



Australian Government

UEE50411 Diploma of Electrical Engineering

Release 5

UEE50411 Diploma of Electrical Engineering

Modification History

Release	Action	Core/Elective	Details	Points
2	Add	Group B	UETTDRIS67A Solve problems in energy supply network equipment	80
2	Add	Group B	UETTDRIS68A Solve problems in energy supply network protection equipment and systems	40
2	Add	Group B	UETTDRIS44A Perform HV field switching operation to a given schedule	60
2	Add	Group D	UETTDRIS69A Diagnose and rectify faults in energy supply apparatus	60
2	Add	Group D	UETTDRIS70A Diagnose and rectify faults in electrical energy distribution systems	60
2	Add	Group D	UETTDRIS71A Diagnose and rectify faults in electrical energy supply transmission systems	60
2	Add	Group D	UETTDRIS72A Diagnose and rectify faults in distributed Generation systems	60
3	Add	Group A	UEENEEE125A Provide engineering solutions for problems in complex multiple path circuit	60
3	Add	Group A	UEENEEE126A Provide solutions to basic engineering computational problems	60
2	Edit		Edit Name to reflect correct Unit title UEENEEED104A Use engineering applications software on personal computers	40
2	Edit		Edit Name to Reflect correct Unit Title UEENEEI124A Fault find and repair analogue circuits and components in electronic control systems	
2	Edit		Edit Name to reflect correct Unit title UEENEEE117A Implement and monitor energy sector OHS policies and procedures	

2	Edit		Edit Name to reflect correct Unit title UEENEEE124A Compile and produce an energy sector detailed report	
2	Edit		Edit Name to reflect correct Unit title UEENEEK132A Develop strategies to address environmental and sustainability issues in the energy sector	

3	Add	Group D	UEENEEE125A Provide engineering solutions for problems in complex multiple path circuit	60
3	Add	Group D	UEENEEE126A Provide solutions to basic engineering computational problems	60
3	Edit	Group B	Edit Name to reflect correct Unit title UEENEEI102A Solve problems in pressure measurement components and systems	40
3	Edit	Group B	Edit Name to reflect correct Unit title UEENEEI103A Solve problems in density_level measurement components and systems	40
3	Edit	Group B	Edit Name to reflect correct Unit title UEENEEI104A Solve problems in flow measurement components and systems	40
3	Edit	Group B	Edit Name to reflect correct Unit title UEENEEI105A Solve problems in temperature measurement components and systems	40
3	Edit	Group C	Edit Name to reflect correct Unit title UEENEEI151A Develop, enter and verify word and analogue control programs for programmable logic controllers.	60

4	Edit	Core	Correct title of UEENEEE101A - Apply Occupational Health and Safety regulations, codes and practices in the workplace	20
4	Edit	Core	Correct title of UEENEEE102A - Fabricate, assemble and dismantle utilities industry components	40

4	Edit	Elective	Correct title of UEENEED101A - Use computer applications relevant to a workplace	20
4	Edit	Elective	Correct title of UEENEEE121A Plan an integrated cabling installation system	40
4	Edit	Elective	Correct title of UEENEEE125A Provide engineering solutions for problems in complex multiple path circuits	60
4	Edit	Elective	Correct title of UEENEEG110A Find and repair faults in LV d.c. electrical apparatus and circuits	60
4	Edit	Elective	Correct title of UEENEEG111A Carry out basic repairs to electrical components and equipment	40
4	Edit	Elective	Correct title of UEENEEG113A Install and maintain emergency safety systems	60
4	Edit	Elective	Correct title of UEENEEG116A Diagnose and rectify faults in traction lift systems	80
4	Edit	Elective	Correct title of UEENEEG119A Maintain operation of electrical marine equipment and systems	60
4	Edit	Elective	Correct title of UEENEEG120A Select and arrange equipment for special LV electrical installations	60
4	Edit	Elective	Correct title of UEENEEG125A Plan electrical installations with a low voltage demand up to 400 A per phase	40
4	Edit	Elective	Correct title of UEENEEG126A Install and maintain field power and distribution systems with a low voltage demand up to 200 A per phase	40
4	Edit	Elective	Correct title of UEENEEG127A Design electrical installations with a low voltage demand greater than 400 A per phase	40
4	Edit	Elective	Correct title of UEENEEG128A Plan low voltage switchboard and control panel layouts	40
4	Edit	Elective	Correct title of UEENEEG129A Overhaul and repair major switchgear and controlgear	60
4	Edit	Elective	Correct title of UEENEEG131A Evaluate performance of low voltage electrical apparatus	40

