Australian Government

UEE51220 Diploma of Air Conditioning and Refrigeration Engineering

Release 1

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Modification History

Release 1. This is the first release of this qualification in the UEE Electrotechnology Training Package

Qualification Description

This qualification covers competencies to develop systems; select equipment; and commission, maintain and diagnose faults/malfunctions of refrigeration systems and equipment that apply to commercial food storage and preservation and air conditioning and air distribution equipment and special applications. It includes regulatory requirements for purchasing and handling refrigerants.

Competency development activities in this qualification are subject to regulations directly related to licencing. A relevant contract of training through an apprenticeship or relevant employment may be required to enable the application of the required knowledge and skills to on the job work activities and environments. Refrigerant Handling Licence:

The achievement of the qualification meets the training components for the full national Refrigerant Handling Licence which is required to work on refrigeration and air conditioning equipment that carries the risk of a fluorocarbon refrigerant being emitted while decanting the refrigerant or manufacturing, installing, commissioning, servicing, maintaining or decommissioning refrigeration and air conditioning equipment.

Refrigeration and Air Conditioning Occupational Licence:

Additional and/or other conditions may apply in some jurisdictions subject to regulations related to refrigeration/air conditioning work. Practice in the workplace and during training is also subject to work health and safety (WHS)/occupational health and safety (OHS) regulations.

Electrical Occupation Licence:

The achievement of this qualification with the core restricted electrical units meet the electrical regulatory requirements for related restricted electrical work in most state/territories. This is required to work on electrical installations which are designed to operate at voltages greater than 50 volt (V) alternating current (a.c.) or 120 V direct current (d.c.).

Entry Requirements

There are no entry requirements for this qualification.

Packaging Rules

A total of **1670 weighting points** comprising:

1540 core weighting points listed below; **plus**

130 general elective weighting points from the general elective units listed below.

Choose a total of 130 **weighting points** elective units from the list below, of which between 0 and 60 **weighting points** can be taken from Group A; and between 0 and 30 **weighting points** must be taken from Group B; and between 0 and 50 **weighting points** must be taken from Group C; and between 50 and 130 **weighting points** must be taken from Group D; or all electives units of 130 **weighting points** can be taken from Group D.

Up to 60 weighting points of the general elective units Group A, may be selected, with appropriate contextualisation, from any relevant nationally endorsed Training Package or accredited course, provided selected units contribute to the vocational outcome of the qualification. Previously assigned weighting points are listed in the UEE Electrotechnology Training Package Companion Volume Implementation Guide (CVIG), if not listed weighting points will be 10 points, unless directed from the Electrotechnology Industry Reference Committee (IRC).

There are units of competency within this qualification that contain pre-requisites. Units of competency that have a pre-requisite requirement are identified by this symbol *. Refer directly to the units of competency to identify pre-requisite requirements to ensure all are complied with. A list of all pre-requisites is also provided in the UEE Pre-requisites Companion Volume.

Where imported units are selected, care must be taken to ensure all pre-requisite units specified are complied with.

Core units		**Weighting Points**
UEECD0007	Apply work health and safety regulations, codes and practices in the workplace	20
UEECD0010	Compile and produce an energy sector detailed report	60
UEECD0016	Document and apply measures to control WHS risks associated with electrotechnology work*	20
UEECD0019	Fabricate, assemble and dismantle utilities industry components*	40
UEECD0020	Fix and secure electrotechnology equipment*	20
UEECD0024	Implement and monitor energy sector WHS policies and procedures	20
UEECD0027	Participate in development and follow a personal competency development plan	20
UEECD0042	Solve problems in ELV single path circuits*	40

UEECD0051	Use drawings, diagrams, schedules, standards, codes and specifications*	40
UEECS0033	Use engineering applications software on personal computers	40
UEERA0001	Analyse the operation of HVAC air and hydronic systems*	80
UEERA0002	Analyse the psychrometric performance of HVAC/R systems*	50
UEERA0031	Diagnose and rectify faults in air conditioning and refrigeration control systems*	60
UEERA0034	Establish heat loads for commercial refrigeration and/or air conditioning applications*	80
UEERA0035	Establish the basic operating conditions of air conditioning systems*	20
UEERA0036	Establish the basic operating conditions of vapour compression systems*	60
UEERA0038	Establish the thermodynamic parameters of refrigeration and air conditioning systems*	80
UEERA0042	Evaluate thermodynamic and fluid parameters of refrigeration systems*	100
UEERA0044	Find and rectify faults in single phase motors and associated controls*	40
UEERA0045	Find and rectify faults in three phase motors and associated controls*	30
UEERA0050	Install refrigerant pipe work, flow controls and accessories*	60
UEERA0051	Install, commission, service and maintain air conditioning systems*	80
UEERA0052	Install, commission, service and maintain low temperature systems*	40
UEERA0053	Install, commission, service and maintain medium temperature systems*	60
UEERA0059	Prepare and connect refrigerant tubing and fittings*	40

