

2 Course Delivery

2.1 General Information

Teaching programs for courses in the Metal and Engineering Curriculum Framework can be developed using a number of different approaches. These include:

- programming individual units of competency sequentially
- identifying a theme that is common to several units of competency, and programming teaching and learning activities which address this theme
- devising a project, experience or event that requires students to learn and use a number of competencies
- a combination of any of the above.

Each approach has merit depending on the nature of particular competencies selected, access to facilities, equipment, resources and workplaces, and the needs and experiences of students.

When considering these approaches, teachers and trainers should keep in mind the following general principles:

- VET courses focus on the achievement of workplace competence. They are intended to equip students with the skills and knowledge required to perform workplace roles to the standard expected in industry. Competence incorporates all aspects of work performance including communication, problem-solving and the capacity to apply skills and knowledge in both familiar and new situations as well as industry-specific skills
- students must be given the opportunity to develop skills over time and have multiple opportunities to demonstrate that they possess the necessary combination of skills and knowledge
- students must have the opportunity to develop and practise skills in a real or simulated workplace setting
- assessment of competence involves the assessment of skills and knowledge combined. An **integrated** or **holistic** approach to assessment should be adopted in line with the concept of competence as the integration of a wide range of skills, knowledge and attitudes. An integrated approach to course delivery will facilitate integrated competency assessment.

On the basis of these principles, teachers and trainers should develop teaching and learning programs that allow for the integrated development of several elements and/or units of competency simultaneously. Where this is not possible, learning activities developed for individual units of competency should seek to integrate elements within the unit and to address the linkages to other units identified in the Training Package and in the Syllabus.

In particular, students should be given frequent opportunities to develop and update metal, engineering and related services industry knowledge and to consolidate skills and knowledge with respect to the environment, safety and teamwork.

Where possible, assessment tasks and events should be included as an integral part of training.

2.2 Sequence of Delivery

Neither the Metal and Engineering Curriculum Framework nor the Training Package prescribes a particular delivery sequence¹ for individual units of competency or for related groups of units of competency. Refer to the *Metal and Engineering Curriculum Framework Part A* for information on course structures.

The sequencing of a teaching program for a particular course is a matter for the teacher's professional judgement, based on the existing skills and experience of students, their interests, access to facilities including workplaces and the timing of work placement.

2.2.1 Relationships between units of competency

Relationships exist between units of competency and this should inform programming and assessment activities.

Units of competency generally need to be linked to reflect the skills required for a job role.

While holistic assessment should be adopted, most units of competency in the Training Package can be assessed independently. There are also some units that **must** be assessed before other units (prerequisites). This is the case when the skills and knowledge essential to the achievement of a particular unit of competency are found in other units.

The prerequisite requirements for units of competency available in this Framework are outlined in Section 8 of Part A of the Syllabus and Section 2.2.1.1 of this Support Document. Details regarding prerequisites, related units and Training Package suggestions for holistic assessment of units of competency where combined assessment and/or training is recommended can be found under the headings *Prerequisites*, *Related units* and *Interdependent assessment* in each unit of competency. This information is available in Part B of the Syllabus or the Metal and Engineering Training Package (MEM05).

The following information is reproduced from the *Assessment Guidelines and Competency Standards Overview of the Metal and Engineering Training Package (MEM05)*².

Advice on assessment of Prerequisite Units

The Metal and Engineering Training Package units of competency are built on a structure of accumulated skills and knowledge. This means that there are hierarchies of skills and knowledge that are built up from a range of competencies. Any units of competency that underpin others are listed as prerequisites. The use of the term 'prerequisite' has been used for many years in the Metal and Engineering units of competency. In terms of training delivery and assessment, the term 'prerequisite' means that a person cannot be deemed 'competent' in the higher level unit until they are competent in the prerequisite units. An RTO may choose an integrated assessment approach (see above). In this case the actual assessment of prerequisites may occur concurrently with other units.

Prerequisite Units and Prerequisite Pathways

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

¹ Some units of competency have prerequisite requirements which must be adhered to. Refer to Section 8 in Part A of the Syllabus and Section 2.2.1 in this Support Document.

² DEST, 2005, *Metal and Engineering Training Package (MEM05) Volume 1*, pp 129 & 138. This information may also be accessed via the National Training Information Service website (www.ntis.gov.au).

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

2.2.1.1 Prerequisites for units of competency within the Metal and Engineering Curriculum Framework

120 and 240-hour courses	
<i>Unit of competency</i>	<i>Prerequisite</i>
MEM03003B Perform sheet and plate assembly	MEM18001C Use hand tools MEM18002B Use power tools/hand-held operations
MEM04018B Perform general woodworking machine operations	MEM12023A Perform engineering measurements MEM18001C Use hand tools
MEM05005B Carry out mechanical cutting	MEM12023A Perform engineering measurements MEM18001C Use hand tools
MEM07032B Use workshop machines for basic operations	MEM18001C Use hand tools
MEM12006B Mark off/out (general engineering)	MEM09002B Interpret technical drawing MEM12023A Perform engineering measurements
MEM18003C Use tools for precision work	MEM12023A Perform engineering measurements MEM18001C Use hand tools MEM18002B Use power tools/hand-held operations
MEM18055B Dismantle, replace and assemble engineering components	MEM09002B Interpret technical drawing MEM12023A Perform engineering measurements MEM18001C Use hand tools MEM18002B Use power tools/hand-held operations
MEM19002B Prepare jewellery illustrations	MEM16006A Organise and communicate information

<i>Unit of competency</i>	<i>Prerequisite</i>
MEM19006B Replace watch batteries	MEM18001C Use hand tools
MEM19012B Produce jewellery wax model	MEM12023A Perform engineering measurements MEM18001C Use hand tools MEM18002B Use power tools/hand-held operations MEM18003C Use tools for precision work
MEM19015B Perform jewellery enamelling	MEM13003B Work safely with industrial chemicals and materials MEM18001C Use hand tools
MEM25001B Apply fibre-reinforced materials	MEM13003B Work safely with industrial chemicals and materials MEM18001C Use hand tools MEM18002B Use power tools/hand-held operations
MEM25004B Fair and shape surfaces	MEM13003B Work safely with industrial chemicals and materials MEM18001C Use hand tools MEM18002B Use power tools/hand-held operations
MEM25007B Maintain marine vessel surfaces	MEM13003B Work safely with industrial chemicals and materials MEM18001C Use hand tools MEM18002B Use power tools/hand-held operations

Specialisation study

<i>Unit of competency</i>	<i>Prerequisite</i>
MEM07003B Perform machine setting (routine)	MEM07024B Operate and monitor machine/process MEM12023A Perform engineering measurements MEM16006A Organise and communicate information MEM18001C Use hand tools

<i>Unit of competency</i>	<i>Prerequisite</i>
MEM07005B Perform general machining	MEM09002B Interpret technical drawing MEM12023A Perform engineering measurements MEM18001C Use hand tools
MEM07028B Operate computer controlled machine/ processes	MEM07024B Operate and monitor machine/process
MEM08010B Manually finish/polish materials	MEM18001C Use hand tools
MEM09003B Prepare basic engineering drawing	MEM09002B Interpret technical drawing
MEM12007C Mark off/out structural fabrications and shapes	MEM12023A Perform engineering measurements
MEM15003B Use improvement processes in team activities	MEM16007A Work with others in a manufacturing, engineering or related environment
MEM19001B Perform jewellery metal casting	MEM13004B Work safely with molten metal/glass
MEM19014B Mark off/out structural fabrications and shapes	MEM18001C Use hand tools
MEM19016B Construct jewellery components	MEM05006B Perform brazing and/or silver soldering MEM12023A Perform engineering measurements MEM18001C Use hand tools
MEM19017B Fabricate jewellery items	MEM05006B Perform brazing and/or silver soldering MEM06007B Perform basic incidental heat/quenching, tempering and annealing MEM12023A Perform engineering measurements MEM18001C Use hand tools
MEM25.2B Form and integrate fibre-reinforced structures	MEM13003B Work safely with industrial chemicals and materials MEM18001C Use hand tools MEM18002B Use power tools/hand-held operations

<i>Unit of competency</i>	<i>Prerequisite</i>
MEM25006B Undertake marine sheathing operations	MEM13003B Work safely with industrial chemicals and materials MEM18001C Use hand tools MEM18002B Use power tools/hand-held operations MEM25004B Fair and shape surfaces
MEM30001A Use computer aided drafting systems to produce basic engineering drawings	MEM16006A Organise and communicate information MEM16008A Interact with computing technology
MEM30002A Produce basic engineering graphics	MEM16006A Organise and communicate information MEM16008A Interact with computing technology
MEM50004B Maintain quality of environment by following marina codes	MEM50003B Follow workplace procedures to maintain the marine environment
MEM50005B Refuel vessels	MEM50002B Work safely on marine craft MEM50003B Follow workplace procedures to maintain the marine environment
MEM50006B Check operational capability of marine craft	MEM50002B Work safely on marine craft
MEM50007B Check operational capability of sails and sail operating equipment	MEM50002B Work safely on marine craft

2.2.2 Coding and numbering system for units of competency

For example: *MEM12023A Perform engineering measurements*

- the first three letters (MEM) identify the Training Package, ie Metal and Engineering
- the first number (12) identifies the field within the Training Package, ie measurement
- the next number (23) indicates that this is the 23rd unit in this field
- the last letter (A) indicates the version of the unit, ie this is the first version of the unit.