4	Edit	Elective	Correct title of UEENEEG132A Carry out low voltage electrical field testing and report findings	60
4	Edit	Elective	Correct title of UEENEEG153A Rewind three phase low voltage induction machines	60
4	Edit	Elective	Correct title of UEENEEG155A Rewind HV three phase induction machines rated for voltages to 3.3 kV	60
4	Edit	Elective	Correct title of UEENEEG156A Rewind HV three phase induction machines rated for voltages above 3.3 kV	60
4	Edit	Elective	Correct title of UEENEEG159A Conduct mechanical tests on electrical machines and components	40
4	Edit	Elective	Correct title of UEENEEG164A Repair and maintain mechanical components of electrical machines	40
4	Edit	Elective	Correct title of UEENEEG165A Maintain and service traction lifts systems and equipment	40
4	Edit	Elective	Correct title of UEENEEG166A Install and maintain escalators, moving walks and treadways	40
4	Edit	Elective	Correct title of UEENEEG167A Align and install traction lift equipment	20
4	Edit	Elective	Correct title of UEENEEG168A Diagnose and rectify faults in complex lift systems	40
4	Edit	Elective	Correct title of UEENEEG172A Investigate and report on electrical incidents and causes	60
4	Edit	Elective	Correct title of UEENEEG177A Select low voltage power factor correction equipment	40
4	Edit	Elective	Correct title of UEENEEG185A Select effective and efficient light sources and luminaries for given locations and designs	60
4	Edit	Elective	Correct title of UEENEEH102A Repairs basic electronic apparatus faults by replacement of components	40
4	Edit	Elective	Correct title of UEENEEH150A Assemble and	80

			set up basic security systems	
4	Edit	Elective	Correct title of UEENEEI101A Use instrumentation drawings, specification, standards and equipment manuals	40
4	Edit	Elective	Correct title of UEENEEI103A Solve problems in density/level measurement components and systems	40
4	Edit	Elective	Correct title of UEENEEI116A Assemble, enter and verify operating instructions in microprocessor equipped devices	20
4	Edit	Elective	Correct title of UEENEEI119A Set up industrial field control devices	60
4	Edit	Elective	Correct title of UEENEEI126A Provide solutions to pneumatic-hydraulic system operations	80
4	Edit	Elective	Correct title of UEENEEI148A Solve problems in single phase electronic power control circuits	60
4	Edit	Elective	Correct title of UEENEEI149A Solve problems in polyphase electronic power control circuits	60
4	Edit	Elective	Correct title of UEENEEK135A Design grid connected photovoltaic power supply systems	60
4	Edit	Elective	Correct title of UEENEEK138A Design micro-hydro systems rated to 6.4 kW	60
4	Edit	Elective	Correct title of UEENEEK148A Install, configure and commission LV grid connected photovoltaic power systems	40
4	Edit	Elective	Correct title of UEENEEK153A Assess energy loads and uses for energy efficiency in residential, office and retail premises	20
4	Edit	Elective	Correct title of UEENEEK154A Assess energy loads and uses for energy efficiency in commercial facilities	40
4	Edit	Elective	Correct title of UEENEEK155A Assess energy loads and uses for energy efficiency in industrial properties and enterprises	40
4	Edit	Elective	Correct title of UEENEEM080A Report on the	20

			integrity of explosion-protected equipment in a hazardous area	
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5	Remove	Group C	UEENEEG197A - Apply currency of safe working practices and compliance verification of electrical installations	20
5	Remove	Group C	UEENEEG198A - Apply compliance requirements to all aspects of electrical work	20

Description

Scope

This qualification provides competencies to develop, select, commission, maintain and diagnose faults/malfunctions on advanced electrical equipment and systems. It includes ERAC requirements for an 'Electrician's licence'.

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 600 points in accordance with the Elective Competency Standard Units table below.

Note: UEENEEG105A - Those holding an 'Unrestricted Electricians Licence or equivalent issued in an Australian State or Territory meets the requirements of this unit and its pre-requisite requirements.

