



Australian Government

UEE53020 Diploma of Electrical Systems Engineering

Release 3

UEE53020 Diploma of Electrical Systems Engineering

Modification History

Release 3. Updated superseded elective units.

Release 2. Updated superseded elective units.

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

Qualification Description

This qualification covers competencies to develop, select, commission, maintain and diagnose faults/malfunctions on advanced electrical equipment and systems.

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Entry Requirements

The entry requirement for this qualification is:

- UEE33020 Certificate III in Electrical Fitting

or

- a current Electrical Fitter Occupational License or its equivalent issued in an applicable Australian state or territory.

Packaging Rules

A total of **800 weighting points** comprising:

160 core weighting points listed below; plus

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

Choose a total of **600 weighting points** elective units from the list below, of which between **0 and 270 weighting points** can be taken from Group A; between **0 and 140 weighting points** can be taken from Group B; between **0 and 240 weighting points** can be taken from Group C; and between **260 and 640 weighting points** can be taken from Group D (or all elective units between **0 and 640 weighting points** can be taken from Group D).

Up to **270 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
UEECD0010	Compile and produce an energy sector detailed report	60
UEECD0024	Implement and monitor energy sector WHS policies and procedures	20
UEECD0027	Participate in development and follow a personal competency development plan	20
UEECD0059	Write specifications for electrical engineering projects	40
UEERE0013	Develop strategies to address environmental and sustainability issues in the energy sector	20

Group A: Imported and common elective units		Weighting Points
BSBINS501	Implement information and knowledge management systems	50
BSBLDR522	Manage people performance	70
BSBOPS203	Deliver a service to customers	20
BSBSTR501	Establish innovative work environments	50
BSBSTR502	Facilitate continuous improvement	60
BSBTWK502	Manage team effectiveness	60
ICTICT214	Operate application software packages	20
UEECD0011	Comply with scheduled and preventative maintenance program processes	20
UEECD0035	Provide basic instruction in the use of electrotechnology apparatus	20

UEECO0002	Maintain documentation	20
UEECO0015	Provide quotations for installation or service jobs	20
UEECO0017	Source and purchase material/parts for installation or service jobs	20

Group B: General elective units**Weighting Points**

UEEAS0007	Assemble, mount and connect control gear and switchgear*	40
UEEAS0008	Fabricate and assemble bus bars*	40
UEEAS0009	Mount and wire control panel equipment*	40
UEECD0050	Use and maintain the integrity of a portable gas detection device*	20
UEECS0033	Use engineering applications software on personal computers	40
UEEDV0001	Assemble and connect telecommunication frames and cabinets*	60
UEEDV0005	Install and maintain cabling for multiple access to telecommunication services*	80
UEEDV0008	Install, modify and verify coaxial and structured communication copper cabling*	40
UEEEC0060	Repairs basic electronic apparatus faults by replacement of components*	40
UEEEC0075	Troubleshoot single phase input d.c power supplies*	40
UEEEL0004	Carry out basic repairs to electrical components and equipment*	40
UEEEL0016	Provide advice on effective and energy efficient lighting products	20
UEEEL0017	Repair and maintain mechanical components of electrical machines*	40
UEEEL0022	Supply effective and efficient lighting products for domestic and small commercial	40

	applications*	
UEEEL0026	Align and install traction lift equipment*	20
UEEEL0033	Conduct electrical tests on LV electrical machines*	40
UEEEL0034	Conduct mechanical tests on electrical machines and components*	40
UEEEL0045	Diagnose and rectify faults in traction lift systems*	80
UEEEL0046	Find and repair faults in LV d.c. electrical apparatus and circuits*	60
UEEEL0052	Maintain and service traction lift systems and equipment*	40
UEEEL0053	Maintain operation of electrical marine equipment and systems*	60
UEEEL0054	Maintain operation of electrical mining equipment and systems*	60
UEEEL0055	Overhaul and repair major switchgear and control gear*	60
UEEEL0056	Place and connect electrical coils*	40
UEEEL0061	Provide advice on the application of energy efficient lighting for ambient and aesthetic effect*	20
UEEEL0066	Rewind LV direct current machines*	60
UEEEL0067	Rewind single phase machines*	40
UEEEL0068	Rewind three phase low voltage induction machines*	60
UEEEL0074	Wind electrical coils*	40
UEEHA0004	Enter a classified hazardous area to undertake work related to electrical equipment	40
UEEHA0022	Determine the explosion-protection requirements to meet a specified classified hazardous area*	40

UEEHA0026	Maintain equipment associated with hazardous areas*	60
UEEHA0031	Supervise repair and overhaul of explosion-protected equipment type flameproof (Ex d)*	60
UEEHA0032	Supervise repair and overhaul of explosion-protected equipment type increased safety (Ex e)*	60
UEEHA0033	Supervise repair and overhaul of explosion-protected equipment type intrinsically safe (Ex i)*	60
UEEHA0034	Supervise repair and overhaul of explosion-protected equipment type pressurised (Ex p)*	60
UEEHA0035	Supervise repair and overhaul of explosion-protected rotating machines*	60
UEEHA0039	Supervise repair and overhaul of explosion-protected equipment type Group III ('t')*	60
UEEIC0002	Assemble, enter and verify operating instructions in microprocessor equipped devices*	20
UEEIC0013	Develop, enter and verify discrete control programs for programmable controllers*	60
UEEIC0022	Install instrumentation and control apparatus and associated equipment*	20
UEEIC0023	Install instrumentation and control cabling and tubing*	20
UEEIC0038	Solve problems in density/level measurement components and systems*	40
UEEIC0039	Solve problems in flow measurement components and systems*	40
UEEIC0041	Solve problems in pressure measurement components and systems*	40
UEEIC0043	Solve problems in temperature measurement	40

