13003B Work safely with industrial chemicals and materials	2
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
MEM08012B	Prepare surfaces by abrasive blasting (basic)	4
	Path: 1 Total Path Weight: 7	
	MEM08016B Control blast coating by-products, materials and emissions	1
	MEM13003B Work safely with industrial chemicals and materials	2
MEM08013B	Prepare surfaces by abrasive blasting (advanced)	4
	Path: 1 Total Path Weight: 11	
	MEM08012B Prepare surfaces by abrasive blasting (basic)	4
	MEM08016B Control blast coating by-products, materials and emissions	1
	MEM13003B Work safely with industrial chemicals and materials	2
MEM08014B	Apply protective coatings (basic)	4
	Path: 1 Total Path Weight: 6	
	MEM13003B Work safely with industrial chemicals and materials	2

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Unit code	Unit title	P
MEM08015B	Apply protective coatings (advanced)	4
	Path: 1 Total Path Weight: 10	
	MEM08014B Apply protective coatings (basic)	4
	MEM13003B Work safely with industrial chemicals and materials	2
MEM08016B	Control blast coating by-products, materials and emissions	1
	Path: 1 Total Path Weight: 3	
	MEM13003B Work safely with industrial chemicals and materials	2
MEM08018B	Electroplate engineering coatings	6
	Path: 1 Total Path Weight: 22	
	MEM07001B Perform operational maintenance of machines/equipment	2
	MEM08001B Perform wire, jig and barrel load/unload work	4
	MEM08003C Perform electroplating operations	6
	MEM13003B Work safely with industrial chemicals and materials	2
	MEM18001C Use hand tools	2
MEM08019B	Electroplate protective finishes	6
	Path: 1 Total Path Weight: 22	
	MEM07001B Perform operational maintenance of machines/equipment	2
	MEM08001B Perform wire, jig and barrel load/unload work	4
	MEM08003C Perform electroplating operations	6
	MEM13003B Work safely with industrial chemicals and materials	2
	MEM18001C Use hand tools	2

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Unit code	Unit title	P
MEM08020B	Electroplate decorative finishes	6
	Path: 1 Total Path Weight: 22	
	MEM07001B Perform operational maintenance of machines/equipment	2
	MEM08001B Perform wire, jig and barrel load/unload work	4
	MEM08003C Perform electroplating operations	6
	MEM13003B Work safely with industrial chemicals and materials	2
	MEM18001C Use hand tools	2
MEM09002B	Interpret technical drawing	4
MEM09003B	Prepare basic engineering drawing	8
	Path: 1 Total Path Weight: 12	
	MEM09002B Interpret technical drawing	4
MEM09004B	Perform electrical/electronic detail drafting	8
	Path: 1 Total Path Weight: 20	
	MEM09002B Interpret technical drawing	4
	MEM09003B Prepare basic engineering drawing	8
MEM09005B	Perform basic engineering detail drafting	8
	Path: 1 Total Path Weight: 20	
	MEM09002B Interpret technical drawing	4
	MEM09003B Prepare basic engineering drawing	8
MEM09006B	Perform advanced engineering detail drafting	4
	Path: 1 Total Path Weight: 24	
	MEM09002B Interpret technical drawing	4
	MEM09003B Prepare basic engineering drawing	8

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Unit code	Unit title	P
	MEM09005B Perform basic engineering detail drafting	8
MEM09007B	Perform advanced mechanical detail drafting	4
	Path: 1 Total Path Weight: 28	
	MEM09002B Interpret technical drawing	4
	MEM09003B Prepare basic engineering drawing	8
	MEM09005B Perform basic engineering detail drafting	8
	MEM09006B Perform advanced engineering detail drafting	4
MEM09008B	Perform advanced structural detail drafting	4
	Path: 1 Total Path Weight: 8	
	MEM09002B Interpret technical drawing	4
MEM09009C	Create 2D drawings using computer aided design system	8
	Path: 1 Total Path Weight: 14	
	MEM09002B Interpret technical drawing	4
	MEM16008A Interact with computing technology	2
MEM09010C	Create 3D models using computer aided design system	4
	Path: 1 Total Path Weight: 18	
	MEM09002B Interpret technical drawing	4
	MEM09009C Create 2D drawings using computer aided design system	8
	MEM16008A Interact with computing technology	2
MEM09011B	Apply basic engineering design concepts	6
	Path: 1 Total Path Weight: 10	
	MEM09002B Interpret technical drawing	4
MEM09021B	Interpret and produce curved 3-dimensional shapes	4

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Unit code	Unit title	P
MEM09022A	Create 2D code files using computer aided manufacturing system	4
	Path: 1 Total Path Weight: 15	
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM16008A Interact with computing technology	2
MEM09023A	Create 3D code files using computer aided manufacturing system	6
	Path: 1 Total Path Weight: 21	
	MEM09002B Interpret technical drawing	4
	MEM09022A Create 2D code files using computer aided manufacturing	4
	MEM12023A Perform engineering measurements	5
	MEM16008A Interact with computing technology	2
MEM09141A	Represent mechanical engineering designs	
	MEM16008A Interact with computing technology	
	MEM30007A Select common engineering materials	
	MEM30012A Apply mathematical techniques in a manufacturing engineering or related environment	
MEM09142A	Represent mechatronic engineering designs	
	MEM16008A Interact with computing technology	
	MEM30007A Select common engineering materials	
	MEM30012A Apply mathematical techniques in a manufacturing engineering or related environment	
MEM09143A	Represent aeronautical engineering designs	
	MEM16008A Interact with computing technology	
	MEM30007A Select common engineering materials	

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Unit code	Unit title	P
	MEM30012A Apply mathematical techniques in a manufacturing engineering or related environment	
MEM09144A	Represent avionic engineering designs	
	MEM16008A Interact with computing technology	
	MEM30007A Select common engineering materials	
	MEM30012A Apply mathematical techniques in a manufacturing engineering or related environment	
MEM09151A	Apply computer aided modelling and data management techniques to mechanical engineering designs	
	MEM09141A Represent mechanical engineering designs	
	MEM16008A Interact with computing technology	
	MEM30007A Select common engineering materials	
	MEM30012A Apply mathematical techniques in a manufacturing engineering or related environment	
MEM09152A	Apply computer aided modelling and data management techniques to mechatronic engineering designs	
	MEM09142A Represent mechatronic engineering designs	
	MEM16008A Interact with computing technology	
	MEM30007A Select common engineering materials	
	MEM30012A Apply mathematical techniques in a manufacturing engineering or related environment	
MEM09153A	Apply computer-aided modelling and data management techniques to aeronautical engineering designs	
	MEM09143A Represent aeronautical engineering designs	
	MEM16008A Interact with computing technology	
	MEM30007A Select common engineering materials	
	MEM30012A Apply mathematical techniques in a manufacturing engineering or related environment	

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Unit code	Unit title	P
MEM09154A	Apply computer-aided modelling and data management techniques to avionic engineering designs	
	MEM09144A Represent avionic engineering designs	
	MEM16008A Interact with computing technology	
	MEM30007A Select common engineering materials	
	MEM30012A Apply mathematical techniques in a manufacturing engineering or related environment	
MEM10001C	Erect structures	4
	Path: 1 Total Path Weight: 37	
	MEM05007C Perform manual heating and thermal cutting	2
	MEM05012C Perform routine manual metal arc welding	2
	MEM05015D Weld using manual metal arc welding process	4
	MEM05051A Select welding processes	2
	MEM05052A Apply safe welding practices	4
	MEM09002B Interpret technical drawing	4
	MEM12007D Mark off/out structural fabrications and shapes	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	Path: 2 Total Path Weight: 37	
	MEM05007C Perform manual heating and thermal cutting	2
	MEM05017D Weld using gas metal arc welding process	4
	MEM05050B Perform routine gas metal arc welding	2
	MEM05051A Select welding processes	2
	MEM05052A Apply safe welding practices	4

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Unit code	Unit title	P
	MEM09002B Interpret technical drawing	4
	MEM12007D Mark off/out structural fabrications and shapes	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
MEM10002B	Terminate and connect electrical wiring	3
	Path: 1 Total Path Weight: 11	
	MEM09002B Interpret technical drawing	4
	MEM12002B Perform electrical/electronic measurement	2
	MEM18001C Use hand tools	2
MEM10003B	Install and test electrical wiring and circuits up to 1000 volts a.c. and 1500 volts d.c.	12
	Path: 1 Total Path Weight: 33	
	MEM09002B Interpret technical drawing	4
	MEM10002B Terminate and connect electrical wiring	3
	MEM12002B Perform electrical/electronic measurement	2
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18049C Disconnect/reconnect fixed wired equipment up to 1000 volts a.c./1500 volts d.c.	3
MEM10004B	Enter and change programmable controller operational parameters	2
	Path: 1 Total Path Weight: 8	
	MEM09002B Interpret technical drawing	4

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Unit code	Unit title	P
	MEM16008A Interact with computing technology	2
MEM10005B	Commission programmable controller programs	4
	Path: 1 Total Path Weight: 12	
	MEM09002B Interpret technical drawing	4
	MEM10004B Enter and change programmable controller operational parameters	2
	MEM16008A Interact with computing technology	2
MEM10006B	Install machine/plant	4
	Path: 1 Total Path Weight: 34	
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18003C Use tools for precision work	4
	MEM18006C Repair and fit engineering components	6
	MEM18009B Perform levelling and alignment of machines and engineering components	4
	MEM18055B Dismantle, replace and assemble engineering components	3
MEM10007C	Modify control systems	6
	Path: 1 Total Path Weight: 61	
	MEM09002B Interpret technical drawing	4
	MEM10002B Terminate and connect electrical wiring	3
	MEM10003B Install and test electrical wiring and circuits up to 1000 volts a.c. and 1500 volts d.c.	12
	MEM12002B Perform electrical/electronic measurement	2

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Unit code	Unit title	P
	MEM12004B Perform precision electrical/electronic measurement	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18048B Fault find and repair/rectify basic electrical circuits	12
	MEM18049C Disconnect/reconnect fixed wired equipment up to 1000 volts a.c./1500 volts d.c.	3
	MEM18051B Fault find repair/rectify complex electrical circuits	6
	Path: 2 Total Path Weight: 89	
	MEM09002B Interpret technical drawing	4
	MEM12002B Perform electrical/electronic measurement	2
	MEM12003B Perform precision mechanical measurement	2
	MEM12023A Perform engineering measurements	5
	MEM12024A Perform computations	3
	MEM12025A Use graphical techniques and perform simple statistical computations	2
	MEM14005A Plan a complete activity	4
	MEM16006A Organise and communicate information	2
	MEM16010A Write reports	2
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18003C Use tools for precision work	4
	MEM18006C Repair and fit engineering components	6
	MEM18010C Perform equipment condition monitoring and recording	4

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Unit code	Unit title	P
	MEM18016B Analyse plant and equipment condition monitoring results	4
	MEM18018C Maintain pneumatic system components	4
	MEM18019B Maintain pneumatic systems	4
	MEM18020B Maintain hydraulic system components	4
	MEM18021B Maintain hydraulic systems	4
	MEM18022B Maintain fluid power controls	8
	MEM18023B Modify fluid power system operation	8
	MEM18055B Dismantle, replace and assemble engineering components	3
	Path: 3 Total Path Weight: 66	
	MEM05001B Perform manual soldering/desoldering – electrical/electronic components	4
	MEM09002B Interpret technical drawing	4
	MEM12004B Perform precision electrical/electronic measurement	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18054B Fault find, test and calibrate instrumentation systems and equipment	8
	MEM18055B Dismantle, replace and assemble engineering components	3
	MEM18057B Maintain/service analog/digital electronic equipment	6
	MEM18060B Maintain, repair control instrumentation - single and multiple loop control systems	8
	MEM18062B Install, maintain and calibrate instrumentation	8

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Unit code	Unit title	P
	sensors, transmitters and final control elements	
	MEM18067B Tune control loops - multi controller or multi element systems	6
	Path: 4 Total Path Weight: 65	
	MEM05001B Perform manual soldering/desoldering - electrical/electronic components	4
	MEM05002B Perform high reliability soldering and desoldering	4
	MEM09002B Interpret technical drawing	4
	MEM12004B Perform precision electrical/electronic measurement	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18056B Diagnose and repair analog equipment and components	10
	MEM18057B Maintain/service analog/digital electronic equipment	6
	MEM18058C Modify electronic equipment	4
	MEM18059B Modify electronic systems	4
	MEM18065B Diagnose and repair digital equipment and components	10
	Path: 5 Total Path Weight: 38	
	MEM09002B Interpret technical drawing	4
	MEM12002B Perform electrical/electronic measurement	2
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2

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Unit code	Unit title	P
	MEM18055B Dismantle, replace and assemble engineering components	3
	MEM18086B Test, recover, evacuate and charge refrigeration systems	4
	MEM18088B Maintain and repair commercial air conditioning systems and components	4
	MEM18092B Maintain and repair commercial and/or industrial refrigeration and/or air conditioning controls	6
	Path: 6 Total Path Weight: 40	
	MEM09002B Interpret technical drawing	4
	MEM12002B Perform electrical/electronic measurement	2
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18055B Dismantle, replace and assemble engineering components	3
	MEM18086B Test, recover, evacuate and charge refrigeration systems	4
	MEM18090B Maintain and repair industrial refrigeration systems and components	6
	MEM18092B Maintain and repair commercial and/or industrial refrigeration and/or air conditioning controls	6
	Path: 7 Total Path Weight: 48	
	MEM09002B Interpret technical drawing	4
	MEM12002B Perform electrical/electronic measurement	2
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2

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Unit code	Unit title	P
	MEM18055B Dismantle, replace and assemble engineering components	3
	MEM18086B Test, recover, evacuate and charge refrigeration systems	4
	MEM18089B Maintain and repair central air handling systems	6
	MEM18090B Maintain and repair industrial refrigeration systems and components	6
	MEM18093B Maintain and repair integrated industrial refrigeration and/or large air handling system controls	8
	Path: 8 Total Path Weight: 60	
	MEM09002B Interpret technical drawing	4
	MEM12002B Perform electrical/electronic measurement	2
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18054B Fault find, test and calibrate instrumentation systems and equipment	8
	MEM18055B Dismantle, replace and assemble engineering components	3
	MEM18060B Maintain, repair control instrumentation - single and multiple loop control systems	8
	MEM18062B Install, maintain and calibrate instrumentation sensors, transmitters and final control elements	8
	MEM18064B Maintain instrumentation system components	6
	MEM18067B Tune control loops - multi controller or multi element systems	6
MEM10008B	Undertake commissioning procedures for plant and/or equipment	4
	Path: 1 Total Path Weight: 38	

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Unit code	Unit title	P
	MEM09002B Interpret technical drawing	4
	MEM10006B Install machine/plant	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18003C Use tools for precision work	4
	MEM18006C Repair and fit engineering components	6
	MEM18009B Perform levelling and alignment of machines and engineering components	4
	MEM18055B Dismantle, replace and assemble engineering components	3
	Path: 2 Total Path Weight: 32	
	MEM09002B Interpret technical drawing	4
	MEM12002B Perform electrical/electronic measurement	2
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18055B Dismantle, replace and assemble engineering components	3
	MEM18086B Test, recover, evacuate and charge refrigeration systems	4
	MEM18090B Maintain and repair industrial refrigeration systems and components	6
	Path: 3 Total Path Weight: 28	
	MEM09002B Interpret technical drawing	4
	MEM12002B Perform electrical/electronic measurement	2

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Unit code	Unit title	P
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18055B Dismantle, replace and assemble engineering components	3
	MEM18089B Maintain and repair central air handling systems	6
	Path: 4 Total Path Weight: 40	
	MEM09002B Interpret technical drawing	4
	MEM10002B Terminate and connect electrical wiring	3
	MEM10003B Install and test electrical wiring and circuits up to 1000 volts a.c. and 1500 volts d.c.	12
	MEM12002B Perform electrical/electronic measurement	2
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18049C Disconnect/reconnect fixed wired equipment up to 1000 volts a.c./1500 volts d.c.	3
	MEM18055B Dismantle, replace and assemble engineering components	3
MEM10009B	Install refrigeration and air conditioning plant and equipment	4
	Path: 1 Total Path Weight: 30	
	MEM05006B Perform brazing and/or silver soldering	2
	MEM09002B Interpret technical drawing	4
	MEM10010B Install pipework and pipework assemblies	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2

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Unit code	Unit title	P
	MEM18002B Use power tools/hand held operations	2
	MEM18055B Dismantle, replace and assemble engineering components	3
	MEM18086B Test, recover, evacuate and charge refrigeration systems	4
MEM10010B	Install pipework and pipework assemblies	4
	Path: 1 Total Path Weight: 17	
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
MEM10011B	Terminate and connect specialist cables	3
	Path: 1 Total Path Weight: 14	
	MEM09002B Interpret technical drawing	4
	MEM10002B Terminate and connect electrical wiring	3
	MEM12002B Perform electrical/electronic measurement	2
	MEM18001C Use hand tools	2
MEM10013A	Install split air conditioning systems and associated pipework	6
	Path: 1 Total Path Weight: 24	
	MEM05006B Perform brazing and/or silver soldering	2
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18055B Dismantle, replace and assemble engineering	3

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Unit code	Unit title	P
	components	
MEM11001C	Erect/dismantle scaffolding and equipment	4
	Path: 1 Total Path Weight: 6	
	MEM18001C Use hand tools	2
MEM11002C	Erect/dismantle complex scaffolding and equipment	4
	Path: 1 Total Path Weight: 10	
	MEM11001C Erect/dismantle scaffolding and equipment	4
	MEM18001C Use hand tools	2
MEM11003B	Coordinate erection/dismantling of complex scaffolding/equipment	4
	Path: 1 Total Path Weight: 14	
	MEM11001C Erect/dismantle scaffolding and equipment	4
	MEM11002C Erect/dismantle complex scaffolding and equipment	4
	MEM18001C Use hand tools	2
MEM11004B	Undertake dogging	4
	Path: 1 Total Path Weight: 6	
	MEM18001C Use hand tools	2
MEM11005B	Pick and process order	4
MEM11006B	Perform production packaging	2
MEM11007B	Administer inventory procedures	4
MEM11008B	Package materials (stores and warehouse)	2
MEM11009B	Handle/move bulk fluids/gases	4
MEM11010B	Operate mobile load shifting equipment	4
MEM11011B	Undertake manual handling	2

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Unit code	Unit title	P
MEM11012B	Purchase materials	6
MEM11013B	Undertake warehouse receival process	4
	Path: 1 Total Path Weight: 6	
	MEM11011B Undertake manual handling	2
MEM11014B	Undertake warehouse dispatch process	4
	Path: 1 Total Path Weight: 8	
	MEM11006B Perform production packaging	2
	MEM11011B Undertake manual handling	2
	Path: 2 Total Path Weight: 8	
	MEM11008B Package materials (stores and warehouse)	2
	MEM11011B Undertake manual handling	2
MEM11015B	Manage warehouse inventory system	6
	Path: 1 Total Path Weight: 12	
	MEM11007B Administer inventory procedures	4
	MEM15002A Apply quality systems	2
MEM11016B	Order materials	2
MEM11017B	Organise and lead stocktakes	4
	Path: 1 Total Path Weight: 8	
	MEM11007B Administer inventory procedures	4
MEM11018B	Organise and maintain warehouse stock receival and/or dispatch system	6
	Path: 1 Total Path Weight: 14	
	MEM11006B Perform production packaging	2
	MEM11011B Undertake manual handling	2

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Unit code	Unit title	P
	MEM11013B Undertake warehouse receival process	4
	Path: 2 Total Path Weight: 14	
	MEM11008B Package materials (stores and warehouse)	2
	MEM11011B Undertake manual handling	2
	MEM11013B Undertake warehouse receival process	4
	Path: 3 Total Path Weight: 14	
	MEM11006B Perform production packaging	2
	MEM11011B Undertake manual handling	2
	MEM11014B Undertake warehouse dispatch process	4
	Path: 4 Total Path Weight: 14	
	MEM11008B Package materials (stores and warehouse)	2
	MEM11011B Undertake manual handling	2
	MEM11014B Undertake warehouse dispatch process	4
MEM11019B	Undertake tool store procedures	4
	Path: 1 Total Path Weight: 17	
	MEM11007B Administer inventory procedures	4
	MEM11011B Undertake manual handling	2
	MEM11013B Undertake warehouse receival process	4
	MEM12024A Perform computations	3
MEM11020B	Perform advanced warehouse computer operations	4
	Path: 1 Total Path Weight: 6	
	MEM16008A Interact with computing technology	2
MEM11021B	Perform advanced operation of load shifting equipment	2
	Path: 1 Total Path Weight: 6	

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Unit code	Unit title	P
	MEM11010B Operate mobile load shifting equipment	4
MEM11022B	Operate fixed/moveable load shifting equipment	4
MEM12001B	Use comparison and basic measuring devices	2
MEM12002B	Perform electrical/electronic measurement	2
MEM11023A	Operate a bridge and gantry crane	4
MEM11024A	Undertake basic rigging	4
	Path: 1 Total Path Weight: 8	
	MEM11004B Undertake dogging	4
MEM11025A	Operate a non-slewing mobile crane of greater than three tonnes capacity	4
MEM12003B	Perform precision mechanical measurement	2
	Path: 1 Total Path Weight: 7	
	MEM12023A Perform engineering measurements	5
MEM12004B	Perform precision electrical/electronic measurement	4
MEM12005B	Calibrate measuring equipment	6
	Path: 1 Total Path Weight: 13	
	MEM12003B Perform precision mechanical measurement	2
	MEM12023A Perform engineering measurements	5
	Path: 2 Total Path Weight: 13	
	MEM12002B Perform electrical/electronic measurement	2
	MEM12023A Perform engineering measurements	5
MEM12006C	Mark off/out (general engineering)	4
	Path: 1 Total Path Weight: 13	
	MEM09002B Interpret technical drawing	4

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Unit code	Unit title	P
	MEM12023A Perform engineering measurements	5
MEM12007D	Mark off/out structural fabrications and shapes	4
	Path: 1 Total Path Weight: 9	
	MEM12023A Perform engineering measurements	5
MEM12019B	Measure components using coordinate measuring machine	4
MEM12020B	Set and operate coordinate measuring machine	2
MEM12021B	Program coordinate measuring machine	4
	Path: 1 Total Path Weight: 15	
	MEM09002B Interpret technical drawing	4
	MEM12003B Perform precision mechanical measurement	2
	MEM12023A Perform engineering measurements	5
MEM12022B	Program coordinate measuring machine (advanced)	2
	Path: 1 Total Path Weight: 13	
	MEM09002B Interpret technical drawing	4
	MEM12003B Perform precision mechanical measurement	2
	MEM12023A Perform engineering measurements	5
MEM12023A	Perform engineering measurements	5
MEM12024A	Perform computations	3
MEM12025A	Use graphical techniques and perform simple statistical computations	2
	Path: 1 Total Path Weight: 5	
	MEM12024A Perform computations	3
MEM13001B	Perform emergency first aid	1
MEM13002B	Undertake occupational health and safety activities in the workplace	3

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Unit code	Unit title	P
MEM13003B	Work safely with industrial chemicals and materials	2
MEM13004B	Work safely with molten metals/glass	2
MEM13006B	Collect and evaluate occupational health and safety data for an enterprise or section of an enterprise	4
MEM13007B	Maintain water treatment systems for cooling towers	2
	Path: 1 Total Path Weight: 4	
	MEM18001C Use hand tools	2
MEM13010A	Supervise occupational health and safety in an industrial work environment	4
	Path: 1 Total Path Weight: 7	
	MEM13002B Undertake occupational health and safety activities in the workplace	3
MEM13013B	Work safely with ionizing radiation	4
MEM13014A	Apply principles of occupational health and safety in the work environment	0
MEM14001B	Schedule material deliveries	8
MEM14002B	Undertake basic process planning	8
MEM14003B	Undertake basic production scheduling	8
MEM14004A	Plan to undertake a routine task	0
MEM14005A	Plan a complete activity	4
MEM14061A	Plan and design mechanical engineering projects	
	MEM14081A Apply mechanical engineering fundamentals to support design and development of projects	
	MEM16008A Interact with computing technology	
	MEM23041A Apply basic scientific principles and techniques in mechanical engineering situations	
	MEM23051A Apply basic electro and control scientific principles and techniques in mechanical and manufacturing	