Core Competency Standard Units All Core competency standard units to be achieved		Weighting Points
UEENEEE038B	Participate in development and follow a personal competency development plan	20
UEENEEE084A	Write specifications for electrotechnology engineering projects	40
UEENEEE101A	Apply Occupational Health and Safety regulations, codes and practices in the workplace	20
UEENEEE102A	Fabricate, assemble and dismantle utilities industry components	40
UEENEEE104A	Solve problems in d.c. circuits	80
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 associated with electrotechnology work	20
UEENEEG006A	Solve problems in single and three phase low voltage machines	80

Core Competency Standard Units All Core competency standard units to be achieved		Weighting Points
UEENEEG033A	Solve problems in single and three phase low voltage electrical apparatus and circuits	60
UEENEEG063A	Arrange circuits, control and protection for general electrical installations	40
UEENEEG101A	Solve problems in electromagnetic devices and related circuits	60
UEENEEG102A	Solve problems in low voltage a.c. circuits	80
UEENEEG103A	Install low voltage wiring and accessories	20
UEENEEG104A	Install appliances, switchgear and associated accessories for low voltage electrical installations	20
UEENEEG105A	Verify compliance and functionality of low voltage general electrical installations	40
UEENEEG106A	Terminate cables, cords and accessories for low voltage circuits	40
UEENEEG107A	Select wiring systems and cables for low voltage general electrical installations	60
UEENEEG108A	Trouble-shoot and repair faults in low voltage electrical apparatus and circuits	40
UEENEEG109A	Develop and connect electrical control circuits	80
UEENEEK132A	Develop strategies to address environmental and sustainability issues in the energy sector	20
Total points in core		1000

Elective Competency Standard Units Complete Elective units to achieve a total of weighting of 600 points from the following groups:		
Group	Minimum points	Maximum points

A	Imported and Common Elective Units 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 5. If units have not being assigned a weighting by the relevant EE-Oz Industry Technical Advisory Committee, their weighting will be 10 points.	0	270
B	Qualification Elective Units	0	100
C	Qualification Elective Units	0	240
D	Qualification Elective Units You may select all your elective units from this Group	260	600

Group A – Imported and Common Elective Units You may complete units to a maximum weighting of 270		Weighting Points
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
UEENEEC001B	Maintain documentation	20
UEENEEC002B	Source and purchase material/parts for installation or service jobs	20
UEENEEC003B	Provide quotations for installation or service jobs	20
UEENEEC010B	Deliver a service to customers	20
UEENEEED101A	Use computer applications relevant to a workplace	20
UEENEEEE009B	Comply with scheduled and preventative maintenance program processes	20
UEENEEEE020B	Provide basic instruction in the use of electrotechnology apparatus	20

	<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 5. 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 270 points
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Group B – Qualification Elective Units You may complete units to a maximum weighting of 100		Weighting Points
UEENEEA110A	Assemble, mount and connect control gear and switchgear	40
UEENEEA112A	Fabricate and assemble bus bars	40
UEENEEA113A	Mount and wire control panel equipment	40
UEENEEA104A	Use engineering applications software on personal computers	40
UEENEEE121A	Plan an integrated cabling installation system	40
UEENEEF102A	Install and maintain cabling for multiple access to telecommunication services	120
UEENEEF104A	Install and modify performance data communication copper cabling	40
UEENEEG110A	Find and repair faults in LV d.c. electrical apparatus and circuits	60
UEENEEG111A	Carry out basic repairs to electrical components and equipment	40
UEENEEG113A	Install and maintain emergency safety systems	60
UEENEEG116A	Diagnose and rectify faults in traction lift systems	80
UEENEEG118A	Maintain operation of electrical mining equipment and systems	60
UEENEEG119A	Maintain operation of electrical marine equipment and systems	60
UEENEEG120A	Select and arrange equipment for special LV electrical installations	60
UEENEEG126A	Install and maintain field power and distribution systems with a low voltage demand up to 200 A per phase	40
UEENEEG129A	Overhaul and repair major switchgear and controlgear	60
UEENEEG150A	Wind electrical coils	40

UEENEEG151A	Place and connect electrical coils	40
UEENEEG152A	Rewind single phase machines	40
UEENEEG153A	Rewind three phase low voltage induction machines	60
UEENEEG154A	Rewind LV direct current machines	60
UEENEEG157A	Conduct electrical tests on LV electrical machines	40
UEENEEG159A	Conduct mechanical tests on electrical machines and components	40
UEENEEG164A	Repair and maintain mechanical components of electrical machines	40
UEENEEG165A	Maintain and service traction lifts systems and equipment	40
UEENEEG166A	Install and maintain escalators, moving walks and treadways	40
UEENEEG167A	Align and install traction lift equipment	20
UEENEEG171A	Install, set up and commission interval metering	20
UEENEEG181A	Provide advice on effective and energy efficient lighting products	20
UEENEEG182A	Supply effective and efficient lighting products for domestic and small commercial applications	40
UEENEEG183A	Provide advice on the application of energy efficient lighting for ambient and aesthetic effect	20
UEENEEG189A	Install and maintain emergency lighting systems	40
UEENEEH102A	Repairs basic electronic apparatus faults by replacement of components	40
UEENEEH111A	Troubleshoot single phase input d.c. power supplies	40
UEENEEH150A	Assemble and set up basic security systems	80
UEENEEI101A	Use instrumentation drawings, specification, standards and equipment manuals	40