The following codes are for the fields included in the Framework:

<i>Field number</i>	<i>Field name</i>	<i>Field number</i>	<i>Field name</i>
3	Assembly	13	Occupational health and safety
4	Casting and moulding	14	Planning
5	Fabrication	15	Quality
6	Forging	16	Communication
7	Machine and process operations	18	Maintenance and diagnostics
8	Surface finishing	19	Jewellery and horological
9	Drawing, drafting and design	25	Marine craft construction
11	Materials handling	30	Engineering technician
12	Measurement	50	Boating services

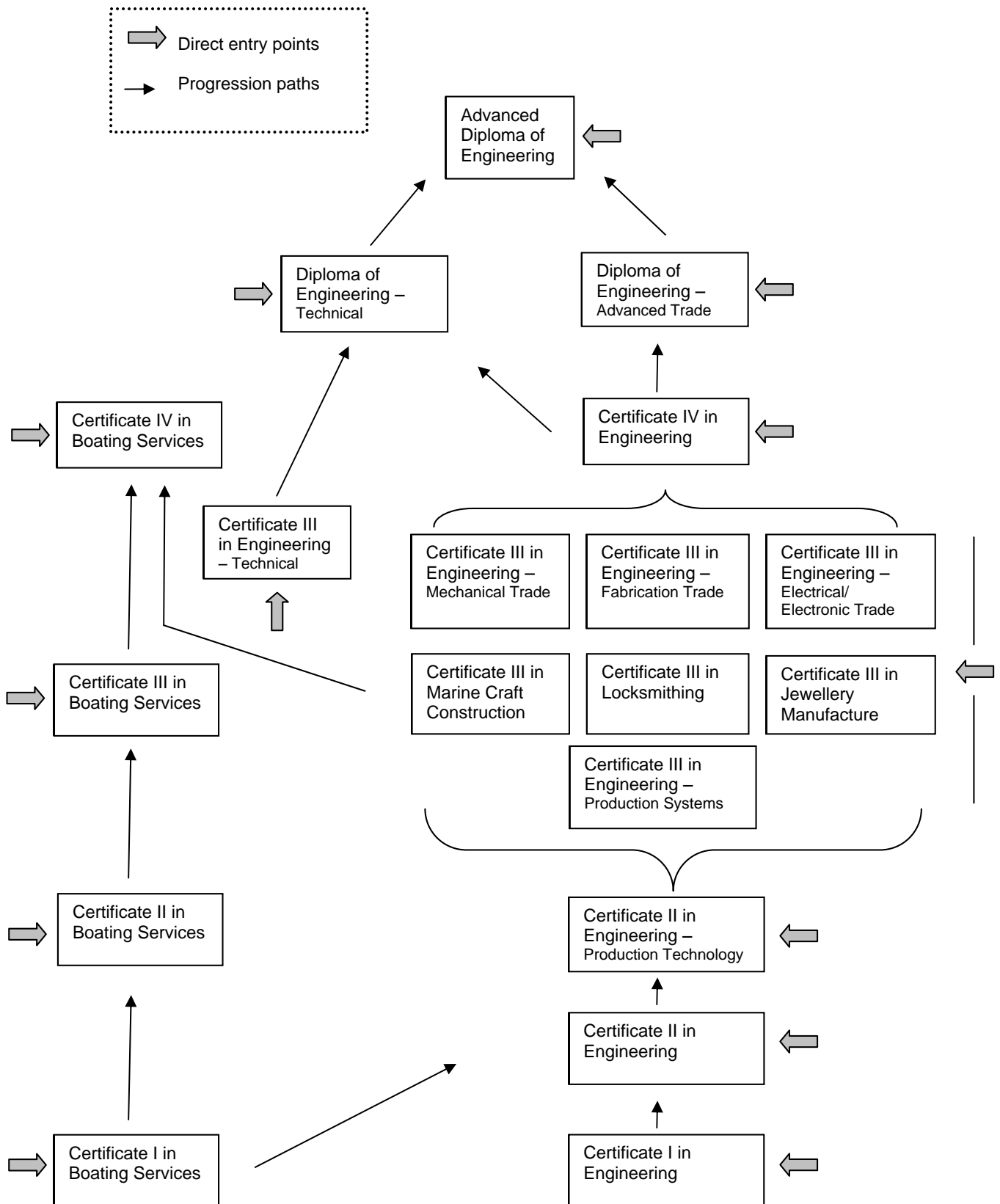
2.2.3 Category status of units of competency for qualifications available in the Metal and Engineering Curriculum Framework

The qualification packaging rules for the AQF VET qualifications available in this Framework are outlined in Section 15 of Part A of the Syllabus. This information is reproduced from the Metal and Engineering Training Package (MEM05).

Students who meet these requirements will be eligible for the relevant AQF VET Certificate, whether or not they have met the additional requirements of the HSC course.

Tables 6, 7 and 8 in Section 15 of Part A of the Syllabus indicate the status of each unit of competency for each qualification available in the Framework. This information may assist teachers to select elective units of competency to meet qualification packaging rules.

2.2.4 Pathways to a career through the Metal and Engineering Training Package qualifications³



³ DEST, 2005, *Metal and Engineering Training Package (MEM05)*, Volume One, p 16.

2.2.5 Sample scope of units of competency to meet HSC course requirements and qualification packaging rules

Selection of units of competency should be undertaken under the guidance of the RTO to ensure that the RTO has scope to deliver those units of competency.

Units of competency contained in the Framework can be delivered by RTOs with the scope and appropriately accredited teachers and facilities. Teachers should seek advice from their school system/sector authority regarding which qualifications and units of competency they are qualified to deliver.

Guidelines regarding the selection of units of competency for qualification outcomes are provided in Section 15 of Part A of the Syllabus. Teachers should consult this document, along with Part B, when selecting units of competency.

The following examples have been developed as a sample of one model which meets *HSC course indicative hour requirements* **and** *qualification packaging rules* for each qualification available in the framework. The models are **examples** of **one approach** and are **not prescriptive**.

2.2.5.1 Metal and Engineering (120 indicative hours)

Example 1: Boating services

Metal and Engineering (120 indicative hours)

Depending on competencies achieved, this model provides the opportunity for students to be eligible for the following qualifications:

- Certificate I in Boating Services
- Statement of Attainment towards Certificate I in Engineering.

Unit code	Unit title	HSC indicative hours of credit	Unit weight (points)	Unit status in qualification	
<i>HSC – compulsory</i>				Certificate I in Boating Services	Certificate I in Engineering
N/A	Manufacturing, engineering and related services industries induction	10	–	–	–
MEM13014A	Apply principles of occupational health and safety in the work environment *	15	–	mandatory	mandatory
MEM14004A	Plan to undertake a routine task	10	–	mandatory	mandatory
MEM15024A	Apply quality procedures	5	–	mandatory	mandatory
MEM16007A	Work with others in a manufacturing, engineering or related environment	15	–	mandatory	mandatory
<i>HSC – elective</i>					
MEM11011B	Undertake manual handling	5	2	elective	specialisation
MEM12023A	Perform engineering measurements	15	5	elective	specialisation
MEM13003B	Work safely with industrial chemicals and materials	10	2	elective	specialisation
MEM50001B	Classify recreational boating technologies and features	20	0	mandatory	–
MEM50002B	Work safely on marine craft	15	1	mandatory	specialisation
MEM50003B	Follow work procedures to maintain the marine environment	10	1	mandatory	specialisation
Total		130 hours	-	7 mandatory 3 electives	4 mandatory 11 points

* Learning experiences for the HSC for this unit of competency must be undertaken prior to work placement.

A total of 10 units of competency must be completed for *Certificate I in Boating Services*:

- 7 mandatory units
- 3 elective units.

For *Certificate I in Engineering* the following must be completed:

- 4 mandatory units
- specialisation units to the value of at least 24 points.

Students who are assessed as competent in at least one unit of competency will be eligible for a Statement of Attainment showing partial completion of Certificate I in Boating Services **or** Certificate I in Engineering.

Refer to Section 15 of Part A of the Syllabus for qualification packaging rules.

2.2.5.2 Metal and Engineering (240 indicative hours)

Example 1: General Engineering Metal and Engineering (240 indicative hours)

Depending on competencies achieved, this model provides the opportunity for students to be eligible for the following qualifications:

- Statement of Attainment towards Certificate II in Engineering
- Certificate I in Engineering.

Unit code	Unit title	HSC indicative hours of credit	Unit weight (points)	Unit status in qualification	
				Certificate I in Engineering	Certificate II in Engineering
<i>HSC – compulsory</i>					
N/A	Manufacturing, engineering and related services industries induction	10	–	–	–
MEM09002B	Interpret technical drawing	30	4	–	specialisation
MEM12023A	Perform engineering measurements	15	5	specialisation	specialisation
MEM12024A	Perform computations	20	3	specialisation	specialisation
MEM13014A	Apply principles of occupational health and safety in the work environment *	15	–	mandatory	mandatory
MEM14004A	Plan to undertake a routine task	10	–	mandatory	mandatory
MEM15002A	Apply quality systems	10	2	specialisation	mandatory
MEM15024A	Apply quality procedures	5	–	mandatory	mandatory
MEM16007A	Work with others in a manufacturing, engineering or related environment	15	–	mandatory	mandatory
MEM18001C	Use hand tools	20	2	specialisation	specialisation
MEM18002B	Use power tools/hand held operations	20	2	specialisation	specialisation
<i>HSC – elective</i>					
MEM05003B	Perform soft soldering	15	2	specialisation	specialisation
MEM07032B	Use workshop machines for basic operations (prereq – 18.1C)	25	2	specialisation	specialisation
MEM11011B	Undertake manual handling	5	2	specialisation	specialisation
MEM12001B	Use comparison and basic measuring devices	10	2	specialisation	specialisation
MEM16008A	Interact with computing technology	10	2	specialisation	specialisation
Total		235 hours	-	4 mandatory 24 points	5 mandatory 26 points

* Learning experiences for the HSC for this unit of competency must be undertaken prior to work placement.

For *Certificate I in Engineering* the following must be completed:

- 4 mandatory units
- specialisation units to the value of at least 24 points.

