



**Manufacturing
Industry Skills
Alliance**

Companion Volume Implementation Guide

Volume 1

Release 5.0

MEM Manufacturing and Engineering Training Package

2025

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MEM Manufacturing and Engineering Training Package Implementation Guide

Introduction

Who is this guide for?

The *MEM Companion Volume Implementation Guide – Volume 1* is designed to assist employees, students, enterprises, and other users in their use of units of competency and qualifications in Release 5.0 of the *MEM Manufacturing and Engineering Training Package* (MEM Release 5.0).

What is in this guide?

This *MEM Companion Volume Implementation Guide – Volume 1* provides specific information and advice about the content and structure of the qualifications and units of competency, including their key features, implementation advice and information on licensing and regulatory requirements.

NOTE: The Appendices section is provided as a separate document, [Companion Volume Implementation Guide – Volume 2](#), and contains:

- qualifications and units of competency
- prerequisites and points weighting
- mapping information for qualifications and units of competency
- qualification and certificate level descriptors
- career pathways.

NOTE: This Companion Volume Implementation Guide and its Appendices should be read in conjunction with the *MEM Manufacturing and Engineering Training Package – Essential Features Guide* which sets out important information about the essential features associated with the Training Package and its relationship with the industries and occupations associated with them.

MEM Training Package Version control and modification history

Version control

Release	Status	Release Date	Approval Process
5.0	Current	04 September 2025	Endorsed
4.0	Superseded	03 February 2023	Endorsed
3.0	Superseded	19 December 2022	Endorsed
2.1	Superseded	31 March 2021	Upgrade (minor release)
2.0	Superseded	26 July 2019	Endorsed
1.2	Superseded	31 May 2016	Upgrade (minor release)
1.1	Superseded	16 June 2015	Upgrade (minor release)
1.0	Superseded	30 April 2015	Endorsed

Modification history details

MEM Release 5.0 – Endorsed changes includes:

- three (3) revised qualifications and ten (10) updated qualifications.
- twenty-four (24) revised units of competency, seven (7) new units of competency and twenty-three (23) updated units of competency.
- one (1) revised skill set.

MEM Release 4.0 – Endorsed changes

Release 4.0 includes:

- six (6) new qualifications.
- twenty-eight (28) new units of competency.

Note: The approved components by the AISC originally titled MEM Release 4.0 have been combined with MEM Release 3.0 Transition Project to reduce the number of releases in the MEM Training Package.

MEM Release 3.0 – Endorsed changes

Release 3.0 includes:

- one (1) new qualification, sixteen (16) revised qualifications, fourteen (14) updated qualifications.
- three hundred and thirty-three (323) revised units of competency and twenty-seven (27) new units of competency.
- one (1) revised skill set - *Non-Destructive Testing - Level 2 non-destructive testing (NDT) practitioner*.

Note: This release was approved subject to the inclusion of information in the Companion Volume Implementation Guide, stating that it remains the responsibility of individual states and

territories to determine arrangements for training delivery (refer to information under 'Qualifications and Occupational Outcome').

MEM Release 2.1 – Endorsed changes

Release 2.1 includes:

- 13 revised qualifications (mandatory training contract pathway added).
- 94 revised units (quantum of hours of workplace practice removed).

MEM Release 2.0 - Endorsed changes

The MEM Manufacturing and Engineering Training Package Release 2.0 consists of:

- seventeen (17) new qualifications, one (1) updated
- four hundred and forty-six (446) revised units of competency
- fifty-five (55) imported units of competency.

MEM Release 1.2 - ISC Upgrades

- Adjustments to 13 units of competency to reflect changes to Essential Performance Capabilities
- List of prerequisites corrected in *MEM10025 Undertake a capstone assessment*
- Imported units updated.

MEM Release 1.1 – ISC Upgrade

Correction of list of prerequisites in *MEM10025 Undertake a capstone assessment*.

MEM Release 1 - Initial release

MEM31215 Certificate III in Engineering – Industrial Electrician qualification.

Qualifications, Skill Sets and Units of Competency

The MEM Manufacturing and Engineering Training Package Release 5.0 contains:

- 39 Australian Qualifications Framework (AQF) aligned qualifications (new qualifications for MEM Release 5.0 are shaded red)
- 797 MEM units of competency (new units for MEM Release 5.0 are shaded red)
- 285 imported units of competency.

MEM Release 5.0 Qualifications

MEM Release 5.0		
Code	Title	TGA Qualification Release
MEM10119	Certificate I in Engineering	Release 2
MEM10222	Certificate I in Boating Services	Release 1
MEM20219	Certificate II in Engineering – Production Technology	Release 3
MEM20322	Certificate II in Boating Services	Release 1
MEM20422	Certificate II in Engineering Pathways	Release 1
MEM30119	Certificate III in Engineering - Production Systems	Release 3
MEM30219	Certificate III in Engineering - Mechanical Trade	Release 4
MEM30422	Certificate III in Engineering - Electronic Trade	Release 1
MEM30522	Certificate III in Engineering – Technical	Release 3
MEM30619	Certificate III in Jewellery Manufacture	Release 3
MEM30719	Certificate III in Marine Craft Construction	Release 3
MEM30819	Certificate III in Locksmithing	Release 3
MEM30919	Certificate III in Boating Services	Release 3
MEM31019	Certificate III in Watch and Clock Service and Repair	Release 3
MEM31119	Certificate III in Engineering - Composites Trade	Release 3
MEM31219	Certificate III in Engineering – Industrial Electrician	Release 2
MEM31322	Certificate III in Refrigeration and Air Conditioning	Release 1
MEM31419	Certificate III in Engineering – Fixed and Mobile Plant Mechanic	Release 3
MEM31519	Certificate III in Engineering – Toolmaking Trade	Release 3
MEM31622	Certificate III in Engineering - Patternmaking Trade	Release 1
MEM31719	Certificate III in Engineering – Casting and Moulding Trade	Release 3
MEM31822	Certificate III in Engineering – Textile Mechanic	Release 2
MEM31925	Certificate III in Engineering - Fabrication Trade	Release 1
MEM40119	Certificate IV in Engineering	Release 2
MEM40222	Certificate IV in Boating Services	Release 1
MEM40322	Certificate IV in Advanced Jewellery Manufacture	Release 1
MEM40422	Certificate IV in Engineering Drafting	Release 2
MEM50119	Diploma of Engineering - Advanced Trade	Release 3
MEM50222	Diploma of Engineering – Technical	Release 2
MEM50322	Diploma of Jewellery and Object Design	Release 1
MEM50425	Diploma of Engineering – Non-Destructive Testing	Release 1
MEM50522	Diploma of Engineering - Materials	Release 2
MEM50622	Diploma of Engineering - Prototyping	Release 1
MEM50722	Diploma of Engineering - Planning	Release 1
MEM50822	Diploma of Applied Technologies	Release 1
MEM60122	Advanced Diploma of Engineering	Release 1
MEM60222	Advanced Diploma of Jewellery and Object Design	Release 2

MEM60322	Advanced Diploma of Engineering - Planning	Release 1
MEM80125	Graduate Diploma of Engineering	Release 1

MEM Skill Sets

One (1) Skill Set has been revised for MEM Release 5.0.

Code	Title	Comment
MEMSS00003	Non-Destructive Testing – Level 2 NDT practitioner	Release 1

MEM Units of Competency

A complete list of **all** MEM Units of Competency is provided in the *Appendix Volume* at **Appendix 1: MEM Units of Competency – Prerequisites and Points Weighting**

A complete list of Imported Units of Competency is provided in the *Appendix Volume* at **Appendix 2: MEM Release 5.0 – Imported Units**

Summary mapping information

Release 5.0

- **Mapping of MEM – Release 5.0 to MEM Release 4.0**

Detailed mapping and equivalence tables are provided in the *Appendix Volume* at **Appendix 3: Qualification Mapping of MEM – Release 5.0**.

Release 4.0

- **Mapping of MEM – Release 4.0 to MEM Release 3.0**

Detailed mapping and equivalence tables are provided in the *Appendix Volume* at **Appendix 3: Qualification Mapping of MEM – Release 4.0**.

Release 3.0

- **Mapping of MEM – Release 3.0 to MEM05 Metal and Engineering Training Package**

It should be noted that Release 3.0 of the MEM Manufacturing and Engineering Training Package does not completely supersede the MEM05 Metal and Engineering Training Package.

- **Mapping of MEM – Release 3.0 to MEM Release 2.1**
- **Mapping of MEM – Release 3.0 to LMT07 Textiles, Clothing And Footwear Training Package**

It should be noted that Release 3.0 of the MEM Manufacturing and Engineering Training Package does not completely supersede the LMT07 Textiles, Clothing and Footwear Training Package.

- **Mapping of MEM – Release 3.0 to CUV11 Visual Arts, Crafts and Design Training Package**

It should be noted that Release 3.0 of the MEM Manufacturing and Engineering Training Package does not completely supersede the CUV11 Visual Arts, Crafts and Design Training Package.

Detailed mapping and equivalence tables are provided in the *Appendix Volume* at **Appendix 3: Qualification Mapping of MEM – Release 3.0**.

Release 2.1

Mapping of MEM – Release 2.1 to MEM05 Metal and Engineering Training Package

It should be noted that Release 2.1 of the MEM Manufacturing and Engineering Training Package does not completely supersede the MEM05 Metal and Engineering Training Package.

Detailed mapping and equivalence tables are provided in the *Appendix Volume* at **Appendix 3: Mapping of MEM – Release 2.1 to MEM05 Metal and Engineering Training Package**.

Release 1

Mapping information for MEM - Release 1

Refer to the *Appendix Volume* at **Appendix 3: Mapping - Industrial Electrician units**.

Key work and training requirements in the industry

Formal Training

All qualifications are competency based and can be achieved through a formal skills recognition process where substantial industry experience is evident. Where formal training is required, competence will be realised through a combination of on and off the job skills and knowledge development.

Skill Sets

MEMSS00003 Non-Destructive Testing – Level 2 NDT practitioner - is intended to build on existing technical qualifications. It covers the skill and knowledge requirements that may lead to industry certification at Level 2 against AS ISO 9712 NDT – Qualification and certification of personnel or subsequent Standards in one or more of the following NDT methods:

- penetrant testing
- magnetic particle testing
- eddy current testing
- ultrasonic testing
- advanced ultrasonic testing
- radiographic testing
- thermography testing
- visual testing.

Certificate I and II Qualifications

The following qualification defines entry-level skills to assist workers entering employment within the boat services industry.

- MEM10222 Certificate I in Boating Services

The following qualifications are deemed by industry to be suitable for pre-employment or pre-apprenticeship training and skills development.

- MEM10119 Certificate I in Engineering
- MEM20422 Certificate II in Engineering Pathways

The following qualifications must **not** be used for school students unless formally undertaken through a Training Contract associated with an Australian Traineeship or through a formal skills and knowledge recognition process in accordance with the Australian Apprenticeships policy. They have been designed for people employed in complex work environments.

- MEM20219 Certificate II in Engineering – Production Technology is designed to meet the needs of skilled workers employed in sophisticated manufacturing production environments.
- MEM20322 Certificate II in Boating Services is designed for people who are employed in a boating services environment.

Certificate III Qualifications

Cert III Qualifications – Training contract NOT required

The following two qualifications do **NOT** require a Training Contract associated with an Australian Apprenticeship however, they can be undertaken under a contract of training as a

traineeship. While there is support of these qualifications being undertaken through a contract of training, there is no intention to mandate an apprenticeship for these qualifications.

- MEM30119 Certificate III in Engineering - Production Systems
- MEM30522 Certificate III in Engineering – Technical

These two (2) qualifications **should** be undertaken through a **Training Contract associated with an Australian Apprenticeship or through a formal skills and knowledge recognition process**.

They must **not** be used for school students unless formally undertaken through a Training Contract associated with an Australian Traineeship or through a formal skills and knowledge recognition process in accordance with the Australian Apprenticeships policy. The qualifications that contain this requirement are:

- MEM30422 Certificate III in Engineering - Electronic Trade
- MEM31622 Certificate III in Engineering - Patternmaking Trade

Cert III Qualifications – Training contract required

13 Specified Cert III Engineering Trade Qualifications – Exemption to 2012 Standards for Training Packages

In recognition of the critical importance that workplace practice plays in meeting the engineering trade workforce development needs of industry, as well as the particular workforce and skill requirements associated with the MEM Training Package, Skills Ministers have agreed to a limited exemption to the *2012 Standards for Training Packages*.¹ This exemption allows Training Contract pathways to be required for the delivery of specified engineering trade qualifications.

This exemption applies at the qualification level.

