



**Australian Government**

# **UEE62511 Advanced Diploma of Air-conditioning and Refrigeration Engineering**

**Release 5**

## UEE62511 Advanced Diploma of Air-conditioning and Refrigeration Engineering

### Modification History

Release	Action	Core/Elective	Details	Points
3	Edit		Edit Name to reflect correct Unit title UEENEED104A Use engineering applications software on personal computers	40
3	Update	Group A	HLTCPR211A Perform CPR	10

5	Update	Elective	HLTAID001 - Provide cardiopulmonary resuscitation	10
5	Edit	Core	Correct title of UEENEEJ102A - Prepare and connect refrigerant tubing and fittings	30
5	Edit	Elective	Correct title of UEENEEK145A - Implement and monitor energy sector environmental and sustainable policies and procedures	20

## Description

### Scope

This qualification provides competencies to design and validate/evaluate refrigeration and air conditioning equipment and systems, manage risk, estimate and manage projects and provide technical advice/sales. It includes regulatory requirements for purchasing and handling refrigerants.

It develops competencies in the ethical and responsible application of mathematics, science, engineering techniques, Standards and Codes of Practice, engineering design practices, supervision and management of physical, human and financial resources in Refrigeration and Air Conditioning engineering.

### Note:

The Ozone Protection and Synthetic Greenhouse Gas Legislation Amendment Bill 2003 apply to this qualification. Prior to planning the delivery of any training and/or assessment activities all legislative and regulatory requirements shall be identified and included.

The core competencies of this qualification meet the prescribed requirements for Engineering Associate membership of Engineers Australia.

Participants seeking Engineers Australia membership should ensure that their training provider is accredited by that body to provide Engineering Education Programs at the level of Engineering Associate.

## Pathways Information

Not Applicable

## Licensing/Regulatory Information

Not Applicable

## Entry Requirements

Not Applicable

## Employability Skills Summary

Not Applicable

## Packaging Rules

### Completion requirements

The requirements for granting this qualification will be met when competency is demonstrated and achieved for:

- All the Core competency standard units, defined in the Core Competency Standard Units table below and
- A combination of Elective competency standard units to achieve a total weighting of 250 points in accordance with the Elective Competency Standard Units table below.

Note: UEENEEJ109A - Those holding an 'Certificate III in Refrigeration and Air-conditioning trade qualification or equivalent' meet the requirements of this unit and its pre-requisite requirements.

Core Competency Standard Units All Core competency standard units to be achieved		Weighting Points
UEENEE104A	Use engineering applications software on personal computers	40
UEENEEE011C	Manage risk in electrotechnology activities	60
UEENEEE080A	Apply industry and community standards to engineering activities	20
UEENEEE083A	Establish and follow a competency development plan in an electrotechnology engineering discipline	120
UEENEEE101A	Apply Occupational Health and Safety regulations, codes and practices in the workplace	20
UEENEEE102A	Fabricate, assemble and dismantle utilities industry components	40
UEENEEE103A	Solve problems in ELV single path circuits	40
UEENEEE105A	Fix and secure electrotechnology equipment	20
UEENEEE107A	Use drawings, diagrams, schedules, standards, codes and specifications	40
UEENEEE117A	Implement and monitor energy sector OHS policies and procedures	20
UEENEEE124A	Compile and produce an energy sector detailed report	60
UEENEEE137A	Document and apply measures to control OHS risks	20

<b>Core Competency Standard Units</b> All Core competency standard units to be achieved		<b>Weighting Points</b>
	associated with electrotechnology work	
UEENEEJ040B	Manage refrigeration and air conditioning projects	40
UEENEEJ069B	Plan refrigeration and air conditioning projects	60
UEENEEJ102A	Prepare and connect refrigerant tubing and fittings	30
UEENEEJ103A	Establish the basic operating conditions of vapour compression systems	60
UEENEEJ104A	Establish the basic operating conditions of air conditioning systems	20
UEENEEJ106A	Install refrigerant pipe work, flow controls and accessories	60
UEENEEJ107A	Install air conditioning and refrigeration systems, major components and associated equipment	80
UEENEEJ108A	Recover, pressure test, evacuate, charge and leak test refrigerants	60
UEENEEJ109A	Verify functionality and compliance of refrigeration and air conditioning installations	20
UEENEEJ110A	Select refrigerant piping, accessories and associated controls	50
UEENEEJ111A	Diagnose and rectify faults in air conditioning and refrigeration systems and components	40
UEENEEJ113A	Commission air conditioning and refrigeration systems	40
UEENEEJ127A	Establish the thermodynamic parameters of refrigeration and air conditioning systems	80
UEENEEJ128A	Produce HVAC/R system design drawings	80
UEENEEJ129A	Establish heat loads for commercial refrigeration and/or air conditioning applications	80
UEENEEJ138A	Analyse vibration and noise in refrigeration and air conditioning systems	80