For *Certificate II in Engineering* the following must be completed:

- 5 mandatory units
- specialisation units to the value of at least 30 points.

Students who are assessed as competent in at least one unit of competency will be eligible for a Statement of Attainment showing partial completion of Certificate I in Engineering **or** Certificate II in Engineering.

Refer to Section 15 of Part A of the Syllabus for qualification packaging rules.

Example 2: General Engineering
Metal and Engineering (240 indicative hours)

Depending on competencies selected and achieved, this model provides the opportunity for students to be eligible for the following qualification:

- Certificate II in Engineering.

Unit code	Unit title	HSC indicative hours of credit	Unit weight (points)	Unit status in qualification
<i>HSC – compulsory</i>				Certificate II in Engineering
N/A	Manufacturing, engineering and related services industries induction	10	–	–
MEM09002B	Interpret technical drawing	30	4	specialisation
MEM12023A	Perform engineering measurements	15	5	specialisation
MEM12024A	Perform computations	20	3	specialisation
MEM13014A	Apply principles of occupational health and safety in the work environment *	15	–	mandatory
MEM14004A	Plan to undertake a routine task	10	–	mandatory
MEM15002A	Apply quality systems	10	–	mandatory
MEM15024A	Apply quality procedures	5	–	mandatory
MEM16007A	Work with others in a manufacturing, engineering or related environment	15	–	mandatory
MEM18001C	Use hand tools	20	2	specialisation
MEM18002B	Use power tools/hand held operations	20	2	specialisation
<i>HSC – elective</i>				
plus, a selection of units of competency from the 240-hour elective pool to the minimum value of 70 indicative hours and 14 points [∇] (excluding MEM05051A, MEM05052A, MEM12006B, MEM18003C, MEM19012B and MEM50001B – these units of competency are not included in the qualification packaging rules for Certificate II in Engineering)				specialisation
Total		240 hours	-	5 mandatory 16+ points (depends on electives)

* Learning experiences for the HSC for this unit of competency must be undertaken prior to work placement.

[∇] When selecting units of competency ensure all prerequisite requirements are met. Refer to Section 8 of Part A of the Syllabus and Section 2.2.1.1 of this Support Document.

For *Certificate II in Engineering* the following must be completed:

- 5 mandatory units
- specialisation units to the value of at least 30 points.

Students who are assessed as competent in at least one unit of competency will be eligible for a Statement of Attainment showing partial completion of Certificate II in Engineering.

Refer to Section 15 of Part A of the Syllabus for qualification packaging rules.

Example 3: Production technology

Metal and Engineering (240 indicative hours)

For students who are assessed as competent in one or more units of competency, this model provides the opportunity for eligibility for the following qualification:

- Statement of Attainment towards Certificate II in Engineering – Production Technology.

Unit code	Unit title	HSC indicative hours of credit	Unit weight (points)	Unit status in qualification
<i>HSC – compulsory</i>				Cert II in Eng – Production Tech
N/A	Manufacturing, engineering and related services industries induction	10	–	–
MEM09002B	Interpret technical drawing	30	4	specialisation
MEM12023A	Perform engineering measurements	15	5	mandatory
MEM12024A	Perform computations	20	3	specialisation
MEM13014A	Apply principles of occupational health and safety in the work environment *	15	–	mandatory
MEM14004A	Plan to undertake a routine task	10	–	mandatory
MEM15002A	Apply quality systems	10	2	mandatory
MEM15024A	Apply quality procedures	5	–	mandatory
MEM16007A	Work with others in a manufacturing, engineering or related environment	15	–	mandatory
MEM18001C	Use hand tools	20	2	specialisation
MEM18002B	Use power tools/hand held operations	20	2	specialisation
<i>HSC – elective</i>				
plus, a selection of units of competency from the 240-hour elective pool to the minimum value of 70 indicative hours [∇] (excluding MEM12006B and MEM50001B – these units of competency are not included in the qualification packaging rules for Certificate II in Engineering – Production Technology)				specialisation (MEM16006A – mandatory)
Total		240 hours	-	6+ mandatory 11+ points (depends on electives)

* Learning experiences for the HSC for this unit of competency must be undertaken prior to work placement.

[∇] When selecting units of competency ensure all prerequisite requirements are met. Refer to Section 8 of Part A of the Syllabus and Section 2.2.1.1 of this Support Document.

For *Certificate II in Engineering – Production Technology* the following must be completed:

- 8 mandatory units
- specialisation units to the value of at least 53 points.

Refer to Section 15 of Part A of the Syllabus for qualification packaging rules.

Example 4: Boating services

Metal and Engineering (240 indicative hours)

Depending on competencies achieved, this model provides the opportunity for students to be eligible for the following qualification:

- Certificate II in Boating Services.

Unit code	Unit title	HSC indicative hours of credit	Unit weight (points)	Unit status in qualification
<i>HSC – compulsory</i>				Certificate II in Boating Services
N/A	Manufacturing, engineering and related services industries induction	10	–	–
MEM09002B	Interpret technical drawing	30	4	elective
MEM12023A	Perform engineering measurements	15	5	elective
MEM12024A	Perform computations	20	3	–
MEM13014A	Apply principles of occupational health and safety in the work environment *	15	–	mandatory
MEM14004A	Plan to undertake a routine task	10	–	mandatory
MEM15002A	Apply quality systems	10	2	–
MEM15024A	Apply quality procedures	5	–	mandatory
MEM16007A	Work with others in a manufacturing, engineering or related environment	15	–	mandatory
MEM18001C	Use hand tools	20	2	elective
MEM18002B	Use power tools/hand held operations	20	2	elective
<i>HSC – elective</i>				
MEM11011B	Undertake manual handling	5	2	elective
MEM13003B	Work safely with industrial chemicals and materials	10	2	elective
MEM16006A	Organise and communicate information	15	2	mandatory
MEM50001B	Classify recreational boating technologies and features	20	0	mandatory
MEM50002B	Work safely on marine craft	15	1	mandatory
MEM50003B	Follow work procedures to maintain the marine environment	10	1	mandatory
Total		245 hours	-	8 mandatory 6 electives

* Learning experiences for the HSC for this unit of competency must be undertaken prior to work placement.

A total of 14 units of competency must be completed for *Certificate II in Boating Services*:

- 8 mandatory units
- 6 elective units.

Students who are assessed as competent in at least one unit of competency will be eligible for a Statement of Attainment showing partial completion of Certificate II in Boating Services.

Please note that the above model can be used to achieve a *Certificate I in Engineering* as well as a Statement of Attainment towards Certificate II in Boating Services. The student would need to undertake and achieve additional unit/s of competency from those listed in the 240-hour course elective pool and qualification packaging rules for Certificate I to the unit weight of 2 points. Table 6 in Part A of the Syllabus may assist in the selection process.

Refer to Section 15 of Part A of the Syllabus for qualification packaging rules.

Example 5: Mechanical

Metal and Engineering (240 indicative hours)

For students who are assessed as competent in one or more units of competency, this model provides the opportunity for eligibility for the following qualification:

- Statement of Attainment towards Certificate III in Engineering – Mechanical Trade.

Unit code	Unit title	HSC indicative hours of credit	Unit weight (points)	Unit status in qualification
<i>HSC – compulsory</i>				Cert III in Eng – Mechanical Trade
N/A	Manufacturing, engineering and related services industries induction	10	–	–
MEM09002B	Interpret technical drawing	30	4	stream
MEM12023A	Perform engineering measurements	15	–	mandatory
MEM12024A	Perform computations	20	–	mandatory
MEM13014A	Apply principles of occupational health and safety in the work environment *	15	–	mandatory
MEM14004A	Plan to undertake a routine task	10	–	mandatory
MEM15002A	Apply quality systems	10	–	mandatory
MEM15024A	Apply quality procedures	5	–	mandatory
MEM16007A	Work with others in a manufacturing, engineering or related environment	15	–	mandatory
MEM18001C	Use hand tools	20	2	stream
MEM18002B	Use power tools/hand held operations	20	2	stream
<i>HSC – elective</i>				
MEM07032B	Use workshop machines for basic operations (prereq – 18.1C)	25	2	stream
MEM11011B	Undertake manual handling	5	2	specialisation
MEM16008A	Interact with computing technology	10	–	mandatory
MEM18055B	Dismantle, replace and assemble engineering components (prereq – 9.2B, 12,23A, 18.1C & 18.2B)	30	3	stream
Total		240 hours	-	8 mandatory 15 points

* Learning experiences for the HSC for this unit of competency must be undertaken prior to work placement.

For *Certificate III in Engineering – Mechanical Trade* the following must be completed:

- 11 mandatory units
- mechanical trade stream units to the value of at least 40 points
- specialisation units to bring the total value of mechanical trade stream and specialisation units to at least 76 points.

Please note that the above model can be used to achieve a *Certificate I in Engineering* or *Certificate II in Engineering* as well as a Statement of Attainment towards Certificate III in Engineering – Mechanical Trade. The student would need to undertake and achieve additional unit/s of competency from those listed in the 240-hour course elective pool and qualification packaging rules for Certificate I or II to the unit weight of 4 or 5 points (respectively). Table 6 in Part A of the Syllabus may assist in the selection process.

Refer to Section 15 of Part A of the Syllabus for qualification packaging rules.

Example 6: Fabrication and assembly

Metal and Engineering (240 indicative hours)

Depending on competencies achieved, this model provides the opportunity for students to be eligible for the following qualifications:

- Statement of Attainment towards Certificate III in Engineering – Fabrication Trade
- Certificate I in Engineering.