The exemption has been applied to 13 Certificate III Manufacturing and Engineering trade qualifications where a Training Contract pathway is required. These qualifications must be undertaken through a **Training Contract associated with an Australian Apprenticeship or through a formal skills and knowledge recognition process**. The qualifications that contain this requirement are:

- MEM30219 Certificate III in Engineering – Mechanical Trade
- MEM31925 Certificate III in Engineering – Fabrication Trade
- MEM30619 Certificate III in Jewellery Manufacture
- MEM30719 Certificate III in Marine Craft Construction
- MEM30819 Certificate III in Locksmithing
- MEM30919 Certificate III in Boating Services
- MEM31019 Certificate III in Watch and Clock Service and Repair
- MEM31119 Certificate III in Engineering – Composites Trade
- MEM31219 Certificate III in Engineering – Industrial Electrician

¹ The exemption is in relation to Section 3.6.1 of the Training Package Products Policy, which states that: “Information on qualification pathways, such as Australian Apprenticeships and VET delivered to secondary students, must be provided in the Companion Volume Implementation Guide. This information is advisory and must not be used to prohibit particular training pathways for the qualification.”

This is in line with the ministerial exemption for the *Standards for Training Packages* which was agreed by Skills Ministers in December 2020.

- MEM31322 Certificate III in Refrigeration and Air Conditioning
- MEM31419 Certificate III in Engineering – Fixed and Mobile Plant Mechanic
- MEM31519 Certificate III in Engineering – Toolmaking Trade
- MEM31719 Certificate III in Engineering – Casting and Moulding Trade

Certificate IV and Diploma Qualifications

Cert IV and Diploma Qualifications – Training contract NOT required

A Training Contract associated with an Australian Apprenticeship, traineeship or a formal skills and knowledge recognition process is **NOT** required for these qualifications.

- MEM40422 Certificate IV in Engineering Drafting²
- MEM50222 Diploma of Engineering – Technical³
- MEM50322 Diploma of Jewellery and Object Design
- MEM50425 Diploma of Engineering - Non-Destructive Testing
- MEM50522 Diploma of Engineering - Materials
- MEM50622 Diploma of Engineering – Prototyping
- MEM50722 Diploma of Engineering - Planning
- MEM50822 Diploma of Applied Technologies

Qualifications recommended to be undertaken through a formal Training Contract

It is recommended that the following qualifications be undertaken through a Training Contract associated with an Australian Apprenticeship or through a formal skills and knowledge recognition process:

- MEM40119 Certificate IV in Engineering
- MEM40222 Certificate IV in Boating Services
- MEM40322 Certificate IV in Advanced Jewellery Manufacture
- MEM50119 Diploma of Engineering – Advanced Trade

The minimum requirements for the above qualifications can also be met by holders of one of the following qualifications or its equivalent subject to meeting the additional requirements set out below:

- MEM30219 Certificate III in Engineering – Mechanical Trade
- MEM31925 Certificate III in Engineering – Fabrication Trade
- MEM30619 Certificate III in Jewellery Manufacture
- MEM30719 Certificate III in Marine Craft Construction
- MEM30819 Certificate III in Locksmithing
- MEM30919 Certificate III in Boating Services
- MEM31019 Certificate III in Watch and Clock Service and Repair
- MEM31119 Certificate III in Engineering – Composites Trade
- MEM31219 Certificate III in Engineering – Industrial Electrician
- MEM31322 Certificate III in Refrigeration and Air Conditioning
- MEM31419 Certificate III in Engineering – Fixed and Mobile Plant Mechanic
- MEM31719 Certificate III in Engineering – Casting and Moulding Trade

MEM40119 Certificate IV in Engineering – Requires holders of the above qualifications, or equivalent qualifications, to complete additional units of competency drawn from Specialisation units Group A to a minimum value of 12 points and Specialisation units from Group B to bring

² This qualification should NOT be used for VET in Schools unless the students are formally engaged in a traineeship in accordance with the Australian Apprenticeships policy.

³ This qualification should NOT be used for VET in Schools unless the students are formally engaged in a traineeship in accordance with the Australian Apprenticeships policy.

the total value of additional units to at least 36 points (note that additional units are those units not included in the Certificate III qualification already held)

- MEM31519 Certificate III in Engineering – Toolmaking Trade
Note: *The holder of the MEM31519 Certificate III in Engineering – Toolmaking Trade qualification is only required to complete additional units of competency drawn from Group A to a minimum value of 12 points and Specialisation units drawn from Group B to bring the total value of additional points to 24 points.*

MEM50119 Diploma of Engineering - Advanced Trade – While there is no qualification entry requirement it is assumed that the learner is either already a tradesperson with access to structured on and off-the-job training or is an apprentice under an Australian Apprenticeship arrangement. It should not be used as a pre-employment or pre-apprenticeship program.

Advanced Diploma Qualifications

Advanced Diploma qualifications define skills and knowledge required to undertake a wide range of advanced and specialised technical work.

- MEM60122 Advanced Diploma of Engineering⁴
- MEM60222 Advanced Diploma of Jewellery and Object Design
- MEM60322 Advanced Diploma of Engineering - Planning

Graduate Diploma Qualifications

Graduate Diploma qualifications define the skills and knowledge required to undertake high level supervisory technician and technical officer work across a wide range of discipline areas.

- MEM80125 Graduate Diploma in Engineering

This qualification requires that learners hold:

- an Advanced Diploma of Engineering or a Diploma of Engineering, or a
- relevant Certificate IV or Certificate III together with significant relevant vocational practice in an engineering related role, or a
- Bachelor Degree; or other higher education qualification, with relevant vocational practice in an engineering related role.

Nominal duration

The nominal duration for apprenticeships associated with MEM Release 5.0 engineering trade qualifications is established in the Manufacturing and Associated Industries and Occupations Award 2020.

Occupational outcomes

The statements in the qualifications contain critical information about the intended purpose of the qualification and are necessary to ensure that the occupational outcome associated with the qualifications meets the occupational standard for the respective trades/vocations as contained in the Award, and that the qualifications are used for their intended purpose.

VET in Schools Programs

The use of Certificate III Engineering Trade qualifications as either **VET in Schools** programs or fully institutional programs is not permitted. It is the clear intention of industry that these qualifications are not used outside an apprenticeship or formal trade recognition process. These

⁴ This qualification should NOT be used for VET in Schools unless the students are formally engaged in a traineeship in accordance with the Australian Apprenticeships policy.

qualifications have been designed to specify the occupational standard for skilled trade workers employed in sophisticated manufacturing environments.

Where students are seeking to be enrolled in a **VET in Schools** program, they should be directed to the Certificate I in Engineering and Certificate II in Engineering Pathways which are qualifications which were specifically designed to be suitable for delivery in VET in Schools and pre-employment or pre-apprenticeship training and skills development.

Additional information on expected qualification outcomes and industry recognised skills profiles is available in **Qualification and occupational outcomes**.

Volume of learning

The AQF qualification descriptors include the volume of learning. Registered Training Organisations (RTOs) must comply with the AQF, apply the volume of learning to training programs, and develop and implement training and assessment strategies that are consistent with the AQF.

The AQF provides the volume of learning allocated to a qualification. This includes all teaching, learning and assessment activities that are required to be undertaken by a typical student to achieve the qualification. These activities include guided learning (classes, lectures, tutorials, online or self-paced study), individual study, research, practice, structured learning activities in the workplace, and assessment activities.

The amount of formal training delivered by an RTO is part of the overall volume of learning and relates primarily to formal activities (including classes and other activities, as well as workplace practice and learning).

RTOs must consider the need to ensure that students can reflect on and absorb knowledge, can practise the skills in different contexts, and learn to apply the skills and knowledge in the varied environments of workplaces before being assessed.

Where the student is an apprentice, the RTO must also meet the requirements of the Training Plan agreed to between the apprentice and the employer and any relevant regulatory requirements contained in the Training Contract and/or state or territory legislation.

Regulation and licensing implications

Licensing requirements for the manufacturing and engineering trades vary considerably across jurisdictions. There may be some units of competency in qualifications that have licensing or regulatory requirements based on the work context and they may change from time to time. For this reason, advice regarding regulatory requirements is contained at both the unit of competency and qualification level.

In all cases, local state and territory regulations and licensing requirements should be verified.

Variability

Examples of the variability in regulation and licensing across Australia include:

- The Certificate III in Engineering – Industrial Electrician⁵ leads to a special class of licence as an Industrial Electrician and was developed at the request of the mining and resources engineering industries.
- The Certificate III in Refrigeration and Air Conditioning qualification requires compliance with regulations for refrigerant handling. A refrigerant handling licence must be held by any person who carries out work in relation to refrigeration and air conditioning equipment.
- There are a number of regulations and certifications that may apply to welders, depending on the nature of the welding required and whether it needs to meet Australian or international standards.
- In some jurisdictions, locksmiths are required to hold a licence, as are metal fabricators but in other jurisdictions, these occupations are unlicensed. In the larger states (New South Wales, Queensland, Victoria and Western Australia), security licences are now required for certain aspects of locksmith work.
- There are wide variations in the certification requirements for welders performing repair and maintenance work on boats and ships.
- There are a variety of industry accreditation and certification requirements for a Non-Destructive Testing – Level 2 NDT practitioner.
- There are specific regulations that apply to medical equipment administered under the Therapeutic Goods Administration.

Specific regulatory bodies

The Australian Maritime Safety Authority (AMSA) is responsible for the regulation and safety oversight of Australia's shipping fleet. This covers all issues associated with boat building including, safety, stability and water-tight and weather-tight integrity.

Regulations in the shipbuilding industry are governed by the International Maritime Organisation (IMO) and include matters relating to safety and environmental regulations, as well as maritime security and shipping efficiency. Australia's international maritime obligations are managed by AMSA.

The Electrical Regulatory Authorities Council (ERAC) coordinates the electrical regulatory strategies, policies and ongoing reform activities of states and territories. Each state and territory however, administers laws relating to electrical safety, supply and efficiency.

⁵ Refer to section: **Implementation: Certificate III in Engineering – Industrial Electrician** for specific implementation advice on this qualification.

General compliance

Businesses in the manufacturing and engineering industries must also comply with:

- federal, state and local government environmental standards
- product safety standards
- occupational health and safety regulations.

Standards for RTOs

The **Standards for RTOs 2015** are the standards regulating nationally consistent, high-quality training and assessment in the vocational education and training (VET) system.

Download the Standards from the **Australian Skills Quality Authority (ASQA)** website www.asqa.gov.au/about/australias-vet-sector/standards-registered-training-organisations-rtos-2015

Assessor requirements of the Standards for RTOs 2015

Assessors must satisfy the assessor requirements in the *Standards for RTOs 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011* its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires.

Australian Qualifications Framework (AQF)

Each RTO must issue AQF qualifications and Statements of Attainment that meet the requirements of the current *AQF Implementation Handbook (Second Edition, January 2013)* and the endorsed Training Packages within the scope of its registration. An AQF qualification is issued once the full requirements for a qualification, as specified in the nationally endorsed Training Package are met. A Statement of Attainment is issued when an individual has completed one or more units of competency from nationally recognised qualification(s) or courses(s).

Qualification titles

Where permitted, qualifications may contain a list of approved additional descriptors that can be added to the qualification title. The use of additional descriptors is contingent on the selection of appropriate elective units that are consistent with the respective specialisation reflected in the descriptor.

For example: A Certificate IV in Engineering specialising in fluid power must be identified as “*Certificate IV in Engineering (Fluid Power)*” rather than a “*Certificate IV Fluid Power*”.

See the current edition of the *AQF Implementation Handbook* available on the **AQF Council** website www.aqf.edu.au.

Overview of components in the MEM Training Package - Release 5.0

Unit of competency

A unit of competency defines the standard specified by industry for the application of knowledge and skill associated with a key function or role in a job or occupation. Units of competency within the MEM Manufacturing and Engineering Training Package may be linked to one or more qualifications.

Prerequisite units of competency and Prerequisite Pathways

The MEM Manufacturing 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 or support progress towards others are listed as prerequisites.

For example: A person must have the competency with the unit *MEM13004 Work safely with molten metals/glass* to support a number of other units in the Casting and Moulding field, such as *MEM04001 Operate melting furnaces*.

In some cases, prerequisites have been grouped to contextualise the unique requirements of different jobs and workplaces. These groupings reflect that different 'skill paths' may be taken to reach a unit of competency. Where a number of 'skill paths' are available, then the most job appropriate 'path' should be chosen for the job or workplace. The prerequisite units count towards the achievement of the qualification requirements.

Ideally, prerequisite skills will be developed and accumulated concurrently and as part of the development and acquisition of the specific competency they underpin.

The specification of a unit as a prerequisite is intended to indicate the reliance that each of the units shares with the other units. They specifically do not indicate a particular sequence in which they must be delivered or assessed.