<b>Core Competency Standard Units</b> All Core competency standard units to be achieved		<b>Weighting Points</b>
UEENEEJ153A	Find and rectify faults in motors and associated controls in refrigeration and air conditioning systems	50
UEENEEJ164A	Analyse the operation of HVAC air and hydronic systems	80
UEENEEJ165A	Evaluate thermodynamic and fluid parameters of refrigeration systems	100
UEENEEJ170A	Diagnose and rectify faults in air conditioning and refrigeration control systems	70
UEENEEJ192A	Analyse the psychrometric performance of HVAC/R systems	50
UEENEEJ194A	Solve problems in low voltage refrigeration circuits	40
UEENEEK132A	Develop strategies to address environmental and sustainability issues in the energy sector	20
UEENEPP012A	Disconnect / reconnect composite appliances connected to low voltage installation wiring	60
UEENEPP017A	Locate and rectify faults in low voltage composite appliances using set procedures	20
UEENEPP024A	Attach cords and plugs to electrical equipment for connection to a single phase 230 Volt supply	20
UEENEPP025A	Attach cords, cables and plugs to electrical equipment for connection to 1000 Va.c. or 1500 Vd.c. supply	20
<b>Total points in core</b>		<b>1910</b>

<b>Elective Competency Standard Units</b> Complete Elective units to achieve a total of weighting of 250 points from the following groups:		
<b>Group</b>	<b>Minimum points</b>	<b>Maximum points</b>

<b>A</b>	<b>Imported and Common Elective Units</b> Imported units from other training packages and/or state accredited courses can be added to this group, but they must be selected from qualifications where the unit is first packaged at AQF level 6. If units have not been assigned a weighting by the relevant EE-Oz Industry Technical Advisory Committee, their weighting will be 10 points.	0	120
<b>B</b>	<b>Qualification Elective Units</b>	0	30
<b>C</b>	<b>Qualification Elective Units</b>	0	60
<b>D</b>	<b>Qualification Elective Units</b>	0	120
<b>E</b>	<b>Qualification Elective Units</b> You may select all of your elective units from this Group	120	250

<b>Group A – Imported and Common Electives Units</b> You may complete units to a maximum weighting of 120		<b>Weighting Points</b>
BSBMGT502B	Manage people performance	70
BSBINM501A	Manage an information or knowledge management system	50
BSBMGT516C	Facilitate continuous improvement	60
BSBINN502A	Build and sustain an innovative work environment	50
BSBWOR502B	Ensure team effectiveness	60
CPCCOHS1001A	Work safely in the construction industry	10
HLTAID001	Provide cardiopulmonary resuscitation	10
MEM16006A	Organise and communicate information	20
MEM16008A	Interact with computing technology	20
MEM30001A	Use computer aided drafting systems to produce basic engineering drawings	40
MEM30002A	Produce basic engineering graphics	40

MEM30003A	Produce detailed engineering drawings	80
MEM30004A	Use CAD to create and display 3D models	40
	<p>Imported units from other training packages and/or state accredited courses can be added to this group, but they must be selected from qualifications where the unit is first packaged at AQF level 6. If units have not being assigned a weighting by the relevant EE-Oz Industry Technical Advisory Committee, their weighting will be 10 points.</p> <p>Note: For further information see Application of the NQC Flexibility Formula, UEE11 Electrotechnology Training Package, Version 1, Volume 1 Qualification Framework</p>	Up to 120 points