Unit code	Unit title	HSC indicative hours of credit	Unit weight (points)	Unit status in qualification	
				Certificate I in Engineering	Cert III in Eng – Fabrication Trade
<i>HSC – compulsory</i>					
N/A	Manufacturing, engineering and related services industries induction	10	–	–	–
MEM09002B	Interpret technical drawing	30	4	–	stream
MEM12023A	Perform engineering measurements	15	5	specialisation	mandatory
MEM12024A	Perform computations	20	3	specialisation	mandatory
MEM13014A	Apply principles of occupational health and safety in the work environment *	15	–	mandatory	mandatory
MEM14004A	Plan to undertake a routine task	10	–	mandatory	mandatory
MEM15002A	Apply quality systems	10	2	specialisation	mandatory
MEM15024A	Apply quality procedures	5	–	mandatory	mandatory
MEM16007A	Work with others in a manufacturing, engineering or related environment	15	–	mandatory	mandatory
MEM18001C	Use hand tools	20	2	specialisation	stream
MEM18002B	Use power tools/hand held operations	20	2	specialisation	stream
<i>HSC – elective</i>					
MEM03003B	Perform sheet and plate assembly (prereq – 18.1C & 18.2B)	35	4	specialisation	stream
MEM05003B	Perform soft soldering	15	2	specialisation	stream
MEM05004C	Perform routine oxy acetylene welding	15	2	specialisation	stream
MEM05005B	Carry out mechanical cutting (prereq – 12.23A & 18.1C)	5	2	specialisation	stream
MEM05007C	Perform manual heating and thermal cutting	10	2	specialisation	stream
Total		250 hours	-	4 mandatory 26 points	7 mandatory 20 points

* Learning experiences for the HSC for this unit of competency must be undertaken prior to work placement.

For *Certificate I in Engineering* the following must be completed:

- 4 mandatory units
- specialisation units to the value of at least 24 points.

For *Certificate III in Engineering – Fabrication Trade* the following must be completed:

- 11 mandatory units
- fabrication trade stream units to the value of at least 40 points
- specialisation units to bring the total value of fabrication trade stream and specialisation units to at least 76 points.

Students who are assessed as competent in at least one unit of competency will be eligible for a Statement of Attainment showing partial completion of Certificate I in Engineering **or** Certificate III in Engineering – Fabrication Trade.

Please note that the above model can be used to achieve a *Certificate II in Engineering* as well as a Statement of Attainment towards Certificate III in Engineering – Fabrication Trade. The student would need to undertake and achieve additional unit/s of competency from those listed in the 240-hour course elective pool and qualification packaging rules for Certificate II to the unit weight of 2 points. Table 6 in Part A of the Syllabus may assist in the selection process.

Refer to Section 15 of Part A of the Syllabus for qualification packaging rules.

Example 7: Fabrication

Metal and Engineering (240 indicative hours)

For students who are assessed as competent in one or more units of competency, this model provides the opportunity for eligibility for the following qualification:

- Statement of Attainment towards Certificate III in Engineering – Fabrication Trade.

Unit code	Unit title	HSC indicative hours of credit	Unit weight (points)	Unit status in qualification
<i>HSC – compulsory</i>				Cert III in Eng – Fabrication Trade
N/A	Manufacturing, engineering and related services industries induction	10	–	–
MEM09002B	Interpret technical drawing	30	4	stream
MEM12023A	Perform engineering measurements	15	–	mandatory
MEM12024A	Perform computations	20	–	mandatory
MEM13014A	Apply principles of occupational health and safety in the work environment *	15	–	mandatory
MEM14004A	Plan to undertake a routine task	10	–	mandatory
MEM15002A	Apply quality systems	10	–	mandatory
MEM15024A	Apply quality procedures	5	–	mandatory
MEM16007A	Work with others in a manufacturing, engineering or related environment	15	–	mandatory
MEM18001C	Use hand tools	20	2	stream
MEM18002B	Use power tools/hand held operations	20	2	stream
<i>HSC – elective</i>				
MEM05004C	Perform routine oxy acetylene welding	15	2	stream
MEM05005B	Carry out mechanical cutting (prereq – 12.23A & 18.1C)	5	2	stream
MEM05007C	Perform manual heating and thermal cutting	10	2	stream
MEM05012C	Perform routine manual metal arc welding	20	2	stream
MEM05050B	Perform routine gas metal arc welding	20	2	stream
Total		240 hours	-	7 mandatory 18 points

* Learning experiences for the HSC for this unit of competency must be undertaken prior to work placement.

For *Certificate III in Engineering – Fabrication Trade* the following must be completed:

- 11 mandatory units
- fabrication trade stream units to the value of at least 40 points
- specialisation units to bring the total value of fabrication trade stream and specialisation units to at least 76 points.

Please note that the above model can be used to achieve a *Certificate I in Engineering* or *Certificate II in Engineering* as well as a Statement of Attainment towards Certificate III in Engineering – Fabrication Trade. The student would need to undertake and achieve additional unit/s of competency from those listed in the 240-hour course elective pool and qualification packaging rules for Certificate I or II to the unit weight of 2 or 4 points (respectively). Table 6 in Part A of the Syllabus may assist in the selection process.

Refer to Section 15 of Part A of the Syllabus for qualification packaging rules.

Example 8: Fabrication and machining

Metal and Engineering (240 indicative hours)

For students who are assessed as competent in one or more units of competency, this model provides the opportunity for eligibility for the following qualification:

- Statement of Attainment towards Certificate III in Engineering – Fabrication Trade.

Unit code	Unit title	HSC indicative hours of credit	Unit weight (points)	Unit status in qualification
<i>HSC – compulsory</i>				Cert III in Eng – Fabrication Trade
N/A	Manufacturing, engineering and related services industries induction	10	–	–
MEM09002B	Interpret technical drawing	30	4	stream
MEM12023A	Perform engineering measurements	15	–	mandatory
MEM12024A	Perform computations	20	–	mandatory
MEM13014A	Apply principles of occupational health and safety in the work environment *	15	–	mandatory
MEM14004A	Plan to undertake a routine task	10	–	mandatory
MEM15002A	Apply quality systems	10	–	mandatory
MEM15024A	Apply quality procedures	5	–	mandatory
MEM16007A	Work with others in a manufacturing, engineering or related environment	15	–	mandatory
MEM18001C	Use hand tools	20	2	stream
MEM18002B	Use power tools/hand held operations	20	2	stream
<i>HSC – elective</i>				
MEM05004C	Perform routine oxy acetylene welding	15	2	stream
MEM05005B	Carry out mechanical cutting (prereq – 12.23A & 18.1C)	5	2	stream
MEM05012C	Perform routine manual metal arc welding	20	2	stream
MEM05050B	Perform routine gas metal arc welding	20	2	stream
MEM07032B	Use workshop machines for basic operations (prereq – 18.1C)	25	2	specialisation
Total		255 hours	-	7 mandatory 18 points

* Learning experiences for the HSC for this unit of competency must be undertaken prior to work placement.

For *Certificate III in Engineering – Fabrication Trade* the following must be completed:

- 11 mandatory units
- fabrication trade stream units to the value of at least 40 points
- specialisation units to bring the total value of fabrication trade stream and specialisation units to at least 76 points.

Please note that the above model can be used to achieve a *Certificate I in Engineering* or *Certificate II in Engineering* as well as a Statement of Attainment towards Certificate III in Engineering – Fabrication Trade. The student would need to undertake and achieve additional unit/s of competency from those listed in the 240-hour course elective pool and qualification packaging rules for Certificate I or II to the unit weight of 2 or 4 points (respectively). Table 6 in Part A of the Syllabus may assist in the selection process.

Refer to Section 15 of Part A of the Syllabus for qualification packaging rules.

Example 9: Fitting and machining

Metal and Engineering (240 indicative hours)

For students who are assessed as competent in one or more units of competency, this model provides the opportunity for eligibility for the following qualification:

- Statement of Attainment towards Certificate III in Engineering – Fabrication Trade.

Unit code	Unit title	HSC indicative hours of credit	Unit weight (points)	Unit status in qualification
<i>HSC – compulsory</i>				Cert III in Eng – Fabrication Trade
N/A	Manufacturing, engineering and related services industries induction	10	–	–
MEM09002B	Interpret technical drawing	30	4	stream
MEM12023A	Perform engineering measurements	15	–	mandatory
MEM12024A	Perform computations	20	–	mandatory
MEM13014A	Apply principles of occupational health and safety in the work environment *	15	–	mandatory
MEM14004A	Plan to undertake a routine task	10	–	mandatory
MEM15002A	Apply quality systems	10	–	mandatory
MEM15024A	Apply quality procedures	5	–	mandatory
MEM16007A	Work with others in a manufacturing, engineering or related environment	15	–	mandatory
MEM18001C	Use hand tools	20	2	stream
MEM18002B	Use power tools/hand held operations	20	2	stream
<i>HSC – elective</i>				
MEM05005B	Carry out mechanical cutting (prereq – 12.23A & 18.1C)	5	2	stream
MEM07032B	Use workshop machines for basic operations (prereq – 18.1C)	25	2	specialisation
MEM11011B	Undertake manual handling	5	2	specialisation
MEM18055B	Dismantle, replace and assemble engineering components (prereq – 9.2B, 12.23A, 18.1C & 18.2B)	30	3	specialisation
Total		235 hours	-	7 mandatory 17 points

* Learning experiences for the HSC for this unit of competency must be undertaken prior to work placement.

For *Certificate III in Engineering – Fabrication Trade* the following must be completed:

- 11 mandatory units
- fabrication trade stream units to the value of at least 40 points
- specialisation units to bring the total value of fabrication trade stream and specialisation units to at least 76 points.

Please note that the above model can be used to achieve a *Certificate I in Engineering* or *Certificate II in Engineering* as well as a Statement of Attainment towards Certificate III in Engineering – Fabrication Trade. The student would need to undertake and achieve additional unit/s of competency from those listed in the 240-hour course elective pool and qualification packaging rules for Certificate I or II to the unit weight of 4 or 5 points (respectively). Table 6 in Part A of the Syllabus may assist in the selection process.