Assessors should approach assessment of units that contain co-dependent prerequisites on the basis that the assessment of the primary unit should not be carried out unless the prerequisite units have already been assessed or credited.

Competency Field

Competency Fields are used to categorise a set or group of units in relation to a field of work. They are convenient groupings of units to assist with the organisation and navigation of the competency standards, and to help users in the selection of relevant competency standards. The fields do not represent barriers to accessing any competency units in a field, or between fields.

Application

Units of competency indicate specific scope and limitation guidance as well as purpose and operating conditions in different contexts and workplaces. In some cases, units of competency have a unique relationship with other units and will be accompanied by a direction. For example, "Where precision mechanical measurement is required *unit MEM12003 Perform precision mechanical measurement* should also be selected."

In some cases, units of competency contain content that can be interpreted as being inconsistent with the Standards for Training Packages. This is necessary due to the direct association between the competency and skills-related pay structures contained in key industrial instruments, including Awards and Certified Agreements.

This content is designed to give clear and enforceable direction to users of the Training Package about how the unit of competency is to be applied. This is to ensure that duplication is minimised, skills pathways are not compromised, and that unit selection is appropriate from an industrial outcome perspective.

For example, some of the units and qualifications contain directions in relation to the application of the units and/or qualifications that are required to ensure that they are applied as intended and in a manner that is consistent with longstanding industrial arrangements. The nature of the direction takes a number of forms such as:

1. Directions that limit the scope of a unit and make clear what the unit does or does not cover:

For example, unit *MEM05011 Assemble fabricated components* contains a statement in the application:

“Where skills for the assembly of fabricated engineering components are required unit *MEM18006 Perform precision fitting of engineering components* should also be selected”

This statement is required to ensure that proper consideration is given to the selection of critical additional units in the selection of the primary unit under consideration. The statement gives coherence to the application of the principal unit by indicating that the ‘skills for the assembly of fabricated engineering components’ are not covered by the unit.

Alternatively, sometimes the selection of the additional unit is not a consideration and is critical for the application of the unit within the direction provided. For example, “Where formal weld records associated with the application of this unit are required to be maintained, the unit *MEM05065 Maintain weld records* must also be selected.

2. Directions that prevent inappropriate selections or duplication of units

Alternatively, some units contain statements with the reverse effect. These statements advise that certain units should not be selected together as they effectively duplicate much of their content but from the perspective of different vocational fields or applications. Accordingly, production machining units should not be selected with trade-level machining units as they are designed for specifically different applications.

For example, the application of unit *MEM07001 Perform operational maintenance of machines/equipment* contains directions that:

“This unit of competency defines the skills and knowledge required to carry out programmed safety and maintenance checks on machines/equipment.

It applies in a manufacturing setting where routine programmed operational maintenance to machines/equipment is required. It is not intended to be used where higher-level maintenance activities are performed.

This unit should not be selected when any of the following are selected:

- *MEM18055 Dismantle, replace and assemble engineering components*
- *MEM18006 Perform precision fitting of engineering components*
- *MEM07005 Perform general machining.*”

This direction is necessary as users may inadvertently package inappropriate units together. They may also fail to select critical units required to reflect the totality of the skills required where the unit in question is not specifically designated as a prerequisite. This can occur when the user assumes that certain contingent applications are covered by a unit when in fact they are not and require the selection of additional units.

Bands

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 relative level of difficulty of skills used in the industry. Band B units generally represent skills and experience with more depth and complexity than Band A units. The large range of units in each Band allows enterprises, employees and students 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. The number of these dual Band units is limited. These units are identified in the units themselves by way of a note.

Notes

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

Unit Weight

Many units of competency have an allocated weight shown as 'unit weight'. This weighting is defined as a number of '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 point's value equal to the points value specified for the various components of the qualification. These combined points total 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.

Allocation of unit points weighting

Classification levels, points and AQF level

Job classifications under the Manufacturing and Associated Industries and Occupations Award 2020 (the Award) reflect the desire of the industry parties to maintain a skills-based classification structure based on measures representing the relative value of the skills required to perform work.

The Award has two methods of describing the skill levels required for classification at particular levels of the classification structure. The first is a reference to a 'minimum training requirement' for each classification level that can be met by individuals holding particular Manufacturing and Engineering Training Package qualifications for each level.

Secondly, the Award references the implementation of the Metal and Engineering Industry Competency Standards consistent with the provisions contained in the *National Metal and Engineering Industry Competency Standards (NMEICS) Implementation Guide*. This *NMEICS Implementation Guide* is required to be used in enterprises whenever the classification of an employee/s is called into question or when the competency standards are being used in an enterprise for the purposes of classifying employees or positions within the industrial award classification structure.

The *NMEICS Implementation Guide* includes a listing of award classification levels, commencing at the lowest level of C14 and rising to C(2b). Each classification level associated

with trade and production work up to C5 has an allocated points value that reflects the value of the skills required for classification at that level.

Classifications above C8 have an additional requirement that restricts the selection of units of competency to those that require a greater depth of knowledge and/or skill as determined by the banding of the unit.

Classification level 10 (C10) is taken as the benchmark for classification, with wage relativities for all other levels set as a percentage less than, equal to, or greater than this level. The C10 level has a point's requirement of 96 points. This benchmark level is commonly associated with entry level base trades workers, such as fitters, machinists, fabricators and electrical trades. The points required for classification levels below C10 have lower point's requirements, and those above require a greater number of points.

The MEM Manufacturing and Engineering Training Package includes qualifications ranging from Certificate I to Graduate Diploma of Engineering. Of these, the trade and production qualifications use points weightings as the basis of their packaging rules. Points weightings are assigned to each unit of competency where the unit is available in a qualification associated with production or trade work. Relevant units of competency must be selected according to the packaging rules so that the total number of required points is achieved.

It is important to ensure that the packaging rules for qualifications reflect the relative skill requirements of the industry and the value that the industry places on the respective skill levels.

Examples of how the points weightings fit into the packaging rules are shown below in the packaging rules for two of the MEM qualifications.

To be awarded the *Certificate III in Engineering – Fabrication Trade*, units of competency to the value of 96 points must be achieved, chosen as outlined below:

- All core units of competency listed below (totalling 33 points)
- Elective units of competency to a minimum value of 40 points from one of either Group A, B, C, D, E, F or G
- Elective units of competency to a maximum value of 23 points from Group H electives to bring the total value to 96 points.

To be awarded the *MEM40119 Certificate IV in Engineering* units of competency to a minimum value of 132 points must be achieved, chosen as outlined below:

- All core units of competency listed below (totalling 33 points)
- Elective units of competency to a minimum value of 12 points from Group A
- Elective units of competency to a maximum value of 87 points from Group B to bring the total value to 132 points.

The minimum requirements for this qualification can also be met by holders of one of the following qualifications, or equivalent, with the completion of additional units of competency drawn from Specialisation units Group A to a minimum value of 12 points and Specialisation units from Group B to bring the total value of additional units to at least 36 points (note that additional units are those units not included in the Certificate III qualification already held):

- MEM30219 Certificate III in Engineering – Mechanical Trade
- MEM31925 Certificate III in Engineering – Fabrication Trade
- MEM30619 Certificate III in Jewellery Manufacture
- MEM30719 Certificate III in Marine Craft Construction
- MEM30819 Certificate III in Locksmithing

- MEM30919 Certificate III in Boating Services
- MEM31019 Certificate III in Watch and Clock Service and Repair
- MEM31119 Certificate III in Engineering – Composites Trade
- MEM31219 Certificate III in Engineering – Industrial Electrician
- MEM31322 Certificate III in Refrigeration and Air Conditioning
- MEM31419 Certificate III in Engineering – Fixed and Mobile Plant Mechanic
- MEM31719 Certificate III in Engineering – Casting and Moulding Trade

Note: The holder of the MEM31519 Certificate III in Engineering – Toolmaking Trade qualification is only required to complete additional units of competency drawn from Group A to a minimum value of 12 points and Specialisation units drawn from Group B to bring the total value of additional points to 24 points.

There is a direct correlation between the points weighting requirements for classification and the points weighting requirements for qualifications.

Allocation of unit points weighting

The allocation of points weighting to MEM Manufacturing and Engineering Training Package units of competency is fundamentally based on the value of the competency in its application in the workplace.

The following statement, drawn from the *NMEICS Implementation Guide*, is used as the principal in setting unit points weightings:

“Not all skills are equally complex, so it is unrealistic to develop competency standards in which each competency unit is treated as if it represents an equal ‘amount’ of competence. The competency standards assign a number of points to each competency unit to indicate its relative weighting, or unit weight.

In assigning points to each competency unit, the industrial parties took in to account several factors, including:

- *The amount of formal and on-the-job training needed to demonstrate competency in the skill required*
- *The amount of background knowledge and experience needed*
- *The complexity of the skill”⁶*

These factors are viewed in the light of other information such as:

- Points allocated to similar units of competency
- The relative level/s at which the unit will be used
- The type of work where the unit is used
- The intended context for the application of the skill.

A further consideration used is the relative value of work as defined at a particular award classification level.

The points are not a simplistic reflection of the nominal hours of delivery.

See the *Appendix Volume* at **Appendix 1: MEM Units of Competency – Prerequisites and Points Weighting**

References

1. Manufacturing and Associated Industries and Occupations Award 2020, Fair Work Commission

⁶ NMEICS Implementation Guide, MERS ITAB, November 1999

2. National Metal and Engineering Industry Competency Standards Implementation Guide, MERS ITAB, November 1999. [National Metal and Engineering Industry Competency Standards Implementation Guide 1999.](#)

Implementation Information – Key Features

RTOs will need to implement a comprehensive training and assessment strategy for each qualification that they deliver.

This implementation information is provided to assist RTOs to develop their training and assessment strategies to meet industry and student needs. It includes information on:

- Choosing the appropriate qualification, skill set or unit of competency
- Choosing electives as required
- Supporting students
- Delivering the training
- Assessing students.

Mandatory entry requirements for qualifications

MEM80122 Graduate Diploma of Engineering is the only qualification containing mandatory entry requirements. This qualification has been developed to support high level supervisory technician and technical officer work across discipline areas including manufacture and maintenance.

The assumed skills and knowledge contained in this qualification are at a high level, and therefore mandatory entry requirements are essential.

Choosing the appropriate qualification

Where do you start? What qualification and competencies are suitable for this industry sector and this student?

This section will assist Training Package users to develop their training and assessment strategies, customise the program to meet industry sector and student needs, identify the most suitable qualification for each student and apply the volume of learning and amount of training required to comply with the Australian Qualifications Framework (AQF).

This section provides information about:

- Career pathways into and out of each qualification
- Qualifications, occupational outcomes and the AQF.

See the *Appendix Volume* at **Appendix 6: Career Pathways** for suggested pathways into and out of the MEM qualifications.

Industry sectors

All MEM Manufacturing and Engineering Training Package qualifications are designed to define an industry recognised skills profile related to work performed in metal, engineering, manufacturing and associated industries.

MEM Qualifications range from Certificate I in Engineering through to Graduate Diploma of Engineering.

Qualifications in this release (R5.0) have been developed for a range of sectors of the metal, engineering, manufacturing engineering and associated industries, including:

- Engineering/manufacturing (15 qualifications)
- Engineering (12 qualifications)
- Jewellery (4 qualifications)

- Marine Craft Construction (1 qualification)
- Locksmithing (1 qualification)
- Boating (4 qualifications)
- Watch and Clock Service and Repair (1 qualification)
- Textiles (1 qualification)

Qualifications and occupational outcomes

In early 2021, Skills Ministers agreed to a limited exemption to the *2012 Standards for Training Packages*, to allow a **Training Contract associated with an Australian Apprenticeship** to be mandatory for the delivery of specified engineering trade in MEM Release 2.1.

The exemption has been applied to 13 Certificate III engineering trade qualifications which must be undertaken through a Training Contract associated with an Australian Apprenticeship or through a formal skills and knowledge recognition process. **Those qualifications have been marked * in the section below.**

It should be noted that additional statements in the qualification descriptions do not mandate training pathways, and it remains the responsibility of individual States and Territories to determine arrangements for training delivery for the following qualifications:

- MEM20322 Certificate II in Boating Services
- MEM30422 Certificate III in Engineering – Electronic Trade
- MEM30522 Certificate III in Engineering – Technical
- MEM31622 Certificate III in Engineering – Patternmaking Trade
- MEM31822 Certificate III in Engineering – Textile Mechanic
- MEM40422 Certificate IV in Engineering Drafting
- MEM50222 Diploma of Engineering – Technical
- MEM60122 Advanced Diploma of Engineering.

