Australian Government

UEE61511 Advanced Diploma of Instrumentation and Control Engineering

Release 4

INDUSTRY SKILLS COUNCILS
Creating Australia's Future

UEE61511 Advanced Diploma of Instrumentation and Control Engineering

Modification History

Release	Action	Core/Elective	Details	Points
3	Edit	Core	Edit Name to reflect correct Unit title UEENEEI102A Solve problems in pressure measurement components and systems	40
3	Edit	Core	Edit Name to reflect correct Unit title UEENEEI103A Solve problems in density_level measurement components and systems	40
3	Edit	Core	Edit Name to reflect correct Unit title UEENEEI104A Solve problems in flow measurement components and systems	40
3	Edit	Core	Edit Name to reflect correct Unit title UEENEEI105A Solve problems in temperature measurement components and systems	40
3	Edit	Core	Edit Name to reflect correct Unit title UEENEEI106A Set up and adjust PID control loops	40
3	Edit	Core	Edit Name to reflect correct Unit title UEENEEI110A Set up and adjust advanced PID process control loops	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
3	Edit	Core	Edit Name to reflect correct Unit title UEENEEE117A Implement and monitor energy sector OHS policies and procedures	20
3	Edit	Core	Edit Name to reflect correct Unit title UEENEEE124A Compile and produce an energy sector detailed report	60

3	Edit	Core	Edit Name to reflect correct Unit title UEENEEI124A Fault find and repair analogue circuits and components in electronic control systems	60
3	Edit	Group B	Edit Name to reflect correct Unit title UEENEED101A Use computer applications relevant to a workplace	20
3	Edit	Group B	Edit Name to reflect correct Unit title UEENEEI114A Trouble shoot process control systems	60
3	Edit	Core	Edit Name to reflect correct Unit title UEENEED104A Use software for engineering applications	40

4	Edit	Core	Correct title of UEENEED104A - Use engineering applications software on personal computers	40
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	Core	Correct title of UEENEEE117A - Implement and monitor energy sector OHS policies and procedures	20
4	Edit	Core	Correct title of UEENEEE124A - Compile and produce an energy sector detailed report	60
4	Edit	Core	Correct title of UEENEEE125A - Provide engineering solutions for problems in complex multiple path circuits	60
4	Edit	Core	Correct title of UEENEEI101A - Use instrumentation drawings, specification, standards and equipment manuals	40
4	Edit	Core	Correct title of UEENEEI103A - Solve problems in density/level measurement components and systems	40
4	Edit	Core	Correct title of UEENEEI107A - Install instrumentation and control cabling and tubing	20

4	Edit	Core	Correct title of UEENEEI108A - Install instrumentation and control apparatus and associated equipment	20
4	Edit	Core	Correct title of UEENEEI124A - Fault find and repair analogue circuits and components in electronic control systems	60
4	Edit	Core	Correct title of UEENEEK132A - Develop strategies to address environmental and sustainability issues in the energy sector	20
4	Edit	Core	Correct title of UEENEEP013A - Disconnect - reconnect control devices connected to low voltage installation wiring	60
4	Edit	Elective	Correct title of UEENEED101A - Use computer applications relevant to a workplace	20
4	Edit	Elective	Correct title of UEENEED110A - Set up, create and implement content for a web server	120
4	Edit	Elective	Correct title of UEENEED111A - Develop, implement and test object oriented code	140
4	Edit	Elective	Correct title of UEENEED144A - Commission industrial computer systems	20
4	Edit	Elective	Correct title of UEENEED145A - Modify-redesign of industrial computer systems	20
4	Edit	Elective	Correct title of UEENEEE127A - Use advanced computational processes to provide solutions to energy sector engineering problems	80
4	Edit	Elective	Correct title of UEENEEE128A - Develop engineering solutions to photonic system problems	80
4	Edit	Elective	Correct title of UEENEEE161A - Analyse static and dynamic parameters of electrical equipment	80
4	Edit	Elective	Correct title of UEENEEE162A - Select drive components for electrical equipment design	80
4	Edit	Elective	Correct title of UEENEEE163A - Analyse materials for suitability in electrical equipment	80
4	Edit	Elective	Correct title of UEENEEE192A - Produce detailed electrotechnology /utilities drawings using computer	60

			aided design equipment and software	
4	Edit	Elective	Correct title of UEENEEG131A - Evaluate performance of low voltage electrical apparatus	40
4	Edit	Elective	Correct title of UEENEEH102A - Repairs basic electronic apparatus faults by replacement of components	40
4	Edit	Elective	Correct title of UEENEEH147A - Assess electronic apparatus compliance	60
4	Edit	Elective	Correct title of UEENEEH184A - Modify digital signal processing (DSP) based sub-systems	80
4	Edit	Elective	Correct title of UEENEEH185A - Design signal-conditioning subsystems	80
4	Edit	Elective	Correct title of UEENEEH188A - Design and develop electronics - computer systems projects	40
4	Edit	Elective	Correct title of UEENEEI115A - Trouble shooting in medical equipment control systems	120
4	Edit	Elective	Correct title of UEENEEI117A - Calibrate, adjust and test measuring instruments	40
4	Edit	Elective	Correct title of UEENEEI121A - Trouble shoot in measuring and analysis systems	40
4	Edit	Elective	Correct title of UEENEEI122A - Assist in commissioning process and instrumentation control systems	40
4	Edit	Elective	Correct title of UEENEEI123A - Design electronic control systems	60
4	Edit	Elective	Correct title of UEENEEI126A - Provide solutions to pneumatic-hydraulic system operations	80
4	Edit	Elective	Correct title of UEENEEI128A - Set up and configure controls on complex fluid systems	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 UEENEEI154A - Design and use advanced programming tools PC networks and HMI Interfacing	120
4	Edit	Elective	Correct title of UEENEEM079A - Design of gas detection systems	20

Description

Scope
This qualification provides competencies to design and validate/evaluate process control equipment and systems, manage risk, estimate and manage projects and provide technical advice/sales. It's also provides competencies to install, set up, test, develop, select, commission, maintain, diagnose faults/malfunctions of equipment and systems.