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Unit code	Unit title	P
	engineering situations	
	MEM23061A Select and test mechanical engineering materials	
	MEM23071A Select and apply mechanical engineering methods, processes and construction techniques	
	MEM23081A Apply scientific principles and techniques in mechanical engineering situations	
	MEM23091A Apply mechanical system design principles and techniques in mechanical engineering situations	
	MEM30012A Apply mathematical techniques in a manufacturing engineering or related environment	
MEM14062A	Plan and design mechatronic engineering projects	
	MEM14082A Apply mechatronics fundamentals to support design and development of engineering projects	
	MEM16008A Interact with computing technology	
	MEM23041A Apply basic scientific principles and techniques in mechanical engineering situations	
	MEM23051A Apply basic electro and control scientific principles and techniques in mechanical and manufacturing engineering situations	
	MEM23062A Select and test mechatronic engineering materials	
	MEM23072A Select and apply mechatronic engineering methods, processes and construction techniques	
	MEM23082A Apply scientific principles and techniques in mechatronic engineering situations	
	MEM23092A Apply automated systems principles and techniques in engineering situations	
	MEM30012A Apply mathematical techniques in a manufacturing engineering or related environment	
MEM14063A	Plan and design manufacturing engineering projects	
	MEM14081A Apply mechanical engineering fundamentals to	

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Unit code	Unit title	P
	support design and development of projects	
	MEM16008A Interact with computing technology	
	MEM23041A Apply basic scientific principles and techniques in mechanical engineering situations	
	MEM23051A Apply basic electro and control scientific principles and techniques in mechanical and manufacturing engineering situations	
	MEM23061A Select and test mechanical engineering materials	
	MEM23071A Select and apply mechanical engineering methods, processes and construction techniques	
	MEM23083A Apply industrial engineering principles and techniques in competitive manufacturing engineering situations	
	MEM23093A Apply plant and process design principles and techniques in engineering situations	
	MEM30012A Apply mathematical techniques in a manufacturing engineering or related environment	
MEM14064A	Plan and design maintenance engineering projects	
	MEM14082A Apply mechatronics fundamentals to support design and development of engineering projects	
	MEM16008A Interact with computing technology	
	MEM23041A Apply basic scientific principles and techniques in mechanical engineering situations	
	MEM23051A Apply basic electro and control scientific principles and techniques in mechanical and manufacturing engineering situations	
	MEM23062A Select and test mechatronic engineering materials	
	MEM23072A Select and apply mechatronic engineering methods, processes and construction techniques	
	MEM23082A Apply scientific principles and techniques in mechatronic engineering situations	

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Unit code	Unit title	P
	MEM23094A Apply maintenance systems principles and techniques in engineering situations	
	MEM30012A Apply mathematical techniques in a manufacturing engineering or related environment	
MEM14065A	Plan and design aeronautical engineering projects	
	MEA349A Apply basic scientific principles and techniques in aeronautical engineering situations	
	MEA350A Select and test aeronautical engineering materials	
	MEM14083A Apply aeronautical engineering fundamentals to support design and development projects	
	MEM16008A Interact with computing technology	
	MEM23052A Apply basic electro and control scientific principles and techniques in aeronautical engineering situations	
	MEM23073A Select and apply aeronautical engineering methods, processes and construction techniques	
	MEM23084A Apply scientific principles and techniques in aeronautical engineering situations	
	MEM23095A Apply aeronautical system design principles and techniques in engineering situations	
	MEM30012A Apply mathematical techniques in a manufacturing engineering or related environment	
MEM14066A	Plan and design avionic engineering projects	
	MEA272A Apply basic scientific principles and techniques in avionic engineering situations	
	MEA273A Select and test avionic engineering materials	
	MEM14084A Apply avionic engineering fundamentals to support design and development projects	
	MEM16008A Interact with computing technology	
	MEM23074A Select and apply avionic engineering methods, processes and construction techniques	

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Unit code	Unit title	P
	MEM23085A Apply scientific principles and techniques in avionic engineering situations	
	MEM23096A Apply avionic system design principles and techniques in engineering situations	
	MEM30012A Apply mathematical techniques in a manufacturing engineering or related environment	
MEM14081A	Apply mechanical engineering fundamentals to support design and development of projects	
	MEM16008A Interact with computing technology	
	MEM23041A Apply basic scientific principles and techniques in mechanical engineering situations	
	MEM23051A Apply basic electro and control scientific principles and techniques in mechanical and manufacturing engineering situations	
	MEM30012A Apply mathematical techniques in a manufacturing engineering or related environment	
MEM14082A	Apply mechatronics fundamentals to support design and development of engineering projects	
	MEM16008A Interact with computing technology	
	MEM23041A Apply basic scientific principles and techniques in mechanical engineering situations	
	MEM23051A Apply basic electro and control scientific principles and techniques in mechanical and manufacturing engineering situations	
	MEM30012A Apply mathematical techniques in a manufacturing engineering or related environment	
MEM14083A	Apply aeronautical engineering fundamentals to support design and development of engineering projects	
	MEA349A Apply basic scientific principles and techniques in aeronautical engineering situations	
	MEM16008A Interact with computing technology	

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Unit code	Unit title	P
	MEM23052A Apply basic electro and control scientific principles and techniques in aeronautical engineering situations	
	MEM30012A Apply mathematical techniques in a manufacturing engineering or related environment	
MEM14084A	Apply avionic engineering fundamentals to support design and development of engineering projects	
	MEA272A Apply basic scientific principles and techniques in avionic engineering situations	
	MEM16008A Interact with computing technology	
	MEM30012A Apply mathematical techniques in a manufacturing engineering or related environment	
MEM15001B	Perform basic statistical quality control	2
MEM15002A	Apply quality systems	2
MEM15003B	Use improvement processes in team activities	4
	Path: 1 Total Path Weight: 4	
	MEM16007A Work with others in a manufacturing, engineering or related environment	0
MEM15004B	Perform inspection	2
MEM15005B	Select and control inspection processes and procedures	4
	Path: 1 Total Path Weight: 6	
	MEM15004B Perform inspection	2
MEM15007B	Conduct product and/or process capability studies	6
	Path: 1 Total Path Weight: 15	
	MEM12024A Perform computations	3
	MEM12025A Use graphical techniques and perform simple statistical computations	2
	MEM15001B Perform basic statistical quality control	2

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Unit code	Unit title	P
	MEM15008B Perform advanced statistical quality control	2
MEM15008B	Perform advanced statistical quality control	2
	Path: 1 Total Path Weight: 9	
	MEM12024A Perform computations	3
	MEM12025A Use graphical techniques and perform simple statistical computations	2
	MEM15001B Perform basic statistical quality control	2
MEM15010B	Perform laboratory procedures	8
MEM15011B	Exercise external quality assurance	6
	Path: 1 Total Path Weight: 12	
	MEM15004B Perform inspection	2
	MEM15005B Select and control inspection processes and procedures	4
MEM15012B	Maintain/supervise the application of quality procedures	4
	Path: 1 Total Path Weight: 11	
	MEM12024A Perform computations	3
	MEM12025A Use graphical techniques and perform simple statistical computations	2
	MEM15001B Perform basic statistical quality control	2
MEM15015B	Examine trading practices	5
	Path: 1 Total Path Weight: 10	
	MEM12023A Perform engineering measurements	5
MEM15016B	Inspect pre-packed articles	8
	Path: 1 Total Path Weight: 10	
	MEM13003B Work safely with industrial chemicals and materials	2

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Unit code	Unit title	P
MEM15017B	Use and maintain reference standards	3
	Path: 1 Total Path Weight: 26	
	MEM11011B Undertake manual handling	2
	MEM12003B Perform precision mechanical measurement	2
	MEM12004B Perform precision electrical/electronic measurement	4
	MEM12005B Calibrate measuring equipment	6
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
MEM15018B	Investigate consumer complaints	6
	Path: 1 Total Path Weight: 36	
	MEM11011B Undertake manual handling	2
	MEM12023A Perform engineering measurements	5
	MEM15004B Perform inspection	2
	MEM15005B Select and control inspection processes and procedures	4
	MEM15015B Examine trading practices	5
	MEM15016B Inspect pre-packed articles	8
	MEM16004B Perform internal/external customer service	2
	MEM18001C Use hand tools	2
MEM15019B	Conduct a field inspection	12
	Path: 1 Total Path Weight: 75	
	MEM09002B Interpret technical drawing	4
	MEM11011B Undertake manual handling	2

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Unit code	Unit title	P
	MEM12003B Perform precision mechanical measurement	2
	MEM12004B Perform precision electrical/electronic measurement	4
	MEM12005B Calibrate measuring equipment	6
	MEM12023A Perform engineering measurements	5
	MEM13003B Work safely with industrial chemicals and materials	2
	MEM15004B Perform inspection	2
	MEM15005B Select and control inspection processes and procedures	4
	MEM15015B Examine trading practices	5
	MEM15016B Inspect pre-packed articles	8
	MEM15017B Use and maintain reference standards	3
	MEM15018B Investigate consumer complaints	6
	MEM16002C Conduct formal interviews and negotiations	4
	MEM16004B Perform internal/external customer service	2
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
MEM15020C	Perform verification/certification or in-service inspection	12
	Path: 1 Total Path Weight: 25	
	MEM09002B Interpret technical drawing	4
	MEM11011B Undertake manual handling	2
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
MEM15021C	Conduct audits of servicing licensees and public weighbridge licensees	4

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Unit code	Unit title	P
	Path: 1 Total Path Weight: 14	
	MEM09002B Interpret technical drawing	4
	MEM11011B Undertake manual handling	2
	MEM16004B Perform internal/external customer service	2
	MEM18001C Use hand tools	2
MEM15022B	Verify reference standards	8
	Path: 1 Total Path Weight: 21	
	MEM09002B Interpret technical drawing	4
	MEM12003B Perform precision mechanical measurement	2
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
MEM15024A	Apply quality procedures	0
MEM16001B	Give formal presentations and take part in meetings	2
MEM16002C	Conduct formal interviews and negotiations	4
MEM16003B	Provide advanced customer service	2
MEM16004B	Perform internal/external customer service	2
MEM16005A	Operate as a team member to conduct manufacturing, engineering or related activities	2
MEM16006A	Organise and communicate information	2
MEM16007A	Work with others in a manufacturing, engineering or related environment	0
MEM16008A	Interact with computing technology	2
MEM16009A	Research and analyse engineering information	2
	Path: 1 Total Path Weight: 8	
	MEM16006A Organise and communicate information	2

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Unit code	Unit title	P
	MEM16012A Interpret technical specifications and manuals	4
MEM16010A	Write reports	2
	Path: 1 Total Path Weight: 6	
	MEM14005A Plan a complete activity	4
MEM16011A	Communicate with individuals and small groups	2
	Path: 1 Total Path Weight: 4	
	MEM16006A Organise and communicate information	2
MEM16012A	Interpret technical specifications and manuals	4
MEM16013A	Operate in a self-directed team	2
	Path: 1 Total Path Weight: 2	
	MEM16007A Work with others in a manufacturing, engineering or related environment	0
MEM16014A	Report technical information	2
	Path: 1 Total Path Weight: 4	
	MEM16006A Organise and communicate information	2
MEM17001B	Assist in development and deliver training in the workplace	2
MEM17002B	Conduct workplace assessment	2
MEM17003A	Assist in the provision of on the job training	2
MEM18001C	Use hand tools	2
MEM18002B	Use power tools/hand held operations	2
MEM18003C	Use tools for precision work	4
	Path: 1 Total Path Weight: 13	
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2

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Unit code	Unit title	P
	MEM18002B Use power tools/hand held operations	2
MEM18004B	Maintain and overhaul mechanical equipment	4
	Path: 1 Total Path Weight: 42	
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18003C Use tools for precision work	4
	MEM18005B Perform fault diagnosis, installation and removal of bearings	4
	MEM18006C Repair and fit engineering components	6
	MEM18007B Maintain and repair mechanical drives and mechanical transmission assemblies	4
	MEM18009B Perform levelling and alignment of machines and engineering components	4
	MEM18055B Dismantle, replace and assemble engineering components	3
MEM18005B	Perform fault diagnosis, installation and removal of bearings	4
	Path: 1 Total Path Weight: 30	
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18003C Use tools for precision work	4
	MEM18006C Repair and fit engineering components	6
	MEM18055B Dismantle, replace and assemble engineering	3

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Unit code	Unit title	P
	components	
MEM18006C	Repair and fit engineering components	6
	Path: 1 Total Path Weight: 26	
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18003C Use tools for precision work	4
	MEM18055B Dismantle, replace and assemble engineering components	3
MEM18007B	Maintain and repair mechanical drives and mechanical transmission assemblies	4
	Path: 1 Total Path Weight: 34	
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18003C Use tools for precision work	4
	MEM18006C Repair and fit engineering components	6
	MEM18009B Perform levelling and alignment of machines and engineering components	4
	MEM18055B Dismantle, replace and assemble engineering components	3
MEM18008B	Balance equipment	2
	Path: 1 Total Path Weight: 28	
	MEM09002B Interpret technical drawing	4

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Unit code	Unit title	P
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18003C Use tools for precision work	4
	MEM18006C Repair and fit engineering components	6
	MEM18055B Dismantle, replace and assemble engineering components	3
MEM18009B	Perform levelling and alignment of machines and engineering components	4
	Path: 1 Total Path Weight: 30	
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18003C Use tools for precision work	4
	MEM18006C Repair and fit engineering components	6
	MEM18055B Dismantle, replace and assemble engineering components	3
MEM18010C	Perform equipment condition monitoring and recording	4
	Path: 1 Total Path Weight: 20	
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18055B Dismantle, replace and assemble engineering components	3

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Unit code	Unit title	P
MEM18011C	Shut down and isolate machines/equipment	2
MEM18012B	Perform installation and removal of mechanical seals	2
	Path: 1 Total Path Weight: 28	
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18003C Use tools for precision work	4
	MEM18006C Repair and fit engineering components	6
	MEM18055B Dismantle, replace and assemble engineering components	3
MEM18013B	Perform gland packing	2
	Path: 1 Total Path Weight: 9	
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
MEM18014B	Manufacture press tools and gauges	8
	Path: 1 Total Path Weight: 73	
	MEM06007B Perform basic incidental heat/quenching, tempering and annealing	2
	MEM07005C Perform general machining	8
	MEM07006C Perform lathe operations	4
	MEM07007C Perform milling operations	4
	MEM07008D Perform grinding operations	4
	MEM09002B Interpret technical drawing	4
	MEM12003B Perform precision mechanical measurement	2

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Unit code	Unit title	P
	MEM12006C Mark off/out (general engineering)	4
	MEM12023A Perform engineering measurements	5
	MEM12024A Perform computations	3
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18003C Use tools for precision work	4
	MEM18006C Repair and fit engineering components	6
	MEM18015B Maintain tools and dies	4
	MEM18055B Dismantle, replace and assemble engineering components	3
	MEM30012A Apply mathematical techniques in a manufacturing engineering or related environment	4
MEM18015B	Maintain tools and dies	4
	Path: 1 Total Path Weight: 54	
	MEM06007B Perform basic incidental heat/quenching, tempering and annealing	2
	MEM07005C Perform general machining	8
	MEM07006C Perform lathe operations	4
	MEM07007C Perform milling operations	4
	MEM07008D Perform grinding operations	4
	MEM09002B Interpret technical drawing	4
	MEM12003B Perform precision mechanical measurement	2
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2

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Unit code	Unit title	P
	MEM18003C Use tools for precision work	4
	MEM18006C Repair and fit engineering components	6
	MEM18055B Dismantle, replace and assemble engineering components	3
MEM18016B	Analyse plant and equipment condition monitoring results	4
	Path: 1 Total Path Weight: 41	
	MEM09002B Interpret technical drawing	4
	MEM12003B Perform precision mechanical measurement	2
	MEM12023A Perform engineering measurements	5
	MEM12024A Perform computations	3
	MEM12025A Use graphical techniques and perform simple statistical computations	2
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18003C Use tools for precision work	4
	MEM18006C Repair and fit engineering components	6
	MEM18010C Perform equipment condition monitoring and recording	4
	MEM18055B Dismantle, replace and assemble engineering components	3
MEM18017C	Modify mechanical systems and equipment	8
	Path: 1 Total Path Weight: 63	
	MEM09002B Interpret technical drawing	4
	MEM12003B Perform precision mechanical measurement	2
	MEM12023A Perform engineering measurements	5
	MEM12024A Perform computations	3

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Unit code	Unit title	P
	MEM12025A Use graphical techniques and perform simple statistical computations	2
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18003C Use tools for precision work	4
	MEM18005B Perform fault diagnosis, installation and removal of bearings	4
	MEM18006C Repair and fit engineering components	6
	MEM18007B Maintain and repair mechanical drives and mechanical transmission assemblies	4
	MEM18009B Perform levelling and alignment of machines and engineering components	4
	MEM18010C Perform equipment condition monitoring and recording	4
	MEM18011C Shut down and isolate machines/equipment	2
	MEM18016B Analyse plant and equipment condition monitoring results	4
	MEM18055B Dismantle, replace and assemble engineering components	3
MEM18018C	Maintain pneumatic system components	4
	Path: 1 Total Path Weight: 30	
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18003C Use tools for precision work	4
	MEM18006C Repair and fit engineering components	6

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Unit code	Unit title	P
	MEM18055B Dismantle, replace and assemble engineering components	3
MEM18019B	Maintain pneumatic systems	4
	Path: 1 Total Path Weight: 34	
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18003C Use tools for precision work	4
	MEM18006C Repair and fit engineering components	6
	MEM18018C Maintain pneumatic system components	4
	MEM18055B Dismantle, replace and assemble engineering components	3
MEM18020B	Maintain hydraulic system components	4
	Path: 1 Total Path Weight: 30	
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18003C Use tools for precision work	4
	MEM18006C Repair and fit engineering components	6
	MEM18055B Dismantle, replace and assemble engineering components	3
MEM18021B	Maintain hydraulic systems	4
	Path: 1 Total Path Weight: 34	

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Unit code	Unit title	P
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18003C Use tools for precision work	4
	MEM18006C Repair and fit engineering components	6
	MEM18020B Maintain hydraulic system components	4
	MEM18055B Dismantle, replace and assemble engineering components	3
MEM18022B	Maintain fluid power controls	8
	Path: 1 Total Path Weight: 42	
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18003C Use tools for precision work	4
	MEM18006C Repair and fit engineering components	6
	MEM18018C Maintain pneumatic system components	4
	MEM18019B Maintain pneumatic systems	4
	MEM18055B Dismantle, replace and assemble engineering components	3
	Path: 2 Total Path Weight: 42	
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2

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Unit code	Unit title	P
	MEM18002B Use power tools/hand held operations	2
	MEM18003C Use tools for precision work	4
	MEM18006C Repair and fit engineering components	6
	MEM18020B Maintain hydraulic system components	4
	MEM18021B Maintain hydraulic systems	4
	MEM18055B Dismantle, replace and assemble engineering components	3
MEM18023B	Modify fluid power system operation	8
	Path: 1 Total Path Weight: 71	
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM12024A Perform computations	3
	MEM12025A Use graphical techniques and perform simple statistical computations	2
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18003C Use tools for precision work	4
	MEM18006C Repair and fit engineering components	6
	MEM18010C Perform equipment condition monitoring and recording	4
	MEM18016B Analyse plant and equipment condition monitoring results	4
	MEM18018C Maintain pneumatic system components	4
	MEM18019B Maintain pneumatic systems	4
	MEM18020B Maintain hydraulic system components	4
	MEM18021B Maintain hydraulic systems	4

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Unit code	Unit title	P
	MEM18022B Maintain fluid power controls	8
	MEM18055B Dismantle, replace and assemble engineering components	3
MEM18024B	Maintain engine cooling systems	2
	Path: 1 Total Path Weight: 18	
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18055B Dismantle, replace and assemble engineering components	3
MEM18025B	Service combustion engines	2
	Path: 1 Total Path Weight: 4	
	MEM18001C Use hand tools	2
MEM18026C	Test compression ignition fuel systems	4
	Path: 1 Total Path Weight: 11	
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
MEM18027C	Overhaul engine fuel system components	8
	Path: 1 Total Path Weight: 24	
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18055B Dismantle, replace and assemble engineering	3

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Unit code	Unit title	P
	components	
MEM18028B	Maintain engine lubrication systems	2
	Path: 1 Total Path Weight: 18	
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18055B Dismantle, replace and assemble engineering components	3
MEM18029B	Tune diesel engines	4
	Path: 1 Total Path Weight: 24	
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18026C Test compression ignition fuel systems	4
	MEM18055B Dismantle, replace and assemble engineering components	3
MEM18030B	Diagnose and rectify low voltage electrical systems	8
	Path: 1 Total Path Weight: 24	
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18055B Dismantle, replace and assemble engineering components	3

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Unit code	Unit title	P
MEM18031B	Diagnose and rectify low voltage starting systems	2
	Path: 1 Total Path Weight: 26	
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18030B Diagnose and rectify low voltage electrical systems	8
	MEM18055B Dismantle, replace and assemble engineering components	3
MEM18032B	Maintain induction/exhaust systems	4
	Path: 1 Total Path Weight: 20	
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18055B Dismantle, replace and assemble engineering components	3
MEM18033B	Perform engine bottom-end overhaul	4
	Path: 1 Total Path Weight: 20	
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18055B Dismantle, replace and assemble engineering components	3

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Unit code	Unit title	P
MEM18034B	Perform engine top-end overhaul	8
	Path: 1 Total Path Weight: 34	
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18003C Use tools for precision work	4
	MEM18006C Repair and fit engineering components	6
	MEM18055B Dismantle, replace and assemble engineering components	3
MEM18035B	Diagnose and rectify braking systems	6
	Path: 1 Total Path Weight: 22	
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18055B Dismantle, replace and assemble engineering components	3
MEM18037B	Diagnose and rectify low voltage charging systems	2
	Path: 1 Total Path Weight: 26	
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18030B Diagnose and rectify low voltage electrical systems	8

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Unit code	Unit title	P
	MEM18055B Dismantle, replace and assemble engineering components	3
MEM18038B	Maintain wheels and tyres	2
	Path: 1 Total Path Weight: 4	
	MEM18001C Use hand tools	2
MEM18039B	Diagnose and rectify track type undercarriage	4
	Path: 1 Total Path Weight: 20	
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18055B Dismantle, replace and assemble engineering components	3
MEM18040B	Maintain suspension systems	4
	Path: 1 Total Path Weight: 20	
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18055B Dismantle, replace and assemble engineering components	3
MEM18041B	Maintain steering systems	4
	Path: 1 Total Path Weight: 20	
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5

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Unit code	Unit title	P
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18055B Dismantle, replace and assemble engineering components	3
MEM18042C	Diagnose and rectify manual transmissions	4
	Path: 1 Total Path Weight: 20	
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18055B Dismantle, replace and assemble engineering components	3
MEM18043C	Diagnose and rectify automatic transmissions	8
	Path: 1 Total Path Weight: 24	
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18055B Dismantle, replace and assemble engineering components	3
MEM18044C	Diagnose and rectify drive line and final drives	4
	Path: 1 Total Path Weight: 20	
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2