In addition, information has been included in the description of some qualifications to provide contextual information about how qualifications were designed to be used and who they were designed for. This information does not mandate entry requirements.

For example, the qualification MEM20322 Certificate II in Boating Services states *‘This qualification is not suited and should not be used for people who are not employed in a boating services environment, nor should it be used for school students unless they are formally engaged in a traineeship in accordance with the Australian Apprenticeships policy.’*

Engineering/manufacturing

These qualifications are designed for engineering/manufacturing employees in metal, engineering, manufacturing and associated industries employed in a wide range of workplaces where production personnel are employed, including manufacturing plants, factories, foundries, distribution and warehousing sites and the like. Job roles could be in the fields of production, machine processing, casting and moulding, surface finishing, stores, distribution and warehousing.

MEM10119 Certificate I in Engineering

This qualification is designed as an entry-level qualification to assist prospective workers entering employment as engineering/manufacturing employees in metal, engineering, manufacturing and associated industries.

Achievement of the *MEM10119 Certificate I in Engineering* will provide a set of competencies that are intended to open pathways into employment and/or further study in the engineering/manufacturing industry.

MEM20219 Certificate II in Engineering – Production Technology

The skills associated with this qualification are intended to apply to a wide range of engineering/manufacturing work applications, including production, distribution, stores and warehousing. It defines the skills and knowledge required for a person to be responsible for the quality of their own work, work from complex instructions and procedures, coordinate work in a team environment or work individually under general supervision and assist in the provision of on-the-job training of other workers.

This qualification must not be used for school students unless they are formally engaged in a traineeship in accordance with the Australian Apprenticeships policy.

MEM20422 Certificate II in Engineering Pathways

This qualification is designed to develop trade-like skills but is not intended to develop trade-level skills. The focus is on using engineering tools and equipment to produce or modify objects.

Achievement of the *MEM20422 Certificate II in Engineering Pathways* will provide broad-based underpinning skills and knowledge in a range of engineering and manufacturing tasks which will enhance the graduates' entry-level employment prospects for apprenticeships, traineeships or general employment in an engineering-related workplace.

This qualification applies to a learning and assessment environment where access to structured on-the-job learning in a workplace may not be available. This qualification is intended for simulated work environments and is suitable for delivery to school students.

MEM30119 Certificate III in Engineering – Production Systems

The Certificate III in Engineering – Production Systems defines the skills associated with a wide range of engineering/manufacturing work applications including production, distribution, stores and warehousing. It defines the skills and knowledge required for a person to understand and apply quality control techniques, exercise good interpersonal and communications skills, work from complex instructions and procedures, exercise discretion within the scope of responsibility, perform work under limited supervision either individually or in a team environment, be responsible for assuring the quality of their own work, perform work which, while primarily involving the skills of the employee's qualification, is incidental or peripheral to the primary task and facilitate the completion of the whole task, inspect products and/or materials for conformity with established operational standards and assists in the provision of on-the-job training of other workers..

This qualification must not be used for school students unless they are formally engaged in a traineeship in accordance with the Australian Apprenticeships policy.

MEM30522 Certificate III in Engineering – Technical

This qualification defines the skills and knowledge required of an Engineering Technician within metal, engineering, manufacturing and associated industries.

The skills associated with this qualification are intended to apply to a wide range of engineering work including undertaking production planning, scheduling, work studies, estimating material requirements, inspection, quality control, laboratory procedures, supplier evaluation, non-destructive testing, metallurgy, drafting, assisting in design and development work of product and processes and other technical tasks.

This qualification is designed to provide an entry pathway to technician work in industry and is available through a Training Contract associated with an Australian Traineeship or through formal skills and knowledge recognition.

MEM40422 Certificate IV in Engineering Drafting

This qualification provides the skills and knowledge required of a detail draftsman producing specialist engineering drawings within metal, engineering, manufacturing and associated industries.

The skills associated with this qualification are intended to apply to the production of engineering detail drawings as applied in manufacturing, engineering and related industry sectors. Graduates would typically be employed in mechanical and machine construction and maintenance, steel fabrication, other fabrication services and assembly, mechanical services, electrical services, fluid power, piping assembly and related industrial applications.

This qualification should not be used for VET in Schools unless the students are formally engaged in a traineeship in accordance with the Australian Apprenticeships policy.

MEM50222 Diploma of Engineering – Technical

This qualification defines the skills and knowledge required of an Engineering Technician within metal, engineering, manufacturing and associated industries.

The skills associated with this qualification are intended to apply to a wide range of technical engineering discipline areas including mechanical, mechatronics, manufacturing, maintenance, and heating ventilation air-conditioning, engineering drafting and refrigeration and air conditioning in manufacturing, engineering and related industries. The qualification provides the opportunity to develop theoretical knowledge and technical skills in either a specific discipline area or across a broad field of technical work and learning.

This qualification should not be used for VET in Schools unless the students are formally engaged in a traineeship in accordance with the Australian Apprenticeships policy.

MEM50425 Diploma of Engineering - Non-Destructive Testing

This qualification provides the skills and knowledge to work as a non-destructive testing (NDT) technician in manufacturing, engineering and associated industries. The qualification covers theory and practice for major NDT test techniques, materials skills and knowledge and general support skills required to work as an NDT technician.

NDT units in this qualification have been updated to incorporate references to the latest ISO technical standards or equivalent and to AS ISO 9712 NDT- Qualification and certification of personnel. Completion of this qualification may contribute to industry certification against these standards for example Australian Institute of Non-Destructive Testing (AINDT) certification at Levels 1, 2 or 3. It should be noted that AINDT has additional requirements for certification beyond the skills and knowledge gained through formal vocational training.

This qualification should not be used for VET in Schools unless the students are formally engaged in a traineeship in accordance with the Australian Apprenticeships policy.

MEM50522 Diploma of Engineering - Materials

This qualification provides technical knowledge and skills related to ferrous and non-ferrous metals, polymers, composites, and ceramics and their application in manufacturing and engineering processes.

Completion of this qualification will enable a person to work in a variety of roles requiring industrial materials knowledge and skill including working as part of a multi-disciplinary design team, supervising the processing of materials, providing expert materials supervision to materials intensive manufacturing processes, and technical sales roles requiring specialist materials knowledge.

This qualification should not be used for VET in Schools unless the students are formally engaged in a traineeship in accordance with the Australian Apprenticeships policy.

MEM50622 Diploma of Engineering – Prototyping

This qualification provides the skills and knowledge to work as a technician either individually or as a member of a team supporting prototyping in large engineering or manufacturing projects.

The qualification covers skills and knowledge in engineering materials, engineering systems, design and planning processes, and mechanical, mechatronic, and production engineering.

This qualification should not be used for VET in Schools unless the students are formally engaged in a traineeship in accordance with the Australian Apprenticeships policy.

MEM50722 Diploma of Engineering - Planning

This qualification provides knowledge and skills in technical planning for manufacturing and engineering operations, including planning, scheduling and organising materials supply, equipment utilisation, logistics, utilities and services for manufacturing and engineering.

Completion of this qualification will enable a person to work in a variety of technical supervisory and managerial roles requiring manufacturing and engineering related planning skills and knowledge including operations management, production planning, estimating, scheduling, and logistics support either individually or as part of a multi-disciplinary team.

This qualification should not be used for VET in Schools unless the students are formally engaged in a traineeship in accordance with the Australian Apprenticeships policy.

MEM50822 Diploma of Applied Technologies

This qualification provides the skill and knowledge required to apply modern cloud and locally based digitisation strategies to manufacturing and engineering workplaces and enterprises in their supply chain. The qualification includes strategies for networking of machines and sites, automation, digital data collection and processing, and other systems and techniques required to implement the cyber-physical systems and technologies often referred to under the general terms of Industry 4.0 and Industry 5.0.

The qualification includes Industry 4.0 specific units of competency and units supplying supporting skills and knowledge. The qualification is suitable for both existing employees and new entrants to manufacturing and engineering organisations or supporting service organisations.

Completion of this qualification will enable a person to work as in a variety of Industry 4.0 related roles including as a lead or 'champion' for Industry 4.0 implementation in an organisation or in more direct roles implementing automation, networking, data handling and other digital systems in an enterprise individually or as part of a multidisciplinary team.

This qualification should not be used for VET in Schools unless the students are formally engaged in a traineeship in accordance with the Australian Apprenticeships policy.

MEM60122 Advanced Diploma of Engineering

This qualification defines skills and knowledge required to undertake para-professional and advanced technician work across a range of discipline areas including mechanical, mechatronics, manufacturing, maintenance, engineering drafting and heating ventilation air-conditioning and refrigeration in manufacturing and engineering. The qualification provides the opportunity to develop theoretical knowledge and technical skills in either a specific discipline area or across a broad field of para-professional and technical work and learning.

This qualification should not be used for VET in Schools unless the students are formally engaged in a traineeship in accordance with the Australian Apprenticeships policy.

MEM60322 Advanced Diploma of Engineering - Planning

This qualification provides knowledge and skills in advanced technical planning for manufacturing and engineering operations, including planning, scheduling and organising materials supply, equipment utilisation, logistics, utilities, and services for manufacturing and engineering.

Completion of this qualification will enable a person to work as in a variety of roles including supervisory and managerial operations roles, production planning, estimating, scheduling, and logistics support either individually or as part of a multidisciplinary team.

This qualification should not be used for VET in Schools unless the students are formally engaged in a traineeship in accordance with the Australian Apprenticeships policy.

MEM80125 Graduate Diploma of Engineering

This qualification defines the skills and knowledge required to undertake high level supervisory technician and technical officer work across a range of discipline areas including mechanical, mechatronics, manufacturing, maintenance, and heating ventilation air-conditioning and refrigeration (HVACR) in manufacturing and engineering. The qualification provides the opportunity to gain advanced theoretical knowledge and technical skills in either a specific discipline area or across a broad field of technical work and learning.

Engineering Trade

**MEM30219 Certificate III in Engineering – Mechanical Trade*

This qualification defines the entry level trade competencies required for an engineering tradesperson – mechanical. Mechanical tradespersons are employed in a wide variety of industry sectors, including workshops, jobbing environments, maintenance and the like. Job roles can include working as fitters, machinists, fitter/machinists and as maintenance mechanics.

This qualification can be packaged to suit specific trade specialisations, including:

- Machining
- Fitting
- Fitting/machining.

There are no other descriptors permitted for use with this qualification.

This qualification is required to be undertaken through a Training Contract associated with an Australian Apprenticeship or through a formal skills and knowledge recognition process.

**MEM31925 Certificate III in Engineering – Fabrication Trade*

This qualification defines the entry level trade competencies required for an engineering tradesperson – fabrication. Fabrication tradespersons are employed in production and jobbing environments, light and heavy fabrication workshops and the like. Job roles can include working as boilermakers, welders, boilermaker/welders, sheetmetal workers, surface finishers and blacksmiths.

This qualification can be packaged to suit specific trade specialisations, including:

- Boilermaking
- Welding
- Boilermaking/welding
- Sheetmetal working
- Blacksmithing
- Surface finishing.

There are no other descriptors permitted for use with this qualification.

This qualification is required to be undertaken through a Training Contract associated with an Australian Apprenticeship or through a formal skills and knowledge recognition process.

MEM30422 Certificate III in Engineering - Electronic Trade

This qualification defines the skills and knowledge required of an Electronic Tradesperson within metal, engineering, manufacturing and associated industries.

The skills associated with this qualification are intended to apply to a wide range of electronic work including installing, maintaining and repairing electronic equipment and systems including telecommunication, radio and television, communication and information processing.

This qualification **should** be undertaken through a Training Contract associated with an Australian Apprenticeship or through a formal skills and knowledge recognition process.

**MEM31119 Certificate III in Engineering – Composites Trade*

This qualification defines the entry level trade competencies required for a composite tradesperson carrying out a wide range of work, including laying up composites, selecting, handling, using and storing materials and components, undertaking repairs and modifications, adjusting resin chemicals and selecting and using joining techniques. Composite tradespersons can be employed in manufacturing, workshops, repair facilities, marine environments, defence or government facilities, including aerospace.

This qualification is required to be undertaken through a Training Contract associated with an Australian Apprenticeship or through a formal skills and knowledge recognition process.

**MEM31219 Certificate III in Engineering – Industrial Electrician*

This qualification defines the entry level trade competencies required to select, set up and install, test, fault-find, repair and maintain electrical systems and equipment in buildings and industrial environments, including oil/gas installations, mine sites, processing plants and the like. The qualification covers the Essential Performance Capabilities (EPCs) as required by electrical regulators and includes a capstone assessment.

This qualification is required to be undertaken through a Training Contract associated with an Australian Apprenticeship or through a formal skills and knowledge recognition process.