UEENEEI102A	Solve problems in pressure measurement components and systems	40
UEENEEI103A	Solve problems in density/level measurement components and systems	40
UEENEEI104A	Solve problems in flow measurement components and systems	40
UEENEEI105A	Solve problems in temperature measurement components and systems	40
UEENEEI116A	Assemble, enter and verify operating instructions in microprocessor equipped devices	20
UEENEEI140A	Plan the electrical installation of integrated systems	20
UEENEEI141A	Develop electrical integrated systems	20
UEENEEI150A	Develop, enter and verify discrete control programs for programmable controllers	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
UEENEEK125A	Solve basic problems in photovoltaic energy apparatus and systems	20
UEENEEK148A	Install, configure and commission LV grid connected photovoltaic power systems	40
UEENEEM019A	Attend to breakdowns in hazardous areas — coal mining	20
UEENEEM020A	Attend to breakdowns in hazardous areas — gas atmospheres	20
UEENEEM021A	Attend to breakdowns in hazardous areas — dust atmospheres	20
UEENEEM022A	Attend to breakdowns in hazardous areas — pressurisation	20

UEENEEM023A	Install explosion-protected equipment and wiring systems — coal mining	60
UEENEEM024A	Install explosion-protected equipment and wiring systems — gas atmospheres	60
UEENEEM025A	Install explosion-protected equipment and wiring systems — dust atmospheres	60
UEENEEM026A	Install explosion-protected equipment and wiring systems — pressurisation	60
UEENEEM027A	Maintain equipment in hazardous areas — coal mining	60
UEENEEM028A	Maintain equipment in hazardous areas — gas atmospheres	60
UEENEEM029A	Maintain equipment in hazardous areas — dust atmospheres	60
UEENEEM030A	Maintain equipment in hazardous areas — pressurisation	60
UEENEEM038A	Conduct testing of hazardous areas installations — coal mining	40
UEENEEM080A	Report on the integrity of explosion-protected equipment in a hazardous area	20
UETTDRIS67A	Solve problems in energy supply network equipment	80
UETTDRIS68A	Solve problems in energy supply network protection equipment and systems	40
UETTDRIS44A	Perform HV field switching operation to a given schedule	40

Group C – Qualification Elective Units		Weighting Points
You may complete units to a maximum weighting of 240		
UEENEEC005B	Estimate electrotechnology projects	40
UEENEEG076A	Install and replace low voltage current transformer metering	20

UEENEEG121A	Verify compliance and functionality of special LV electrical installations	40
UEENEEG122A	Conduct compliance inspection of single phase LV electrical installations	60
UEENEEG123A	Conduct compliance inspection of LV electrical installations with demand exceeding 100 A per phase	40
UEENEEG124A	Conduct compliance inspection of special LV electrical installations	60
UEENEEG125A	Plan electrical installations with a low voltage demand up to 400 A per phase	40
UEENEEG128A	Plan low voltage switchboard and control panel layouts	40
UEENEEG132A	Carry out low voltage electrical field testing and report findings	60
UEENEEG155A	Rewind HV three phase induction machines rated for voltages to 3.3 kV	60
UEENEEG156A	Rewind HV three phase induction machines rated for voltages above 3.3 kV	60
UEENEEG158A	Conduct electrical tests on HV electrical machines	60
UEENEEG162A	Set up and place LV electrical apparatus and associated circuits into service	40
UEENEEG168A	Diagnose and rectify faults in complex lift systems	40
UEENEEG172A	Investigate and report on electrical incidents and causes	60
UEENEEG175A	Develop compliance policies and plans to conduct a electrical contracting business	80
UEENEEG177A	Select low voltage power factor correction equipment	40
UEENEEG179A	Develop detailed electrical drawings	60
UEENEEG184A	Provide photometric data for illumination system design	60