	components and systems*	
UEEIC0047	Use instrumentation drawings, specifications, standards and equipment manuals*	40
UEERA0031	Diagnose and rectify faults in air conditioning and refrigeration control systems*	60
UEERA0035	Establish the basic operating conditions of air conditioning systems*	20
UEERA0036	Establish the basic operating conditions of vapour compression systems*	60
UEERA0037	Establish the basic operating conditions of vapour compression systems - appliances*	50
UEERA0043	Find and rectify faults in appliance control systems and devices*	60
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
UEERA0049	Install and start up single head split air conditioning and water heating heat pump systems*	70
UEERA0050	Install refrigerant pipe work, flow controls and accessories*	60
UEERA0059	Prepare and connect refrigerant tubing and fittings*	40
UEERA0062	Recover and charge refrigerants*	40
UEERA0063	Recover, pressure test, evacuate, charge and leak test refrigerants - appliances*	50
UEERA0079	Safely handle refrigerants and lubricants*	40
UEERA0083	Service and repair microwave ovens*	40
UEERA0085	Service clothes washing machines and dryers*	40
UEERA0086	Service dishwasher machines*	40
UEERA0087	Service electrical heating appliances*	60

UEERA0088	Service gas heating appliances*	40
UEERA0089	Service refrigeration appliances*	60
UEERA0091	Service small electrical appliances and power tools*	60
UEERA0092	Solve problems in low voltage refrigeration and air conditioning circuits*	40
UEERS0021	Assemble and wire electrical rail signalling equipment*	30
UETDRIS017	Perform high voltage field switching operation to a given schedule*	40
UETDRIS018	Perform low voltage field switching operation to a given schedule*	50
UETDRIS031	Maintain insulating oil*	40
UETDRIS032	Solve problems in network equipment*	80
UETDRIS033	Solve problems in network protection*	40
UETDRSB001	Perform substation switching operations to a given schedule*	50
UETDRSB010	Maintain capacitor bank equipment*	40
Group C: General elective units		Weighting Points
UEEEL0007	Develop detailed electrical drawings*	60
UEEEL0032	Conduct electrical tests on HV electrical machines*	60
UEEEL0044	Diagnose and rectify faults in complex lift systems*	40
UEEEL0059	Plan low voltage switchboard and control panel layouts*	40
UEEEL0064	Rewind HV three phase induction machines rated for voltages above 3.3 kV*	60
UEEEL0065	Rewind HV three phase induction machines rated for voltages to 3.3 kV*	60

UEEHA0004	Enter a classified hazardous area to undertake work related to electrical equipment	40
UEEHA0020	Conduct detailed inspection of electrical installations for hazardous areas*	40
UEEHA0022	Determine the explosion-protection requirements to meet a specified classified hazardous area*	40
UEEHA0023	Develop and manage periodic electrical inspection and maintenance programs for hazardous areas*	20
UEEHA0026	Maintain equipment associated with hazardous areas*	60
UEEHA0029	Plan electrical installations for hazardous areas*	20
UEEHA0038	Conduct visual and close inspection of electrical installations for hazardous areas*	40
UEEIC0012	Develop structured programs to control external devices*	40
UEEIC0014	Develop, enter and verify programs in supervisory control and data acquisition systems*	60
UEEIC0015	Develop, enter and verify word and analogue control programs for programmable logic controllers*	60
UEEIC0018	Diagnose and rectify faults in digital controls systems*	60
UEEIC0020	Fault find and repair analogue circuits and components in electronic control systems*	60
UEEIC0026	Provide solutions to fluid circuit operations*	60
UEEIC0027	Provide solutions to pneumatic-hydraulic system operations*	80
UEEIC0028	Provide solutions to problems in industrial control systems*	60
UEEIC0034	Set up industrial field control devices*	60

UEEIC0040	Solve problems in polyphase electronic power control circuits*	60
UEEIC0042	Solve problems in single phase electronic power control circuits*	60

Group D: General elective units**Weighting Points**

UEECD0013	Develop and implement energy sector maintenance programs	60
UEECO0014	Prepare tender submissions for electrotechnology projects*	60
UEEEL0006	Develop detailed and complex drawings for electrical systems using CAD systems*	60
UEEEL0011	Evaluate performance of low voltage electrical apparatus*	40
UEEEL0035	Design effective and efficient lighting for public, open and sports areas*	20
UEEEL0037	Design electrical installations with a low voltage demand greater than 400 A per phase*	40
UEEEL0062	Provide engineering solutions to problems in complex polyphase power circuits*	60
UEEIC0005	Configure and maintain industrial control system networks*	60
UEEIC0010	Develop and test code for microcontroller devices	60
UEEIC0016	Diagnose and rectify faults in a.c. motor drive systems*	60
UEEIC0017	Diagnose and rectify faults in d.c. motor drive systems*	60
UEEIC0019	Diagnose and rectify faults in servo drive systems*	60
UETDRIS025	Diagnose and resolve faults in distribution systems*	60
UETDRIS026	Diagnose and resolve faults in electrical	60

	apparatus*	
UETDRIS027	Diagnose and resolve faults in transmission systems*	60

Qualification Mapping Information

This qualification replaces and is not equivalent to UEE53011 Diploma of Electrical Systems Engineering

Links

Companion Volume Implementation Guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>