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Unit code	Unit title	P
	MEM18002B Use power tools/hand held operations	2
	MEM18055B Dismantle, replace and assemble engineering components	3
MEM18045B	Fault find/repair electrical equipment/components up to 250 volts single phase supply	4
	Path: 1 Total Path Weight: 22	
	MEM09002B Interpret technical drawing	4
	MEM10002B Terminate and connect electrical wiring	3
	MEM12002B Perform electrical/electronic measurement	2
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
MEM18046B	Fault find/repair electrical equipment/components up to 1000 volts a.c./1500 volts d.c.	10
	Path: 1 Total Path Weight: 28	
	MEM09002B Interpret technical drawing	4
	MEM10002B Terminate and connect electrical wiring	3
	MEM12002B Perform electrical/electronic measurement	2
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
MEM18047B	Diagnose and maintain electronic controlling systems on mobile plant	4
	Path: 1 Total Path Weight: 28	
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5

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Unit code	Unit title	P
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18030B Diagnose and rectify low voltage electrical systems	8
	MEM18055B Dismantle, replace and assemble engineering components	3
MEM18048B	Fault find and repair/rectify basic electrical circuits	12
	Path: 1 Total Path Weight: 45	
	MEM09002B Interpret technical drawing	4
	MEM10002B Terminate and connect electrical wiring	3
	MEM10003B Install and test electrical wiring and circuits up to 1000 volts a.c. and 1500 volts d.c.	12
	MEM12002B Perform electrical/electronic measurement	2
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18049C Disconnect/reconnect fixed wired equipment up to 1000 volts a.c./1500 volts d.c.	3
MEM18049C	Disconnect/reconnect fixed wired equipment up to 1000 volts a.c./1500 volts d.c.	3
	Path: 1 Total Path Weight: 14	
	MEM09002B Interpret technical drawing	4
	MEM10002B Terminate and connect electrical wiring	3
	MEM12002B Perform electrical/electronic measurement	2
	MEM18001C Use hand tools	2
MEM18050C	Disconnect/reconnect fixed wired equipment over 1000 volts a.c./1500 volts d.c.	3

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Unit code	Unit title	P
	Path: 1 Total Path Weight: 14	
	MEM09002B Interpret technical drawing	4
	MEM10002B Terminate and connect electrical wiring	3
	MEM12002B Perform electrical/electronic measurement	2
	MEM18001C Use hand tools	2
MEM18051B	Fault find repair/rectify complex electrical circuits	6
	Path: 1 Total Path Weight: 55	
	MEM09002B Interpret technical drawing	4
	MEM10002B Terminate and connect electrical wiring	3
	MEM10003B Install and test electrical wiring and circuits up to 1000 volts a.c. and 1500 volts d.c.	12
	MEM12002B Perform electrical/electronic measurement	2
	MEM12004B Perform precision electrical/electronic measurement	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18048B Fault find and repair/rectify basic electrical circuits	12
	MEM18049C Disconnect/reconnect fixed wired equipment up to 1000 volts a.c./1500 volts d.c.	3
MEM18052B	Maintain fluid power systems for mobile plant	4
	Path: 1 Total Path Weight: 20	
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2

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Unit code	Unit title	P
	MEM18002B Use power tools/hand held operations	2
	MEM18055B Dismantle, replace and assemble engineering components	3
MEM18053B	Modify fluid power control systems	6
	Path: 1 Total Path Weight: 83	
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM12024A Perform computations	3
	MEM12025A Use graphical techniques and perform simple statistical computations	2
	MEM14005A Plan a complete activity	4
	MEM16010A Write reports	2
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18003C Use tools for precision work	4
	MEM18006C Repair and fit engineering components	6
	MEM18010C Perform equipment condition monitoring and recording	4
	MEM18016B Analyse plant and equipment condition monitoring results	4
	MEM18018C Maintain pneumatic system components	4
	MEM18019B Maintain pneumatic systems	4
	MEM18020B Maintain hydraulic system components	4
	MEM18021B Maintain hydraulic systems	4
	MEM18022B Maintain fluid power controls	8
	MEM18023B Modify fluid power system operation	8

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Unit code	Unit title	P
	MEM18055B Dismantle, replace and assemble engineering components	3
MEM18054B	Fault find, test and calibrate instrumentation systems and equipment	8
	Path: 1 Total Path Weight: 38	
	MEM05001B Perform manual soldering/desoldering – electrical/electronic components	4
	MEM09002B Interpret technical drawing	4
	MEM12004B Perform precision electrical/electronic measurement	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18055B Dismantle, replace and assemble engineering components	3
	MEM18057B Maintain/service analog/digital electronic equipment	6
	Path: 2 Total Path Weight: 32	
	MEM09002B Interpret technical drawing	4
	MEM12002B Perform electrical/electronic measurement	2
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18055B Dismantle, replace and assemble engineering components	3
	MEM18064B Maintain instrumentation system components	6
MEM18055B	Dismantle, replace and assemble engineering components	3

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Unit code	Unit title	P
	Path: 1 Total Path Weight: 16	
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
MEM18056B	Diagnose and repair analog equipment and components	10
	Path: 1 Total Path Weight: 30	
	MEM05001B Perform manual soldering/desoldering – electrical/electronic components	4
	MEM09002B Interpret technical drawing	4
	MEM12004B Perform precision electrical/electronic measurement	4
	MEM18001C Use hand tools	2
	MEM18057B Maintain/service analog/digital electronic equipment	6
MEM18057B	Maintain/service analog/digital electronic equipment	6
	Path: 1 Total Path Weight: 20	
	MEM05001B Perform manual soldering/desoldering – electrical/electronic components	4
	MEM09002B Interpret technical drawing	4
	MEM12004B Perform precision electrical/electronic measurement	4
	MEM18001C Use hand tools	2
MEM18058C	Modify electronic equipment	4
	Path: 1 Total Path Weight: 32	
	MEM12004B Perform precision electrical/electronic measurement	4

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Unit code	Unit title	P
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18056B Diagnose and repair analog equipment and components	10
	MEM18065B Diagnose and repair digital equipment and components	10
MEM18059B	Modify electronic systems	4
	Path: 1 Total Path Weight: 55	
	MEM05001B Perform manual soldering/desoldering – electrical/electronic components	4
	MEM09002B Interpret technical drawing	4
	MEM12004B Perform precision electrical/electronic measurement	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18056B Diagnose and repair analog equipment and components	10
	MEM18057B Maintain/service analog/digital electronic equipment	6
	MEM18058C Modify electronic equipment	4
	MEM18065B Diagnose and repair digital equipment and components	10
MEM18060B	Maintain, repair control instrumentation - single and multiple loop control systems	8
	Path: 1 Total Path Weight: 54	
	MEM05001B Perform manual soldering/desoldering – electrical/electronic components	4

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Unit code	Unit title	P
	MEM09002B Interpret technical drawing	4
	MEM12004B Perform precision electrical/electronic measurement	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18054B Fault find, test and calibrate instrumentation systems and equipment	8
	MEM18055B Dismantle, replace and assemble engineering components	3
	MEM18057B Maintain/service analog/digital electronic equipment	6
	MEM18062B Install, maintain and calibrate instrumentation sensors, transmitters and final control elements	8
	Path: 2 Total Path Weight: 48	
	MEM09002B Interpret technical drawing	4
	MEM12002B Perform electrical/electronic measurement	2
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18054B Fault find, test and calibrate instrumentation systems and equipment	8
	MEM18055B Dismantle, replace and assemble engineering components	3
	MEM18062B Install, maintain and calibrate instrumentation sensors, transmitters and final control elements	8
	MEM18064B Maintain instrumentation system components	6
MEM18061B	Maintain/calibrate complex control systems	8

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Unit code	Unit title	P
	Path: 1 Total Path Weight: 60	
	MEM05001B Perform manual soldering/desoldering – electrical/electronic components	4
	MEM09002B Interpret technical drawing	4
	MEM12004B Perform precision electrical/electronic measurement	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18054B Fault find, test and calibrate instrumentation systems and equipment	8
	MEM18055B Dismantle, replace and assemble engineering components	3
	MEM18057B Maintain/service analog/digital electronic equipment	6
	MEM18062B Install, maintain and calibrate instrumentation sensors, transmitters and final control elements	8
	MEM18069B Maintain, repair instrumentation process control analysers	6
	Path: 2 Total Path Weight: 46	
	MEM09002B Interpret technical drawing	4
	MEM12002B Perform electrical/electronic measurement	2
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18054B Fault find, test and calibrate instrumentation systems and equipment	8
	MEM18055B Dismantle, replace and assemble engineering	3

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Unit code	Unit title	P
	components	
	MEM18064B Maintain instrumentation system components	6
	MEM18069B Maintain, repair instrumentation process control analysers	6
	Path: 3 Total Path Weight: 68	
	MEM05001B Perform manual soldering/desoldering – electrical/electronic components	4
	MEM09002B Interpret technical drawing	4
	MEM12004B Perform precision electrical/electronic measurement	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18054B Fault find, test and calibrate instrumentation systems and equipment	8
	MEM18055B Dismantle, replace and assemble engineering components	3
	MEM18057B Maintain/service analog/digital electronic equipment	6
	MEM18060B Maintain, repair control instrumentation - single and multiple loop control systems	8
	MEM18062B Install, maintain and calibrate instrumentation sensors, transmitters and final control elements	8
	MEM18067B Tune control loops - multi controller or multi element systems	6
	Path: 4 Total Path Weight: 62	
	MEM09002B Interpret technical drawing	4
	MEM12002B Perform electrical/electronic measurement	2
	MEM12023A Perform engineering measurements	5

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Unit code	Unit title	P
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18054B Fault find, test and calibrate instrumentation systems and equipment	8
	MEM18055B Dismantle, replace and assemble engineering components	3
	MEM18060B Maintain, repair control instrumentation - single and multiple loop control systems	8
	MEM18062B Install, maintain and calibrate instrumentation sensors, transmitters and final control elements	8
	MEM18064B Maintain instrumentation system components	6
	MEM18067B Tune control loops - multi controller or multi element systems	6
MEM18062B	Install, maintain and calibrate instrumentation sensors, transmitters and final control elements	8
	Path: 1 Total Path Weight: 46	
	MEM05001B Perform manual soldering/desoldering – electrical/electronic components	4
	MEM09002B Interpret technical drawing	4
	MEM12004B Perform precision electrical/electronic measurement	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18054B Fault find, test and calibrate instrumentation systems and equipment	8
	MEM18055B Dismantle, replace and assemble engineering components	3
	MEM18057B Maintain/service analog/digital electronic	6

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Unit code	Unit title	P
	equipment	
	Path: 2 Total Path Weight: 40	
	MEM09002B Interpret technical drawing	4
	MEM12002B Perform electrical/electronic measurement	2
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18054B Fault find, test and calibrate instrumentation systems and equipment	8
	MEM18055B Dismantle, replace and assemble engineering components	3
	MEM18064B Maintain instrumentation system components	6
MEM18063B	Terminate signal and data cables	4
	Path: 1 Total Path Weight: 21	
	MEM05001B Perform manual soldering/desoldering – electrical/electronic components	4
	MEM09002B Interpret technical drawing	4
	MEM12002B Perform electrical/electronic measurement	2
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
MEM18064B	Maintain instrumentation system components	6
	Path: 1 Total Path Weight: 24	
	MEM09002B Interpret technical drawing	4
	MEM12002B Perform electrical/electronic measurement	2
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2

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Unit code	Unit title	P
	MEM18002B Use power tools/hand held operations	2
	MEM18055B Dismantle, replace and assemble engineering components	3
MEM18065B	Diagnose and repair digital equipment and components	10
	Path: 1 Total Path Weight: 30	
	MEM05001B Perform manual soldering/desoldering – electrical/electronic components	4
	MEM09002B Interpret technical drawing	4
	MEM12004B Perform precision electrical/electronic measurement	4
	MEM18001C Use hand tools	2
	MEM18057B Maintain/service analog/digital electronic equipment	6
MEM18066B	Diagnose and repair microprocessor-based equipment	6
	Path: 1 Total Path Weight: 41	
	MEM05001B Perform manual soldering/desoldering – electrical/electronic components	4
	MEM09002B Interpret technical drawing	4
	MEM12004B Perform precision electrical/electronic measurement	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18057B Maintain/service analog/digital electronic equipment	6
	MEM18065B Diagnose and repair digital equipment and components	10
MEM18067B	Tune control loops - multi controller or multi element systems	6
	Path: 1 Total Path Weight: 60	

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Unit code	Unit title	P
	MEM05001B Perform manual soldering/desoldering – electrical/electronic components	4
	MEM09002B Interpret technical drawing	4
	MEM12004B Perform precision electrical/electronic measurement	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18054B Fault find, test and calibrate instrumentation systems and equipment	8
	MEM18055B Dismantle, replace and assemble engineering components	3
	MEM18057B Maintain/service analog/digital electronic equipment	6
	MEM18060B Maintain, repair control instrumentation - single and multiple loop control systems	8
	MEM18062B Install, maintain and calibrate instrumentation sensors, transmitters and final control elements	8
	Path: 2 Total Path Weight: 54	
	MEM09002B Interpret technical drawing	4
	MEM12002B Perform electrical/electronic measurement	2
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18054B Fault find, test and calibrate instrumentation systems and equipment	8
	MEM18055B Dismantle, replace and assemble engineering components	3

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Unit code	Unit title	P
	MEM18060B Maintain, repair control instrumentation - single and multiple loop control systems	8
	MEM18062B Install, maintain and calibrate instrumentation sensors, transmitters and final control elements	8
	MEM18064B Maintain instrumentation system components	6
MEM18069B	Maintain, repair instrumentation process control analysers	6
	Path: 1 Total Path Weight: 52	
	MEM05001B Perform manual soldering/desoldering – electrical/electronic components	4
	MEM09002B Interpret technical drawing	4
	MEM12004B Perform precision electrical/electronic measurement	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18054B Fault find, test and calibrate instrumentation systems and equipment	8
	MEM18055B Dismantle, replace and assemble engineering components	3
	MEM18057B Maintain/service analog/digital electronic equipment	6
	MEM18062B Install, maintain and calibrate instrumentation sensors, transmitters and final control elements	8
	Path: 2 Total Path Weight: 38	
	MEM09002B Interpret technical drawing	4
	MEM12002B Perform electrical/electronic measurement	2
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2

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Unit code	Unit title	P
	MEM18002B Use power tools/hand held operations	2
	MEM18054B Fault find, test and calibrate instrumentation systems and equipment	8
	MEM18055B Dismantle, replace and assemble engineering components	3
	MEM18064B Maintain instrumentation system components	6
MEM18070C	Modify complex electrical circuits and systems	6
	Path: 1 Total Path Weight: 61	
	MEM09002B Interpret technical drawing	4
	MEM10002B Terminate and connect electrical wiring	3
	MEM10003B Install and test electrical wiring and circuits up to 1000 volts a.c. and 1500 volts d.c.	12
	MEM12002B Perform electrical/electronic measurement	2
	MEM12004B Perform precision electrical/electronic measurement	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18048B Fault find and repair/rectify basic electrical circuits	12
	MEM18049C Disconnect/reconnect fixed wired equipment up to 1000 volts a.c./1500 volts d.c.	3
	MEM18051B Fault find repair/rectify complex electrical circuits	6
MEM18071B	Connect/disconnect fluid conveying system components	2
	Path: 1 Total Path Weight: 6	
	MEM13003B Work safely with industrial chemicals and materials	2
	MEM18001C Use hand tools	2

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Unit code	Unit title	P
MEM18072B	Manufacture fluid conveying conductor assemblies	4
	Path: 1 Total Path Weight: 6	
	MEM18001C Use hand tools	2
MEM18073A	Perform advanced equipment testing and diagnostics on mobile plant and equipment	8
	Path: 1 Total Path Weight: 44	
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM16006A Organise and communicate information	2
	MEM16008A Interact with computing technology	2
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18010C Perform equipment condition monitoring and recording	4
	MEM18030B Diagnose and rectify low voltage electrical systems	8
	MEM18047B Diagnose and maintain electronic controlling systems on mobile plant	4
	MEM18055B Dismantle, replace and assemble engineering components	3
MEM18084A	Commission and decommission split air conditioning systems	4
	Path: 1 Total Path Weight: 20	
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18055B Dismantle, replace and assemble engineering	3

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Unit code	Unit title	P
	components	
MEM18085A	Install, service and repair domestic air conditioning and refrigeration appliances	6
	Path: 1 Total Path Weight: 22	
	MEM05006B Perform brazing and/or silver soldering	2
	MEM12002B Perform electrical/electronic measurement	2
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18055B Dismantle, replace and assemble engineering components	3
MEM18086B	Test, recover, evacuate and charge refrigeration systems	4
	Path: 1 Total Path Weight: 20	
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18055B Dismantle, replace and assemble engineering components	3
MEM18087B	Service and repair domestic and light commercial refrigeration and air conditioning equipment	6
	Path: 1 Total Path Weight: 30	
	MEM05006B Perform brazing and/or silver soldering	2
	MEM09002B Interpret technical drawing	4
	MEM12002B Perform electrical/electronic measurement	2
	MEM12023A Perform engineering measurements	5

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Unit code	Unit title	P
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18055B Dismantle, replace and assemble engineering components	3
	MEM18086B Test, recover, evacuate and charge refrigeration systems	4
MEM18088B	Maintain and repair commercial air conditioning systems and components	4
	Path: 1 Total Path Weight: 26	
	MEM09002B Interpret technical drawing	4
	MEM12002B Perform electrical/electronic measurement	2
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18055B Dismantle, replace and assemble engineering components	3
	MEM18086B Test, recover, evacuate and charge refrigeration systems	4
MEM18089B	Maintain and repair central air handling systems	6
	Path: 1 Total Path Weight: 34	
	MEM09002B Interpret technical drawing	4
	MEM10002B Terminate and connect electrical wiring	3
	MEM12002B Perform electrical/electronic measurement	2
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2

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Unit code	Unit title	P
	MEM18049C Disconnect/reconnect fixed wired equipment up to 1000 volts a.c./1500 volts d.c.	3
	MEM18055B Dismantle, replace and assemble engineering components	3
	MEM18086B Test, recover, evacuate and charge refrigeration systems	4
	Path: 2 Total Path Weight: 28	
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM13007B Maintain water treatment systems for cooling towers	2
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18055B Dismantle, replace and assemble engineering components	3
	MEM18086B Test, recover, evacuate and charge refrigeration systems	4
MEM18090B	Maintain and repair industrial refrigeration systems and components	6
	Path: 1 Total Path Weight: 40	
	MEM05006B Perform brazing and/or silver soldering	2
	MEM09002B Interpret technical drawing	4
	MEM10002B Terminate and connect electrical wiring	3
	MEM10010B Install pipework and pipework assemblies	4
	MEM12002B Perform electrical/electronic measurement	2
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2

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Unit code	Unit title	P
	MEM18002B Use power tools/hand held operations	2
	MEM18049C Disconnect/reconnect fixed wired equipment up to 1000 volts a.c./1500 volts d.c.	3
	MEM18055B Dismantle, replace and assemble engineering components	3
	MEM18086B Test, recover, evacuate and charge refrigeration systems	4
MEM18091B	Maintain and repair multi stage, cascade and/or ultra-cold industrial refrigeration systems	4
	Path: 1 Total Path Weight: 38	
	MEM09002B Interpret technical drawing	4
	MEM10002B Terminate and connect electrical wiring	3
	MEM12002B Perform electrical/electronic measurement	2
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18049C Disconnect/reconnect fixed wired equipment up to 1000 volts a.c./1500 volts d.c.	3
	MEM18055B Dismantle, replace and assemble engineering components	3
	MEM18086B Test, recover, evacuate and charge refrigeration systems	4
	MEM18087B Service and repair domestic and light commercial refrigeration and air conditioning equipment	6
	Path: 2 Total Path Weight: 38	
	MEM09002B Interpret technical drawing	4
	MEM10002B Terminate and connect electrical wiring	3
	MEM12002B Perform electrical/electronic measurement	2

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Unit code	Unit title	P
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18049C Disconnect/reconnect fixed wired equipment up to 1000 volts a.c./1500 volts d.c.	3
	MEM18055B Dismantle, replace and assemble engineering components	3
	MEM18086B Test, recover, evacuate and charge refrigeration systems	4
	MEM18090B Maintain and repair industrial refrigeration systems and components	6
	Path: 3 Total Path Weight: 36	
	MEM09002B Interpret technical drawing	4
	MEM10002B Terminate and connect electrical wiring	3
	MEM12002B Perform electrical/electronic measurement	2
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18049C Disconnect/reconnect fixed wired equipment up to 1000 volts a.c./1500 volts d.c.	3
	MEM18055B Dismantle, replace and assemble engineering components	3
	MEM18086B Test, recover, evacuate and charge refrigeration systems	4
	MEM18088B Maintain and repair commercial air conditioning systems and components	4
MEM18092B	Maintain and repair commercial and/or industrial refrigeration and/or air conditioning controls	6

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Unit code	Unit title	P
	Path: 1 Total Path Weight: 32	
	MEM09002B Interpret technical drawing	4
	MEM12002B Perform electrical/electronic measurement	2
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18055B Dismantle, replace and assemble engineering components	3
	MEM18086B Test, recover, evacuate and charge refrigeration systems	4
	MEM18088B Maintain and repair commercial air conditioning systems and components	4
	Path: 2 Total Path Weight: 34	
	MEM09002B Interpret technical drawing	4
	MEM12002B Perform electrical/electronic measurement	2
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18055B Dismantle, replace and assemble engineering components	3
	MEM18086B Test, recover, evacuate and charge refrigeration systems	4
	MEM18090B Maintain and repair industrial refrigeration systems and components	6
MEM18093B	Maintain and repair integrated industrial refrigeration and/or large air handling system controls	8
	Path: 1 Total Path Weight: 42	

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Unit code	Unit title	P
	MEM09002B Interpret technical drawing	4
	MEM10002B Terminate and connect electrical wiring	3
	MEM12002B Perform electrical/electronic measurement	2
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18049C Disconnect/reconnect fixed wired equipment up to 1000 volts a.c./1500 volts d.c.	3
	MEM18055B Dismantle, replace and assemble engineering components	3
	MEM18086B Test, recover, evacuate and charge refrigeration systems	4
	MEM18090B Maintain and repair industrial refrigeration systems and components	6
	Path: 2 Total Path Weight: 42	
	MEM09002B Interpret technical drawing	4
	MEM10002B Terminate and connect electrical wiring	3
	MEM12002B Perform electrical/electronic measurement	2
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18049C Disconnect/reconnect fixed wired equipment up to 1000 volts a.c./1500 volts d.c.	3
	MEM18055B Dismantle, replace and assemble engineering components	3
	MEM18086B Test, recover, evacuate and charge refrigeration systems	4

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Unit code	Unit title	P
	MEM18089B Maintain and repair central air handling systems	6
MEM18094B	Service and repair commercial refrigeration	6
	Path: 1 Total Path Weight: 34	
	MEM09002B Interpret technical drawing	4
	MEM10002B Terminate and connect electrical wiring	3
	MEM12002B Perform electrical/electronic measurement	2
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18049C Disconnect/reconnect fixed wired equipment up to 1000 volts a.c./1500 volts d.c.	3
	MEM18055B Dismantle, replace and assemble engineering components	3
	MEM18086B Test, recover, evacuate and charge refrigeration systems	4
MEM18095A	Maintain and repair cooling towers/evaporative condensers and associated equipment	4
	Path: 1 Total Path Weight: 34	
	MEM05006B Perform brazing and/or silver soldering	2
	MEM09002B Interpret technical drawing	4
	MEM12002B Perform electrical/electronic measurement	2
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18055B Dismantle, replace and assemble engineering components	3

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Unit code	Unit title	P
	MEM18086B Test, recover, evacuate and charge refrigeration systems	4
	MEM18094B Service and repair commercial refrigeration	6
	Path: 2 Total Path Weight: 32	
	MEM05006B Perform brazing and/or silver soldering	2
	MEM09002B Interpret technical drawing	4
	MEM12002B Perform electrical/electronic measurement	2
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18055B Dismantle, replace and assemble engineering components	3
	MEM18086B Test, recover, evacuate and charge refrigeration systems	4
	MEM18088B Maintain and repair commercial air conditioning systems and components	4
MEM18096A	Maintain, repair/replace and adjust refrigerant flow controls and associated equipment	6
	Path: 1 Total Path Weight: 28	
	MEM05006B Perform brazing and/or silver soldering	2
	MEM10010B Install pipework and pipework assemblies	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18055B Dismantle, replace and assemble engineering components	3
	MEM18086B Test, recover, evacuate and charge refrigeration	4