Refer to Section 15 of Part A of the Syllabus for qualification packaging rules.

Example 10: Electrical/Electronic

Metal and Engineering (240 indicative hours)

For students who are assessed as competent in one or more units of competency, this model provides the opportunity for eligibility for the following qualification:

- Statement of Attainment towards Certificate III in Engineering – Electrical/Electronic Trade.

Unit code	Unit title	HSC indicative hours of credit	Unit weight (points)	Unit status in qualification
<i>HSC – compulsory</i>				Cert III in Eng – Electrical/Electronic Trade
N/A	Manufacturing, engineering and related services industries induction	10	–	–
MEM09002B	Interpret technical drawing	30	4	stream
MEM12023A	Perform engineering measurements	15	–	mandatory
MEM12024A	Perform computations	20	–	mandatory
MEM13014A	Apply principles of occupational health and safety in the work environment *	15	–	mandatory
MEM14004A	Plan to undertake a routine task	10	–	mandatory
MEM15002A	Apply quality systems	10	–	mandatory
MEM15024A	Apply quality procedures	5	–	mandatory
MEM16007A	Work with others in a manufacturing, engineering or related environment	15	–	mandatory
MEM18001C	Use hand tools	20	2	stream
MEM18002B	Use power tools/hand held operations	20	2	stream
<i>HSC – elective</i>				
MEM05003B	Perform soft soldering	15	2	stream
MEM11011B	Undertake manual handling	5	2	specialisation
MEM13001B	Perform emergency first aid	10	1	specialisation
MEM16008A	Interact with computing technology	10	–	mandatory
MEM18055B	Dismantle, replace and assemble engineering components (prereq – 9.2B, 12.23A, 18.1C & 18.2B)	30	3	stream
Total		240 hours	-	8 mandatory 16 points

* Learning experiences for the HSC for this unit of competency must be undertaken prior to work placement.

For *Certificate III in Engineering – Electrical/Electronic Trade* the following must be completed:

- 11 mandatory units
- electrical/electronic trade stream units to the value of at least 40 points
- specialisation units to bring the total value of electrical/electronic trade stream and specialisation units to at least 76 points.

Please note that the above model can be used to achieve a *Certificate I in Engineering* **or** *Certificate II in Engineering* as well as a Statement of Attainment towards Certificate III in Engineering – Electrical/Electronic Trade. The student would need to undertake and achieve additional unit/s of competency from those listed in the 240-hour course elective pool and qualification packaging rules for Certificate I or II to the unit weight of 3 or 4 points (respectively). Table 6 in Part A of the Syllabus may assist in the selection process.

Refer to Section 15 of Part A of the Syllabus for qualification packaging rules.

Example 11: Jewellery manufacture

Metal and Engineering (240 indicative hours)

For students who are assessed as competent in one or more units of competency, this model provides the opportunity for eligibility for the following qualification:

- Statement of Attainment towards Certificate III in Jewellery Manufacture.

Unit code	Unit title	HSC indicative hours of credit	Unit weight (points)	Unit status in qualification
<i>HSC – compulsory</i>				Cert III in Jewellery Manufacture
N/A	Manufacturing, engineering and related services industries induction	10	–	–
MEM09002B	Interpret technical drawing	30	4	stream
MEM12023A	Perform engineering measurements	15	–	mandatory
MEM12024A	Perform computations	20	–	mandatory
MEM13014A	Apply principles of occupational health and safety in the work environment *	15	–	mandatory
MEM14004A	Plan to undertake a routine task	10	–	mandatory
MEM15002A	Apply quality systems	10	–	mandatory
MEM15024A	Apply quality procedures	5	–	mandatory
MEM16007A	Work with others in a manufacturing, engineering or related environment	15	–	mandatory
MEM18001C	Use hand tools	20	2	stream
MEM18002B	Use power tools/hand held operations	20	2	stream
<i>HSC – elective</i>				
MEM16006A	Organise and communicate information	15	–	mandatory
MEM18003C	Use tools for precision work (prereq – 12.23A, 18.1C & 18.2B)	15	4	stream
MEM19002B	Prepare jewellery illustrations	30	4	stream
MEM19012B	Produce jewellery wax model (prereq – 12.23A, 18.1C, 18.2B & 18.3C)	30	4	stream
Total		260 hours	-	8 mandatory 20 points

* Learning experiences for the HSC for this unit of competency must be undertaken prior to work placement.

For *Certificate III in Jewellery Manufacture* the following must be completed:

- 11 mandatory units
- jewellery manufacture stream units to the value of at least 40 points
- specialisation units to bring the total value of jewellery manufacture stream and specialisation units to at least 76 points.

Please note that the above model can be used to achieve a *Certificate I in Engineering* as well as a Statement of Attainment towards Certificate III in Jewellery Manufacture. The student would need to undertake and achieve additional unit/s of competency from those listed in the 240-hour course elective pool and qualification packaging rules for Certificate I to the unit weight of 4 points. Table 6 in Part A of the Syllabus may assist in the selection process.

Refer to Section 15 of Part A of the Syllabus for qualification packaging rules.

Example 12: Jewellery manufacture

Metal and Engineering (240 indicative hours)

Depending on competencies achieved, this model provides the opportunity for students to be eligible for the following qualifications:

- Statement of Attainment towards Certificate III in Jewellery Manufacture
- Certificate I in Engineering.

Unit code	Unit title	HSC indicative hours of credit	Unit weight (points)	Unit status in qualification	
<i>HSC – compulsory</i>				Certificate I in Engineering	Cert III in Jewellery Manufacture
N/A	Manufacturing, engineering and related services industries induction	10	–	–	–
MEM09002B	Interpret technical drawing	30	4	–	stream
MEM12023A	Perform engineering measurements	15	5	specialisation	mandatory
MEM12024A	Perform computations	20	3	specialisation	mandatory
MEM13014A	Apply principles of occupational health and safety in the work environment *	15	–	mandatory	mandatory
MEM14004A	Plan to undertake a routine task	10	–	mandatory	mandatory
MEM15002A	Apply quality systems	10	2	specialisation	mandatory
MEM15024A	Apply quality procedures	5	–	mandatory	mandatory
MEM16007A	Work with others in a manufacturing, engineering or related environment	15	–	mandatory	mandatory
MEM18001C	Use hand tools	20	2	specialisation	stream
MEM18002B	Use power tools/hand held operations	20	2	specialisation	stream
<i>HSC – elective</i>					
MEM05006B	Perform brazing and/or silver soldering	20	2	specialisation	stream
MEM07032B	Use workshop machines for basic operation (prereq – 18.1C)	25	2	specialisation	stream
MEM11011B	Undertake manual handling	5	2	specialisation	specialisation
MEM13003B	Work safely with industrial chemicals and materials	10	2	specialisation	stream
MEM16006A	Organise and communicate information	15	2	specialisation	mandatory
Total		245 hours	-	4 mandatory 24 points	8 mandatory 16 points

* Learning experiences for the HSC for this unit of competency must be undertaken prior to work placement.

For *Certificate I in Engineering* the following must be completed:

- 4 mandatory units
- specialisation units to the value of at least 24 points.

For *Certificate III in Jewellery Manufacture* the following must be completed:

- 11 mandatory units
- jewellery manufacture stream units to the value of at least 40 points
- specialisation units to bring the total value of jewellery manufacture stream and specialisation units to at least 76 points.

Students who are assessed as competent in at least one unit of competency will be eligible for a Statement of Attainment showing partial completion of Certificate I in Engineering **or** Certificate III in Jewellery Manufacture.

Please note that the above model can be used to achieve a *Certificate II in Engineering* as well as a Statement of Attainment towards Certificate III in Jewellery Manufacture. The student would need to undertake and achieve additional unit/s of competency from those listed in the 240-hour course elective pool and qualification packaging rules for Certificate II to the unit weight of 4 points. Table 6 in Part A of the Syllabus may assist in the selection process.

Refer to Section 15 of Part A of the Syllabus for qualification packaging rules.

Example 13: Marine craft construction
Metal and Engineering (240 indicative hours)

Depending on competencies achieved, this model provides the opportunity for students to be eligible for the following qualifications:

- Statement of Attainment towards Certificate III in Marine Craft Construction
- Certificate I in Engineering.

Unit code	Unit title	HSC indicative hours of credit	Unit weight (points)	Unit status in qualification	
<i>HSC – compulsory</i>				Certificate I in Engineering	Cert III in Marine Craft Construction
N/A	Manufacturing, engineering and related services industries induction	10	–	–	–
MEM09002B	Interpret technical drawing	30	4	–	stream
MEM12023A	Perform engineering measurements	15	5	specialisation	mandatory
MEM12024A	Perform computations	20	3	specialisation	mandatory
MEM13014A	Apply principles of occupational health and safety in the work environment *	15	–	mandatory	mandatory
MEM14004A	Plan to undertake a routine task	10	–	mandatory	mandatory
MEM15002A	Apply quality systems	10	2	specialisation	mandatory
MEM15024A	Apply quality procedures	5	–	mandatory	mandatory
MEM16007A	Work with others in a manufacturing, engineering or related environment	15	–	mandatory	mandatory
MEM18001C	Use hand tools	20	2	specialisation	stream
MEM18002B	Use power tools/hand held operations	20	2	specialisation	stream
<i>HSC – elective</i>					
MEM04018B	Perform general woodworking machine operations (prereq – 12.23A & 18.1C)	15	4	specialisation	stream
MEM13003B	Work safely with industrial chemicals and materials	10	2	specialisation	stream
MEM25004B	Fair and shape surfaces (prereq – 13.3B, 18.1C & 18.2B)	30	2	specialisation	stream
MEM25007B	Maintain marine vessel surfaces (prereq – 13.3B, 18.1C & 18.2B)	30	4	specialisation	stream
Total		255 hours	-	4 mandatory 26 points	7 mandatory 20 points

* Learning experiences for the HSC for this unit of competency must be undertaken prior to work placement.