UEERA0062	Recover and charge refrigerants*	40
UEERA0079	Safely handle refrigerants and lubricants*	40
UEERA0081	Select refrigerant piping, accessories and associated controls*	40
UEERA0092	Solve problems in low voltage refrigeration and air conditioning circuits*	40
UEERA0094	Verify functionality and compliance of refrigeration and air conditioning installations*	40
UEERE0015	Implement and monitor energy sector environmental and sustainable policies and procedures	20
UEERL0001	Attach cords and plugs to electrical equipment for connection to a single phase 230 Volt supply*	20
UEERL0002	Attach cords, cables and plugs to electrical equipment for connection to 1000 V a.c. or 1500 V d.c.*	20
UEERL0004	Disconnect - reconnect electrical equipment connected to low voltage (LV) installation wiring*	60
UEERL0005	Locate and rectify faults in low voltage (LV) electrical equipment using set procedures*	20

Group A: Imported and common elective units.		**Weighting Points**
BSBMGT502	Manage people performance	70
BSBINM501	Manage an information or knowledge management system	50
BSBMGT516	Facilitate continuous improvement	60
BSBINN502	Build and sustain an innovative work environment	50
BSBWOR502	Lead and manage team effectiveness	60
CPCCWHS1001	Prepare to work safely in the construction industry	10
HLTAID001	Provide cardiopulmonary resuscitation	10
MEM16006	Organise and communicate information*	20

MEM16008	Interact with computing technology*	20
MEM30031A	Operate computer-aided design (CAD) system to produce basic drawing elements	40
MEM30032A	Produce basic engineering drawings	80
MEM30033A	Use computer-aided design (CAD) to create and display 3-D models*	40

Group B: Qualification elective units.		**Weighting Points**
UEERA0005	Apply safety awareness and legal requirements for ammonia refrigerant	10
UEERA0006	Apply safety awareness and legal requirements for carbon dioxide refrigerant	10
UEERA0007	Apply safety awareness and legal requirements for flammable refrigerants	10
UEERA0046	Install and commission ammonia refrigeration systems, components and associated equipment*	20
UEERA0047	Install and commission carbon dioxide refrigeration systems, components and associated equipment*	20
UEERA0048	Install and commission flammable refrigerant air conditioning and refrigeration systems*	20
UEERA0054	Maintain microbial control of refrigeration and air conditioning systems	20
UEERA0065	Repair and service ammonia refrigeration systems*	20
UEERA0066	Repair and service carbon dioxide refrigeration systems*	20
UEERA0067	Repair and service secondary refrigeration systems*	20
UEERA0068	Repair and service self-contained carbon dioxide refrigeration and heat pump systems*	20
UEERA0069	Resolve problems in beverage dispensers*	40
UEERA0070	Resolve problems in central plant air conditioning systems*	40

UEERA0071	Resolve problems in dairy refrigeration systems*	20
UEERA0072	Resolve problems in hydronic systems*	40
UEERA0073	Resolve problems in ice making systems*	20
UEERA0075	Resolve problems in post-mix refrigeration systems*	20
UEERA0076	Resolve problems in refrigerated beverage vending cabinets*	20
UEERA0077	Resolve problems in transport refrigeration systems*	20
UEERA0078	Resolve problems in ultra-low temperature refrigeration systems*	20
UEERA0084	Service and repair self-contained flammable refrigerants air conditioning and refrigeration systems*	20

Group C: Qualification elective units.		**Weighting Points**
UEECD0013	Develop and implement energy sector maintenance programs	60
UEECO0001	Estimate electrotechnology projects	40
UEERA0060	Produce HVAC/R control system diagrams*	40
UEERA0061	Produce HVAC/R system design drawings*	80
UEERA0080	Select basic commercial refrigeration system equipment, components and accessories*	40
UEERA0082	Select residential air conditioning system equipment, components and accessories*	40

Group D: Qualification elective units.		**Weighting Points**
UEECD0039	Provide solutions to basic engineering computational problems*	60
UEECO0014	Prepare tender submissions for electrotechnology projects*	60
UEERA0014	Design ammonia refrigerated systems*	40

UEERA0015	Design carbon dioxide refrigerated systems*	40
UEERA0016	Design commercial refrigeration systems and select components*	80
UEERA0021	Design control systems for refrigeration or heating, ventilation and air conditioning systems*	80
UEERA0022	Design heating, ventilation and air conditioning (HVAC) systems and select components*	60
UEERA0023	Design hydrocarbon refrigerated systems*	40
UEERA0025	Design industrial refrigeration systems and select components*	80
UEERA0027	Design secondary refrigerant systems*	40
UEERA0028	Determine noise and vibration encountered in HVAC/R applications*	80
UEERA0039	Evaluate and report on building services energy management systems*	80
UEERA0040	Evaluate and report on the indoor air quality of buildings*	40

Qualification Mapping Information

This qualification replaces and is equivalent to UEE51211 Diploma of Air-conditioning and Refrigeration Engineering

Links

Companion Volume implementation guides are found in VETNet - - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6