UEENEEG185A	Select effective and efficient light sources and luminaries for given locations and designs	60
UEENEEG186A	Design effective and efficient lighting for residential and commercial buildings	20
UEENEEG188A	Prepare quotations for the supply of effective and efficient lighting products for lighting projects	20
UEENEEI119A	Set up industrial field control devices	60
UEENEEI120A	Provide solutions to problems in industrial control systems	60
UEENEEI124A	Fault find and repair analogue circuits and components in electronic control systems	60
UEENEEI125A	Provide solutions to fluid circuit operations	60
UEENEEI126A	Provide solutions to pneumatic-hydraulic system operations	80
UEENEEI139A	Diagnose and rectify faults in digital controls systems	60
UEENEEI142A	Develop an electrical integrated system interface for access through a touch screen	20
UEENEEI143A	Develop access control of electrical integrated systems using logic-based programming tools	20
UEENEEI144A	Develop interfaces for multiple access methods to monitor, schedule and control an electrical integrated system	20
UEENEEI148A	Solve problems in single phase electronic power control circuits	60
UEENEEI149A	Solve problems in polyphase electronic power control circuits	60
UEENEEI151A	Develop, enter and verify word and analogue control programs for programmable logic controllers.	60
UEENEEI152A	Develop, enter and verify programs in Supervisory Control and Data Acquisition systems	60
UEENEEI155A	Develop structured programs to control external	40

	devices	
UEENEEK135A	Design grid connected photovoltaic power supply systems	60
UEENEEK152A	Develop strategies to address sustainability issues for electrical installations	20
UEENEEK153A	Assess energy loads and uses for energy efficiency in residential, office and retail premises	40
UEENEEK154A	Assess energy loads and uses for energy efficiency in commercial facilities	40
UEENEEK155A	Assess energy loads and uses for energy efficiency in industrial properties and enterprises	40

Group D – Qualification Elective Units You must complete units to a minimum weighting of 260 You may select all your elective units from this Group		Weighting Points
UEENEEC006B	Prepare tender submissions for electrotechnology projects	60
UEENEEE110A	Develop and implement energy sector maintenance programs	60
UEENEEE125A	Provide engineering solutions for problems in complex multiple path circuits	60
UEENEEE126A	Provide solutions to basic engineering computational problems	60
UEENEEG127A	Design electrical installations with a low voltage demand greater than 400 A per phase	40
UEENEEG131A	Evaluate performance of low voltage electrical apparatus	40
UEENEEG149A	Provide engineering solutions to problems in complex polyphase power circuits	60
UEENEEG180A	Develop detailed and complex drawings for electrical systems using CAD systems	60
UEENEEG187A	Design effective and efficient lighting for public, open and sports areas	20

UEENEEI127A	Analyse complex electronic circuits controlling fluids	80
UEENEEI145A	Diagnose and rectify faults in a.c. motor drive systems	60
UEENEEI146A	Diagnose and rectify faults in d.c. motor drive systems	60
UEENEEI147A	Diagnose and rectify faults in servo drive systems	60
UEENEEI156A	Develop and test code for microcontroller devices	60
UEENEEI157A	Configure and maintain industrial control system networks	60
UEENEEK129A	Design renewable energy (RE) heating systems	120
UEENEEK131A	Design wind energy conversion systems (WECS) rated to 10 kW	60
UEENEEK138A	Design micro-hydro systems rated to 6.4 kW	60
UEENEEM035A	Conduct a conformity assessment of explosion-protected equipment — coal mining	40
UEENEEM036A	Conduct a conformity assessment of explosion-protected equipment — gas atmospheres	40
UEENEEM037A	Conduct a conformity assessment of explosion-protected equipment — dust atmospheres	40
UEENEEM064A	Conduct audit of hazardous areas installations — coal mining	60
UEENEEM065A	Conduct audit of hazardous areas installations — gas atmospheres	60
UEENEEM066A	Conduct audit of hazardous areas installations — dust atmospheres	60
UEENEEM067A	Assess the fitness-for-purpose of hazardous areas explosion-protected equipment — coal mining	60
UEENEEM068A	Assess the fitness-for-purpose of hazardous areas explosion-protected equipment — gas atmospheres	60
UEENEEM069A	Assess the fitness-for-purpose of hazardous areas	60

	explosion-protected equipment — dust atmospheres	
UETTDRI69A	Diagnose and rectify faults in energy supply apparatus	60
UETTDRI70A	Diagnose and rectify faults in electrical energy distribution systems	60
UETTDRI71A	Diagnose and rectify faults in electrical energy supply transmission systems	60
UETTDRI72A	Diagnose and rectify faults in distributed Generation systems	60

Note:

1. Prerequisite 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 prerequisite pathway for the progression to achieve particular competencies or qualification at a higher level.
3. Registered training organisations shall provide competency development advice in relation to any licensing requirements to practice that apply, or can contribute towards the qualification requirement, prior to establishing the competency development plan.

END OF QUALIFICATION**Custom Content Section**

Not applicable.