**MEM31322 Certificate III in Refrigeration and Air Conditioning*

This qualification defines the entry level trade competencies required for a heating, ventilation, air conditioning and refrigeration (HVACR) tradesperson. Refrigeration and air conditioning mechanics can be employed in industrial, domestic and commercial environments, workshops, as well as maintenance environments. This qualification was previously covered by completing qualification MEM31319 Certificate III in Refrigeration and Air Conditioning.

This qualification is required to be undertaken through a Training Contract associated with an Australian Apprenticeship or through a formal skills and knowledge recognition process.

**MEM31419 Certificate III in Engineering – Fixed and Mobile Plant Mechanic*

This qualification defines the entry level trade competencies required for an engineering tradesperson – mechanical specialising in diesel fitting and plant mechanics carrying out a wide range of work including manufacturing, assembly and commissioning of mobile and stationary plant, servicing, diagnosis and rectification of faults, and preventative maintenance. Diesel fitters can be employed in heavy vehicle and earthmoving workshops, mines, maintenance environments and the like. This qualification was previously covered by completing *qualification MEM30205 Certificate III in Engineering – Mechanical Trade with units associated with the specialisation of Fixed and Mobile Plant Mechanic*.

This qualification is required to be undertaken through a Training Contract associated with an Australian Apprenticeship or through a formal skills and knowledge recognition process.

**MEM31519 Certificate III in Engineering – Toolmaking Trade*

This qualification defines the entry level trade competencies required for an engineering tradesperson – mechanical specialising in toolmaking carrying out a wide range of work, including the manufacture, modification and maintenance of tooling. This qualification was previously covered by completing qualification *MEM30205 Certificate III in Engineering – Mechanical Trade with units associated with the specialisation of Toolmaking*.

This qualification is required to be undertaken through a Training Contract associated with an Australian Apprenticeship or through a formal skills and knowledge recognition process.

MEM31622 Certificate III in Engineering – Patternmaking Trade

This qualification defines the skills and knowledge required of an Engineering Tradesperson - Patternmaking within the metal, engineering, manufacturing and associated industries. The skills associated with this qualification are intended to apply to a wide range of patternmaking work including constructing full-size engineering model out of timber. Patternmakers also produce visual models, experimental models and models for the manufacture of prototype developmental products.

This qualification **should** be undertaken through a Training Contract associated with an Australian Apprenticeship or through a formal skills and knowledge recognition process.

**MEM31719 Certificate III in Engineering – Casting and Moulding Trade*

This qualification defines the trade-level competencies required for an engineering tradesperson – fabrication specialising in casting and moulding carrying out a wide range of work, including producing sand moulds by hand or use moulding machines, pour and trim castings and operate and monitor melting furnaces. Casting and moulding tradespersons are employed primarily in foundries. This qualification was previously covered by completing qualification *MEM30305 Certificate III in Engineering – Fabrication Trade with the specialisation of Casting and Moulding*.

This qualification is required to be undertaken through a Training Contract associated with an Australian Apprenticeship or through a formal skills and knowledge recognition process.

MEM40119 Certificate IV in Engineering

This qualification defines the trade level competencies required by a higher engineering tradesperson carrying out a wide range of engineering work. Engineering tradespersons who have completed the qualification can be employed as advanced mechanical maintenance tradespersons, pressure welders, advanced fabrication structural tradespersons, fluid power systems tradespersons, instrumentation tradespersons, computer-aided manufacturing (CAM) programmers, advanced toolmaking tradespersons and other higher engineering trades.

The qualification is available for direct entry, or for already trade qualified students who should receive appropriate credit.

While there is no qualification entry requirement, it is assumed that the learner is either already a tradesperson with access to structured on and off-the-job training or is an apprentice under an Australian Apprenticeship arrangement. It must not be used as a pre-employment or pre-apprenticeship program. It is also designed for tradespersons who can gain credit towards this qualification for relevant competencies gained from a relevant MEM Manufacturing and Engineering Training Package Certificate III qualification

It must not be delivered through institutional only delivery.

MEM50119 Diploma of Engineering – Advanced Trade

This qualification defines the trade competencies required by an advanced engineering

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tradesperson - Level II within metal, engineering, manufacturing and associated industries or at equivalent levels in other industries where engineering tradespersons work. Advanced engineering tradespersons who have completed the qualification can be employed as welding inspectors, welding supervisors, instrumentation and control tradespersons, advanced engineering mechanical tradespersons and mechatronics tradespersons and other advanced trades.

In some jurisdictions, this qualification can be undertaken through an apprenticeship training contract under Australian Apprenticeships policy. It can be achieved through the formal trade recognition process. It should not be used as a pre-employment or pre-apprenticeship program.

It must not be delivered through institutional only delivery.

It is also designed for tradespersons who can gain credit towards this qualification for relevant competencies gained from relevant MEM Manufacturing and Engineering Training Package Certificate III and Certificate IV qualifications.

Jewellery

****MEM30619 Certificate III in Jewellery Manufacture***

This qualification provides trade-level competencies for a jewellery manufacture tradesperson carrying out a wide range of work, including undertaking designing and making jewellery and small objects using a wide range of materials including metals, stones, woods, plastics and fibres. Jewellery manufacture tradespersons are employed in small, medium and large manufacturing firms.

This qualification is required to be undertaken through a Training Contract associated with an Australian Apprenticeship or through a formal skills and knowledge recognition process.

MEM40322 Certificate IV in Advanced Jewellery Manufacture

This qualification provides advanced jewellery manufacturing skills and knowledge required by a tradesperson within a jewellery industry, applying to a wide range of jewellery manufacture work including undertaking designing and making jewellery and small objects using a wide range of materials including metals, stones, woods, plastics and fibres. Jewellery manufacture tradespersons are employed in small, medium and large manufacturing firms.

It is assumed that the learner is either already a tradesperson with access to structured on and off-the-job training or is an apprentice under an Australian Apprenticeship arrangement.

MEM50322 Diploma of Jewellery and Object Design

This qualification provides the skills and knowledge required to apply design processes and technical production skills to the design and manufacture of custom-made jewellery and objects. It is typically used to develop skills and knowledge in jewellery enterprises. Graduates of this qualification will typically apply skills and knowledge to specialist jewellery and object design briefs, including heritage jewellery, theatre and film commissions, exhibitions and churchware, as well one-off individual client briefs.

MEM60222 Advanced Diploma of Jewellery and Object Design

This qualification provides the skills and knowledge required to develop jewellery and object design solutions that require a wide range of specialised technical and creative skills. Design solutions reflect consideration of aesthetics, function, production techniques, material characteristics, and marketability of jewellery and objects. Graduates of this qualification will typically apply skills and knowledge to specialist jewellery and object design briefs, including

heritage jewellery, theatre and film commissions, exhibitions and churchware, as well one-off individual client briefs.

Marine Craft Construction

**MEM30719 Certificate III in Marine Craft Construction*

This qualification provides trade-level competencies for a marine craft construction tradesperson carrying out a wide range of work, including undertaking manufacturing and repairs of boats in fibre-reinforced plastics, timber and metal and marine/boat yard operations, fitting out of internal and external components of vessels and installation of engineering drive systems. Marine craft construction tradespersons are employed as shipwrights and boat builders in a wide variety of industry sectors, including workshops, jobbing environments, maintenance and the like including the manufacture and repair of boats and marine craft in fibre-reinforced plastics, timber and metal and marine/boat yard operations, fitting out of internal and external components of vessels and installation of engineering drive systems.

This qualification is required to be undertaken through a Training Contract associated with an Australian Apprenticeship or through a formal skills and knowledge recognition process.

Locksmithing

**MEM30819 Certificate III in Locksmithing*

This qualification provides trade-level competencies for a locksmithing tradesperson carrying out a wide range of work, including undertaking the repair, manufacture and installation of locking and security systems. Locksmiths are employed in domestic, automotive and industrial applications.

This qualification is required to be undertaken through a Training Contract associated with an Australian Apprenticeship or through a formal skills and knowledge recognition process.

Boating

MEM10222 Certificate I in Boating Services

This qualification provides entry-level skills and knowledge to assist workers entering employment within the boating services industry and includes the ability to work safely on marine craft and follow work procedures to maintain the marine environment.

MEM20322 Certificate II in Boating Services

This qualification provides employees the skills and knowledge required of an employee working within the boating services industry and includes the ability to work safely on marine craft and follow work procedures to maintain the marine environment. Employees will engage in a wide range of boating services work including the general maintenance of structures and hulls.

**MEM30919 Certificate III in Boating Services*

This qualification provides level competencies required by an employee who works within boating services industry carrying out a wide range of boating services work, including the general maintenance of structures, hulls, engines and on board mechanical work and includes maintaining the marine environment. They are employed in and around marinas and slipways, and in boat and ship building, maintenance and repair facilities.

This qualification is required to be undertaken through a Training Contract associated with an Australian Apprenticeship or through a formal skills and knowledge recognition process.

MEM40222 Certificate IV in Boating Services

This qualification provides the advanced skills and knowledge required of an employee who works within boating services industry.

The advanced skills associated with this qualification are intended to apply to a wide range of boating services work including the general maintenance of structures, hulls, engines and on board mechanical work. It also includes maintaining the marine environment. They are employed in and around marinas and slipways, and in boat and ship building, maintenance and repair facilities.

It is assumed that the learner is either already qualified with access to structured on and off-the-job training or is a trainee under an Australian Traineeship arrangement. It should not be used as a pre-employment or pre-apprenticeship program.

Watch Clock Service and Repair

**MEM31019 Certificate III in Watch and Clock Service and Repair*

This qualification provides trade-level competencies required by a watch and clock service and repair tradesperson carrying out a wide range of work, including undertaking the disassembly, assembly, installation, adjustment, replacement, modification, testing, fault finding, and maintenance and service of watch and clock cases, mechanisms and other relevant components. Watch and clock service and repair tradespersons are employed in a variety of watch and clock service related businesses, including retail stores, manufacturer service centres and specialist watch and clock service repair businesses.

This qualification is required to be undertaken through a Training Contract associated with an Australian Apprenticeship or through a formal skills and knowledge recognition process.

Textiles

MEM31822 Certificate III in Engineering – Textile Mechanic

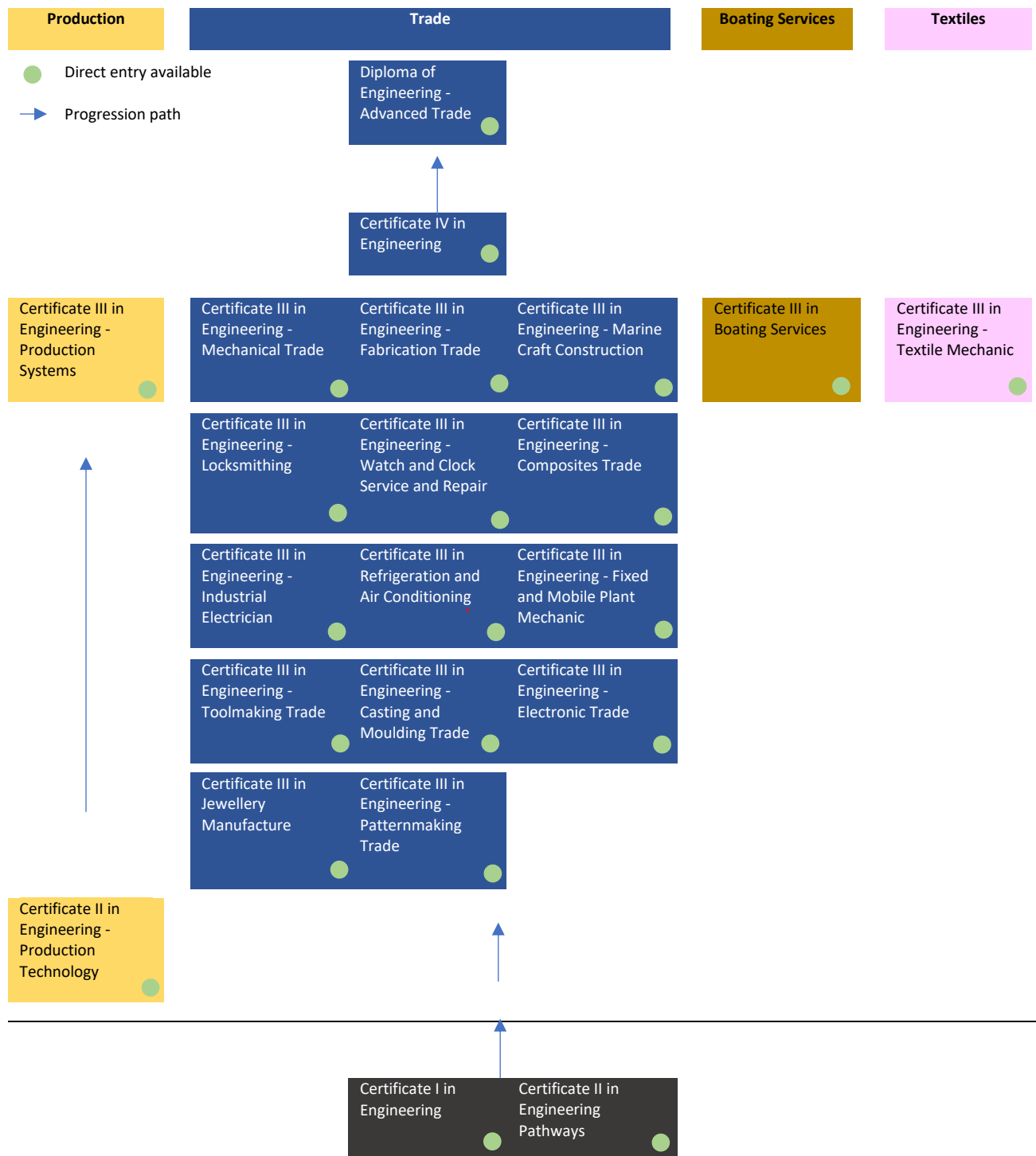
This qualification defines the skills and knowledge required of an Engineering Tradesperson – Textile Mechanic within textile related industries.