For *Certificate I in Engineering* the following must be completed:

- 4 mandatory units
- specialisation units to the value of at least 24 points.

For *Certificate III in Marine Craft Construction* the following must be completed:

- 11 mandatory units
- marine craft construction stream units to the value of at least 40 points
- specialisation units to bring the total value of marine craft construction stream and specialisation units to at least 76 points.

Students who are assessed as competent in at least one unit of competency will be eligible for a Statement of Attainment showing partial completion of Certificate I in Engineering **or** Certificate III in Marine Craft Construction.

Please note that the above model can be used to achieve a *Certificate II in Engineering* as well as a Statement of Attainment towards Certificate III in Marine Craft Construction. The student would need to undertake and achieve additional unit/s of competency from those listed in the 240-hour course elective pool and qualification packaging rules for Certificate II to the unit weight of 2 points. Table 6 in Part A of the Syllabus may assist in the selection process.

Refer to Section 15 of Part A of the Syllabus for qualification packaging rules.

Example 14: Marine craft construction

Metal and Engineering (240 indicative hours)

Depending on competencies achieved, this model provides the opportunity for students to be eligible for the following qualification:

- Statement of Attainment towards Certificate III in Marine Craft Construction
- Certificate II in Engineering.

Unit code	Unit title	HSC indicative hours of credit	Unit weight (points)	Unit status in qualification	
<i>HSC – compulsory</i>				Certificate II in Engineering	Cert III in Marine Craft Construction
N/A	Manufacturing, engineering and related services industries induction	10	–	–	–
MEM09002B	Interpret technical drawing	30	4	specialisation	stream
MEM12023A	Perform engineering measurements	15	5	specialisation	mandatory
MEM12024A	Perform computations	20	3	specialisation	mandatory
MEM13014A	Apply principles of occupational health and safety in the work environment *	15	–	mandatory	mandatory
MEM14004A	Plan to undertake a routine task	10	–	mandatory	mandatory
MEM15002A	Apply quality systems	10	–	mandatory	mandatory
MEM15024A	Apply quality procedures	5	–	mandatory	mandatory
MEM16007A	Work with others in a manufacturing, engineering or related environment	15	–	mandatory	mandatory
MEM18001C	Use hand tools	20	2	specialisation	stream
MEM18002B	Use power tools/hand held operations	20	2	specialisation	stream
<i>HSC – elective</i>					
MEM04018B	Perform general woodworking machine operations (prereq – 12.23A & 18.1C)	15	4	specialisation	stream
MEM13003B	Work safely with industrial chemicals and materials	10	2	specialisation	stream
MEM16006A	Organise and communicate information	15	2	specialisation	mandatory
MEM16008A	Interact with computing technology	10	2	specialisation	mandatory
MEM25007B	Maintain marine vessel surfaces (prereq – 13.3B, 18.1C & 18.2B)	30	4	specialisation	stream
Total		250 hours	-	5 mandatory 30 points	9 mandatory 18 points

* Learning experiences for the HSC for this unit of competency must be undertaken prior to work placement.

For *Certificate II in Engineering* the following must be completed:

- 5 mandatory units
- specialisation units to the value of at least 30 points.

For *Certificate III in Marine Craft Construction* the following must be completed:

- 11 mandatory units
- marine craft construction stream units to the value of at least 40 points
- specialisation units to bring the total value of marine craft construction stream and specialisation units to at least 76 points.

Students who are assessed as competent in at least one unit of competency will be eligible for a Statement of Attainment showing partial completion of Certificate II in Engineering **or** Certificate III in Marine Craft Construction.

Refer to Section 15 of Part A of the Syllabus for qualification packaging rules.

2.2.5.3 Sample scope and sequence – Fabrication and assembly

(Cross-reference: pp 22-23 of this document.)

This sample scope and sequence is for the delivery of Metal and Engineering (240 indicative hours) over two years. Course requirements for Metal and Engineering (120 indicative hours) have been considered should a student exit the course at the end of Year 11.

Possible qualification outcomes:

- Statement of Attainment towards Certificate III in Engineering – Fabrication Trade
- Certificate I in Engineering.

YEAR 11

Week		1	2	3	4	5	6	7	8	9	10
TERM 1	Metal & Engineering (240 hours)	Introduction to the course Manufacturing, engineering and related services industries induction (5) MEM13014A Apply principles of occupational health and safety in the work environment (15)					MEM18001C Use hand tools (10) MEM18002B Use power tools/hand held operations (10) MEM05003B Perform soft soldering (15)				
		Assessment for RPL Refer to Part A of the Syllabus – Section 8.4					→ A 35-hour work placement is to be undertaken by the end of Term 3				

Week		1	2	3	4	5	6	7	8	9	10
TERM 2	Metal & Engineering (240 hours)	MEM18001C MEM18002B MEM05003B cont/d	MEM14004A Plan to undertake a routine task (5) MEM15002A Apply quality systems (5) MEM15024A Apply quality procedures (2) MEM16007A Work with others in a manufacturing, engineering or related environment (7)				MEM09002B Interpret technical drawing (8) MEM12023A Perform engineering measurements (4) MEM12024A Perform computations (4)				Workshop project (Toolbox)
			work placements								

Week		1	2	3	4	5	6	7	8	9	10
TERM 3	Metal & Engineering (240 hours)	MEM14004A Plan to undertake a routine task (5) MEM15002A Apply quality systems (5) MEM15024A Apply quality procedures (3) MEM16007A Work with others in a manufacturing, engineering or related environment (8) MEM05007C Perform manual heating and thermal cutting (10)					Yr 11 Exams	MEM14004A MEM15002A MEM15024A MEM16007A MEM05007C cont/d			Manufacturing, engineering and related services industries induction (5)
		work placements						work placements ←			

Year 11 cont/d

Week		1	2	3	4	5	6	7	8	9	10
TERM 4	Metal & Engineering (240 hours)	MEM18001C Use hand tools (5)		MEM12023A Perform engineering measurements (5)		MEM09002B Interpret technical drawing (10)		MEM12024A Perform computations (6)		MEM05004C Perform routine oxy acetylene welding (15)	
		MEM18002B Use power tools/hand held operations (5)		MEM12023A Perform engineering measurements (5)		MEM12024A Perform computations (6)		MEM05004C Perform routine oxy acetylene welding (15)		Workshop project (BBQ/pizza oven)	
→ A second 35-hour work placement is to be undertaken by the end of Term 2, Year 12											

YEAR 12

Week		1	2	3	4	5	6	7	8	9	10
TERM 1	Metal & Engineering (240 hours)	MEM09002B MEM12023A MEM12024A MEM05004C cont/d		MEM18001C Use hand tools (5)		MEM18002B Use power tools/hand held operations (5)		MEM09002B Interpret technical drawing (12)		MEM12023A Perform engineering measurements (6)	
		MEM12024A MEM05004C cont/d		MEM18001C Use hand tools (5)		MEM18002B Use power tools/hand held operations (5)		MEM12024A Perform computations (10)		MEM03003B Perform sheet and plate assembly (35)	
								MEM05005B Carry out mechanical cutting (5)		Workshop project (industry specific class project)	
work placements											

Week		1	2	3	4	5	6	7	8	9	10
TERM 2	Metal & Engineering (240 hours)	MEM09002B MEM12023A MEM12024A MEM03003B MEM05005B Industry specific class project cont/d									
		work placements ←									

Week		1	2	3	4	5	6	7	8	9	10
TERM 3	Metal & Engineering (240 hours)	MEM09002B MEM12023A MEM12024A MEM03003B MEM05005B Industry specific class project cont/d			Trial HSC		Revision				
		MEM09002B MEM12023A MEM12024A MEM03003B MEM05005B Industry specific class project cont/d			Trial HSC		Revision				

2.2.5.4 Metal and Engineering (240 indicative hours) + Metal and Engineering Specialisation Study

Example 1: Technical

Metal and Engineering (240 indicative hours) + Metal and Engineering Specialisation Study (120 indicative hours)

Depending on competencies achieved, this model provides the opportunity for students to be eligible for the following qualifications:

- Statement of Attainment towards Certificate III in Engineering – Technical
- Certificate II in Engineering.

Unit code	Unit title	HSC indicative hours of credit	Unit weight (points)	Unit status in qualification	
<i>HSC – 240-hour compulsory</i>				Certificate II in Engineering	Cert III in Eng – Technical
N/A	Manufacturing, engineering and related services industries induction	10	–	–	–
MEM09002B	Interpret technical drawing	30	4	specialisation	–
MEM12023A	Perform engineering measurements	15	5	specialisation	–
MEM12024A	Perform computations	20	3	specialisation	elective
MEM13014A	Apply principles of occupational health and safety in the work environment *	15	–	mandatory	–
MEM14004A	Plan to undertake a routine task	10	–	mandatory	–
MEM15002A	Apply quality systems	10	–	mandatory	–
MEM15024A	Apply quality procedures	5	–	mandatory	–
MEM16007A	Work with others in a manufacturing, engineering or related environment	15	–	mandatory	–
MEM18001C	Use hand tools	20	2	specialisation	elective
MEM18002B	Use power tools/hand held operations	20	2	specialisation	–
<i>HSC – 240-hour elective</i>					
MEM16006A	Organise and communicate information	15	2	specialisation	mandatory
MEM16008A	Interact with computing technology	10	2	specialisation	mandatory
plus,	a selection of units of competency from the 240-hour elective pool to the minimum value of 45–55 indicative hours and 8 points ^v (excluding MEM05051A, MEM05052A, MEM12006B, MEM18003C, MEM19012B and MEM50001B – these units of competency are not included in the qualification packaging rules for Certificate II in Engineering)			specialisation	–
<i>HSC – 120-hour Specialisation Study</i>					
MEM15001B	Perform basic statistical quality control	30	2	specialisation	elective
MEM30001A	Use computer aided drafting systems to produce basic engineering drawings (prereq – 16.6A & 16.8A)	50	Nil	–	elective
MEM30002A	Produce basic engineering graphics (prereq – 16.6A & 16.8A)	30	Nil	–	elective
Total		350 – 360 hours	-	5 mandatory 30 points	2 mandatory 5 electives

* Learning experiences for the HSC for this unit of competency must be undertaken prior to work placement.