<b>Group B – Qualification Elective Units</b>		<b>Weighting Points</b>
You may complete units to a maximum weighting of 30		
UEENEEJ114A	Resolve problems in hydronic systems	40
UEENEEJ115A	Resolve problems in beverage dispensers	40
UEENEEJ116A	Resolve problems in transport refrigeration systems	20
UEENEEJ117A	Resolve problems in ultra-low temperature refrigeration systems	20
UEENEEJ118A	Resolve problems in post mix refrigeration systems	20
UEENEEJ119A	Resolve problems in ice making systems	20
UEENEEJ166A	Resolve problems in dairy refrigeration systems	20
UEENEEJ167A	Resolve problems in central plant air conditioning systems	40
UEENEEJ168A	Maintain microbial control of refrigeration and air conditioning systems	20
UEENEEJ171A	Resolve problems in refrigerated beverage vending cabinets	20
UEENEEJ174A	Apply safety awareness and legal requirements for hydrocarbon refrigerants	10
UEENEEJ175A	Service and repair self contained hydrocarbon air conditioning and refrigeration systems	20
UEENEEJ176A	Install and commission hydrocarbon refrigeration systems, components and associated equipment	20
UEENEEJ178A	Apply safety awareness and legal requirements for ammonia refrigerant	10
UEENEEJ179A	Repair and service ammonia refrigeration systems	20
UEENEEJ180A	Install and commission ammonia refrigeration systems, components and associated equipment	20
UEENEEJ182A	Repair and service secondary refrigeration systems	20
UEENEEJ184A	Apply safety awareness and legal requirements for	10

	carbon dioxide refrigerant	
UEENEEJ185A	Repair and service carbon dioxide refrigeration systems	20
UEENEEJ186A	Install and commission carbon dioxide refrigeration systems, components and associated equipment	20
UEENEEJ188A	Repair and service self contained carbon dioxide refrigeration and heat pump systems	20

<b>Group C – Qualification Elective Units</b>		<b>Weighting Points</b>
You may complete units to a maximum weighting of 60		
UEENEEC005B	Estimate electrotechnology projects	40
UEENEEJ130A	Produce HVAC/R control system diagrams	40
UEENEEJ190A	Select basic commercial refrigeration system equipment, components and accessories	40
UEENEEJ191A	Select residential air conditioning system equipment, components and accessories	40
UEENEEK145A	Implement and monitor energy sector environmental and sustainable policies and procedures	20

<b>Group D – Qualification Elective Units</b>		<b>Weighting Points</b>
You may complete units to a maximum weighting of 120		
UEENEEC006B	Prepare tender submissions for electrotechnology projects	60
UEENEEE015B	Develop design briefs for electrotechnology projects	40
UEENEEE126A	Provide solutions to basic engineering computational problems	60
UEENEEJ132A	Design commercial refrigeration systems and select components	80
UEENEEJ133A	Design industrial refrigeration systems and select components	80

UEENEEJ134A	Design heating, ventilation and air conditioning (HVAC) systems and select components	60
UEENEEJ135A	Design control systems for refrigeration or heating, ventilation and air conditioning systems	80
UEENEEJ136A	Evaluate and report on building services energy management systems	80
UEENEEJ137A	Evaluate and report on the indoor air quality of buildings	40
UEENEEJ177A	Design hydrocarbon refrigerated systems	40
UEENEEJ181A	Design ammonia refrigerated systems	40
UEENEEJ183A	Design secondary refrigerant systems	40
UEENEEJ187A	Design carbon dioxide refrigerated systems	40
UEENEEK151A	Develop effective engineering strategies for energy reduction in buildings	60

<b>Group E – Qualification Elective Units</b>		<b>Weighting Points</b>
You must complete units to a minimum weighting of 120		
You may select all your elective units from this Group		
UEENEEC007B	Manage contract variations	40
UEENEEJ139A	Develop specifications and prepare drawings for HVAC/Refrigeration projects	60
UEENEEJ141A	Design complex commercial refrigeration systems and select equipment	40
UEENEEJ142A	Design complex industrial refrigeration systems and select equipment	40
UEENEEJ143A	Design complex air conditioning systems and select equipment	120
UEENEEJ144A	Design mechanical ventilation/exhaust systems and select equipment	40
UEENEEJ145A	Design hydronic systems and select equipment	80

UEENEEJ146A	Design complex control systems for refrigeration or heating, ventilation, air conditioning systems	80
UEENEEJ147A	Audit energy use for commercial HVAC/Refrigeration systems	40
UEENEEJ148A	Audit HVAC/R control systems for compliance with regulations and standards	60
UEENEEJ149A	Develop heat exchanger design specifications	80
UEENEEJ150A	Evaluate new and alternative technologies applicable to electrotechnology applications	40

**Note:**

1. Pre-requisite pathways shall be identified and met for all elective units selected.
2. In selecting elective units considerations to career planning advice should be given to units that form part of a pre-requisite pathway for the progression to achieve particular competencies or qualification at a higher level
3. Registered training organisations shall also provide information related to the relevant pathway(s) that may be taken to achieve paraprofessional status ("associate membership") with a professional engineering membership organisation.

**END OF QUALIFICATION**