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Unit code	Unit title	P
	systems	
MEM18097A	Manufacture cavity dies	8
	Path: 1 Total Path Weight: 73	
	MEM06007B Perform basic incidental heat/quenching, tempering and annealing	2
	MEM07005C Perform general machining	8
	MEM07006C Perform lathe operations	4
	MEM07007C Perform milling operations	4
	MEM07008D Perform grinding operations	4
	MEM09002B Interpret technical drawing	4
	MEM12003B Perform precision mechanical measurement	2
	MEM12006C Mark off/out (general engineering)	4
	MEM12023A Perform engineering measurements	5
	MEM12024A Perform computations	3
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18003C Use tools for precision work	4
	MEM18006C Repair and fit engineering components	6
	MEM18015B Maintain tools and dies	4
	MEM18055B Dismantle, replace and assemble engineering components	3
	MEM30012A Apply mathematical techniques in a manufacturing engineering or related environment	4
MEM18098A	Prepare to perform work associated with fuel system installation and servicing	2
	Path: 1 Total Path Weight: 6	

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Unit code	Unit title	P
	MEM09002B Interpret technical drawing	4
MEM19001B	Perform jewellery metal casting	6
	Path: 1 Total Path Weight: 8	
	MEM13004B Work safely with molten metals/glass	2
MEM19002B	Prepare jewellery illustrations	4
	Path: 1 Total Path Weight: 6	
	MEM16006A Organise and communicate information	2
MEM19003B	Handle gem materials	2
MEM19004B	Handle and examine gemstone materials	6
	Path: 1 Total Path Weight: 8	
	MEM19003B Handle gem materials	2
MEM19005B	Produce three-dimensional precision items	8
	Path: 1 Total Path Weight: 20	
	MEM13003B Work safely with industrial chemicals and materials	2
	MEM13004B Work safely with molten metals/glass	2
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18003C Use tools for precision work	4
MEM19006B	Replace watch batteries	1
	Path: 1 Total Path Weight: 3	
	MEM18001C Use hand tools	2
MEM19007B	Perform gemstone setting	6
	Path: 1 Total Path Weight: 21	

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Unit code	Unit title	P
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18003C Use tools for precision work	4
	MEM19003B Handle gem materials	2
MEM19008B	Prepare jewellery designs	6
	Path: 1 Total Path Weight: 24	
	MEM13003B Work safely with industrial chemicals and materials	2
	MEM13004B Work safely with molten metals/glass	2
	MEM16006A Organise and communicate information	2
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18003C Use tools for precision work	4
	MEM19002B Prepare jewellery illustrations	4
	Path: 2 Total Path Weight: 30	
	MEM08010B Manually finish/polish materials	6
	MEM13004B Work safely with molten metals/glass	2
	MEM16006A Organise and communicate information	2
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM19001B Perform jewellery metal casting	6
	MEM19002B Prepare jewellery illustrations	4
	Path: 3 Total Path Weight: 28	

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Unit code	Unit title	P
	MEM16006A Organise and communicate information	2
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18003C Use tools for precision work	4
	MEM19003B Handle gem materials	2
	MEM19007B Perform gemstone setting	6
	MEM19014B Perform hand engraving	4
MEM19009B	Perform investment procedures for lost wax casting process	1
	Path: 1 Total Path Weight: 8	
	MEM12024A Perform computations	3
	MEM13003B Work safely with industrial chemicals and materials	2
	MEM18001C Use hand tools	2
	Path: 2 Total Path Weight: 10	
	MEM07024B Operate and monitor machine/process	4
	MEM12024A Perform computations	3
	MEM18001C Use hand tools	2
MEM19010B	Produce rubber moulds for lost wax casting process	2
MEM19011B	Perform wax injection of moulds for lost wax casting process	2
MEM19012B	Produce jewellery wax model	4
	Path: 1 Total Path Weight: 12	
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18003C Use tools for precision work	4

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Unit code	Unit title	P
MEM19013B	Produce jewellery metal masters	4
	Path: 1 Total Path Weight: 20	
	MEM08010B Manually finish/polish materials	6
	MEM13004B Work safely with molten metals/glass	2
	MEM16006A Organise and communicate information	2
	MEM19001B Perform jewellery metal casting	6
MEM19014B	Perform hand engraving	4
	Path: 1 Total Path Weight: 6	
	MEM18001C Use hand tools	2
MEM19015B	Perform jewellery enamelling	4
	Path: 1 Total Path Weight: 8	
	MEM13003B Work safely with industrial chemicals and materials	2
	MEM18001C Use hand tools	2
MEM19016B	Construct jewellery components	4
	Path: 1 Total Path Weight: 13	
	MEM05006B Perform brazing and/or silver soldering	2
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
MEM19017B	Fabricate jewellery items	6
	Path: 1 Total Path Weight: 17	
	MEM05006B Perform brazing and/or silver soldering	2
	MEM06007B Perform basic incidental heat/quenching, tempering and annealing	2
	MEM12023A Perform engineering measurements	5

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Unit code	Unit title	P
	MEM18001C Use hand tools	2
MEM19018B	Repair jewellery items	6
	Path: 1 Total Path Weight: 37	
	MEM05006B Perform brazing and/or silver soldering	2
	MEM12023A Perform engineering measurements	5
	MEM13003B Work safely with industrial chemicals and materials	2
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM19001B Perform jewellery metal casting	6
	MEM19003B Handle gem materials	2
	MEM19016B Construct jewellery components	4
	MEM19017B Fabricate jewellery items	6
MEM19020B	Fault-find and maintain micro-mechanisms	4
	Path: 1 Total Path Weight: 20	
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18055B Dismantle, replace and assemble engineering components	3
MEM19021B	Diagnose and service micro-mechanisms	6
	Path: 1 Total Path Weight: 26	
	MEM09002B Interpret technical drawing	4
	MEM12023A Perform engineering measurements	5

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Unit code	Unit title	P
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18055B Dismantle, replace and assemble engineering components	3
	MEM19020B Fault-find and maintain micro-mechanisms	4
MEM19022B	Perform precision micro-mechanism diagnosis and servicing	6
	Path: 1 Total Path Weight: 46	
	MEM07005C Perform general machining	8
	MEM09002B Interpret technical drawing	4
	MEM12003B Perform precision mechanical measurement	2
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM18003C Use tools for precision work	4
	MEM18055B Dismantle, replace and assemble engineering components	3
	MEM19020B Fault-find and maintain micro-mechanisms	4
	MEM19021B Diagnose and service micro-mechanisms	6
MEM20001A	Produce keys	4
MEM20002A	Assemble and test lock mechanisms	6
	Path: 1 Total Path Weight: 10	
	MEM20001A Produce keys	4
MEM20003A	Install and upgrade locks and hardware	4
	Path: 1 Total Path Weight: 8	
	MEM18001C Use hand tools	2

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Unit code	Unit title	P
	MEM18002B Use power tools/hand held operations	2
MEM20004A	Gain entry	4
	Path: 1 Total Path Weight: 22	
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM20001A Produce keys	4
	MEM20002A Assemble and test lock mechanisms	6
	MEM20003A Install and upgrade locks and hardware	4
MEM20005A	Install and maintain door control devices/systems	2
	Path: 1 Total Path Weight: 6	
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
MEM20006A	Maintain and service mechanical locking devices	6
	Path: 1 Total Path Weight: 10	
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
MEM20007A	Plan and prepare a masterkey system	4
	Path: 1 Total Path Weight: 14	
	MEM20002A Assemble and test lock mechanisms	6
	MEM20001A Produce keys	4
MEM20008A	Develop and implement a masterkey system	6
	Path: 1 Total Path Weight: 20	
	MEM20001A Produce keys	4
	MEM20002A Assemble and test lock mechanisms	6

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Unit code	Unit title	P
	MEM20007A Plan and prepare a masterkey system	4
MEM20009A	Gain entry and reinstate fire and security containers	4
	Path: 1 Total Path Weight: 14	
	MEM18002B Use power tools/hand held operations	2
	MEM20001A Produce keys	4
	MEM20004A Gain entry	4
MEM20010A	Gain entry and reinstate automotive locking systems	4
	Path: 1 Total Path Weight: 18	
	MEM20001A Produce keys	4
	MEM20002A Assemble and test lock mechanisms	6
	MEM20004A Gain entry	4
MEM20011A	Service and repair fire and security containers	6
	Path: 1 Total Path Weight: 20	
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM20001A Produce keys	4
	MEM20002A Assemble and test lock mechanisms	6
MEM20012A	Service and repair mechanical automotive locking systems	4
	Path: 1 Total Path Weight: 18	
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM20001A Produce keys	4
	MEM20002A Assemble and test lock mechanisms	6
MEM20013A	Service automotive transponder systems	2

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Unit code	Unit title	P
	Path: 1 Total Path Weight: 6	
	MEM20001A Produce keys	4
MEM20014A	Perform a site security survey	2
MEM21001A	Replace watch batteries, capacitors and bands	2
MEM21002A	Perform watch movement exchange	2
	Path: 1 Total Path Weight: 4	
	MEM21001A Replace watch batteries, capacitors and bands	2
MEM21003A	Perform watch case servicing, repair and refurbishment	4
	Path: 1 Total Path Weight: 8	
	MEM21001A Replace watch batteries, capacitors and bands	2
	MEM21002A Perform watch movement exchange	2
MEM21004A	Clean watch and clock components	2
MEM21005A	Diagnose faults in quartz watches	2
	Path: 1 Total Path Weight: 4	
	MEM21001A Replace watch batteries, capacitors and bands	2
MEM21006A	Service quartz watches	4
	Path: 1 Total Path Weight: 10	
	MEM21005A Diagnose faults in quartz watches	2
	MEM21002A Perform watch movement exchange	2
	MEM21001A Replace watch batteries, capacitors and bands	2
MEM21007A	Service complex quartz watches	4
	Path: 1 Total Path Weight: 14	
	MEM21006A Service quartz watches	4
	MEM21005A Diagnose faults in quartz watches	2

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Unit code	Unit title	P
	MEM21002A Perform watch movement exchange	2
	MEM21001A Replace watch batteries, capacitors and bands	2
MEM21008A	Service mechanical watches	4
	Path: 1 Total Path Weight: 6	
	MEM18001C Use hand tools	2
MEM21009A	Inspect, diagnose, adjust and repair mechanical watches	4
	Path: 1 Total Path Weight: 10	
	MEM21008A Service mechanical watches	4
	MEM18001C Use hand tools	2
MEM21010A	Service watch power generating systems	2
	Path: 1 Total Path Weight: 12	
	MEM21009A Inspect, diagnose, adjust and repair mechanical watches	4
	MEM21008A Service mechanical watches	4
	MEM18001C Use hand tools	2
MEM21011A	Service calendar and other dial indication mechanisms for watches	4
	Path: 1 Total Path Weight: 16	
	MEM21010A Service watch power generating systems	2
	MEM21009A Inspect, diagnose, adjust and repair mechanical watches	4
	MEM21008A Service mechanical watches	4
	MEM18001C Use hand tools	2
MEM21012A	Service and repair mechanical watch oscillating systems	4
	Path: 1 Total Path Weight: 14	

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Unit code	Unit title	P
	MEM21009A Inspect, diagnose, adjust and repair mechanical watches	4
	MEM21008A Service mechanical watches	4
	MEM18001C Use hand tools	2
MEM21013A	Service, test and adjust watch escapements	4
	Path: 1 Total Path Weight: 18	
	MEM21012A Service and repair mechanical watch oscillating systems	4
	MEM21009A Inspect, diagnose, adjust and repair mechanical watches	4
	MEM21008A Service mechanical watches	4
	MEM18001C Use hand tools	2
MEM21014A	Service mechanical chronograph watches	6
	Path: 1 Total Path Weight: 22	
	MEM21011A Service calendar and other dial indication mechanisms for watches	4
	MEM21010A Service watch power generating systems	2
	MEM21009A Inspect, diagnose, adjust and repair mechanical watches	4
	MEM21008A Service mechanical watches	4
	MEM18001C Use hand tools	2
MEM21015A	Perform precision watch timing and adjustment	6
	Path: 1 Total Path Weight: 24	
	MEM21013A Service, test and adjust watch escapements	4
	MEM21012A Service and repair mechanical watch oscillating systems	4
	MEM21009A Inspect, diagnose, adjust and repair mechanical	4

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Unit code	Unit title	P
	watches	
	MEM21008A Service mechanical watches	4
	MEM18001C Use hand tools	2
MEM21016A	Install and set up clocks	2
MEM21017A	Service and repair clock timepieces	6
MEM21018A	Service clock escapements and oscillating systems	4
	Path: 1 Total Path Weight: 28	
	MEM21017A Service and repair clock timepieces	6
	MEM21013A Service, test and adjust watch escapements	4
	MEM21012A Service and repair mechanical watch oscillating systems	4
	MEM21009A Inspect, diagnose, adjust and repair mechanical watches	4
	MEM21008A Service mechanical watches	4
	MEM18001C Use hand tools	2
MEM21019A	Service and repair clock striking mechanisms	4
	Path: 1 Total Path Weight: 10	
	MEM21017A Service and repair clock timepieces	6
MEM21020A	Service and repair clock chiming mechanisms	6
	Path: 1 Total Path Weight: 16	
	MEM21019A Service and repair clock striking mechanisms	4
	MEM21017A Service and repair clock timepieces	6
MEM21021A	Restore clockwork mechanisms	6
	Path: 1 Total Path Weight: 30	
	MEM21020 Service and repair clock chiming mechanisms	6

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Unit code	Unit title	P
	MEM21019A Service and repair clock striking mechanisms	4
	MEM21017A Service and repair clock timepieces	6
	MEM18001C Use hand tools	2
	MEM09002B Interpret technical drawing	4
	MEM06007B Perform basic incidental heat/quenching, tempering and annealing	2
MEM21022A	Manufacture watch and clock components	6
	Path: 1 Total Path Weight: 49	
	MEM21021A Restore clockwork mechanisms	6
	MEM21020 Service and repair clock chiming mechanisms	6
	MEM21019A Service and repair clock striking mechanisms	4
	MEM21017A Service and repair clock timepieces	6
	MEM18001C Use hand tools	2
	MEM12023A Perform engineering measurements	5
	MEM09002B Interpret technical drawing	4
	MEM07005C Perform general machining	8
	MEM06007B Perform basic incidental heat/quenching, tempering and annealing	2
MEM21023A	Plan, set up and operate horological workshop or service centre	4
MEM22001A	Perform engineering activities	
	MEM16006A Organise and communicate information	
MEM22002A	Manage self in the engineering environment	
	MEM16006A Organise and communicate information	
MEM22003A	Manage engineering resources	
	MEM16006A Organise and communicate information	

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Unit code	Unit title	P
MEM22004A	Manage engineering projects	
	MEM16006A Organise and communicate information	
MEM22005A	Manage engineering operations	
	MEM16006A Organise and communicate information	
MEM22006A	Source and estimate materials	
	MEM16006A Organise and communicate information	
MEM22007A	Manage environmental effects of engineering activities	
	MEM16006A Organise and communicate information	
MEM22008A	Manage change and technical development	
	MEM16006A Organise and communicate information	
MEM22009A	Manage technical sales and promotion	
	MEM16006A Organise and communicate information	
MEM23001A	Apply advanced mathematical techniques in a manufacturing engineering or related environment	
	MEM30012Apply mathematical techniques in a manufacturing engineering or related environment	
	MEM16008Interact with computing technology	
MEM23002A	Apply calculus in engineering situations	
	MEM30012A Apply mathematical techniques in a manufacturing engineering or related environment	
MEM23003A	Operate and program computers and/or controllers in engineering situations	
	MEM16008A Interact with computing technology	
MEM23041A	Apply basic scientific principles and techniques in mechanical engineering situations	
MEM23051A	Apply basic electro and control scientific principles and techniques in mechanical and manufacturing engineering	

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Unit code	Unit title	P
	situations	
MEM23052A	Apply basic electro and control scientific principles and techniques in aeronautical engineering situations	
MEM23061A	Select and test mechanical engineering materials	
MEM23062A	Select and test mechatronic engineering materials	
MEM23071A	Select and apply mechanical engineering methods, processes and construction techniques	
MEM23072A	Select and apply mechatronic engineering methods, processes and construction techniques	
MEM23073A	Select and apply aeronautical engineering methods, processes and construction techniques	
	MEA340A Lay out and set up aircraft systems	
MEM23074A	Select and apply avionic engineering methods, processes and construction techniques	
	MEA272A Apply basic scientific principles and techniques in avionic engineering situations	
MEM23081A	Apply scientific principles and techniques in mechanical engineering situations	
	MEM23041 Apply basic scientific principles and techniques in mechanical engineering situations MEM23051 Apply basic electro and control scientific principles and techniques in mechanical and manufacturing engineering situations	
MEM23082A	Apply scientific principles and techniques in mechatronic engineering situations	
	MEM23041 Apply basic scientific principles and techniques in mechanical engineering situations MEM23051 Apply basic electro and control scientific principles and techniques in mechanical and manufacturing engineering situations	
MEM23083A	Apply industrial engineering principles and techniques in competitive manufacturing engineering situations	

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Unit code	Unit title	P
	MEM23041 Apply basic scientific principles and techniques in mechanical engineering situations MEM23051 Apply basic electro and control scientific principles and techniques in mechanical and manufacturing engineering situations	
MEM23084A	Apply scientific principles and techniques in aeronautical engineering situations	
	MEA349A Apply basic scientific principles and techniques in aeronautical engineering situations	
	MEM23052A Apply basic electro and control scientific principles and techniques in aeronautical engineering situations	
MEM23085A	Apply scientific principles and techniques in avionic engineering situations	
	MEA272A Apply basic scientific principles and techniques in avionic engineering situations	
	MEM23001A Apply advanced mathematical techniques in a manufacturing, engineering or related environment	
	MEM23002A Apply calculus in engineering situations	
MEM23091A	Apply mechanical system design principles and techniques in mechanical engineering situations	
	MEM23041A Apply basic scientific principles and techniques in mechanical engineering situations	
	MEM23051A Apply basic electro and control scientific principles and techniques in mechanical and manufacturing engineering situations	
MEM23092A	Apply automated systems principles and techniques in engineering situations	
	MEM23041A Apply basic scientific principles and techniques in mechanical engineering situations	
	MEM23051A Apply basic electro and control scientific principles and techniques in mechanical and manufacturing engineering situations	

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Unit code	Unit title	P
MEM23093A	Apply plant and process design principles and techniques in engineering situations	
	MEM23041A Apply basic scientific principles and techniques in mechanical engineering situations	
	MEM23051A Apply basic electro and control scientific principles and techniques in mechanical and manufacturing engineering situations	
MEM23094A	Apply maintenance systems principles and techniques in engineering situations	
	MEM23041A Apply basic scientific principles and techniques in mechanical engineering situations	
	MEM23051A Apply basic electro and control scientific principles and techniques in mechanical and manufacturing engineering situations	
MEM23095A	Apply aeronautical system design principles and techniques in aeronautical engineering situations	
	MEA349A Apply basic scientific principles and techniques in aeronautical engineering situations	
MEM23096A	Apply avionic system design principles and techniques in avionic engineering situations	
	MEA272A Apply basic scientific principles and techniques in avionic engineering situations	
MEM23097A	Apply automated systems principles and techniques in aeronautical engineering situations	
	MEA349A Apply basic scientific principles and techniques in aeronautical engineering situations	
	MEM23052A Apply basic electro and control scientific principles and techniques in aeronautical engineering situations	
MEM23098A	Apply automated systems principles and techniques in avionic engineering situations	
	MEA272A Apply basic scientific principles and techniques in avionic engineering situations	

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Unit code	Unit title	P
MEM24001B	Perform basic penetrant testing	2
	Path: 1 Total Path Weight: 4	
	MEM18001C Use hand tools	2
MEM24002B	Perform penetrant testing	4
	Path: 1 Total Path Weight: 10	
	MEM18001C Use hand tools	2
	MEM24012C Apply metallurgy principles	4
MEM24003B	Perform basic magnetic particle testing	2
	Path: 1 Total Path Weight: 4	
	MEM18001C Use hand tools	2
MEM24004B	Perform magnetic particle testing	4
	Path: 1 Total Path Weight: 10	
	MEM18001C Use hand tools	2
	MEM24012C Apply metallurgy principles	4
MEM24005B	Perform basic eddy current testing	2
	Path: 1 Total Path Weight: 4	
	MEM18001C Use hand tools	2
MEM24006B	Perform eddy current testing	6
	Path: 1 Total Path Weight: 12	
	MEM18001C Use hand tools	2
	MEM24012C Apply metallurgy principles	4
MEM24007B	Perform ultrasonic thickness testing	2
	Path: 1 Total Path Weight: 4	
	MEM18001C Use hand tools	2

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Unit code	Unit title	P
MEM24008B	Perform ultrasonic testing	6
	Path: 1 Total Path Weight: 12	
	MEM18001C Use hand tools	2
	MEM24012C Apply metallurgy principles	4
MEM24009B	Perform basic radiographic testing	2
	Path: 1 Total Path Weight: 8	
	MEM13013B Work safely with ionizing radiation	4
	MEM18001C Use hand tools	2
MEM24010B	Perform radiographic testing	6
	Path: 1 Total Path Weight: 16	
	MEM13013B Work safely with ionizing radiation	4
	MEM18001C Use hand tools	2
	MEM24012C Apply metallurgy principles	4
MEM24011B	Establish non-destructive tests	12
	Path: 1 Total Path Weight: 50	
	MEM13013B Work safely with ionizing radiation	4
	MEM16010A Write reports	2
	MEM18001C Use hand tools	2
	MEM24002B Perform penetrant testing	4
	MEM24004B Perform magnetic particle testing	4
	MEM24006B Perform eddy current testing	6
	MEM24008B Perform ultrasonic testing	6
	MEM24010B Perform radiographic testing	6
	MEM24012C Apply metallurgy principles	4

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Unit code	Unit title	P
MEM24012C	Apply metallurgy principles	4
MEM25001B	Apply fibre-reinforced materials	2
	Path: 1 Total Path Weight: 8	
	MEM13003B Work safely with industrial chemicals and materials	2
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
MEM25002B	Form and integrate fibre-reinforced structures	4
	Path: 1 Total Path Weight: 10	
	MEM13003B Work safely with industrial chemicals and materials	2
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
MEM25003B	Set up marine vessel structures	4
	Path: 1 Total Path Weight: 21	
	MEM09002B Interpret technical drawing	4
	MEM12007D Mark off/out structural fabrications and shapes	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
MEM25004B	Fair and shape surfaces	2
	Path: 1 Total Path Weight: 8	
	MEM13003B Work safely with industrial chemicals and materials	2
	MEM18001C Use hand tools	2

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Unit code	Unit title	P
	MEM18002B Use power tools/hand held operations	2
MEM25005B	Construct and assemble marine vessel timber components	8
	Path: 1 Total Path Weight:29	
	MEM04018B Perform general woodworking machine operations	4
	MEM09002B Interpret technical drawing	4
	MEM12007D Mark off/out structural fabrications and shapes	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
MEM25006B	Undertake marine sheathing operations	2
	Path: 1 Total Path Weight: 10	
	MEM13003B Work safely with industrial chemicals and materials	2
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM25004B Fair and shape surfaces	2
MEM25007B	Maintain marine vessel surfaces	4
	Path: 1 Total Path Weight: 10	
	MEM13003B Work safely with industrial chemicals and materials	2
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
MEM25008B	Repair marine vessel surfaces and structures	4
	Path: 1 Total Path Weight: 25	
	MEM12007D Mark off/out structural fabrications and shapes	4