^v When selecting units of competency ensure all prerequisite requirements are met. Refer to Section 8 of Part A of the Syllabus and Section 2.2.1.1 of this Support Document.

For *Certificate II in Engineering* the following must be completed:

- 5 mandatory units
- specialisation units to the value of at least 30 points.

For *Certificate III in Engineering – Technical* the following must be completed:

- 2 mandatory units
- 8 electives.

Students who are assessed as competent in at least one unit of competency will be eligible for a Statement of Attainment showing partial completion of Certificate II in Engineering **or** Certificate III in Engineering – Technical (depending on unit of competency achieved).

Refer to Section 15 of Part A of the Syllabus for qualification packaging rules.

Example 2: Boating services

Metal and Engineering (240 indicative hours) + Metal and Engineering Specialisation Study (120 indicative hours)

Depending on competencies achieved, this model provides the opportunity for students to be eligible for the following qualifications:

- Certificate III in Boating Services
- Certificate I in Engineering.

Unit code	Unit title	HSC indicative hours of credit	Unit weight (points)	Unit status in qualification	
<i>HSC – 240-hour compulsory</i>				Certificate I in Engineering	Cert III in Boating Services
N/A	Manufacturing, engineering and related services industries induction	10	–	–	–
MEM09002B	Interpret technical drawing	30	4	–	elective
MEM12023A	Perform engineering measurements	15	5	specialisation	elective
MEM12024A	Perform computations	20	3	specialisation	–
MEM13014A	Apply principles of occupational health and safety in the work environment *	15	–	mandatory	mandatory
MEM14004A	Plan to undertake a routine task	10	–	mandatory	mandatory
MEM15002A	Apply quality systems	10	2	specialisation	–
MEM15024A	Apply quality procedures	5	–	mandatory	mandatory
MEM16007A	Work with others in a manufacturing, engineering or related environment	15	–	mandatory	mandatory
MEM18001C	Use hand tools	20	2	specialisation	elective
MEM18002B	Use power tools/hand held operations	20	2	specialisation	elective
<i>HSC – 240-hour elective</i>					
MEM11011B	Undertake manual handling	5	2	specialisation	elective
MEM12006B	Mark off/out (general engineering) (prereq – 9.2B & 12.23A)	25	4	–	elective
MEM13003B	Work safely with industrial chemicals and materials	10	2	specialisation	elective
MEM16006A	Organise and communicate information	15	2	specialisation	mandatory
MEM50002B	Work safely on marine craft	15	1	specialisation	mandatory
MEM50003B	Follow work procedures to maintain the marine environment	10	1	specialisation	mandatory
<i>HSC – 120-hour Specialisation Study</i>					
MEM50001B	Classify recreational boating technologies	20	0	–	mandatory
MEM50004B	Maintain quality of environment by following marina codes (prereq – 50.3B)	10	1	specialisation	elective
MEM50005B	Refuel vessels (prereq – 50.2B & 50.3B)	10	0	–	elective
MEM50006B	Check operational capability of marine craft (prereq – 50.2B)	15	0	–	elective
MEM50007B	Check operational capability of sails and sail operating equipment (prereq – 50.2B)	15	0	–	elective
MEM50008B	Carry out trip preparation and planning	15	0	–	elective
MEM50009B	Safely operate a mechanically powered recreational boat	20	2	specialisation	elective
MEM50010B	Respond to boating emergencies and incidents	15	0	–	elective
Total		370 hours	-	4 mandatory 25 points	8 mandatory 14 electives

* Learning experiences for the HSC for this unit of competency must be undertaken prior to work placement.

For *Certificate I in Engineering* the following must be completed:

- 4 mandatory units
- specialisation units to the value of at least 24 points.

For *Certificate III in Boating Services* the following must be completed:

- 8 mandatory units
- 14 electives.

Students who are assessed as competent in at least one unit of competency will be eligible for a Statement of Attainment showing partial completion of Certificate I in Engineering **or** Certificate III in Boating Services.

Please note that the above model can be used to achieve a *Certificate II in Engineering* as well as a Statement of Attainment towards Certificate III in Boating Services. The student would need to undertake and achieve additional unit/s of competency from those listed in the 240-hour course elective pool and qualification packaging rules for Certificate II to the unit weight of 3 points. Table 6 in Part A of the Syllabus may assist in the selection process.

Refer to Section 15 of Part A of the Syllabus for qualification packaging rules.

Example 3: Mechanical trade

Metal and Engineering (240 indicative hours) + Metal and Engineering Specialisation Study (60 or 120 indicative hours)

For students who are assessed as competent in one or more units of competency, this model provides the opportunity for eligibility for the following qualification:

- Statement of Attainment towards Certificate III in Engineering – Mechanical Trade.

Unit code	Unit title	HSC indicative hours of credit	Unit weight (points)	Unit status in qualification
<i>HSC – 240-hour compulsory</i>				Cert III in Eng – Mechanical Trade
N/A	Manufacturing, engineering and related services industries induction	10	–	–
MEM09002B	Interpret technical drawing	30	4	stream
MEM12023A	Perform engineering measurements	15	–	mandatory
MEM12024A	Perform computations	20	–	mandatory
MEM13014A	Apply principles of occupational health and safety in the work environment *	15	–	mandatory
MEM14004A	Plan to undertake a routine task	10	–	mandatory
MEM15002A	Apply quality systems	10	–	mandatory
MEM15024A	Apply quality procedures	5	–	mandatory
MEM16007A	Work with others in a manufacturing, engineering or related environment	15	–	mandatory
MEM18001C	Use hand tools	20	2	stream
MEM18002B	Use power tools/hand held operations	20	2	stream

* Learning experiences for the HSC for this unit of competency must be undertaken prior to work placement.

<i>HSC – 240-hour elective – select[∇] a minimum of 70 indicative hours from the following:</i>				
MEM03003B	Perform sheet and plate assembly (prereq – 18.1C & 18.2B)	35	4	specialisation
MEM05004C	Perform routine oxy acetylene welding	15	2	specialisation
MEM05005B	Carry out mechanical cutting (prereq – 12.23A & 18.1C)	5	2	specialisation
MEM05006B	Perform brazing and/or silver soldering	20	2	specialisation
MEM05007C	Perform manual heating and thermal cutting	10	2	specialisation
MEM05012C	Perform routine manual metal arc welding	20	2	specialisation
MEM05050B	Perform routine gas metal arc welding	20	2	specialisation
MEM07032B	Use workshop machines for basic operations (prereq – 18.1C)	25	2	stream
MEM12001B	Use comparison and basic measuring devices	10	2	specialisation
MEM12006B	Mark off/out (general engineering) (prereq – 9.2B & 12.23A)	25	4	stream
MEM13001B	Perform emergency first aid	10	1	specialisation
MEM16006A	Organise and communicate information	15	2	mandatory
MEM16008A	Interact with computing technology	10	2	mandatory
MEM18003C	Use tools for precision work (prereq – 12.23A, 18.1C & 18.2B)	15	4	stream

[∇] When selecting units of competency ensure all prerequisite requirements are met. Refer to Section 8 of Part A of the Syllabus and Section 2.2.1.1 of this Support Document.

Unit code	Unit title	HSC indicative hours of credit	Unit weight (points)	Unit status in qualification
MEM18055B	Dismantle, replace and assemble engineering components (prereq – 9.2B, 12.23A, 18.1C & 18.2B)	30	3	stream
<i>HSC – Specialisation Study – select [∇] a minimum of 60 or 120 indicative hours from those remaining above and/or the following:</i>				
MEM06007B	Perform basic incidental heat/quenching, tempering and annealing	20	2	specialisation
MEM07003B	Perform machine setting (routine) (prereq – 7.24B, 12.23A, 16.6A & 18.1C)	50	4	stream
MEM07005B	Perform general machining (prereq – 9.2B, 12.23A & 18.1C)	50	8	stream
MEM07024B	Operate and monitor machine/process	30	4	stream
MEM07028B	Operate computer controlled machine/processes (prereq – 7.24B)	40	2	stream
MEM09003B	Prepare basic engineering drawing	30	8	specialisation
MEM15003B	Use improvement processes in team activities (prereq – 16.7A)	15	4	specialisation
Total		300 or 360 hrs	-	7+ mandatory 8+ points (depends on electives)

[∇] When selecting units of competency ensure all prerequisite requirements are met. Refer to Section 8 of Part A of the Syllabus and Section 2.2.1.1 of this Support Document.

For *Certificate III in Engineering – Mechanical Trade* the following must be completed:

- 11 mandatory units
- mechanical trade stream units to the value of at least 40 points
- specialisation units to bring the total value of mechanical trade stream and specialisation units to at least 76 points.

Refer to Section 15 of Part A of the Syllabus for qualification packaging rules.

Example 4: Fabrication trade

Metal and Engineering (240 indicative hours) + Metal and Engineering Specialisation Study (60 or 120 indicative hours)

For students who are assessed as competent in one or more units of competency, this model provides the opportunity for eligibility for the following qualification:

- Statement of Attainment towards Certificate III in Engineering – Fabrication Trade.