The skills associated with this qualification are intended to apply to a wide range of textile mechanic trade work, including setting up, adjusting and maintaining carding, footwear manufacture, knitting, sewing, spinning, tufting, or weaving machinery.

This qualification **should** be undertaken through a Training Contract associated with an Australian Apprenticeship or through a formal skills and knowledge recognition process.

Refer to the *Appendix Volume* at **Appendix 5: AQF Certificate level descriptors and Qualification descriptors** for more detail on qualifications

Manufacturing and Engineering Training Package



Qualification Achievement

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 ways of achieving the respective qualifications may include:

- Assessment only
- Combination of on-the-job and institution-based training
- Institution-based training programs
- On-the-job training

Some qualifications mandate ways of achieving qualifications, for example, through a training Contract and care should be taken to ensure that delivery is consistent with the qualification requirements.

Skills recognition pathways including Australian Apprenticeships

The MEM Manufacturing and Engineering Training Package provides national qualification outcomes based on recognition of competency achievement. These qualifications can generally be accessed through Training Contracts associated with an Australian Apprenticeship.

Following an agreement by Skills Ministers to a limited exemption to the *2012 Standards for Training Packages*, Training Contract pathways are required for the delivery of specified trade qualifications.

This exemption applies at the qualification level.

The exemption has been applied to 13 Certificate III Manufacturing and Engineering trade qualifications where a Training Contract pathway is required. These qualifications must be undertaken through a **Training Contract associated with an Australian Apprenticeship or through a formal skills and knowledge recognition process**. Those qualifications are:

- MEM30219 Certificate III in Engineering – Mechanical Trade
- **MEM31925** Certificate III in Engineering – Fabrication Trade
- MEM30619 Certificate III in Jewellery Manufacture
- MEM30719 Certificate III in Marine Craft Construction
- MEM30819 Certificate III in Locksmithing
- MEM30919 Certificate III in Boating Services
- MEM31019 Certificate III in Watch and Clock Service and Repair
- MEM31119 Certificate III in Engineering – Composites Trade
- MEM31219 Certificate III in Engineering – Industrial Electrician
- MEM31322 Certificate III in Refrigeration and Air Conditioning
- MEM31419 Certificate III in Engineering – Fixed and Mobile Plant Mechanic
- MEM31519 Certificate III in Engineering – Toolmaking Trade
- MEM31719 Certificate III in Engineering – Casting and Moulding Trade

The requirement to undertake these qualifications via a Training Contract associated with an Australian Apprenticeship or through a formal skills and knowledge recognition process does not apply where a person has already undertaken a related engineering trade Certificate III via an apprenticeship or through a formal recognition of prior learning process. Additionally, it does not apply to other students and skilled migrants who have successfully undergone an approved trade skills recognition assessment

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

Pathways to Certificate IV in Engineering and Diploma of Engineering – Advanced Trade

It is recommended that the following qualifications be undertaken through a Training Contract associated with an Australian Apprenticeship or through a formal skills and knowledge recognition process:

- MEM40119 Certificate IV in Engineering
- MEM50119 Diploma of Engineering – Advanced Trade

The minimum requirements for the above qualifications can also be met by holders of one of the following qualifications or its equivalent subject to meeting the additional requirements set out below:

- MEM30219 Certificate III in Engineering – Mechanical Trade
- **MEM31925** Certificate III in Engineering – Fabrication Trade
- MEM30619 Certificate III in Jewellery Manufacture
- MEM30719 Certificate III in Marine Craft Construction
- MEM30819 Certificate III in Locksmithing
- MEM30919 Certificate III in Boating Services
- MEM31019 Certificate III in Watch and Clock Service and Repair
- MEM31119 Certificate III in Engineering – Composites Trade
- MEM31219 Certificate III in Engineering – Industrial Electrician
- MEM31322 Certificate III in Refrigeration and Air Conditioning
- MEM31419 Certificate III in Engineering – Fixed and Mobile Plant Mechanic
- MEM31719 Certificate III in Engineering – Casting and Moulding Trade

MEM40119 Certificate IV in Engineering – Requires holders of the above qualifications, or equivalent qualifications, to complete additional units of competency drawn from Specialisation units Group A to a minimum value of 12 points and Specialisation units from Group B to bring the total value of additional units to at least 36 points (note that additional units are those units not included in the Certificate III qualification already held)

- MEM31519 Certificate III in Engineering – Toolmaking Trade
***Note:** The holder of the MEM31519 Certificate III in Engineering – Toolmaking Trade qualification is only required to complete additional units of competency drawn from Group A to a minimum value of 12 points and Specialisation units drawn from Group B to bring the total value of additional points to 24 points.*

MEM50119 Diploma of Engineering - Advanced Trade – Requires holders to complete the core units of competency as specified for this Diploma as well as additional Specialisation units of competency drawn from Specialisation units Group A to a maximum value of 24 points and Specialisation units in Group B and Group C (maximum of 12 points from Group B) to bring the total value of additional units to at least 44 points (note that additional units are those units not included in the Certificate III qualification already held)

***Note:** The holder of the MEM31519 Certificate III in Engineering – Toolmaking Trade qualification is only required to complete the Core units of competency specified for this Diploma as well as additional specialisation units of competency from Group A to the total value of 12 points and specialisation units in Group B and Group C (maximum of 12 points from Group B to bring the total value of additional units to 44 points.*

In addition to the above, the minimum requirements for this qualification can also be met by holders of the MEM40119 Certificate IV in Engineering or equivalent, subject to the completion of the Core units of competency as specified above as well as additional Specialisation units drawn from Specialisation units Group A to bring the total value of additional units to at least 8 points. Where higher level Core units (i.e. those required beyond Certificate IV) were included in the Certificate IV as Specialisation units then additional Specialisation units from Group C to the same points value will also need to be completed.

Pathways to Graduate Diploma of Engineering

MEM80125 Graduate Diploma of Engineering – Requires that learners have:

- an Advanced Diploma of Engineering or a Diploma of Engineering, or a
- relevant Certificate IV or Certificate III together with significant relevant vocational practice in an engineering related role, or a
- Bachelor Degree; or other higher education qualification, with relevant vocational practice in an engineering related role.

Customisation of qualifications

All qualifications in the MEM Manufacturing 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 customisation.

Qualification titles – specialisations and descriptors

Specialisations

Some MEM qualifications allow for specialisations to be added to the qualification title to illustrate a skills profile or defined occupation. This can only be done where the qualification specifies detail for specialisations in the packaging rules. Examples of qualifications that allow these specialisations are the Certificate III in Engineering – Mechanical Trade and Certificate III in Engineering Fabrication Trade. In each qualification the specialisation must be drawn from the approved list provided in the packaging rules and must be in brackets as shown in the following examples.

- **Example 1**
Certificate III in Engineering – Fabrication Trade (Surface Finishing)
- **Example 2**
Certificate III in Engineering – Mechanical Trade (Fitting)

Note: The addition of a specialisation to a qualification must not change the qualification's formal title or unique national code.

Descriptors

A pathway descriptor may be added to any qualification. The Certificate IV in Engineering and Diploma of Engineering – Advanced Trade qualifications have approved descriptors outlined in the packaging rules of each qualification. There are no specific requirements associated with the use of the listed descriptors other than their use should reflect the choice of units of competency in the qualification and that they should reflect the nature of the occupation or the function. The descriptor must be below the formal title of the qualification as shown in the following examples.

- **Example 1**
Certificate IV in Engineering
Achieved through Fluid Power electives
- **Example 2**
Certificate II in Engineering - Production Technology
Achieved through Production Machine Operation electives

Note: The addition of a descriptor to a qualification must not change the qualification's formal title or unique national code.

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 Machine and Process Operations field contains units that may be suitable for the qualification in the above example focussing on Production Machine Operation.

Note that fields do not set up barriers to accessing the various qualifications. Units may be drawn from a number of relevant fields to form a qualification as long as they are available for selection in the qualification packaging rules.

Summary of approved specialisations and descriptors for qualification titles

Code	Title	Approved specialisations and descriptors
MEM10119	Certificate I in Engineering	There are no approved specialisations or descriptors for this qualification
MEM10222	Certificate I in Boating Services	There are no approved specialisations or descriptors for this qualification
MEM20219	Certificate II in Engineering - Production Technology	There are no approved specialisations or descriptors for this qualification
MEM20322	Certificate II in Boating Services	There are no approved specialisations or descriptors for this qualification
MEM20422	Certificate II in Engineering Pathways	There are no approved specialisations or descriptors for this qualification
MEM30119	Certificate III in Engineering - Production Systems	There are no specialisations or approved descriptors for this qualification
MEM30219	Certificate III in Engineering - Mechanical Trade	Specialisations include: Machining; Fitting; Fitting/Machining
MEM31925	Certificate III in Engineering - Fabrication Trade	Specialisations include: Boilermaking; Welding; Boilermaking/welding; Sheetmetal working; Blacksmithing; Surface Finishing
MEM30522	Certificate III in Engineering - Technical	There are no approved specialisations or descriptors for this qualification
MEM30422	Certificate III in Engineering - Electronic Trade	There are no approved specialisations or descriptors for this qualification
MEM30619	Certificate III in Jewellery Manufacture	There are no approved specialisations or descriptors for this qualification
MEM30719	Certificate III in Marine Craft Construction	There are no approved specialisations or descriptors for this qualification
MEM30819	Certificate III in Locksmithing	There are no approved specialisations or descriptors for this qualification
MEM30919	Certificate III in Boating Services	There are no approved specialisations or descriptors for this qualification
MEM31019	Certificate III in Watch and Clock Service and Repair	There are no approved specialisations or descriptors for this qualification
MEM31119	Certificate III in Engineering - Composites Trade	There are no approved specialisations or descriptors for this qualification
MEM31219	Certificate III in Engineering – Industrial Electrician	There are no approved specialisations or descriptors for this qualification
MEM31322	Certificate III in Refrigeration and Air Conditioning	There are no approved specialisations or descriptors for this qualification
MEM31419	Certificate III in Engineering – Fixed and Mobile Plant Mechanic	There are no approved specialisations or descriptors for this qualification
MEM31519	Certificate III in Engineering - Toolmaking Trade	There are no approved specialisations or descriptors for this qualification
MEM31622	Certificate III in Engineering - Patternmaking Trade	There are no approved specialisations or descriptors for this qualification
MEM31719	Certificate III in Engineering – Casting and Moulding Trade	There are no approved specialisations or descriptors for this qualification
MEM31822	Certificate III in Engineering – Textile Mechanic	There are no approved specialisations or descriptors for this qualification
MEM40119	Certificate IV in Engineering	Approved descriptors include: Casting and Moulding CNC Programming Fluid Power Boilermaking Instrumentation Maintenance Fixed and Mobile Plant Mechanic Mechatronics Patternmaking Refrigeration and Air Conditioning Marine Craft Construction Robotics Sheet Metal Toolmaking Watch and Clock Service and Repair Welding

MEM40222	Certificate IV in Boating Services	There are no approved specialisations or descriptors for this qualification
MEM40322	Certificate IV in Advanced Jewellery Manufacture	There are no approved specialisations or descriptors for this qualification
MEM40422	Certificate IV in Engineering Drafting	There are no approved specialisations or descriptors for this qualification
MEM50119	Diploma of Engineering Advanced Trade	Approved descriptors include: Casting and Moulding; CNC programming; Fluid Power; Heavy Fabrication; Instrumentation; Maintenance; Marine Electronics; Mechatronics; Metrology; Non-Destructive Testing; Patternmaking; Refrigeration and Airconditioning, Robotics, Toolmaking; Watch and Clock Service and Repair; Welding; Blacksmithing; Surface Finishing
MEM50222	Diploma of Engineering - Technical	Approved descriptors include: Mechanical; Mechatronics; Manufacturing; Maintenance; Drafting
MEM50322	Diploma of Jewellery and Object Design	There are no approved specialisations or descriptors for this qualification
MEM50425	Diploma of EngineeringNon--Destructive Testing	There are no approved specialisations or descriptors for this qualification
MEM50522	Diploma of Engineering - Materials	There are no approved specialisations or descriptors for this qualification
MEM50622	Diploma of Engineering – Prototyping	There are no approved specialisations or descriptors for this qualification
MEM50722	Diploma of Engineering – Planning	There are no approved specialisations or descriptors for this qualification
MEM50822	Diploma of Applied Technologies	There are no approved specialisations or descriptors for this qualification
MEM60122	Advanced Diploma of Engineering	Approved descriptors include: Mechanical; Mechatronics; Manufacturing; Maintenance; Drafting
MEM60222	Advanced Diploma of Jewellery and Object Design	There are no approved specialisations or descriptors for this qualification
MEM60322	Advanced Diploma of Engineering - Planning	There are no approved specialisations or descriptors for this qualification
MEM80125	Graduate Diploma of Engineering	There are no approved specialisations or descriptors for this qualification

Assessment guidelines

Use of assessment tools

Assessment tools provide a means of collecting the evidence that assessors use in making judgments about whether candidates have achieved competency. There is no set format or process for the design, production or development of assessment tools.