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Unit code	Unit title	P
	MEM12023A Perform engineering measurements	5
	MEM13003B Work safely with industrial chemicals and materials	2
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM25004B Fair and shape surfaces	2
	MEM25007B Maintain marine vessel surfaces	4
MEM25009B	Form timber shapes using hot processes	2
	Path: 1 Total Path Weight: 23	
	MEM04018B Perform general woodworking machine operations	4
	MEM09002B Interpret technical drawing	4
	MEM12007D Mark off/out structural fabrications and shapes	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
MEM25010B	Perform fitout procedures	4
	Path: 1 Total Path Weight: 33	
	MEM04018B Perform general woodworking machine operations	4
	MEM09002B Interpret technical drawing	4
	MEM12007D Mark off/out structural fabrications and shapes	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM25005B Construct and assemble marine vessel timber components	8

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Unit code	Unit title	P
MEM25011B	Install marine systems	8
	Path: 1 Total Path Weight: 12	
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
MEM25012B	Install and test operations of marine auxiliary systems	6
	Path: 1 Total Path Weight: 12	
	MEM13003B Work safely with industrial chemicals and materials	2
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
MEM25013B	Produce three-dimensional plugs/moulds	12
	Path: 1 Total Path Weight: 41	
	MEM04018B Perform general woodworking machine operations	4
	MEM09002B Interpret technical drawing	4
	MEM12007D Mark off/out structural fabrications and shapes	4
	MEM12023A Perform engineering measurements	5
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
	MEM25002B Form and integrate fibre-reinforced structures	4
	MEM25003B Set up marine vessel structures	4
MEM25014B	Perform marine slipping operations	2
	Path: 1 Total Path Weight: 6	
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2

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Unit code	Unit title	P
MEM25015A	Assemble and install equipment and accessories/ancillaries	2
	Path: 1 Total Path Weight: 10	
	MEM09002B Interpret technical drawing	4
	MEM18001C Use hand tools	2
	MEM18002B Use power tools/hand held operations	2
MEM30001A	Use computer aided drafting systems to produce basic engineering drawings	
	MEM16006A Organise and communicate information	
	MEM16008A Interact with computing technology	
MEM30002A	Produce basic engineering graphics	
	MEM16006A Organise and communicate information	
	MEM16008A Interact with computing technology	
MEM30003A	Produce detailed engineering drawings	
	MEM16006A Organise and communicate information	
	MEM16008A Interact with computing technology	
	MEM30001A Use computer aided drafting systems to produce basic engineering drawings	
	MEM30002A Produce basic engineering graphics	
MEM30004A	Use CAD to create and display 3D models	
	MEM16006A Organise and communicate information	
	MEM16008A Interact with computing technology	
	MEM30001A Use computer aided drafting systems to produce basic engineering drawings	
MEM30005A	Calculate force systems within simple beam structures	
	MEM30012A Apply mathematical techniques in a manufacturing engineering or related environment	

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Unit code	Unit title	P
MEM30006A	Calculate stresses in simple structures	
	MEM30012A Apply mathematical techniques in a manufacturing engineering or related environment	
MEM30007A	Select common engineering materials	
MEM30008A	Apply basic economic and ergonomic concepts to evaluate engineering applications	
MEM30009A	Contribute to the design of basic mechanical systems	
	MEM16008A Interact with computing technology	
	MEM30002A Produce basic engineering graphics	
	MEM30003A Produce detailed engineering drawings	
MEM30010A	Set up basic hydraulic circuits	
MEM30011A	Set up basic pneumatic circuits	
MEM30012A	Apply mathematical techniques in a manufacturing, engineering or related environment	
MEM30013A	Assist in the preparation of a basic workplace layout	
MEM30014A	Apply basic just in time systems to the reduction of waste	
MEM30015A	Develop recommendations for basic set up time improvements	
MEM30016A	Assist in the analysis of a supply chain	
MEM30017A	Use basic preventative maintenance techniques and tools	
MEM30018A	Undertake basic process planning	
MEM30019A	Use resource planning software systems in manufacturing	
	MEM16008A Interact with computing technology	
MEM30020A	Develop and manage a plan for a simple manufacturing related project	
MEM30021A	Prepare a simple production schedule	
MEM30022A	Undertake supervised procurement activities	

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Unit code	Unit title	P
MEM30023A	Prepare a simple cost estimate for a manufactured product	
MEM30024A	Participate in quality assurance techniques	
	MEM15001B Perform basic statistical quality control	
MEM30025A	Analyse a simple electrical system circuit	
	MEM12024A Perform computations	
MEM30026A	Select and test components for simple electronic switching and timing circuits	
	MEM12024A Perform computations	
MEM30027A	Prepare basic programs for programmable logic controllers	
MEM30028A	Assist in sales of technical products/systems	
MEM50001B	Classify recreational boating technologies and features	
MEM50002B	Work safely on marine craft	1
MEM50003B	Follow work procedures to maintain the marine environment	1
MEM50004B	Maintain quality of environment by following marina codes	1
	Path: 1 Total Path Weight: 2	
	MEM50003B Follow work procedures to maintain the marine environment	1
MEM50005B	Refuel vessels	
	Path: 1 Total Path Weight: 2	
	MEM50002B Work safely on marine craft	1
	MEM50003B Follow work procedures to maintain the marine environment	1
MEM50006B	Check operational capability of marine craft	
	Path: 1 Total Path Weight: 1	
	MEM50002B Work safely on marine craft	1

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Unit code	Unit title	P
MEM50007B	Check operational capability of sails and sail operating equipment	
	Path: 1 Total Path Weight: 1	
	MEM50002B Work safely on marine craft	1
MEM50008B	Carry out trip preparation and planning	
MEM50009B	Safely operate a mechanically powered recreational boat	2
MEM50010B	Respond to boating emergencies and incidents	

Appendix 3: Imported units of competency and points weighting

The table below shows imported units of competency and, where applicable, their allocated points weighting. Unit points weightings are shown in the right hand column labelled "P".

Training Package codes for imported units:

AUR05 Automotive Industry Retail, Service and Repair Training Package

BSB01 Business Services Training Package

CPC08 Construction, Plumbing and Services Integrated Framework

ICT02 Telecommunications Training Package

MEA97 Aeroskills Training Package

MSA07 Manufacturing Training Package

PMB07 Plastics, Rubber and Cablemaking Training Package

PRS03 Asset Security Training Package

TLI10 Transport and Logistics Training Package

Unit code	Unit title	P
AURV225908A	Carry out panel repairs	4
BSBOHS502B	Participate in the management of the OHS information and data systems	2
BSBOHS601B	Develop a systematic approach to managing OHS	4

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Unit code	**Unit title**	**P**
BSBOHS602B	Develop OHS information and data analysis and reporting and recording processes	2
BSBOHS603B	Analyse and evaluate OHS risk	4
CPCCLDG3001A	Licence to perform dogging	
CPCCLRG3001A	Licence to perform rigging basic level	
CPCCLSF2001A	Licence to erect, alter and dismantle scaffolding basic level	
CPCCLSF3001A	Licence to erect, alter and dismantle scaffolding intermediate level	
ICTTC136B	Install, maintain and modify customer premises communications cabling: ACA Restricted Rule	6
ICTTC137B	Install, maintain and modify customer premises communications cabling: ACA Open Rule	6
TLILIC0012A	Licence to operate a vehicle loading crane (capacity 10 metre tonnes and above)	1
TLILIC2001A	Licence to operate a forklift truck	
TLILIC2002A	Licence to operate an order picking forklift truck	
TLILIC3003A	Licence to operate a bridge and gantry crane	
TLILIC3006A	Licence to operate a non-slewing mobile crane (greater than 3 tonnes capacity)	
MEA405B	Repair/modify aircraft composite material structure/components	4
MSACMC210A	Manage the impact of change on own work	
MSACMC410A	Lead change in a manufacturing environment	
MSACMC610A	Manage relationships with non-customer external organisations	
MSACMC611A	Manage people relationships	
MSACMC612A	Manage workplace learning	
MSACMS200A	Apply competitive manufacturing practices	
MSACMS201A	Sustain process improvements	

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Unit code	**Unit title**	**P**
MSACMS400A	Implement a competitive manufacturing system	
MSACMS401A	Ensure process improvements are sustained	
MSACMS600A	Develop a competitive manufacturing system	
MSACMS601A	Analyse and map a value chain	
MSACMS602A	Manage a value chain	
MSACMS603A	Develop manufacturing related business plans	
MSACMT220A	Apply quick changeover procedures	
MSACMT221A	Apply Just in Time (JIT) procedures	
MSACMT230A	Apply cost factors to work practices	
MSACMT231A	Interpret product costs in terms of customer requirements	
MSACMT240A	Apply 5S procedures in a manufacturing environment	
MSACMT250A	Monitor process capability	
MSACMT251A	Apply quality standards	
MSACMT260A	Use planning software systems in manufacturing	
MSACMT261A	Use SCADA systems in manufacturing	
MSACMT270A	Use sustainable energy practices	
MSACMT271A	Use sustainable environmental practices	
MSACMT280A	Undertake root cause analysis	
MSACMT281A	Contribute to the application of a proactive maintenance strategy	
MSACMT421A	Facilitate a Just in Time (JIT) system	
MSACMT430A	Improve cost factors in work practices	
MSACMT432A	Analyse manual handling processes	
MSACMT440A	Lead 5S in a manufacturing environment	

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Unit code	**Unit title**	**P**
MSACMT450A	Undertake process capability improvements	
MSACMT451A	Mistake proof a production process	
MSACMT452A	Apply statistics to processes in manufacturing	
MSACMT452A	Apply statistics to processes in manufacturing	
MSACMT460A	Facilitate the use of planning software systems in manufacturing	
MSACMT461A	Facilitate SCADA systems in a manufacturing team or work area	
MSACMT481A	Undertake proactive maintenance analyses	
MSACMT482A	Assist in implementing a proactive maintenance strategy	
MSACMT620A	Develop quick changeover procedures	
MSACMT621A	Develop a Just in Time (JIT) system	
MSACMT630A	Optimise cost of product	
MSACMT631A	Undertake value analysis of product costs in terms of customer requirements	
MSACMT640A	Manage 5S system in a manufacturing environment	
MSACMT650A	Determine and improve process capability	
MSACMT660A	Develop the application of enterprise systems in manufacturing	
MSACMT661A	Determine and establish information collection requirements and processes	
MSACMT670A	Develop and manage sustainable energy practices	
MSACMT671A	Develop and manage sustainable environmental practices	
MSACMT675A	Facilitate the development of a new product	
MSACMT681A	Develop a proactive maintenance strategy	
MSAENV272B	Participate in environmentally sustainable work practices	3
MSAENV472B	Implement and monitor environmentally sustainable work	4

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Unit code	**Unit title**	**P**
	practices	
MSAENV672B	Develop workplace policy and procedures for environmental sustainability	
MSATCM304A	Interpret basic binary phase diagrams	4
PMBPROD291B	Operate resin infusion moulding equipment	2
PMBPROD291B	Operate resin infusion moulding equipment	2
PMBPROD294B	Operate resin transfer moulding equipment	2
PMBPROD294B	Operate resin transfer moulding equipment	2
PMBPROD298B	Operate equipment using pre-pregs material	2
PMBPROD298B	Operate equipment using pre-pregs material	2
PMBPROD391B	Produce composites using resin infusion	4
PMBPROD394B	Produce composites using resin transfer moulding	4
PMBPROD398B	Produce composites using pre-pregs	4
PRSTS202A	Install security equipment/system	4
PRSTS302A	Program security equipment/system	2
PRSTS303A	Test installed security equipment/system	2
PRSTS304A	Commission/decommission security equipment/system	2
PRSTS305A	Identify and diagnose electronic security equipment/ system fault	2
PRSTS307A	Maintain and service security equipment/system	4
PRSTS317A	Provide estimate and quote	4
PRSTS319A	Modify and repair security equipment/system	4

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Appendix 4: Revised MEM unit codes 2006 (historical reference only)

Appendix 4: Revised MEM unit codes 2006 (historical reference only)

In October 2006, decimal points in all MEM05 codes were replaced with zero to enable loading to the National Training Information Service (NTIS). The following table shows a mapping between old unit codes and the replacement unit codes. Note: the table is for historical reference only and has not been updated with unit version changes occurring later than October 2006 (MEM05 V1.01)

Old unit code	Revised unit code
MEM3.1B	MEM03001B
MEM3.2B	MEM03002B
MEM3.3B	MEM03003B
MEM3.4B	MEM03004B
MEM3.5B	MEM03005B
MEM3.6B	MEM03006B
MEM4.1B	MEM04001B
MEM4.2B	MEM04002B
MEM4.3B	MEM04003B
MEM4.4B	MEM04004B
MEM4.5B	MEM04005B
MEM4.6B	MEM04006B
MEM4.7B	MEM04007B
MEM4.8B	MEM04008B
MEM4.10B	MEM04010B
MEM4.11B	MEM04011B
MEM4.12B	MEM04012B
MEM4.13B	MEM04013B

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Old unit code	Revised unit code
MEM4.14B	MEM04014B
MEM4.15B	MEM04015B
MEM4.16C	MEM04016C
MEM4.17B	MEM04017B
MEM4.18B	MEM04018B
MEM4.19B	MEM04019B
MEM5.1B	MEM05001B
MEM5.2B	MEM05002B
MEM5.3B	MEM05003B
MEM5.4C	MEM05004C
MEM5.5B	MEM05005B
MEM5.6B	MEM05006B
MEM5.7C	MEM05007C
MEM5.8C	MEM05008C
MEM5.9C	MEM05009C
MEM5.10B	MEM05010B
MEM5.11C	MEM05011C
MEM5.12C	MEM05012C
MEM5.13C	MEM05013C
MEM5.14C	MEM05014C
MEM5.15C	MEM05015C
MEM5.16C	MEM05016C
MEM5.17C	MEM05017C
MEM5.18C	MEM05018C

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Old unit code	Revised unit code
MEM5.19C	MEM05019C
MEM5.20C	MEM05020C
MEM5.22C	MEM05022C
MEM5.23C	MEM05023C
MEM5.24B	MEM05024B
MEM5.25C	MEM05025C
MEM5.26B	MEM05026B
MEM5.36C	MEM05036C
MEM5.37B	MEM05037B
MEM5.38B	MEM05038B
MEM5.39B	MEM05039B
MEM5.40B	MEM05040B
MEM5.41B	MEM05041B
MEM5.42B	MEM05042B
MEM5.43B	MEM05043B
MEM5.44B	MEM05044B
MEM5.45B	MEM05045B
MEM5.46B	MEM05046B
MEM5.47B	MEM05047B
MEM5.48B	MEM05048B
MEM5.49B	MEM05049B
MEM5.50B	MEM05050B
MEM5.51A	MEM05051A
MEM5.52A	MEM05052A

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Old unit code	Revised unit code
MEM5.53A	MEM05053A
MEM5.54A	MEM05054A
MEM6.1B	MEM06001B
MEM6.2B	MEM06002B
MEM6.3C	MEM06003C
MEM6.4B	MEM06004B
MEM6.5B	MEM06005B
MEM6.6C	MEM06006C
MEM6.7B	MEM06007B
MEM6.8A	MEM06008A
MEM6.9A	MEM06009A
MEM7.1B	MEM07001B
MEM7.2B	MEM07002B
MEM7.3B	MEM07003B
MEM7.4B	MEM07004B
MEM7.5B	MEM07005B
MEM7.6B	MEM07006B
MEM7.7B	MEM07007B
MEM7.8C	MEM07008C
MEM7.9B	MEM07009B
MEM7.10B	MEM07010B
MEM7.11B	MEM07011B
MEM7.12B	MEM07012B
MEM7.13B	MEM07013B

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Old unit code	Revised unit code
MEM7.14B	MEM07014B
MEM7.15B	MEM07015B
MEM7.16C	MEM07016C
MEM7.18C	MEM07018C
MEM7.19C	MEM07019C
MEM7.20C	MEM07020C
MEM7.21B	MEM07021B
MEM7.22C	MEM07022C
MEM7.23C	MEM07023C
MEM7.24B	MEM07024B
MEM7.25B	MEM07025B
MEM7.26B	MEM07026B
MEM7.27B	MEM07027B
MEM7.28B	MEM07028B
MEM7.29B	MEM07029B
MEM7.30C	MEM07030C
MEM7.31C	MEM07031C
MEM7.32B	MEM07032B
MEM7.33B	MEM07033B
MEM7.34A	MEM07034A
MEM7.39A	MEM07039A
MEM7.40A	MEM07040A
MEM8.1B	MEM08001B
MEM8.2C	MEM08002C

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Old unit code	Revised unit code
MEM8.3C	MEM08003C
MEM8.4B	MEM08004B
MEM8.5B	MEM08005B
MEM8.6B	MEM08006B
MEM8.7B	MEM08007B
MEM8.8B	MEM08008B
MEM8.9C	MEM08009C
MEM8.10B	MEM08010B
MEM8.11B	MEM08011B
MEM8.12B	MEM08012B
MEM8.13B	MEM08013B
MEM8.14B	MEM08014B
MEM8.15B	MEM08015B
MEM8.16B	MEM08016B
MEM8.18B	MEM08018B
MEM8.19B	MEM08019B
MEM8.20B	MEM08020B
MEM9.2B	MEM09002B
MEM9.3B	MEM09003B
MEM9.4B	MEM09004B
MEM9.5B	MEM09005B
MEM9.6B	MEM09006B
MEM9.7B	MEM09007B
MEM9.8B	MEM09008B

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Old unit code	Revised unit code
MEM9.9C	MEM09009C
MEM9.10C	MEM09010C
MEM9.11B	MEM09011B
MEM9.21B	MEM09021B
MEM9.22A	MEM09022A
MEM9.23A	MEM09023A
MEM9.141A	MEM09141A
MEM9.142A	MEM09142A
MEM9.151A	MEM09151A
MEM9.152A	MEM09152A
MEM10.1C	MEM10001C
MEM10.2B	MEM10002B
MEM10.3B	MEM10003B
MEM10.4B	MEM10004B
MEM10.5B	MEM10005B
MEM10.6B	MEM10006B
MEM10.7C	MEM10007C
MEM10.8B	MEM10008B
MEM10.9B	MEM10009B
MEM10.10B	MEM10010B
MEM10.11B	MEM10011B
MEM10.12A	MEM10012A
MEM11.1C	MEM11001C
MEM11.2C	MEM11002C

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Old unit code	Revised unit code
MEM11.3B	MEM11003B
MEM11.4B	MEM11004B
MEM11.5B	MEM11005B
MEM11.6B	MEM11006B
MEM11.7B	MEM11007B
MEM11.8B	MEM11008B
MEM11.9B	MEM11009B
MEM11.10B	MEM11010B
MEM11.11B	MEM11011B
MEM11.12B	MEM11012B
MEM11.13B	MEM11013B
MEM11.14B	MEM11014B
MEM11.15B	MEM11015B
MEM11.16B	MEM11016B
MEM11.17B	MEM11017B
MEM11.18B	MEM11018B
MEM11.19B	MEM11019B
MEM11.20B	MEM11020B
MEM11.21B	MEM11021B
MEM11.22B	MEM11022B
MEM12.1B	MEM12001B
MEM12.2B	MEM12002B
MEM12.3B	MEM12003B
MEM12.4B	MEM12004B

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Old unit code	Revised unit code
MEM12.5B	MEM12005B
MEM12.6B	MEM12006B
MEM12.7C	MEM12007C
MEM12.19B	MEM12019B
MEM12.20B	MEM12020B
MEM12.21B	MEM12021B
MEM12.22B	MEM12022B
MEM12.23A	MEM12023A
MEM12.24A	MEM12024A
MEM12.25A	MEM12025A
MEM13.1B	MEM13001B
MEM13.2B	MEM13002B
MEM13.3B	MEM13003B
MEM13.4B	MEM13004B
MEM13.6B	MEM13006B
MEM13.7B	MEM13007B
MEM13.10A	MEM13010A
MEM13.13B	MEM13013B
MEM13.14A	MEM13014A
MEM14.1B	MEM14001B
MEM14.2B	MEM14002B
MEM14.3B	MEM14003B
MEM14.4A	MEM14004A
MEM14.5A	MEM14005A

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Old unit code	Revised unit code
MEM14.61A	MEM14061A
MEM14.62A	MEM14062A
MEM14.63A	MEM14063A
MEM14.64A	MEM14064A
MEM14.81A	MEM14081A
MEM14.82A	MEM14082A
MEM15.1B	MEM15001B
MEM15.2A	MEM15002A
MEM15.3B	MEM15003B
MEM15.4B	MEM15004B
MEM15.5B	MEM15005B
MEM15.7B	MEM15007B
MEM15.8B	MEM15008B
MEM15.10B	MEM15010B
MEM15.11B	MEM15011B
MEM15.12B	MEM15012B
MEM15.15B	MEM15015B
MEM15.16B	MEM15016B
MEM15.17B	MEM15017B
MEM15.18B	MEM15018B
MEM15.19B	MEM15019B
MEM15.20C	MEM15020C
MEM15.21C	MEM15021C
MEM15.22B	MEM15022B

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Old unit code	Revised unit code
MEM15.24A	MEM15024A
MEM16.1B	MEM16001B
MEM16.2C	MEM16002C
MEM16.3B	MEM16003B
MEM16.4B	MEM16004B
MEM16.5A	MEM16005A
MEM16.6A	MEM16006A
MEM16.7A	MEM16007A
MEM16.8A	MEM16008A
MEM16.9A	MEM16009A
MEM16.10A	MEM16010A
MEM16.11A	MEM16011A
MEM16.12A	MEM16012A
MEM16.13A	MEM16013A
MEM16.14A	MEM16014A
MEM17.1B	MEM17001B
MEM17.2B	MEM17002B
MEM17.3A	MEM17003A
MEM18.1C	MEM18001C
MEM18.2B	MEM18002B
MEM18.3C	MEM18003C
MEM18.4B	MEM18004B
MEM18.5B	MEM18005B
MEM18.6B	MEM18006B

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Old unit code	Revised unit code
MEM18.7B	MEM18007B
MEM18.8B	MEM18008B
MEM18.9B	MEM18009B
MEM18.10C	MEM18010C
MEM18.11C	MEM18011C
MEM18.12B	MEM18012B
MEM18.13B	MEM18013B
MEM18.14B	MEM18014B
MEM18.15B	MEM18015B
MEM18.16B	MEM18016B
MEM18.17C	MEM18017C
MEM18.18C	MEM18018C
MEM18.19B	MEM18019B
MEM18.20B	MEM18020B
MEM18.21B	MEM18021B
MEM18.22B	MEM18022B
MEM18.23B	MEM18023B
MEM18.24B	MEM18024B
MEM18.25B	MEM18025B
MEM18.26C	MEM18026C
MEM18.27C	MEM18027C
MEM18.28B	MEM18028B
MEM18.29B	MEM18029B
MEM18.30B	MEM18030B

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Old unit code	Revised unit code
MEM18.31B	MEM18031B
MEM18.32B	MEM18032B
MEM18.33B	MEM18033B
MEM18.34B	MEM18034B
MEM18.35B	MEM18035B
MEM18.37B	MEM18037B
MEM18.38B	MEM18038B
MEM18.39B	MEM18039B
MEM18.40B	MEM18040B
MEM18.41B	MEM18041B
MEM18.42C	MEM18042C
MEM18.43C	MEM18043C
MEM18.44C	MEM18044C
MEM18.45B	MEM18045B
MEM18.46B	MEM18046B
MEM18.47B	MEM18047B
MEM18.48B	MEM18048B
MEM18.49B	MEM18049B
MEM18.50B	MEM18050B
MEM18.51B	MEM18051B
MEM18.52B	MEM18052B
MEM18.53B	MEM18053B
MEM18.54B	MEM18054B
MEM18.55B	MEM18055B