Unit code	Unit title	HSC indicative hours of credit	Unit weight (points)	Unit status in qualification
<i>HSC – 240-hour compulsory</i>				Cert III in Eng – Fabrication Trade
N/A	Manufacturing, engineering and related services industries induction	10	–	–
MEM09002B	Interpret technical drawing	30	4	stream
MEM12023A	Perform engineering measurements	15	–	mandatory
MEM12024A	Perform computations	20	–	mandatory
MEM13014A	Apply principles of occupational health and safety in the work environment *	15	–	mandatory
MEM14004A	Plan to undertake a routine task	10	–	mandatory
MEM15002A	Apply quality systems	10	–	mandatory
MEM15024A	Apply quality procedures	5	–	mandatory
MEM16007A	Work with others in a manufacturing, engineering or related environment	15	–	mandatory
MEM18001C	Use hand tools	20	2	stream
MEM18002B	Use power tools/hand held operations	20	2	stream

* Learning experiences for the HSC for this unit of competency must be undertaken prior to work placement.

<i>HSC – 240-hour elective – select [∇] a minimum of 70 indicative hours from the following:</i>				
MEM03003B	Perform sheet and plate assembly (prereq – 18.1C & 18.2B)	35	4	stream
MEM05003B	Perform soft soldering	15	2	stream
MEM05004C	Perform routine oxy acetylene welding	15	2	stream
MEM05005B	Carry out mechanical cutting (prereq – 12.23A & 18.1C)	5	2	stream
MEM05006B	Perform brazing and/or silver soldering	20	2	stream
MEM05007C	Perform manual heating and thermal cutting	10	2	stream
MEM05012C	Perform routine manual metal arc welding	20	2	stream
MEM05049B	Perform routine gas tungsten arc welding	20	2	stream
MEM05050B	Perform routine gas metal arc welding	20	2	stream
MEM05051A	Select welding process	10	2	stream
MEM05052A	Apply safe welding practices	10	4	stream
MEM07032B	Use workshop machines for basic operations (prereq – 18.1C)	25	2	specialisation
MEM11011B	Undertake manual handling	5	2	specialisation
MEM12001B	Use comparison and basic measuring devices	10	2	specialisation

[∇] When selecting units of competency ensure all prerequisite requirements are met. Refer to Section 8 of Part A of the Syllabus and Section 2.2.1.1 of this Support Document.

Unit code	Unit title	HSC indicative hours of credit	Unit weight (points)	Unit status in qualification
MEM12006B	Mark off/out (general engineering) (prereq – 9.2B & 12.23A)	25	4	specialisation
MEM13001B	Perform emergency first aid	10	1	specialisation
MEM13003B	Work safely with industrial chemicals and materials	10	2	specialisation
MEM16.5A	Operate as a team member to conduct manufacturing, engineering or related activities	10	2	specialisation
MEM16006A	Organise and communicate information	15	2	mandatory
MEM16008A	Interact with computing technology	10	2	mandatory
MEM18003C	Use tools for precision work (prereq – 12.23A, 18.1C & 18.2B)	15	4	specialisation
MEM18055B	Dismantle, replace and assemble engineering components (prereq – 9.2B, 12.23A, 18.1C & 18.2B)	30	3	specialisation
<i>HSC – Specialisation Study – select [∇] a minimum of 60 or 120 indicative hours from those remaining above and/or the following:</i>				
MEM05001B	Perform manual soldering/desoldering – electrical/electronic components	20	4	stream
MEM06007B	Perform basic incidental heat/quenching, tempering and annealing	20	2	specialisation
MEM07003B	Perform machine setting (routine) (prereq – 7.24B, 12.23A, 16.6A & 18.1C)	50	4	specialisation
MEM07005B	Perform general machining (prereq – 9.2B, 12.23A & 18.1C)	50	8	specialisation
MEM07024B	Operate and monitor machine/process	30	4	specialisation
MEM07028B	Operate computer controlled machine/processes (prereq – 7.24B)	40	2	specialisation
MEM08010B	Manually finish/polish materials (prereq – 18.1C)	15	6	stream
MEM09003B	Prepare basic engineering drawing (prereq – 9.2B)	30	8	specialisation
MEM12007C	Mark off/out structural fabrications and shapes (prereq – 12.23A)	30	4	stream
Total		300 or 360 hrs	-	7+ mandatory 8+ points (depends on electives)

[∇] When selecting units of competency ensure all prerequisite requirements are met. Refer to Section 8 of Part A of the Syllabus and Section 2.2.1.1 of this Support Document.

For *Certificate III in Engineering – Fabrication Trade* the following must be completed:

- 11 mandatory units
- fabrication trade stream units to the value of at least 40 points
- specialisation units to bring the total value of fabrication trade stream and specialisation units to at least 76 points.

Refer to Section 15 of Part A of the Syllabus for qualification packaging rules.

Example 5: Electrical/Electronic trade

Metal and Engineering (240 indicative hours) + Metal and Engineering Specialisation Study (60 or 120 indicative hours)

For students who are assessed as competent in one or more units of competency, this model provides the opportunity for eligibility for the following qualification:

- Statement of Attainment towards Certificate III in Engineering – Electrical/Electronic Trade.

Unit code	Unit title	HSC indicative hours of credit	Unit weight (points)	Unit status in qualification
<i>HSC – 240-hour compulsory</i>				Cert III in Eng – Electrical/Electronic Trade
N/A	Manufacturing, engineering and related services industries induction	10	–	–
MEM09002B	Interpret technical drawing	30	4	stream
MEM12023A	Perform engineering measurements	15	–	mandatory
MEM12024A	Perform computations	20	–	mandatory
MEM13014A	Apply principles of occupational health and safety in the work environment *	15	–	mandatory
MEM14004A	Plan to undertake a routine task	10	–	mandatory
MEM15002A	Apply quality systems	10	–	mandatory
MEM15024A	Apply quality procedures	5	–	mandatory
MEM16007A	Work with others in a manufacturing, engineering or related environment	15	–	mandatory
MEM18001C	Use hand tools	20	2	stream
MEM18002B	Use power tools/hand held operations	20	2	stream

* Learning experiences for the HSC for this unit of competency must be undertaken prior to work placement.

<i>HSC – 240-hour elective – select [∇] a minimum of 70 indicative hours from the following:</i>				
MEM3.1B	Perform manual production assembly	35	4	specialisation
MEM03003B	Perform sheet and plate assembly (prereq – 18.1C & 18.2B)	35	4	specialisation
MEM05003B	Perform soft soldering	15	2	stream
MEM05004C	Perform routine oxy acetylene welding	15	2	specialisation
MEM05006B	Perform brazing and/or silver soldering	20	2	stream
MEM05012C	Perform routine manual metal arc welding	20	2	specialisation
MEM05049B	Perform routine gas tungsten arc welding	20	2	specialisation
MEM05050B	Perform routine gas metal arc welding	20	2	specialisation
MEM05052A	Apply safe welding practices	10	4	specialisation
MEM07032B	Use workshop machines for basic operations (prereq – 18.1C)	25	2	specialisation
MEM11011B	Undertake manual handling	5	2	specialisation
MEM12001B	Use comparison and basic measuring devices	10	2	specialisation
MEM13001B	Perform emergency first aid	10	1	specialisation
MEM13003B	Work safely with industrial chemicals and materials	10	2	specialisation

[∇] When selecting units of competency ensure all prerequisite requirements are met. Refer to Section 8 of Part A of the Syllabus and Section 2.2.1.1 of this Support Document.

Unit code	Unit title	HSC indicative hours of credit	Unit weight (points)	Unit status in qualification
MEM16.5A	Operate as a team member to conduct manufacturing, engineering or related activities	10	2	specialisation
MEM16006A	Organise and communicate information	15	2	mandatory
MEM16008A	Interact with computing technology	10	2	mandatory
MEM18003C	Use tools for precision work (prereq – 12.23A, 18.1C & 18.2B)	15	4	specialisation
MEM18055B	Dismantle, replace and assemble engineering components (prereq – 9.2B, 12.23A, 18.1C & 18.2B)	30	3	stream
<i>HSC – Specialisation Study – select[∇] a minimum of 60 or 120 indicative hours from those remaining above and/or the following:</i>				
MEM05001B	Perform manual soldering/desoldering – electrical/electronic components	20	4	stream
MEM06007B	Perform basic incidental heat/quenching, tempering and annealing	20	2	specialisation
MEM07003B	Perform machine setting (routine) (prereq – 7.24B, 12.23A, 16.6A & 18.1C)	50	4	specialisation
MEM07005B	Perform general machining (prereq – 9.2B, 12.23A & 18.1C)	50	8	specialisation
MEM07024B	Operate and monitor machine/process	30	4	specialisation
MEM07028B	Operate computer controlled machine/ processes (prereq – 7.24B)	40	2	specialisation
MEM09003B	Prepare basic engineering drawing	30	8	specialisation
Total		300 or 360 hrs	-	7+ mandatory 8+ points (depends on electives)

[∇] When selecting units of competency ensure all prerequisite requirements are met. Refer to Section 8 of Part A of the Syllabus and Section 2.2.1.1 of this Support Document.

For *Certificate III in Engineering – Electrical/Electronic Trade* the following must be completed:

- 11 mandatory units
- electrical/electronic trade stream units to the value of at least 40 points
- specialisation units to bring the total value of electrical/electronic trade stream and specialisation units to at least 76 points.

Refer to Section 15 of Part A of the Syllabus for qualification packaging rules.

2.2.6 The timing of work placement

The scheduling of work placement should reflect student readiness and complement off-the-job learning programs.

The learning experiences for the HSC for the following unit of competency **must** be undertaken prior to work placement:

MEM13014A Apply principles of occupational health and safety in the work environment

Some of the learning experiences for the HSC for the following units of competency may be best addressed prior to students undertaking a work placement:

MEM14004A Plan to undertake a routine task

MEM16007A Work with others in a manufacturing, engineering or related environment

MEM18001C Use hand tools.