Using prepared assessment tools

If using prepared assessment tools, assessors should ensure these relate to the current version of the relevant unit of competency. The current unit of competency can be checked on

<http://training.gov.au>

Developing assessment tools

When developing assessment tools, assessors must ensure that they:

- Are benchmarked against the relevant unit or units of competency
- Meet the assessment requirements of the National VET Regulator as set out in the *Standards for Registered Training Organisations (RTOs) 2015*.

Key references for assessors developing assessment tools:

- [TAE Training and Education Training Package](#)
- [ASQA's Guide to developing assessment tools](#).

Compliance with the principles of assessment

All assessments of competency against the MEM Manufacturing and Engineering Training Package carried out by RTOs are required to demonstrate compliance with the principles of assessment:

These principles must be addressed in the:

- Design, establishment and management of the assessment system for this Training Package
- Development of assessment tools
- Conduct of assessment.

The principles of assessment

Fairness

The individual learner's needs are considered in the assessment process.

Where appropriate, reasonable adjustments are applied by the RTO to consider the individual learner's needs.

The RTO informs the learner about the assessment process and provides the learner with the opportunity to challenge the result of the assessment and be reassessed if necessary.

Flexibility

Assessment is flexible to the individual learner by:

- Reflecting the learner's needs
- Assessing competencies held by the learner no matter how or where they have been acquired
- Drawing from a range of assessment methods and using those that are appropriate to the context, the unit of competency and associated assessment requirements, and the individual.

Validity

Any assessment decision of the RTO is justified, based on the evidence of performance of the individual learner.

Validity requires:

- Assessment against the unit/s of competency and the associated assessment requirements covers the broad range of skills and knowledge that are essential to competent performance
- Assessment of knowledge and skills is integrated with their practical application
- Assessment to be based on evidence that demonstrates that a learner could demonstrate these skills and knowledge in other similar situations
- Judgement of competence is based on evidence of learner performance that is aligned to the unit/s of competency and associated assessment requirements.

Reliability

Evidence presented for assessment is consistently interpreted and assessment results are comparable irrespective of the assessor conducting the assessment.⁷

Evidence guidelines

ASQA provides specific guidance on how evidence relevant to the requirements of units of competency is categorised and can be collected:

“Forms of evidence

Evidence can be categorised as direct, indirect or supplementary evidence:

- ***Direct evidence*** is evidence that can be observed or witnessed by the assessor. This could include observation of workplace performance, oral questioning, demonstration, challenge test
- ***Indirect evidence*** is evidence of a candidate’s work that can be reviewed or examined by the assessor. This could include finished products, written assignments or tests, or a portfolio of previous work performed.
- ***Supplementary evidence*** is additional evidence presented to assessors to support a candidate’s claim of competence. This could include reports from supervisors, colleagues and/or clients, testimonials from employers, work diaries, evidence of training.

It is important to understand that when it comes to assessment, there is no ‘hierarchy of evidence’ While training packages and accredited courses describe the outcomes of assessment and provide advice about the scope and context for assessment, neither the Standards for RTOs 2015 nor training product guidelines prescribe exactly what type of evidence, or how much evidence, must be collected.

Rather, your RTO must reach an appropriate balance and ensure that, overall; the evidence collected meets the Rules of Evidence.

- ***validity***—the evidence presented demonstrates the learner has the skills, knowledge and attributes as described in the module or unit of competency and associated assessment requirements
- ***sufficiency***—the quality, quantity and relevance of evidence presented enables a judgement to be made of a learner’s competency
- ***currency***—the evidence presented is from either the present or the very recent past, and
- ***authenticity***—the evidence presented for assessment is the learner’s own work.

⁷ The Standards for Registered Training Organisations (RTOs) 2015

*It is the **quality of all evidence collected** (including any supplementary evidence collected by another party) that is important to making a sound judgement about competence—rather than the quantity, type and form of evidence, where it was collected or who collected it.”⁸*

Collecting evidence in the workplace

When researching and developing strategies for collecting evidence in the workplace, it is critical that training providers consult with industry and employers to ensure that the collection of evidence and assessment aligns to current industry methods, workplace conditions, relevant technologies and products, and performance.

It is important to consider:

- What ‘evidence collecting tools’ are available to training providers and assessors
- The learner’s role in the workplace
- Who will collect the evidence and how the evidence will be collected, recorded and kept
- What information/materials will be required by the employer/supervisor/learner to facilitate the collection of evidence.

Collecting evidence in the workplace is consistent with the principles of assessment and ensures that the learner is afforded the opportunity to build their competency through experience.

Collecting evidence – Involving others

Involving another party such as a supervisor, colleague or client enables assessors to gather evidence that is authentic, valid and current and is a legitimate strategy for collecting evidence of the demonstration of skills in the workplace. If this mode of evidence collection is considered, it is important that the Training Provider or assessor first determine that it is appropriate to involve another party in the collection of evidence and that it will lead to the collection of quality and reliable evidence.

This strategy might be employed to augment a demonstration of skill carried out as part of a formal assessment process.

This evidence could include:

From the learner:

- work diaries and log books
- training contracts
- electronic journals
- portfolios of work
- a combination of the above

From the employer:

- reports from supervisors, colleagues and/or clients
- testimonials
- workplace documentation
- work orders
- work contracts
- a combination of the above

⁸ Australian Skills Quality Authority (ASQA) website. Viewed 9 September 2019

If involving others to assist in the collection of evidence, it is important to remember that they are not making any assessment decisions, nor are they involved in a co-assessment arrangement. They are simply collecting evidence because they can regularly observe the apprentice in a workplace setting.

Collecting evidence – Grouping units of competency

A learner can meet requirements for multiple units of competency at the same time, particularly when the competencies are linked by process, task, or are co-dependent.

Units of competency can be grouped together for both training and assessment purposes, to represent a workplace role, to encompass a particular workplace task or to meet the specific needs of the industry.

Grouping units of competency can also make it more efficient and convenient for employers and supervisors to record and provide assessors with supplementary evidence of skill acquisition, particularly if the units are grouped according to a particular workplace responsibility or work task.

Grouping units together for assessment purposes requires a clear understanding of the individual competencies to be assessed and the identification of evidence that can be reliably used to determine learner competency across the grouped units. This is best undertaken when the assessor has identified units of competency that form a specific task, process or assigned duty that can effectively be used to assess those competencies or elements at the same time.

When grouping units together for assessment, assessors should consider links or commonalities between units including:

- elements and performance criteria
- foundation skills
- evidence requirements
- assessment conditions

For example:

An assessor may visit an apprentice on a number of occasions to conduct observations, assessments and knowledge testing. On each visit, the assessor observes and records the apprentice successfully undertaking a range of connected or co-dependent skills and competencies in order to complete a project or fulfil a job requirement.

With evidence of workplace practice collected and logged by the learner as well as observation reports, time sheets, job sheets and work orders from the employer or supervisor, the assessor can over time, verify that the apprentice has completed all unit requirements related to that project or job requirement.

Collecting evidence – Using technology

Telecommunication applications such as Skype, FaceTime and YouTube have features that allow instant messaging, video chat and voice chat. Content sharing applications allow the uploading or live streaming of recordings, enabling the learner to provide evidence of, and an assessor to observe, skills practised and acquired. Emails and texts messaging can also be used to share files and other supplementary evidence.

Collecting evidence – Further guidance

Further guidance on assessment can be found under “**Evidence Guidelines**” in this Companion Volume.

Access and equity

An individual's access to training and assessment should not be adversely affected by restrictions placed on the location or context of the training and assessment beyond the requirements specified in the MEM Manufacturing and Engineering Training Package and must be bias-free.

Individual needs that could present a barrier to access, participation and the achievement of learning and training outcomes include age, gender, cultural or ethnic background, disability, sexuality, language skills, literacy or numeracy level, employment status or geographical location.

Training Packages reflect and cater for the increasing diversity of Australia's VET clients and current and future workforce. The flexibilities offered by Training Package qualifications and units of competency enhance opportunities and potential outcomes for all people so that we can all benefit from a wider national skills base and a shared contribution to Australia's economic development and social and cultural life.

For additional information, refer to the *Standards for RTOs 2015* or equivalent legislation covering VET regulation in a non-referring State as the case requires.

Reasonable adjustments

It is important that education providers take meaningful, transparent and reasonable steps to consult, consider and implement reasonable adjustments for learners with disability. Under the *Disability Standards for Education 2005*, education providers must make reasonable adjustments for people with disability to the maximum extent that those adjustments do not cause that provider unjustifiable hardship. While 'reasonable adjustment' and 'unjustifiable hardship' are different concepts and involve different considerations, they both seek to strike a balance between the interests of education providers and the interests of learners with and without disability. The Disability Standards and guidelines for their implementation can be downloaded at: <https://www.education.gov.au/disability-standards-education-2005>

An adjustment is any measure or action that a learner requires because of their disability, and which has the effect of assisting them to access and participate in education and training on the same basis as those without a disability. An adjustment is reasonable if it achieves this purpose while considering factors such as the nature of the learner's disability, their views, the potential effect of the adjustment on the learner and others who might be affected, and the costs and benefits of making the adjustment.

A training provider is also entitled to maintain the academic requirements of a course or program and to consider the requirements or components that are inherent or essential to its nature when assessing whether an adjustment is reasonable. There may be more than one adjustment that is reasonable in a given set of circumstances; education providers are required to make adjustments that are reasonable and that do not cause them unjustifiable hardship.

The definition of reasonable adjustment in the *Standards for RTOs 2015* says that '...reasonable adjustment means adjustments that can be made to the way in which evidence of candidate performance can be collected. Whilst reasonable adjustments can be made in terms of the way in which evidence of performance is gathered, the evidence criteria for making competent/not yet competent decisions (and/or awarding grades) should not be altered in any way. That is, the standards expected should be the same irrespective of the group and/or individual being assessed; otherwise comparability of standards will be compromised'.

Manufacturing and Engineering limitations

In applying these guidelines to training and assessment leading to qualifications in the MEM Manufacturing and Engineering Training Package, training providers will need to consider limitations specified in regulations and their associated Manuals of Standards. In some cases, there are specific physical standards that must be met, such as visual acuity and colour perception.

Foundation Skills

Foundation skills are the non-technical skills that underpin an individual's successful participation in the workplace. Foundation skills generally incorporate language, literacy and numeracy (LLN) skills described in the *Australian Core Skills Framework* (ACSF), and the employability skills described in the *Core Skills for Work Developmental Framework* (CSfW).

The skills included in these frameworks are:

- **ACSF:**
 - Learning
 - Reading
 - Writing
 - Oral Communication
 - Numeracy
 - Digital Literacy
- **CSfW:**
 - Navigating the world of work
 - Interacting with others
 - Getting the work done

Manufacturing and Engineering is a technology-based industry that can require high skill levels and the ability to analyse and solve problems in often complex components and systems. The industry is highly regulated and those working within it must be able to read and comprehend instructions, standards and manuals at varying levels of complexity, and document and certify the work that they perform. Work performed may be closely supervised and be inspected/certified by supervisors or may have a high level of autonomy and personal accountability. Work may be performed either individually or within teams of various sizes.