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Old unit code	Revised unit code
MEM18.56B	MEM18056B
MEM18.57B	MEM18057B
MEM18.58C	MEM18058C
MEM18.59B	MEM18059B
MEM18.60B	MEM18060B
MEM18.61B	MEM18061B
MEM18.62B	MEM18062B
MEM18.63B	MEM18063B
MEM18.64B	MEM18064B
MEM18.65B	MEM18065B
MEM18.66B	MEM18066B
MEM18.67B	MEM18067B
MEM18.69B	MEM18069B
MEM18.70C	MEM18070C
MEM18.71B	MEM18071B
MEM18.72B	MEM18072B
MEM18.73A	MEM18073A
MEM18.86B	MEM18086B
MEM18.87B	MEM18087B
MEM18.88B	MEM18088B
MEM18.89B	MEM18089B
MEM18.90B	MEM18090B
MEM18.91B	MEM18091B
MEM18.92B	MEM18092B

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Old unit code	Revised unit code
MEM18.93B	MEM18093B
MEM18.94B	MEM18094B
MEM18.95A	MEM18095A
MEM18.96A	MEM18096A
MEM18.97A	MEM18097A
MEM19.1B	MEM19001B
MEM19.2B	MEM19002B
MEM19.3B	MEM19003B
MEM19.4B	MEM19004B
MEM19.5B	MEM19005B
MEM19.6B	MEM19006B
MEM19.7B	MEM19007B
MEM19.8B	MEM19008B
MEM19.9B	MEM19009B
MEM19.10B	MEM19010B
MEM19.11B	MEM19011B
MEM19.12B	MEM19012B
MEM19.13B	MEM19013B
MEM19.14B	MEM19014B
MEM19.15B	MEM19015B
MEM19.16B	MEM19016B
MEM19.17B	MEM19017B
MEM19.18B	MEM19018B
MEM19.20B	MEM19020B

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Old unit code	Revised unit code
MEM19.21B	MEM19021B
MEM19.22B	MEM19022B
MEM20.1A	MEM20001A
MEM20.2A	MEM20002A
MEM20.3A	MEM20003A
MEM20.4A	MEM20004A
MEM20.5A	MEM20005A
MEM20.6A	MEM20006A
MEM20.7A	MEM20007A
MEM20.8A	MEM20008A
MEM20.9A	MEM20009A
MEM20.10A	MEM20010A
MEM20.11A	MEM20011A
MEM20.12A	MEM20012A
MEM20.13A	MEM20013A
MEM20.14A	MEM20014A
MEM22.1A	MEM22001A
MEM22.2A	MEM22002A
MEM22.3A	MEM22003A
MEM22.4A	MEM22004A
MEM22.5A	MEM22005A
MEM22.6A	MEM22006A
MEM22.7A	MEM22007A
MEM22.8A	MEM22008A

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Old unit code	Revised unit code
MEM22.9A	MEM22009A
MEM23.1A	MEM23001A
MEM23.2A	MEM23002A
MEM23.3A	MEM23003A
MEM23.41A	MEM23041A
MEM23.51A	MEM23051A
MEM23.61A	MEM23061A
MEM23.62A	MEM23062A
MEM23.71A	MEM23071A
MEM23.72A	MEM23072A
MEM23.81A	MEM23081A
MEM23.82A	MEM23082A
MEM23.83A	MEM23083A
MEM23.91A	MEM23091A
MEM23.92A	MEM23092A
MEM23.93A	MEM23093A
MEM23.94A	MEM23094A
MEM24.1B	MEM24001B
MEM24.2B	MEM24002B
MEM24.3B	MEM24003B
MEM24.4B	MEM24004B
MEM24.5B	MEM24005B
MEM24.6B	MEM24006B
MEM24.7B	MEM24007B

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Old unit code	Revised unit code
MEM24.8B	MEM24008B
MEM24.9B	MEM24009B
MEM24.10B	MEM24010B
MEM24.11B	MEM24011B
MEM24.12B	MEM24012B
MEM25.1B	MEM25001B
MEM25.2B	MEM25002B
MEM25.3B	MEM25003B
MEM25.4B	MEM25004B
MEM25.5B	MEM25005B
MEM25.6B	MEM25006B
MEM25.7B	MEM25007B
MEM25.8B	MEM25008B
MEM25.9B	MEM25009B
MEM25.10B	MEM25010B
MEM25.11B	MEM25011B
MEM25.12B	MEM25012B
MEM25.13B	MEM25013B
MEM25.14B	MEM25014B
MEM25.15A	MEM25015A
MEM30.1A	MEM30001A
MEM30.2A	MEM30002A
MEM30.3A	MEM30003A
MEM30.4A	MEM30004A

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Old unit code	Revised unit code
MEM30.5A	MEM30005A
MEM30.6A	MEM30006A
MEM30.7A	MEM30007A
MEM30.8A	MEM30008A
MEM30.9A	MEM30009A
MEM30.10A	MEM30010A
MEM30.11A	MEM30011A
MEM30.12A	MEM30012A
MEM30.13A	MEM30013A
MEM30.14A	MEM30014A
MEM30.15A	MEM30015A
MEM30.16A	MEM30016A
MEM30.17A	MEM30017A
MEM30.18A	MEM30018A
MEM30.19A	MEM30019A
MEM30.20A	MEM30020A
MEM30.21A	MEM30021A
MEM30.22A	MEM30022A
MEM30.23A	MEM30023A
MEM30.24A	MEM30024A
MEM30.25A	MEM30025A
MEM30.26A	MEM30026A
MEM30.27A	MEM30027A
MEM30.28A	MEM30028A

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Old unit code	Revised unit code
MEM50.1B	MEM50001B
MEM50.2B	MEM50002B
MEM50.3B	MEM50003B
MEM50.4B	MEM50004B
MEM50.5B	MEM50005B
MEM50.6B	MEM50006B
MEM50.7B	MEM50007B
MEM50.8B	MEM50008B
MEM50.9B	MEM50009B
MEM50.10B	MEM50010B

Appendix 5: MEM05 Qualifications mapping against MEM98 (historical reference only)

Following is a summary of qualification codes for the original MEM05 Metal and Engineering Training Package mapped to show their relationship, if any, to the former Training Package MEM98. The table is for historical reference only.

Code	Replaces	Nature of relationship	Change to qualification outcome
MEM10105	MEM10198	Change in packaging requirements and points required	Increase in points required
MEM10205	MEM10203	Change in units of competency	No
MEM20105	MEM20198	Change in packaging requirements and units of competency	No
MEM20205	MEM20298	Change in packaging requirements and units of competency	No
MEM20305	MEM2030	Change in units of competency	No

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	3		
MEM30105	MEM30198	Change in packaging requirements and units of competency	No
MEM30205	MEM30298	Change in packaging requirements and units of competency	No
MEM30305	MEM30398	Change in packaging requirements and units of competency	No
MEM30405	MEM30498	Change in packaging requirements and units of competency	No
MEM30505	MEM30598	Change in packaging requirements, dedicated bank of new units	No
MEM30605	MEM30803	Change in packaging requirements and units of competency	No
MEM30705	MEM30603	Change in packaging requirements and units of competency	No
MEM30805	N/A	New qualification	N/A
MEM30905	MEM30703	Change in units of competency	No
MEM40105	MEM40103	Change in packaging requirements and units of competency	No
MEM40205	MEM40203	Change in units of competency	No
MEM50105	MEM50198	Change in packaging requirements and units of competency	No
MEM50205	N/A	New qualification	N/A
MEM60105	N/A	New qualification	N/A

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Appendix 6: Units of competency mapping against MEM98 (historical reference only)

Important note: the tables that follow are for historical reference only and have not been updated for any changes beyond October 2006 (MEM05 V1.01). For the latest changes in MEM05 V1.02 endorsed 4th January 2008, please refer to the mapping table in the front of this volume.

The first table maps MEM98 Foundation and Core units to Mandatory units in MEM05 V1.01. The second table maps Specialisation units from MEM98 to MEM05 V1.01.

Every MEM98 unit carried into MEM05 was revised to some degree. Some MEM98 units were deleted and in some cases replaced as shown in the mapping. Some new units were also added. A brief comment shows how each unit relates to the former Training Package MEM98.

The letter 'Y' in the prerequisite column (labeled P) of the specialisation unit list indicates that a unit of competency has one or more prerequisites.

MEM98 Foundation & Core unit mapping to MEM05 mandatory units

MEM98 CODE	Old foundation/core unit title	MEM05 CODE	New mandatory unit title	Mandatory AQF level
1.1F	Undertake interactive workplace communication	MEM16007A	Work with others in a manufacturing, engineering or related environment	I
1.2F	Apply principles of occupational health and safety in the work environment	MEM13014A	Apply principles of occupational health and safety in the work environment	I
1.3F	Apply quality procedures	MEM15024A	Apply quality procedures	I
1.4F	Plan to undertake a routine task	MEM14004A	Plan to undertake a routine task	I
2.1C12	Apply quality systems	MEM15002A	Apply quality systems	II (lower)
2.2C11	Organise and analyse information	MEM16006A	Organise and communicate information	II (higher)
2.4C11	Assist in the provision of on the job training	MEM17003A	Assist in the provision of on the job training	II (higher)
2.5C11	Measure with graduated	MEM12023A	Perform engineering	II (higher)

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	devices		measurements	
2.6C10	Plan a complete activity	MEM14005A	Plan a complete activity	III
2.7C10	Perform computations (basic)		combined into 12024 below	
2.8C10	Perform computations	MEM12024A	Perform computations	III
2.9C10	Perform computer operations	MEM16008A	Interact with computing technology	III
2.11C5	Research and prepare presentations and reports	MEM16009A	Research and analyse engineering information	V
2.13C5	Perform mathematical computations	MEM30012A	Apply mathematical techniques in a manufacturing, engineering or related situations	V
2.14C5	Use graphical techniques and perform simple statistical computations	MEM12025A	Use graphical techniques and perform simple statistical computations	V
2.16C5	Interpret quality specifications and manuals	MEM16012A	Interpret technical specifications and manuals	V
	NEW UNIT	MEM16011A	Communicate with individuals and small groups	V
	NEW UNIT	MEM16014A	Report technical information	V

The following foundation/core units from MEM98 have been revised and renamed. They are not mandatory in MEM05 and may be selected as specialisation units where available:

2.3C11	Operate in a work based team environment	MEM16005A	Operate as a team member to conduct manufacturing, engineering or related activities
2.10C5	Write reports	MEM16010A	Write reports

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2.15C5	Operate in an autonomous team environment	MEM16013A	Operate in a self-directed team

Note: A new specialisation unit has been included in MEM05 to address the need for higher level mathematical skills. MEM23001A Apply advanced mathematical techniques in a manufacturing engineering or related environment is available in the Diploma of Engineering – Technical and Advanced Diploma of Engineering

MEM98 Specialisation unit mapping to MEM05

The letter 'Y' in the prerequisite column (labeled P) of the specialisation unit list indicates that a unit of competency has one or more prerequisites. Note: the table below has been updated to show revised unit codes as at October 2006, but does not include unit version updates.

MEM05 Unit code	**MEM05 Unit title**	**P**	**Relationship to MEM98**
MEM03001B	Perform manual production assembly		No change, equivalent to 3.1A A
MEM03002B	Perform precision assembly	Y	Minor wording changes, updated , replaces 3.2A A
MEM03003B	Perform sheet and plate assembly	Y	Added PC, wording changes, equivalent to 3.3A A
MEM03004B	Perform electronic/electrical assembly (production)		Minor title change, replaces 3.4A A
MEM03005B	Rework and repair (electrical/electronic production)	Y	Minor wording changes equivalent to 3.5A A
MEM03006B	Set assembly stations	Y	Modified unit content to better define against unit 7.3, replaces unit 3.6AA
			3.7AA replaced by unit 7.40A
MEM04001B	Operate melting furnaces	Y	PC wording change, replaces 4.1AA
MEM04002B	Perform gravity die casting	Y	No change, equivalent to 4.2AA

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MEM05 Unit code	MEM05 Unit title	P	Relationship to MEM98
MEM04003B	Operate pressure die casting machine	Y	No change, equivalent to 4.3AA
MEM04004B	Prepare and mix sand for metal moulding		No change, equivalent to 4.4AA
MEM04005B	Produce moulds and cores by hand (jobbing)	Y	No change, equivalent to 4.5AA
MEM04006B	Operate sand moulding and core making machines		No change, equivalent to 4.6AA
MEM04007B	Pour molten metal	Y	No change, equivalent to 4.7AA
MEM04008B	Fettle and trim metal castings/forgings	Y	No change, equivalent to 4.8AA
			4.9AB – unit deleted. Content covered by 24 NDT field
MEM04010B	Develop and manufacture wood patterns	Y	Prerequisites updated, replaces 4.10AA
MEM04011B	Produce polymer patterns	Y	Prerequisites updated, replaces 4.11AA
MEM04012B	Assemble plated patterns	Y	Prerequisites updated, new PC, PC updated, replaces 4.12AA
MEM04013B	Develop and manufacture polystyrene patterns	Y	Prerequisites updated, replaces 4.13AA
MEM04014B	Develop and manufacture production patterns	Y	Elements 3 and 4 deleted, prerequisites updated, replaces 4.14AA
MEM04015B	Develop and manufacture vacuum forming moulds and associated equipment	Y	Prerequisites updated, change to elements and PCs, replaces 4.15AA
MEM04016C	Develop and manufacture precision models	Y	Prerequisites updated, replaces 4.16AB

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MEM05 Unit code	MEM05 Unit title	P	Relationship to MEM98
MEM04017B	Develop and manufacture gear, conveyor screw and propeller patterns	Y	Prerequisites updated, replaces 4.17AA
MEM04018B	Perform general woodworking machine operations	Y	Prerequisites updated, replaces 4.18AA
MEM04019B	Perform refractory installation and repair	Y	No change, equivalent to 4.19AA
MEM05001B	Perform manual soldering/desoldering – electrical/electronic components		Slight title change, replaces 5.1AA
MEM05002B	Perform high reliability soldering and desoldering	Y	No change, equivalent to 5.2AA
MEM05003B	Perform soft soldering		Slight title change, replaces 5.3AA
MEM05004C	Perform routine oxy acetylene welding		Minor amendments to elements/PC, replaces 5.4AB
MEM05005B	Carry out mechanical cutting	Y	No change, equivalent to 5.5AA
MEM05006B	Perform brazing and/or silver soldering		Minor amendments to elements/PC, replaces 5.6AA
MEM05007C	Perform manual heating and thermal cutting		Slight title change, replaces 5.7AB
MEM05008C	Perform advanced manual thermal cutting, gouging and shaping	Y	Slight title change, replaces 5.8AB
MEM05009C	Perform automated thermal cutting	Y	Slight title change, replaces 5.9AB
MEM05010B	Apply fabrication, forming and shaping techniques	Y	Prerequisites added, title change, replaces 5.10AA
MEM05011C	Assemble fabricated components	Y	No change, equivalent to 5.11AB

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MEM05 Unit code	MEM05 Unit title	P	Relationship to MEM98
MEM05012C	Perform routine manual metal arc welding		No change, equivalent to 5.12AB
MEM05013C	Perform manual production welding		No change, equivalent to 5.13AB
MEM05014C	Monitor quality of production welding/fabrications	Y	No change, equivalent to 5.14AB
MEM05015C	Weld using manual metal arc welding process	Y	amendments to elements/PC, replaces 5.15AB
MEM05016C	Perform advanced welding using manual metal arc welding process	Y	PC added and modified, replaces 5.16AB
MEM05017C	Weld using gas metal arc welding process	Y	No change, equivalent to 5.17AB
MEM05018C	Perform advanced welding using gas metal arc welding process	Y	No change, equivalent to 5.18AB
MEM05019C	Weld using gas tungsten arc welding process	Y	No change, equivalent to 5.19AB
MEM05020C	Perform advanced welding using gas tungsten arc welding process	Y	PC added, replaces 5.20AB
MEM05022C	Perform advanced welding using oxy acetylene welding process	Y	Element added, replaces 5.22AB
MEM05023C	Weld using submerged arc welding process	Y	No change, equivalent to 5.23AB
MEM05024B	Perform welding supervision	Y	No change, equivalent to 5.24BA
MEM05025C	Perform welding/fabrication inspection	Y	No change, equivalent to 5.25BB
MEM05026B	Apply welding principles		No change, equivalent to 5.26AA
MEM05036C	Repair/replace/modify fabrications	Y	Prerequisites updated, replaces 5.36AB

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MEM05 Unit code	MEM05 Unit title	P	Relationship to MEM98
MEM05037B	Perform geometric development	Y	Prerequisites updated, slight title change, PC amended, replaces 5.37AA
MEM05038B	Perform advanced geometric development - cylindrical/rectangular	Y	Prerequisites updated, slight title change, replaces 5.38AA
MEM05039B	Perform advanced geometric development - conical	Y	Prerequisites updated, slight title change, replaces 5.39AA
MEM05040B	Perform advanced geometric development - transitions	Y	Prerequisites updated, slight title change, replaces 5.40AA
MEM05041B	Weld using powder flame spraying	Y	Prerequisites updated, PC deleted, replaces 5.41AA
MEM05042B	Perform welds to code standards using flux core arc welding process	Y	Change to dual band unit, equivalent to 5.42AA
MEM05043B	Perform welds to code standards using gas metal arc welding process	Y	Change to dual band unit, equivalent to 5.43AA
MEM05044B	Perform welds to code standards using gas tungsten arc welding process	Y	Change to dual band unit, equivalent to 5.44AA
MEM05045B	Perform pipe welds to code standards using manual metal arc welding process	Y	Change to dual band unit, equivalent to 5.45AA
MEM05046B	Perform welds to code standards using manual metal arc welding process	Y	Change to dual band unit, equivalent to 5.46AA
MEM05047B	Weld using flux core arc welding process	Y	No change, equivalent to 5.47AA
MEM05048B	Perform advanced welding using flux core arc welding process	Y	No change, equivalent to 5.48AA
MEM05049B	Perform routine gas tungsten arc welding		No change, equivalent to 5.49AB

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MEM05 Unit code	MEM05 Unit title	P	Relationship to MEM98
MEM05050B	Perform routine gas metal arc welding		No change, equivalent to 5.50AA
MEM05051A	Select welding processes		New unit
MEM05052A	Apply safe welding practices		New unit
MEM05053A	Set and edit computer controlled thermal cutting machines	Y	New unit
MEM05054A	Write basic NC/CNC programs for thermal cutting machines	Y	New unit
MEM06001B	Perform hand forging	Y	Slight title change, replaces 6.1A A
MEM06002B	Perform hammer forging		Slight title change, replaces 6.2AA
MEM06003C	Carry out heat treatment		No change, equivalent to 6.3AB
MEM06004B	Select heat treatment processes and test finished product	Y	No change, equivalent to 6.4AA
MEM06005B	Perform drop and upset forging	Y	Slight title change, replaces 6.5AA
MEM06006C	Repair springs	Y	Slight title change, deleted PC, amended PC, replaces 6.6AB
MEM06007B	Perform basic incidental heat/quenching, tempering and annealing		No change, equivalent to 6.7AA
MEM06008A	Hammer forge complex shapes	Y	New unit
MEM06009A	Hand forge complex shapes	Y	New unit
MEM07001B	Perform operational maintenance of machines/equipment	Y	No change, equivalent to 7.1AA
MEM07002B	Perform precision shaping/planing/slotting operations	Y	Prerequisites updated, replaces 7.2AA

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MEM05 Unit code	MEM05 Unit title	P	Relationship to MEM98
MEM07003B	Perform machine setting (routine)	Y	Prerequisites updated, replaces 7.3AA
MEM07004B	Perform machine setting (complex)	Y	Prerequisites updated, PC amended, equivalent to 7.4AA
MEM07005B	Perform general machining	Y	Prerequisites updated, replaces 7.5AA
MEM07006B	Perform lathe operations	Y	Prerequisites updated, minor PC amendment, replaces 7.6AA
MEM07007B	Perform milling operations	Y	Prerequisites updated, replaces 7.7AA
MEM07008C	Perform grinding operations	Y	Prerequisites updated, replaces 7.8AB
MEM07009B	Perform precision jig boring operations	Y	Prerequisites updated, replaces 7.9AA
MEM07010B	Perform tool and cutter grinding operations	Y	Prerequisites updated, replaces 7.10AA
MEM07011B	Perform complex milling operations	Y	Prerequisites updated, replaces 7.11AA
MEM07012B	Perform complex grinding operations	Y	Prerequisites updated, replaces 7.12AA
MEM07013B	Perform machining operations using horizontal and/or vertical boring machines	Y	Prerequisites updated, replaces 7.13AA
MEM07014B	Perform electro-discharge machining operations (EDM)	Y	Prerequisites updated, replaces 7.14AA
MEM07015B	Set computer controlled machines/processes	Y	Prerequisites updated, title change, terminology updated, replaces 7.15AA
MEM07016C	Set and edit computer controlled machines/processes	Y	Prerequisites updated, title change, terminology

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MEM05 Unit code	MEM05 Unit title	P	Relationship to MEM98
			updated, replaces 7.16AB
MEM07018C	Write basic NC/CNC programs	Y	Prerequisites updated, slight title change, replaces 7.18AB
MEM07019C	Program NC/CNC machining centre	Y	Prerequisites updated, replaces 7.19AB
MEM07020C	Program multiple spindle and/or multiple axis NC/CNC machining centre	Y	Prerequisites updated, slight title change, replaces 7.20AB
MEM07021B	Perform complex lathe operations	Y	Prerequisites updated, elements/PC amended, replaces 7.21AA
MEM07022C	Program CNC wire cut machines	Y	Title change, replaces 7.22AB
MEM07023C	Program and set up CNC manufacturing cell	Y	Prerequisites updated, replaces 7.23BB
MEM07024B	Operate and monitor machine/process		No change, equivalent to 7.24AA
MEM07025B	Perform advanced machine/process operation	Y	Content updated, prerequisites updated, replaces 7.25AA
MEM07026B	Perform advanced plastic processing	Y	Prerequisites updated, slight title change, replaces 7.26AA
MEM07027B	Perform advanced press operations	Y	Content updated, prerequisites updated, replaces 7.27AA
MEM07028B	Operate computer controlled machines/processes	Y	Title change, terminology updated, equivalent to 7.28AA
MEM07029B	Perform routine sharpening/maintenance of production tools and cutters	Y	Prerequisites updated, replaces 7.29AA

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MEM05 Unit code	MEM05 Unit title	P	Relationship to MEM98
MEM07030C	Perform metal spinning lathe operations (basic)	Y	Prerequisites updated, element added, PCs amended, unit weighting revised, replaces 7.30AB
MEM07031C	Perform metal spinning lathe operations (complex)	Y	No change, equivalent to 7.31AB
MEM07032B	Use workshop machines for basic operations	Y	No change, equivalent to 7.32AA
MEM07033B	Operate and monitor basic boiler		Prerequisites updated, replaces 7.33AA
MEM07034A	Operate and monitor intermediate class boiler	Y	New unit
MEM07039A	Write programs for industrial robots	Y	New unit
MEM07040A	Set multistage integrated processes	Y	Replacement unit. Previously unit 3.7AA prerequisites updated, title change, replaces 3.7AA
MEM08001B	Perform wire, jig and barrel load/unload work		Prerequisites updated, slight title change, replaces 8.1AA
MEM08002C	Pre-treat work for subsequent surface coating	Y	No change, equivalent to 8.2AB
MEM08003C	Perform electroplating operations	Y	No change, equivalent to 8.3AB
MEM08004B	Finish work using wet, dry and vapour deposition methods	Y	No change, equivalent to 8.4AA
MEM08005B	Prepare and produce specialised coatings	Y	No change, equivalent to 8.5AA
MEM08006B	Produce clear and/or coloured and/or sealed anodised films on aluminium	Y	No change, equivalent to 8.6AA
MEM08007B	Control surface finish production and finished product quality		No change, equivalent to 8.7AA

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MEM05 Unit code	MEM05 Unit title	P	Relationship to MEM98
MEM08008B	Operate and control surface finishing waste treatment process	Y	No change, equivalent to 8.8AA
MEM08009C	Make up solutions	Y	No change, equivalent to 8.9AB
MEM08010B	Manually finish/polish materials	Y	No change, equivalent to 8.10AA
MEM08011B	Prepare surfaces using solvents and/or mechanical means	Y	Prerequisties updated, replaces 8.11AA
MEM08012B	Prepare surfaces by abrasive blasting (basic)	Y	No change, equivalent to 8.12AA
MEM08013B	Prepare surfaces by abrasive blasting (advanced)	Y	No change, equivalent to 8.13AA
MEM08014B	Apply protective coatings (basic)	Y	Prerequisites updated, scope modified, replaces 8.14AA
MEM08015B	Apply protective coatings (advanced)	Y	Prerequisites updated, scope modified, replaces 8.15AA
MEM08016B	Control blast coating by-products, materials and emissions	Y	No change, equivalent to 8.16AA
MEM08018B	Electroplate engineering coatings	Y	No change, equivalent to 8.18AA
MEM08019B	Electroplate protective finishes	Y	No change, equivalent to 8.19AA
MEM08020B	Electroplate decorative finishes	Y	No change, equivalent to 8.20AA
			Unit deleted – 9.1AA Content incorporate into unit 12.23A
MEM09002B	Interpret technical drawing		No change, equivalent to 9.2AA
MEM09003B	Prepare basic engineering drawing	Y	No change, equivalent to 9.3AA

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MEM05 Unit code	MEM05 Unit title	P	Relationship to MEM98
MEM09004B	Perform electrical/electronic detail drafting	Y	No change, equivalent to 9.4BA
MEM09005B	Perform basic engineering detail drafting	Y	Slight title change, replaces 9.5AA
MEM09006B	Perform advanced engineering detail drafting	Y	No change, equivalent to 9.6BA
MEM09007B	Perform advanced mechanical detail drafting	Y	Element added, replaces 9.7BA
MEM09008B	Perform advanced structural detail drafting	Y	Element added, replaces 9.8BA
MEM09009C	Create 2D drawings using computer aided design system	Y	Prerequisites updated, equivalent to 9.9BB
MEM09010C	Create 3D models using computer aided design system	Y	Prerequisites updated, equivalent to 9.10BB
MEM09011B	Apply basic engineering design concepts	Y	No change, equivalent to 9.11AA
MEM09021B	Interpret and produce curved 3-dimensional shapes		No change, equivalent to 9.21AA
MEM09022A	Create 2D code file using computer aided manufacturing system	Y	New unit
MEM09023A	Create 3D code files using computer aided manufacturing system	Y	New unit
MEM09141A	Represent mechanical engineering designs	Y	New unit
MEM09142A	Represent mechatronic engineering designs	Y	New unit
MEM09151A	Apply computer aided modelling and data management techniques to mechanical engineering designs	Y	New unit
MEM09152A	Apply computer aided modelling and data management techniques to	Y	New unit

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MEM05 Unit code	MEM05 Unit title	P	Relationship to MEM98
	mechatronic engineering designs		
MEM10001C	Erect structures	Y	Prerequisites updated, replaces 10.1AB
MEM10002B	Terminate and connect electrical wiring	Y	No change, equivalent to 10.2AA
MEM10003B	Install and test electrical wiring and circuits up to 1000 volts a.c. and 1500 volts d.c.	Y	Prerequisites updated,unit weighting amended replaces 10.3AA
MEM10004B	Enter and change programmable controller operational parameters	Y	Prerequisites updated, scope and terminology extended to include robots, replaces 10.4AA
MEM10005B	Commission programmable controller programs	Y	Prerequisites updated, terminology changed throughout to programmable controllers, replaces 10.5AA
MEM10006B	Install machine/plant	Y	Prerequisites updated, replaces 10.6AA
MEM10007C	Modify control systems	Y	Prerequisites updated, replaces 10.7BB
MEM10008B	Undertake commissioning procedures for plant and/or equipment	Y	Prerequisites updated, replaces 10.8BA
MEM10009B	Install refrigeration and air conditioning plant and equipment	Y	Prerequisites updated, title change, replaces 10.9AA
MEM10010B	Install pipework and pipework assemblies	Y	Prerequisites updated, replaces 10.10AA
MEM10011B	Terminate and connect specialist cables	Y	Unit weighting increased 10.11AA
			10.13AA replaced by unit 25.15A
MEM10012A	Install split air conditioning system	Y	Replaced by MEM10013A

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MEM05 Unit code	MEM05 Unit title	P	Relationship to MEM98
MEM10013A	Install split air conditioning systems and associated pipework	Y	Modified unit based on MEM10012A. Changed prerequisites, added evacuation, testing and pipework. Not equivalent to MEM10012A
MEM11001C	Erect/dismantle scaffolding and equipment	Y	Elements added, unit updated to NOHSC requirements, replaces 11.1AB
MEM11002C	Erect/dismantle complex scaffolding and equipment	Y	Elements added, unit updated to NOHSC requirements, replaces 11.2AB
MEM11003B	Coordinate erection/dismantling of complex scaffolding/equipment	Y	Elements added, unit updated to NOHSC requirements, replaces 11.3AA
MEM11004B	Undertake dogging	Y	Title change, minor working changes, replaces 11.4AA
MEM11005B	Pick and process order		No change, equivalent to 11.5AA
MEM11006B	Perform production packaging		Slight title change, replaces 11.6AA
MEM11007B	Administer inventory procedures		Prerequisites updated, replaces 11.7AA
MEM11008B	Package materials (stores and warehouse)		No change, equivalent to 11.8AA
MEM11009B	Handle/move bulk fluids/gases		Amended PCs, replaces 11.9AA
MEM11010B	Operate mobile load shifting equipment		Revised scope, amended elements/PC, replaces 11.10AA
MEM11011B	Undertake manual handling		Title change, amended PC,

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MEM05 Unit code	MEM05 Unit title	P	Relationship to MEM98
			replaces 11.11AA
MEM11012B	Purchase materials		No change, equivalent to 11.12AA
MEM11013B	Undertake warehouse receival process	Y	No change, equivalent to 11.13AA
MEM11014B	Undertake warehouse dispatch process	Y	No change, equivalent to 11.14AA
MEM11015B	Manage warehouse inventory system	Y	No change, equivalent to 11.15AA
MEM11016B	Order materials		No change, equivalent to 11.16AA
MEM11017B	Organise and lead stocktakes	Y	No change, equivalent to 11.17AA
MEM11018B	Organise and maintain warehouse stock receival and/or dispatch system	Y	No change, equivalent to 11.18AA
MEM11019B	Undertake tool store procedures	Y	Prerequisites updated, wording clarification throughout, , replaces 11.19AA
MEM11020B	Perform advanced warehouse computer operations	Y	Prerequisites updated, replaces 11.20AA
MEM11021B	Perform advanced operation of load shifting equipment	Y	Terminology clarified, equivalent to 11.21AA
MEM11022B	Operate fixed/moveable load shifting equipment		No change, equivalent to 11.22AA
MEM12001B	Use comparison and basic measuring devices		Unit rewritten, replaces 12.1AA
MEM12002B	Perform electrical/electronic measurement		Slight title change, replaces 12.2AA
MEM12003B	Perform precision mechanical measurement	Y	Prerequisites updated, replaces 12.3AA

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MEM05 Unit code	MEM05 Unit title	P	Relationship to MEM98
MEM12004B	Perform precision electrical/electronic measurement		Slight title change, replaces 12.4AA
MEM12005B	Calibrate measuring equipment	Y	Prerequisites updated, replaces 12.5BA
MEM12006B	Mark off/out (general engineering)	Y	Prerequisites updated, element deleted, replaces 12.6AA
MEM12007C	Mark off/out structural fabrications and shapes	Y	Prerequisites updated, replaces 12.7AB
MEM12019B	Measure components using coordinate measuring machine		PC amended, replaces 12.19AA
MEM12020B	Set and operate coordinate measuring machine		Wording changes to differentiate from higher level units, replaces 12.20AA
MEM12021B	Program coordinate measuring machine	Y	No change, equivalent to 12.21AA
MEM12022B	Program coordinate measuring machine (advanced)	Y	No change, equivalent to 12.22AA
MEM12023A	Perform engineering measurements		New unit, made up of content from 2.5C11 core unit
MEM12024A	Perform computations		New unit made up of content of 2.7 and 2.8 C10 core unit
MEM12025A	Use graphical techniques and perform simple statistical computations	Y	New unit made up of content from 2.14C5 core unit
MEM13001B	Perform emergency first aid		Minor terminology clarification, replaces 13.1AA
MEM13002B	Undertake occupational health and safety activities in the workplace		No change, equivalent to 13.2AA

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MEM05 Unit code	MEM05 Unit title	P	Relationship to MEM98
MEM13003B	Work safely with industrial chemicals and materials		Scope amended, replaces 13.3AA
MEM13004B	Work safely with molten metals/glass		Scope amended, replaces 13.4AA
			Deleted unit – 13.5 Manage occupational health and safety for a workplace or section of a workplace deleted. See new unit 13.10
MEM13006B	Collect and evaluate occupational health and safety data for an enterprise or section of an enterprise		Title change, replaces 13.6AA
MEM13007B	Maintain water treatment systems for cooling towers	Y	Unit rewritten, title change, replaces 13.7AA
MEM13010A	Supervise occupational health and safety in an industrial work environment.	Y	New unit. Supervisory level unit to replace 13.5 Manage occupational health and safety for a workplace or section of a workplace
MEM13013B	Work safely with ionizing radiation		Additional PCs, equivalent to 13.13AA
MEM13014A	Apply principles of occupational health and safety in the work environment		New unit. Replaces core unit 1.2F
MEM14001B	Schedule material deliveries		No change, equivalent to 14.1BA
MEM14002B	Undertake basic process planning		Slight title change, replaces 14.2B A
MEM14003B	Undertake basic production scheduling		No change, equivalent to 14.3B A
MEM14004A	Plan to undertake a routine task		Replaces core unit 1.4F
MEM14005A	Plan a complete activity		New unit. Replaces core

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MEM05 Unit code	MEM05 Unit title	P	Relationship to MEM98
			unit 2.6C10
MEM14061A	Plan and design mechanical engineering projects	Y	New unit
MEM14062A	Plan and design mechatronic engineering projects	Y	New unit
MEM14063A	Plan and design manufacturing engineering projects	Y	New unit
MEM14064A	Plan and design maintenance engineering projects	Y	New unit
MEM14081A	Apply mechanical engineering fundamentals to support design and development of projects	Y	New unit
MEM14082A	Apply mechatronics fundamentals to support design and development of engineering projects	Y	New unit
MEM15001B	Perform basic statistical quality control		No change, equivalent to 151A A
MEM15002A	Apply quality systems		New unit. Replaces core unit 2.1C12
MEM15003B	Use improvement processes in team activities	Y	Prerequisites updated, replaces 15.3AA
MEM15004B	Perform inspection		Title change, replaces 15.4AA
MEM15005B	Select and control inspection processes and procedures	Y	Title change, replaces 15.5AA
MEM15007B	Conduct product and/or process capability studies	Y	Prerequisites updated, replaces 15.7BA
MEM15008B	Perform advanced statistical quality control	Y	Prerequisites updated, replaces 15.8BA
MEM15010B	Perform laboratory procedures		No change, equivalent to 15.10BA

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MEM05 Unit code	MEM05 Unit title	P	Relationship to MEM98
MEM15011B	Exercise external quality assurance	Y	No change, equivalent to 15.11BA
MEM15012B	Maintain/supervise the application of quality procedures	Y	Prerequisites updated, replaces 15.12BA
MEM15015B	Examine trading practices	Y	Prerequisites updated, replaces 15.15AA
MEM15016B	Inspect pre-packed articles	Y	Prerequisites updated, replaces 15.16AA
MEM15017B	Use and maintain reference standards	Y	Prerequisites updated, amended PCs, replaces 15.17BA
MEM15018B	Investigate consumer complaints	Y	Prerequisites updated, replaces 15.18BA
MEM15019B	Conduct a field inspection	Y	Prerequisites updated, replaces 15.19BA
MEM15020C	Perform verification/certification or in-service inspection	Y	Prerequisites updated, replaces 15.20BB
MEM15021C	Conduct audits of servicing licensees and public weighbridge licensees	Y	Prerequisites updated, replaces 15.21BB
MEM15022B	Verify reference standards	Y	Prerequisites updated, replaces 15.22AA
MEM15024A	Apply quality procedures		New unit. Replaces core unit 1.3F
MEM16001B	Give formal presentations and take part in meetings		No change, equivalent to 16.1BA
MEM16002C	Conduct formal interviews and negotiations		No change, equivalent to 16.2AB
MEM16003B	Provide advanced customer service		No change, equivalent to 16.3BA
MEM16004B	Perform internal/external customer		No change, equivalent to

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MEM05 Unit code	MEM05 Unit title	P	Relationship to MEM98
	service		16.4AA
MEM16005A	Operate as a team member to conduct manufacturing, engineering or related activities		New unit. Replaces core unit 2.3C11
MEM16006A	Organise and communicate information		New unit. Replaces core unit 2.2C11
MEM16007A	Work with others in a manufacturing, engineering or related environment		New unit. Replaces core unit 1.1F
MEM16008A	Interact with computing technology		New unit. Replaces core unit 2.9C10
MEM16009A	Research and analyse engineering information	Y	New unit. Replaces core unit 2.11C5
MEM16010A	Write reports	Y	New unit. Replaces core unit 2.10C5
MEM16011A	Communicate with individuals and small groups	Y	New unit.
MEM16012A	Interpret technical specifications and manuals		New unit.
MEM16013A	Operate in a self-directed team	Y	New unit. Replaces core unit 2.15C5
MEM16014A	Report technical information	Y	New unit.
MEM17001B	Assist in development and deliver training in the workplace		Prerequisites updated, replaces 17.1AA
MEM17002B	Conduct workplace assessment		Revised unit, replaces unit 17.2AA
MEM17003A	Assist in the provision of on the job training		New unit. Replaces core unit 2.4C11
MEM18001C	Use hand tools		No change, equivalent to 18.1AB
MEM18002B	Use power tools/hand held		No change, equivalent to

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MEM05 Unit code	MEM05 Unit title	P	Relationship to MEM98
	operations		18.2AA
MEM18003C	Use tools for precision work	Y	Prerequisites updated, content rewritten to better reflect unit intent, replaces 18.3AB
MEM18004B	Maintain and overhaul mechanical equipment	Y	Prerequisites updated, replaces 18.4AA
MEM18005B	Perform fault diagnosis, installation and removal of bearings	Y	Prerequisites updated, minor wording changes, replaces 18.5AA
MEM18006B	Repair and fit engineering components	Y	Unit rewritten to differentiate from 18.55, equivalent to 18.6AA
MEM18007B	Maintain and repair mechanical drives and mechanical transmission assemblies	Y	Prerequisites updated, replaces 18.7AA
MEM18008B	Balance equipment	Y	Prerequisites updated, unit reworked to define scope more clearly, replaces 18.8AA
MEM18009B	Perform levelling and alignment of machines and engineering components	Y	Prerequisites updated, replaces 18.9AA
MEM18010C	Perform equipment condition monitoring and recording	Y	Prerequisites updated, replaces 18.10AB
MEM18011C	Shut down and isolate machines/equipment		No change, equivalent to 18.11AB
MEM18012B	Perform installation and removal of mechanical seals	Y	Prerequisites updated, replaces 18.12AA
MEM18013B	Perform gland packing	Y	Prerequisites updated, replaces 18.13AA
MEM18014B	Manufacture press tools and gauges	Y	Title change, content relating to die/mould manufacture moved to new

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MEM05 Unit code	MEM05 Unit title	P	Relationship to MEM98
			unit 18.97 Manufacture cavity dies
MEM18015B	Maintain tools and dies	Y	Slight title change, replaces 18.15AA
MEM18016B	Analyse plant and equipment condition monitoring results	Y	Prerequisites updated, equivalent to 18.16BA
MEM18017C	Modify mechanical systems and equipment	Y	Prerequisites updated, equivalent to 18.17BB
MEM18018C	Maintain pneumatic system components	Y	Prerequisites updated, equivalent to 18.18AB
MEM18019B	Maintain pneumatic systems	Y	Prerequisites updated, minor title change, equivalent to 18.19AA
MEM18020B	Maintain hydraulic system components	Y	Prerequisites updated, equivalent to 18.20AB
MEM18021B	Maintain hydraulic systems	Y	Prerequisites updated, minor title change, equivalent to 18.21AA
MEM18022B	Maintain fluid power controls	Y	Prerequisites updated, minor title change, equivalent to 18.22AA
MEM18023B	Modify fluid power system operation	Y	Prerequisites updated, replaces 18.23BA
MEM18024B	Maintain engine cooling systems	Y	Prerequisites updated, minor title change, equivalent to 18.24A A
MEM18025B	Service combustion engines	Y	Equivalent to 18.25AA
MEM18026C	Test compression ignition fuel systems	Y	Prerequisites updated, replaces 18.26AB
MEM18027C	Overhaul engine fuel system components	Y	Prerequisites updated, replaces 18.27AB
MEM18028B	Maintain engine lubrication systems	Y	Prerequisites updated, slight

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MEM05 Unit code	MEM05 Unit title	P	Relationship to MEM98
			title change, terminology modified, replaces 18.28AB
MEM18029B	Tune diesel engines	Y	Prerequisites updated, replaces 18.29AA
MEM18030B	Diagnose and rectify low voltage electrical systems	Y	Prerequisites updated, terminology changed in title and throughout unit, replaces 18.30A A
MEM18031B	Diagnose and rectify low voltage starting systems	Y	Prerequisites updated, terminology changed in title and throughout unit, replaces 18.31AA
MEM18032B	Maintain induction/exhaust systems	Y	Prerequisites updated, terminology changed in title and throughout unit, replaces 18.32AA
MEM18033B	Perform engine bottom-end overhaul	Y	Prerequisites updated, replaces 18.33AA
MEM18034B	Perform engine top-end overhaul	Y	Prerequisites updated, replaces 18.34AA
MEM18035B	Diagnose and rectify braking systems	Y	Prerequisites updated, terminology changed in title and throughout unit, replaces 18.35AA
			Deleted unit. 18.36B A Maintain and repair scientific analysis equipment - unit deleted – no longer required
MEM18037B	Diagnose and rectify low voltage charging systems	Y	Prerequisites updated, terminology changed in title and throughout unit, replaces 18.37AA
MEM18038B	Maintain wheels and tyres	Y	Prerequisites updated, terminology changed in title and throughout unit,

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MEM05 Unit code	MEM05 Unit title	P	Relationship to MEM98
			replaces 18.38AA
MEM18039B	Diagnose and rectify track type undercarriage	Y	Prerequisites updated, terminology changed in title and throughout unit, replaces 18.39AA
MEM18040B	Maintain suspension systems	Y	Prerequisites updated, terminology changed in title and throughout unit, replaces 18.40AA
MEM18041B	Maintain steering systems	Y	Prerequisites updated, terminology changed in title and throughout unit, replaces 18.41AA
MEM18042C	Diagnose and rectify manual transmissions	Y	Prerequisites updated, terminology changed in title and throughout unit, replaces 18.42AB
MEM18043C	Diagnose and rectify automatic transmissions	Y	Prerequisites updated, terminology changed in title and throughout unit, replaces 18.43AB
MEM18044C	Diagnose and rectify drive line and final drives	Y	Prerequisites updated, terminology changed in title and throughout unit, replaces 18.44AB
MEM18045B	Fault find/repair electrical equipment/components up to 250 volts single phase supply	Y	Range statement clarification, prerequisites updated, replaces 18.45AB
MEM18046B	Fault find/repair electrical equipment/components up to 1000 volts a.c./1500 volts d.c.	Y	Range statement clarification, prerequisites updated, replaces 18.46AB
MEM18047B	Diagnose and maintain electronic controlling systems on mobile plant	Y	Prerequisites updated, replaces 18.47AA
MEM18048B	Fault find and repair/rectify basic electrical circuits	Y	Prerequisites updated, replaces 18.48AA

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MEM05 Unit code	MEM05 Unit title	P	Relationship to MEM98
MEM18049B	Disconnect/reconnect fixed wired equipment up to 1000 volts a.c./1500 volts d.c.	Y	No changes, equivalent to 18.49AA
MEM18050B	Disconnect/reconnect fixed wired equipment over 1000 volts a.c./1500 volts d.c.	Y	No changes, equivalent to 18.50AA
MEM18051B	Fault find and repair/rectify complex electrical circuits	Y	Prerequisites updated, replaces 18.51AA
MEM18052B	Maintain fluid power systems for mobile plant	Y	Prerequisites updated, minor title change, equivalent to 18.52AA
MEM18053B	Modify fluid power control systems	Y	Prerequisites updated, replaces 18.53BA
MEM18054B	Fault find, test and calibrate instrumentation systems and equipment	Y	Prerequisites updated, replaces 18.54AA
MEM18055B	Dismantle, replace and assemble engineering components	Y	Prerequisites updated, replaces 18.55AA
MEM18056B	Diagnose and repair analog equipment and components	Y	No change, equivalent to 18.56AA
MEM18057B	Maintain/service analog/digital electronic equipment	Y	No change, equivalent to 18.57AA
MEM18058C	Modify electronic equipment	Y	No change, equivalent to 18.58AB
MEM18059B	Modify electronic systems	Y	Prerequisites updated, replaces 18.59BA
MEM18060B	Maintain, repair control instrumentation - single and multiple loop control systems	Y	Prerequisites updated, replaces 18.60AA
MEM18061B	Maintain/calibrate complex control systems	Y	Prerequisites updated, replaces 18.61BA
MEM18062B	Install, maintain and calibrate instrumentation sensors,	Y	Prerequisites updated,

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MEM05 Unit code	MEM05 Unit title	P	Relationship to MEM98
	transmitters and final control elements		replaces 18.62AA
MEM18063B	Terminate signal and data cables	Y	Prerequisites updated, replaces 18.63AA
MEM18064B	Maintain instrumentation system components	Y	Prerequisites updated, replaces 18.64AA
MEM18065B	Diagnose and repair digital equipment and components	Y	No change, equivalent to 18.65AA
MEM18066B	Diagnose and repair microprocessor-based equipment	Y	Prerequisites updated, replaces 18.66AA
MEM18067B	Tune control loops - multi controller or multi element systems	Y	Prerequisites updated, replaces 18.67AA
MEM18069B	Maintain, repair instrumentation process control analysers	Y	Prerequisites updated, replaces 18.69BA
MEM18070C	Modify complex electrical circuits and systems	Y	Prerequisites updated, replaces 18.70BB
MEM18071B	Connect/disconnect fluid conveying system components	Y	No change, equivalent to 18.71AA
MEM18072B	Manufacture fluid conveying conductor assemblies	Y	No change, equivalent to 18.72AA
MEM18073A	Perform advanced equipment testing and diagnostics on mobile plant and equipment	Y	New unit.
MEM18086B	Test, recover, evacuate and charge refrigeration systems	Y	Prerequisites updated, title change, minor wording changes, replaces 18.86AA
MEM18087B	Service and repair domestic and light commercial refrigeration and air conditioning equipment	Y	Prerequisites updated, minor wording changes, replaces 18.87AA
MEM18088B	Maintain and repair commercial air conditioning systems and components	Y	Prerequisites updated, minor wording changes, replaces 18.88AA