Foundation Skills are essential to successful learning and continuing employment. In the MEM Manufacturing and Engineering Training Package units of competency advice is provided that relevant employability skills and core skills are embedded in all units of competency. Employability Skills are best identified holistically at the qualification level.

Training providers must incorporate Foundation Skills in order to design valid and reliable training and to assist in meeting the Assessment Requirements specified in the units of competency. This analysis could include:

- Reviewing units of competency to locate relevant Employability Skills and determine how they are applied within the unit
- Designing training and assessment to address Employability Skills requirements.

If necessary, trainers and assessors can work with a language, literacy and numeracy (LLN) specialist to support the core skill requirements of the learner. This could be done in a variety of ways, such as providing extra support, mentoring and giving more opportunities for practice.

Details on the *Australian Core Skills Framework* levels and descriptors can be found at:

<https://www.dewr.gov.au/skills-information-training-providers/australian-core-skills-framework>

Details on the *Core Skills for Work Developmental Framework* can be found at:

<https://www.dewr.gov.au/skills-information-training-providers/core-skills-work-developmental-framework>

Health and safety implications for manufacturing

The latest version of all legislation, regulations, industry codes of practice and Australian/international standards, or the version specified by the local regulatory authority, must be used.

Applicable legislation, regulations, standards and codes of practice include the following:

- Work health and safety (WHS) legislation, codes of practice and guidance material
- Australian Design Rules (ADR)
- Environmental regulations and guidelines
- Other relevant government legislation, regulations and codes
- Australian and other standards
- Other relevant codes and standards
- Licence and certification requirements.

The regulatory framework will be reflected in workplace policies and procedures and is not required to be independently assessed.

All operations must comply with WHS and environmental management requirements, which may be imposed through state/territory or federal legislation - these requirements must not be compromised at any time. Individual units of competency give details on the relevant WHS requirements.

All operations must also comply with duty of care obligations as described in state/territory or federal legislation - these requirements must not be compromised at any time.

Industrial electricians

All Commonwealth and, where applicable, state and territory WHS legislation and regulations apply to industrial electrical work. Specific aspects of the work require great care and these areas are emphasised in the relevant units of competency. Examples of such areas include:

- All Electrical Regulatory Authorities Council (ERAC) 'critical' capabilities
- Testing or measuring circuits or equipment in existing installations when live
- Isolation and tag procedures and proving electrical isolation
- Switching, isolating, commissioning and decommissioning high voltage (HV) and low voltage (LV) electrical equipment and installations
- Hazards associated with step and touch voltages, induced voltages and stored energy particularly with high voltages in single and three phase transformers
- Creepage and clearance requirements associated with HV equipment and distribution systems
- Earthing requirements to limit the rise of touch voltages
- Safe working procedures for connecting and testing and fault-finding transformers
- WHS precautions and considerations when dealing with instrument transformers especially current transformers
- Live switchboard rescue from live low voltage conductors
- Risks associated with fallen distribution lines and the associated voltage gradients
- Installation defects categorised as 'serious' by electrical regulators
- Drilling materials containing asbestos including undertaking a risk assessment and applicable use of personal protective equipment (PPE)
- sources of stored energy associated with machine/system/process control
- Installation and maintenance work in hazardous areas
- Risks associated with lifting of heavy loads

- Working in confined spaces
- Working at heights.

Industrial gas work

Commonwealth and state and territory WHS legislation and regulations apply to industrial work involving gas, including work with type B gas appliances such as heat treatment furnaces and forges. Specific aspects of this work require great care, and this must be taken into consideration in all work and training environments for relevant units of competency.

Resources and equipment

RTOs delivering units of competency in the MEM Manufacturing and Engineering Training Package must comply with the assessment requirements in each unit of competency that includes access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications. See examples of qualifications below where specific resources and equipment are required:

MEM20219 Certificate II in Engineering – Production Technology

The skills associated with this qualification are intended to apply to a wide range of engineering/manufacturing work applications, including production, distribution, stores, and warehousing. It defines the skills and knowledge required for a person to be responsible for the quality of their own work, work from complex instructions and procedures, coordinate work in a team environment or work individually under general supervision and assist in the provision of on-the-job training of other workers.

MEM31219 Certificate III in Engineering – Industrial Electrician

While some units of competency permit assessment under simulated conditions the range of resources and equipment required means that assessment off the job is impractical for most units associated with industrial electrician activities. RTOs intending to add this new qualification to their scope should carefully consider how they might acquire suitable plant and equipment to provide valid learning experiences for students.

Resources and equipment used for assessment should reflect current industry practices in relation to:

- Installing wiring and accessories for low voltage circuits including supplying a three-phase load in general and industrial installations
- Working examples of three phase loads
- Realistic examples of faults in wiring, lighting and equipment that occur within the industrial electrician's spectrum of work
- Test equipment and appropriate hand and power tools
- Commission and decommissioning of high and low voltage equipment and installations
- HV test equipment and switching arrangements
- Performing installation and maintenance work on electrical equipment in hazardous areas.

Legal considerations for learners

Apprenticeship legal requirements are determined by the appropriate state/territory authority or commission, and in industrial instruments including Awards and enterprise agreements. This includes registration of the Training Contract and Training Plan.

Current legislation and successor legislation is defined in:

- Australian Capital Territory: Training and Tertiary Education Act 2003

- New South Wales: Apprenticeship and Traineeship Act 2001
- Northern Territory: Northern Territory Employment and Training Act 1991
- Queensland: Vocational Education, Training and Employment Act 2000
- South Australia: Training and Skills Development Act 2008
- Tasmania: Vocational Education and Training Act 1994
- Victoria: Education and Training Reform Act 2006
- Western Australia: Vocational Education and Training Act 1996

Under Awards, relevant state or territory legislation, and the Training Contract obligations that apply to apprenticeships, amongst other things, employers must ensure that each apprentice has appropriate arrangements made at an enterprise level to meet the apprentices' training requirements and adequate access to suitably qualified people to supervise the learning and assessment of the apprentice. Awards stipulate payment levels for first, second, third and fourth stages of the apprenticeship and any work and pay conditions applying to apprentices willing to work overtime or on public holidays, which usually has set limits.

The term of an apprenticeship is determined by the rate by which an apprentice gains the required competence and the starting level of competence of the apprentice. For the trades covered by the MEM Manufacturing and Engineering Training Package, three to four years is a general guide.

Implementation: Certificate III in Engineering – Industrial Electrician

Introduction

This *Companion Volume Implementation Guide* details key features of the MEM Manufacturing and Engineering Training Package and provides useful implementation advice that will support the successful implementation of the *Certificate III in Engineering – Industrial Electrician*. This section of the guide supplements the information provided previously and highlights requirements unique to the *Certificate III in Engineering – Industrial Electrician*.

Overview

This qualification covers the skills and knowledge required for employment as an industrial electrician within the metal, engineering, manufacturing and associated industries where Engineering Tradesperson – Industrial Electricians work. This qualification provides competencies to select, set up and install, test, fault find, repair and maintain electrical systems and equipment in buildings and industrial environments including oil/gas installations, mine sites, processing plants and the like. The qualification covers the Essential Performance Capabilities (EPCs) as required by electrical regulators and includes a capstone assessment.

This qualification is designed to provide an industry recognised skills profile related to trade work as an Engineering Tradesperson – Industrial Electrician. It is a requirement that the Certificate III in Engineering – Industrial Electrician be undertaken through a **Training Contract associated with an Australian Apprenticeship or through a formal skills and knowledge recognition process**.

Assessment

Assessment of some of the units of competency, must, where indicated, include evidence of the candidate's performance in a functioning workplace where there is a sufficient range of appropriate tasks and materials to cover the scope of application of the units. All outcomes must reflect the standard of performance inherent in the job.

Workplace practice and collecting evidence

To ensure that all training activities reinforce the skills and knowledge required for employment as an industrial electrician the relationship between on and off job training and assessment is critical.

It is important that any person undergoing training is provided with sufficient workplace practice to enable them to develop the skills and knowledge required by industry. It is also critical that they are able to gather the required evidence for assessment and the evidence gathered can be verified by RTO who is delivering training and assessment services.

It is recommended that RTOs include a summary of work location and type with each apprentice's licence application, as this provides the Licensing Board with useful information about:

- where the apprentice has worked in the various stages of his/her apprenticeship (the nature of the business or of that part of the company, and the physical location)
- how long the apprentice was in that location
- the type of work in which the apprentice participated (e.g. 24/7 maintenance crew, or new construction installing work etc)

It is anticipated that the information available through these two initiatives will assist the assessment of licence applications.

Where an enterprise cannot provide for the full scope of work required then there may be a need to place the apprentice with another enterprise where that necessary experience and learning can be gained.

Key features and impact

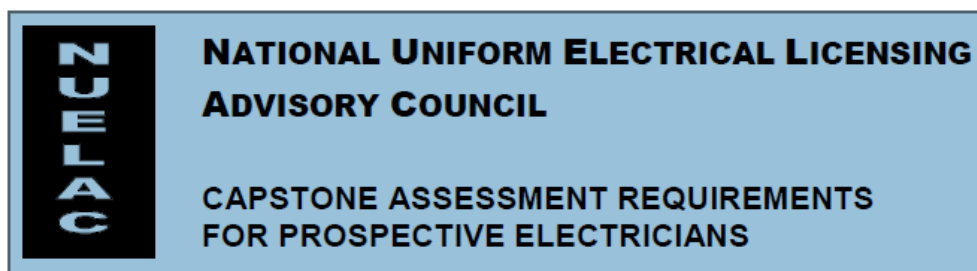
The qualification has been developed after a thorough consultation with enterprises that predominantly operate in industry sub-sectors of oil and gas, mining, production manufacturing and defence and provides competencies in the ability to select, set up and install, test, fault find, repair and maintain electrical systems and equipment in buildings and industrial environments including oil/gas installations, mine sites and processing plants.

The qualification covers the 55 Essential Performance Capabilities (EPC55) and includes a standalone capstone assessment – *MEM10025 Undertake a Capstone Assessment* that addresses ERAC's 'critical capabilities'.

A complete list of MEM: Certificate III in Engineering – Industrial Electrician units of competency, 'critical capabilities' and mapping to previous units of competency are provided in the *Appendix Volume* at **Appendix 4: Mapping – Industrial Electrician units**.

Essential capabilities

In 2001, the National Uniform Electrical Licensing Advisory Council (NUELAC) released a uniform set of 66 'essential capabilities' for licensed electricians.



These requirements provided advice to industry, particularly RTOs about the regulatory environment that an apprentice electrician must satisfy before being issued with an electrical license.

In 2014 these essential capabilities were reviewed with the assistance of representatives from state regulators, training providers, unions, employer groups and licensees in Australia and New Zealand to ensure they were still relative and adequate. The result was a revised 55 Essential Performance Capabilities (EPC55).⁹

Capstone Assessment

This assessment is to be carried out after the completion of all other assessment requirements of the units of competency that make up MEM31219 Certificate III in Engineering – Industrial Electrician and prior to application for an Electrical Licence. Assessment is to be carried out at the premises of the Registered Training Organisation (RTO) and is expected to be conducted by an assessor other than the one who has been a regular instructor to the apprentice.

This unit covers the skills and knowledge required to meet the ERAC requirements and includes all 'critical items' on the EPC55 list.

⁹ Electrical Regulatory Authorities Council (ERAC) website. Viewed September 2019

A full list of the revised 55 Essential Performance Capabilities (EPC55) and highlighted 'critical items' are provided in the Appendix Volume at **Appendix 4: Mapping – Industrial Electrician units** (Mapping of 55 EPCs to previous 66 EPCs).

Additional information and advice on licensing and the Essential Performance Capabilities (EPCs) can be obtained on the ERAC website: <https://www.erac.gov.au/>

While the ERAC coordinates the electrical regulatory strategies, policies and ongoing reform activities of the Australian States and Territories as well as New Zealand, each Australian state, territory and New Zealand administers laws relating to electricity safety, supply and efficiency. This legislation also creates frameworks for electrical licensing and equipment approvals. Each state and territory regulator may need to approve the RTO in accordance with these documents.

Recognition of prior learning

Existing workers who have the required skills and knowledge as well as sufficient and appropriate recorded work experience can apply for recognition of prior learning **through a formal skills and knowledge recognition process**.

Further advice may be obtained from:

Manufacturing Industry Skills Alliance
L5/534 Church Street, Cremorne, VIC 3121
P: (03) 9815 7000
E: solutions@manufacturingalliance.org.au
W: <https://manufacturingalliance.org.au/>