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MEM05 Unit code	MEM05 Unit title	P	Relationship to MEM98
MEM18089B	Maintain and repair central air handling systems	Y	Prerequisites updated, new pathway, title change, minor wording changes, replaces 18.89AA
MEM18090B	Maintain and repair industrial refrigeration systems and components	Y	Prerequisites updated, minor wording changes, replaces 18.90AA
MEM18091B	Maintain and repair multi stage, cascade and/or ultra-cold industrial refrigeration systems	Y	Prerequisites updated, minor wording changes, replaces 18.91AA
MEM18092B	Maintain and repair commercial and/or industrial refrigeration and/or air conditioning controls	Y	Prerequisites updated, minor wording changes, replaces 18.92AA
MEM18093B	Maintain and repair integrated industrial refrigeration and/or large air handling system controls	Y	Prerequisites updated, minor wording changes, replaces 18.93BA
MEM18094B	Service and repair commercial refrigeration	Y	Prerequisites updated, minor wording changes, replaces 18.94AA
MEM18095A	Maintain and repair cooling towers/evaporative condensers and associated equipment	Y	New unit.
MEM18096A	Maintain, repair/replace and adjust refrigerant flow controls and associated equipment	Y	New unit.
MEM18097A	Manufacture cavity dies	Y	New unit.
MEM19001B	Perform jewellery metal casting	Y	No change, equivalent to 19.1AA
MEM19002B	Prepare jewellery illustrations	Y	Prerequisites updated, replaces 19.2AA
MEM19003B	Handle gem materials		Minor title change, replaces 19.3AA
MEM19004B	Handle and examine gemstone	Y	No change, equivalent to

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MEM05 Unit code	MEM05 Unit title	P	Relationship to MEM98
	materials		19.4AA
MEM19005B	Produce three-dimensional precision items	Y	No change, equivalent to 19.5AA
MEM19006B	Replace watch batteries	Y	Minor title change, replaces 19.6AA
MEM19007B	Perform gemstone setting	Y	Prerequisites updated, replaces 19.7AA
MEM19008B	Prepare jewellery designs	Y	Prerequisites updated, replaces 19.8AA
MEM19009B	Perform investment procedures for lost wax casting process	Y	Prerequisites updated, replaces 19.9AA
MEM19010B	Produce rubber moulds for lost wax casting process		No change, equivalent to 19.10A A
MEM19011B	Perform wax injection of moulds for lost wax casting process		No change, equivalent to 19.11A A
MEM19012B	Produce jewellery wax model	Y	No change, equivalent to 19.12A A
MEM19013B	Produce jewellery metal masters	Y	Prerequisites updated, replaces 19.13A A
MEM19014B	Perform hand engraving	Y	No change, equivalent to 19.14A A
MEM19015B	Perform jewellery enamelling	Y	No change, equivalent to 19.15AA
MEM19016B	Construct jewellery components	Y	Prerequisites updated, replaces 19.16AA
MEM19017B	Fabricate jewellery items	Y	Prerequisites updated, replaces 19.17AA
MEM19018B	Repair jewellery items	Y	No change, equivalent to 19.18AA
MEM19020B	Fault-find and maintain micro-mechanisms	Y	Minor wording corrections, replaces 19.20AA

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MEM05 Unit code	MEM05 Unit title	P	Relationship to MEM98
MEM19021B	Diagnose and service micro-mechanisms	Y	Prerequisites updated, minor wording corrections, replaces 19.21AA
MEM19022B	Perform precision micro-mechanism diagnosis and servicing	Y	Prerequisites updated, minor wording corrections, replaces 19.22AA
MEM20001A	Produce keys		New unit.
MEM20002A	Assemble and test lock mechanisms	Y	New unit.
MEM20003A	Install and upgrade locks and hardware	Y	New unit.
MEM20004A	Gain entry	Y	New unit.
MEM20005A	Install and maintain door control devices/systems	Y	New unit.
MEM20006A	Maintain and service mechanical locking devices	Y	New unit.
MEM20007A	Plan and prepare a masterkey system	Y	New unit.
MEM20008A	Develop and implement a masterkey system	Y	New unit.
MEM20009A	Gain entry and reinstate fire and security containers	Y	New unit.
MEM20010A	Gain entry and reinstate automotive locking systems	Y	New unit.
MEM20011A	Service and repair fire and security containers	Y	New unit.
MEM20012A	Service and repair mechanical automotive locking systems	Y	New unit.
MEM20013A	Service automotive transponder systems	Y	New unit.
MEM20014A	Perform a site security survey		New unit.

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MEM05 Unit code	MEM05 Unit title	P	Relationship to MEM98
MEM22001A	Perform engineering activities	Y	New unit.
MEM22002A	Manage self in the engineering environment	Y	New unit.
MEM22003A	Manage engineering resources	Y	New unit.
MEM22004A	Manage engineering projects	Y	New unit.
MEM22005A	Manage engineering operations	Y	New unit.
MEM22006A	Source and estimate materials	Y	New unit.
MEM22007A	Manage environmental effects of engineering activities	Y	New unit.
MEM22008A	Manage change and technical development	Y	New unit.
MEM22009A	Manage technical sales and promotion	Y	New unit.
MEM23001A	Apply advanced mathematical techniques in a manufacturing engineering or related environment	Y	New unit.
MEM23002A	Apply calculus in engineering situations	Y	New unit.
MEM23003A	Operate and program computers and/or controllers in engineering situations	Y	New unit.
MEM23041A	Apply basic scientific principles and techniques in mechanical engineering situations		New unit.
MEM23051A	Apply basic electro and control scientific principles and techniques in mechanical and manufacturing engineering situations		New unit.
MEM23061A	Select and test mechanical engineering materials		New unit.

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MEM05 Unit code	MEM05 Unit title	P	Relationship to MEM98
MEM23062A	Select and test mechatronic engineering materials		New unit.
MEM23071A	Select and apply mechanical engineering methods, processes and construction techniques		New unit.
MEM23072A	Select and apply mechatronic engineering methods, processes and construction techniques		New unit.
MEM23081A	Apply scientific principles and techniques in mechanical engineering situations	Y	New unit.
MEM23082A	Apply scientific principles and techniques in mechatronic engineering situations	Y	New unit.
MEM23083A	Apply industrial engineering principles and techniques in competitive manufacturing engineering situations	Y	New unit.
MEM23091A	Apply mechanical system design principles and techniques in mechanical engineering situations	Y	New unit.
MEM23092A	Apply automated systems principles and techniques in engineering situations	Y	New unit.
MEM23093A	Apply plant and process design principles and techniques in engineering situations	Y	New unit.
MEM23094A	Apply maintenance systems principles and techniques in engineering situations	Y	New unit.
MEM24001B	Perform basic penetrant testing	Y	No change, equivalent to 24.1AA
MEM24002B	Perform penetrant testing	Y	No change, equivalent to 24.2A A

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MEM05 Unit code	MEM05 Unit title	P	Relationship to MEM98
MEM24003B	Perform basic magnetic particle testing	Y	No change, equivalent to 24.3AA
MEM24004B	Perform magnetic particle testing	Y	No change, equivalent to 24.4AA
MEM24005B	Perform basic eddy current testing	Y	No change, equivalent to 24.5AA
MEM24006B	Perform eddy current testing	Y	No change, equivalent to 24.6AA
MEM24007B	Perform ultrasonic thickness testing	Y	No change, equivalent to 24.7AA
MEM24008B	Perform ultrasonic testing	Y	No change, equivalent to 24.8AA
MEM24009B	Perform basic radiographic testing	Y	No change, equivalent to 24.9AA
MEM24010B	Perform radiographic testing	Y	No change, equivalent to 24.10AA
MEM24011B	Establish non-destructive tests	Y	Prerequisites updated, replaces 24.11BA
MEM24012B	Apply metallurgy principles		No change, equivalent to 24.12AA
MEM25001B	Apply fibre-reinforced materials	Y	No change, equivalent to 25.1AA
MEM25002B	Form and integrate fibre-reinforced structures	Y	No change, equivalent to 25.2AA
MEM25003B	Set up marine vessel structures	Y	No change, equivalent to 25.3AA
MEM25004B	Fair and shape surfaces	Y	No change, equivalent to 25.4AA
MEM25005B	Construct and assemble marine vessel timber components	Y	No change, equivalent to 25.5AA

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MEM05 Unit code	MEM05 Unit title	P	Relationship to MEM98
MEM25006B	Undertake marine sheathing operations	Y	No change, equivalent to 25.6AA
MEM25007B	Maintain marine vessel surfaces	Y	No change, equivalent to 25.7AA
MEM25008B	Repair marine vessel surfaces and structures	Y	No change, equivalent to 25.8AA
MEM25009B	Form timber shapes using hot processes	Y	No change, equivalent to 25.9AA
MEM25010B	Perform fitout procedures	Y	No change, equivalent to 25.10AA
MEM25011B	Install marine systems	Y	No change, equivalent to 25.11AA
MEM25012B	Install and test operations of marine auxiliary systems	Y	No change, equivalent to 25.12AA
MEM25013B	Produce three-dimensional plugs/moulds	Y	No change, equivalent to 25.13AA
MEM25014B	Perform marine slipping operations	Y	Prerequisites updated, replaces 25.14A A
MEM25015A	Assemble and install equipment and accessories/ancillaries		Replacement unit. Previously unit 10.13AA
MEM30001A	Use computer aided drafting systems to produce basic engineering drawings	Y	New unit.
MEM30002A	Produce basic engineering graphics	Y	New unit.
MEM30003A	Produce detailed engineering drawings	Y	New unit.
MEM30004A	Use CAD to create and display 3D models	Y	New unit.
MEM30005A	Calculate force systems within simple beam structures	Y	New unit.

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MEM05 Unit code	MEM05 Unit title	P	Relationship to MEM98
MEM30006A	Calculate stresses in simple structures	Y	New unit.
MEM30007A	Select common engineering materials		New unit.
MEM30008A	Apply basic economic and ergonomic concepts to evaluate engineering applications		New unit.
MEM30009A	Contribute to the design of basic mechanical systems	Y	New unit.
MEM30010A	Set up basic hydraulic circuits		New unit.
MEM30011A	Set up basic pneumatic circuits		New unit.
MEM30012A	Apply mathematical techniques in a manufacturing, engineering or related environment		New unit.
MEM30013A	Assist in the preparation of a basic workplace layout		New unit.
MEM30014A	Apply basic just in time systems to the reduction of waste		New unit.
MEM30015A	Develop recommendations for basic set up time improvements		New unit.
MEM30016A	Assist in the analysis of a supply chain		New unit.
MEM30017A	Use basic preventative maintenance techniques and tools		New unit.
MEM30018A	Undertake basic process planning		New unit.
MEM30019A	Use resource planning software systems in manufacturing	Y	New unit.
MEM30020A	Develop and manage a plan for a simple manufacturing related project		New unit.

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MEM05 Unit code	MEM05 Unit title	P	Relationship to MEM98
MEM30021A	Prepare a simple production schedule		New unit.
MEM30022A	Undertake supervised procurement activities		New unit.
MEM30023A	Prepare a simple cost estimate for a manufactured product		New unit.
MEM30024A	Participate in quality assurance techniques	Y	New unit.
MEM30025A	Analyse a simple electrical system circuit	Y	New unit.
MEM30026A	Select and test components for simple electronic switching and timing circuits	Y	New unit.
MEM30027A	Prepare basic programs for programmable logic controllers		New unit.
MEM30028A	Assist in sales of technical products/systems		New unit.
MEM50001B	Classify recreational boating technologies and features		No change, equivalent to 50.1EA
MEM50002B	Work safely on marine craft		No change, equivalent to 50.2AA
MEM50003B	Follow work procedures to maintain the marine environment		No change, equivalent to 50.3AA
MEM50004B	Maintain quality of environment by following marina codes	Y	No change, equivalent to 50.4AA
MEM50005B	Refuel vessels	Y	No change, equivalent to 50.5EA
MEM50006B	Check operational capability of marine craft	Y	No change, equivalent to 50.6EA
MEM50007B	Check operational capability of sails and sail operating equipment	Y	No change, equivalent to 50.7EA

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MEM05 Unit code	MEM05 Unit title	P	Relationship to MEM98
MEM50008B	Carry out trip preparation and planning		No change, equivalent to 50.8EA
MEM50009B	Safely operate a mechanically powered recreational boat		No change, equivalent to 50.9AA
MEM50010B	Respond to boating emergencies and incidents		No change, equivalent to 50.10EA

Appendix 7: Key Competencies in MEM05 (historical information)

The Key Competencies at Certificate I in the Metal and Engineering Training Package

The Certificate I engineering and boating qualifications will be used predominantly by people seeking to enter or just entering the workforce. It is expected that they will already have some aspects of the Key Competencies. They will need to be able to demonstrate performance at level 1 for some Key Competencies in order to meet the requirements of the mandatory units of competency as described for the qualifications. Further comment on each of the Key Competencies is shown below.

1. Collecting, analysing and organising information

This Key Competency would be required to a limited degree at the Certificate I level. The extent will depend on the selection of elective units of competency as well as their particular workplace application. Achievement of the mandatory units of competency for these qualifications will require demonstration of some ability to undertake the collection, analysis and organisation of information. Note that 'information' may also include data. For example, there may be a need to select the appropriate standard operating procedure for some aspect of the work. Another application will be experienced when working with a quality system and the use of information and data associated with that system.

2. Communicating ideas and information

Communication in any workplace is an essential competency. The mandatory unit of competency in Certificate I concerned with working with others requires the demonstration of adequate communication. For example, the correct interpretation of safety signage, standard operating procedures and quality system information are essential at this qualification level. Interpersonal communication is important and performance at level 1 is also required in giving and receiving simple information.

3. Planning and organising activities

Self planning and organising (within an overall framework) is required from all employees in a manufacturing or engineering enterprise, with performance at level 1

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expected.

4. Working with others and in teams

Working with others is fundamental to the way most manufacturing and engineering enterprises work. Teams may be single level work area teams, multidisciplinary, multi-level teams, permanent teams, ad hoc teams or any other combination of people may be termed a 'team'. Performance at level 1 is expected to meet the requirements of the mandatory units of competency at the Certificate I level.

5. Solving problems

Problem solving at the Certificate I level is required. However, the extent will depend heavily on the selection of elective units of competency as well as their particular workplace application. Many enterprises would expect employees to be able to solve problems within the scope of their job role. This would particularly apply where there is some form of organisational improvement being undertaken. At this level the solving of problems would be in accordance with procedures, following problem solving techniques specified and implementing solutions defined in the procedures. Performance at level 1 would be required.

6. Using mathematical ideas and techniques

This key competency may require performance up to level one in the Certificate I qualifications. This will depend on the particular job role and the range of elective units of competency that have been selected. Manufacturing and engineering enterprises will all require the use of mathematical ideas and techniques. This may be limited to spatial judgements only but may also extend to measurement, use and manipulation of numbers as well as mathematical estimation.

7. Using technology

Most jobs in the manufacturing and engineering industry require some degree of interaction with technology. The extent of this interaction will depend on the selection of elective units of competency as well as their particular workplace application. Performance at level 1 may be required for the Certificate I qualifications.

The Key Competencies at Certificate II in the Metal and Engineering Training Package

The Certificate II engineering and boating qualifications may be used by people who are just entering the workforce or who are already in the workforce. It is expected that they will already have some aspects of the Key Competencies. This will depend on their work and life experiences. They will need to be able to demonstrate performance at level 1 for some or all of the Key Competencies in order to meet the requirements of the mandatory units of competency as described for the qualifications. Note that the two levels of Certificate II in Engineering have different mandatory requirements. Depending on the choice of elective units of competency as well as their particular workplace application, performance at level 1 will be generally required although level 2 may be required in some instances. Further comment on each of the Key Competencies is shown below.

1. Collecting, analysing and organising information

This Key Competency would be required to a limited degree at the lower level

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Certificate II in Engineering and essential for the other Certificate II qualifications. The extent will depend on the selection of elective units of competency as well as their particular workplace application. In addition, achievement of the mandatory units of competency for these qualifications will require demonstration of the ability to undertake the collection, analysis and organisation of information. Note that 'information' may also include data. For example, many of the elective competencies include a requirement of organisation and planning to do the job or task. This will involve the collection of information regarding procedures, specifications, settings, hazards and the like.

2. Communicating ideas and information

Communication in any workplace is an essential competency. The mandatory unit of competency in Certificate II concerned with working with others requires the demonstration of adequate communication. For example, the correct interpretation of safety signage, standard operating procedures and quality system information are essential at this qualification level. Interpersonal communication is important and performance at level 1 is also required in giving and receiving information.

3. Planning and organising activities

Self planning and organising (within an overall framework) is required from all employees in a manufacturing or engineering enterprise, with performance at level 1 expected.

4. Working with others and in teams

Working with others is fundamental to the way most manufacturing and engineering enterprises work. Teams may be single level work area teams, multidisciplinary, multi-level teams, permanent teams, ad hoc teams or any other combination of people may be termed a 'team'. Performance at level 1 is expected to meet the requirements of the mandatory units of competency at the Certificate II level.

5. Solving problems

Problem solving at the Certificate II level is required. However, the extent will depend heavily on the selection of elective units of competency as well as their particular workplace application. Many enterprises would expect employees to be able to solve problems within the scope of their job role. This would particularly apply where there is some form of organisational improvement being undertaken. At this level the solving of problems would be in accordance with procedures, following problem solving techniques specified and implementing solutions defined in the procedures. Performance at level 1 would be required.

6. Using mathematical ideas and techniques

This key competency may require performance up to level one in the Certificate II qualifications, particularly in the higher level Certificate II in Engineering. This will depend on the particular job role and the range of elective units of competency that have been selected. Manufacturing and engineering enterprises will all require the use of mathematical ideas and techniques. This may be limited to spatial judgements only but may also extend to measurement, use and manipulation of numbers as well as mathematical estimation.

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7. Using technology

Most jobs in the manufacturing and engineering industry require some degree of interaction with technology. The extent of this interaction will depend on the selection of elective units of competency as well as their particular workplace application. Performance at level 1 may be required for the Certificate II qualifications.

The Key Competencies at Certificate III in the Metal and Engineering Training Package

The Certificate III trade and production qualification outcomes are used by people who will be well established in the workforce. At their point of entry, they will be in similar positions to those people accessing the Certificate I and II qualifications. At Certificate III it is expected that people will have significant autonomy in their job role and will have developed the Key Competencies to a reasonable degree. As with the lower qualification levels, the choice of elective units of competency as well as their particular workplace application will determine the extent of their requirements and achievement of the Key Competencies. The Certificate III trade and production qualification outcomes will require performance at level 1 for all of the Key Competencies and perhaps at level 2 in some instances.

The Certificate III Technical qualification is an entry level qualification for people undertaking 'technical work' as defined in the relevant industrial instruments. It is expected that they will already have some aspects of the Key Competencies. They will need to be able to demonstrate performance at level 1 for some Key Competencies in order to meet the requirements of the mandatory units of competency as described for this qualification. Performance requirements in other Key Competencies will depend on the selection of elective units of competency as well as their particular workplace application. Further comment on each of the Key Competencies is shown below.

1. Collecting, analysing and organising information

This Key Competency would be required for all of the Certificate III qualifications in order to meet the requirements of the mandatory units of competency. Many of the competencies chosen as part of the qualification will include the need for demonstration of the ability to undertake the collection, analysis and organisation of information. Note that 'information' may also include data. For example, many of the elective competencies include a requirement of organisation and planning to do the job or task. This will involve the collection of information regarding procedures, specifications, settings, hazards and the like. Performance at level 1 would be required.

2. Communicating ideas and information

Communication in any workplace is an essential competency. The mandatory units of competency at Certificate III require the demonstration of adequate communication to at least performance level 1. This would extend beyond the simple interpretation of safety signage, standard operating procedures and quality system information. For example, when assisting in the provision of on the job training there will be a need for interpersonal communication of giving and receiving information to performance level 2.

3. Planning and organising activities

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Self planning and organising (within an overall framework) is required from all employees in a manufacturing or engineering enterprise, with performance at level 1 expected.

4. Working with others and in teams

Working with others is fundamental to the way most manufacturing and engineering enterprises work. Teams may be single level work area teams, multidisciplinary, multi-level teams, permanent teams, ad hoc teams or any other combination of people may be termed a 'team'. Performance at level 1 is expected to meet the requirements of the mandatory units of competency at the Certificate III level.

5. Solving problems

Problem solving at the Certificate III level is required. However, the extent will depend heavily on the selection of elective units of competency as well as their particular workplace application. Typical trade and production work at this level will require the ability to solve problems within the scope of the particular job role. Performance at level 1 would be required.

6. Using mathematical ideas and techniques

This key competency requires performance up to level one in the Certificate III qualifications. All manufacturing and engineering enterprises will all require the use of mathematical ideas and techniques. At this qualification level there will be a need for accurate use and manipulation on numbers as well as measurement and estimation. Performance at level 2 may be required in some instances, depending on the selection of elective units of competency as well as their particular workplace application.

7. Using technology

Jobs in the manufacturing and engineering industry at the Certificate III level will require some degree of interaction with technology. The extent of this interaction will depend on the selection of elective units of competency as well as their particular workplace application. Performance at level 1 will be required for the Certificate III qualifications and may need to extend to level 2 in some cases.

The Key Competencies at Certificate IV in the Metal and Engineering Training Package

The Key Competencies at this level have been described in the preceding section on the Certificate III qualifications. This is because the Certificate IV qualifications are aimed at the same broad target group, with a general extension of the scope of work. In the case of the boating qualification there may need to be an increase in performance levels to reflect the requirements of the business-focussed mandatory units.

The Key Competencies at Diploma level in the Metal and Engineering Training Package

There are two Diploma level qualifications. The advanced trade qualification builds on trade-focussed qualifications at Certificate III and IV. Therefore, comments on performance in the Key Competencies will be similar for Certificate IV. The technical qualification is an intermediate level qualification for technical workers. They may be

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involved in extensive planning work as well as quality and with some degree of supervision of others. These work functions will require higher levels of performance in some of the Key Competencies. The competencies used at Diploma level may require a level of competence needed to evaluate and sometimes reshape tasks. In these instances they would require a performance level 3. Again, this will depend on the selection of elective units of competency as well as their particular workplace application.

The Key Competencies at Advanced Diploma level in the Metal and Engineering Training Package

The competencies used at Advanced Diploma level predominantly require a level of competence needed to evaluate and reshape tasks. Key Competencies are required at performance level 3.

1. Collecting, analysing and organising information

The execution of the competencies required for the Advanced Diploma always requires the collection, analysis and organisation of data/information. At this level there is often the need to determine what data is needed and then to evaluate whether the data collected will yield the required information. At this level this would be in accordance with protocols and policies and may be covered by procedures.

2. Communicating ideas and information

Many manufacturing and engineering enterprises work in teams and require high levels of communication with all stakeholders. At this level there is the need to evaluate the effectiveness of communication flows and whether the information is appropriate for the decisions which need to be made and then making, or recommending changes. At this level this would be in accordance with protocols and policies and may be covered by procedures.

3. Planning and organising activities

At the Advanced Diploma level, not only is planning and organisation of self, others and resources undertaken, but there is an expectation that the effectiveness of these plans and organising will be evaluated and where appropriate changed/ recommendations for change made. At this level this would be in accordance with protocols and policies and may be covered by procedures.

4. Working with others and in teams

Working in teams is fundamental to the way most competitive manufacturing organisations work. At this level the function of the teams and other interpersonal interactions should be being evaluated and improvements being made. At this level this would be in accordance with protocols and policies and may be covered by procedures.

5. Solving problems

Problem solving is a key activity at this level with the need to evaluate the tools needed to solve problems and then to modify the tools or acquire/recommend other tools to help the problem solving process. At the Advanced Diploma level the person might be expected to have an extensive array of problem solving tools to choose from. At this level this would be in accordance with protocols and policies and may be covered by procedures. They might also be expected to generate novel solutions to problems which

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do not respond to standard solutions, possibly working with relevant technical experts.

6. Using mathematical ideas and techniques

While some units require specific mathematical competence most require a level of numeracy sufficient to understand numerical data/charts, interpret what they mean and communicate with technical experts about quantitative data. At this level this would be in accordance with protocols and policies and may be covered by procedures.

7. Using technology

At this level hands on competency with the technology of the process may not be required, however an understanding of the principles underpinning manufacturing processes will be required sufficient to evaluate its operation and to evaluate different courses of action while working with a technical expert. Computer usage would be expected. At this level this would be in accordance with protocols and policies and may be covered by procedures.

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