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

Note: UEENEEI112A - Those holding an 'Certificate III in Instrumentation and Control 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**
UEENEED104A	Use engineering applications software on personal computers	40
UEENEEE006B	Apply methods to maintain currency of industry developments	20
UEENEEE011C	Manage risk in electrotechnology activities	60
UEENEEE015B	Develop design briefs for electrotechnology projects	40
UEENEEE075B	Write specifications for industrial electronics and control projects	40
UEENEEE080A	Apply industry and community standards to engineering activities	20
UEENEEE081A	Apply material science to solving electrotechnology engineering problems	60
UEENEEE082A	Apply physics to solving electrotechnology engineering problems	60
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

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
UEENEEE119A	Solve problems in multiple path extra low voltage (ELV) a.c. circuits	40
UEENEEE124A	Compile and produce an energy sector detailed report	60
UEENEEE125A	Provide engineering solutions for problems in complex multiple path circuits	60
UEENEEE126A	Provide solutions to basic engineering computational problems	60
UEENEEE137A	Document and apply measures to control OHS risks associated with electrotechnology work	20
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
UEENEEI106A	Set up and adjust PID control loops	40
UEENEEI107A	Install instrumentation and control cabling and tubing	20
UEENEEI108A	Install instrumentation and control apparatus and associated equipment	20
UEENEEI110A	Set up and adjust advanced PID process control loops	40
UEENEEI111A	Find and rectify faults in process final control elements	40

UEENEEI112A	Verify compliance and functionality of instrumentation and control installations	40
UEENEEI113A	Setup and configure human-machine interface (HMI) and industrial networks	60
UEENEEI124A	Fault find and repair analogue circuits and components in electronic control systems	60
UEENEEI134A	Manage instrumentation and control projects	40
UEENEEI135A	Plan instrumentation and control projects	60
UEENEEI139A	Diagnose and rectify faults in digital controls systems	60
UEENEEI150A	Develop, enter and verify discrete control programs for programmable controllers	60
UEENEEK132A	Develop strategies to address environmental and sustainability issues in the energy sector	20
UEENEEP013A	Disconnect - reconnect control devices connected to low voltage installation wiring	60
Total points in core		**1740**

Elective Competency Standard Units

Complete Elective units to achieve a total of weighting of 420 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 6. If units have not being assigned a weighting by the relevant EE-Oz Industry Technical Advisory Committee, their weighting will be 10 points.	0	170
B	**Qualification Elective Units**	0	80
C	**Qualification Elective Units**	0	80

Elective Competency Standard Units Complete Elective units to achieve a total of weighting of 420 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 6. If units have not being assigned a weighting by the relevant EE-Oz Industry Technical Advisory Committee, their weighting will be 10 points.	0	170
D	**Qualification Elective Units**	0	80
E	**Qualification Elective Units** You may select all your elective units from this Group	180	420

Group A – Imported and Common Elective Units You may complete units to a maximum weighting of 170		**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
	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. Note: For further information see Application of the	Up to 170 points

	NQC Flexibility Formula, UEE11 Electrotechnology Training Package, Version 1, Volume 1 Qualification Framework	

Group B – Qualification Elective Units You may complete units to a maximum weighting of 80		**Weighting Points**
UEENEED101A	Use computer applications relevant to a workplace	20
UEENEEE190A	Prepare engineering drawings using manual drafting and CAD for electrotechnology/utilities applications	60
UEENEEE191A	Prepare electrotechnology/utilities drawings using manual drafting and CAD equipment and software	60
UEENEEH102A	Repairs basic electronic apparatus faults by replacement of components	40
UEENEEH111A	Troubleshoot single phase input d.c. power supplies	40
UEENEEI114A	Trouble shoot process control systems	60
UEENEEI115A	Trouble shooting in medical equipment control systems	120
UEENEEI117A	Calibrate, adjust and test measuring instruments	40
UEENEEI118A	Set up weighting measuring and control instruments	20
UEENEEI131A	Set up gas analysis measuring and control instruments	20
UEENEEI132A	Set up water analysis measuring and control instruments	20
UEENEEI133A	Set up scientific analysis measuring and control instruments	20
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	60

	systems — coal mining	
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
UEENEEM076A	Use and maintain the integrity of a portable gas detection device	20
UEENEEM077A	Install and maintain the integrity of fixed gas detection equipment	20
UEENEEM080A	Report on the integrity of explosion-protected equipment in a hazardous area	20

Group C – Qualification Elective Units You may complete units to a maximum weighting of 80		**Weighting Points**
UEENEEC005B	Estimate electrotechnology projects	40
UEENEEE192A	Produce detailed electrotechnology /utilities drawings using computer aided design equipment and software	60
UEENEEI121A	Trouble shoot in measuring and analysis systems	40
UEENEEI122A	Assist in commissioning process and instrumentation control systems	40
UEENEEI125A	Provide solutions to fluid circuit operations	60

UEENEEI126A	Provide solutions to pneumatic-hydraulic system operations	80
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 devices	40
UEENEEM038A	Conduct testing of hazardous areas installations — coal mining	40
UEENEEM039A	Conduct testing of hazardous areas installations — gas atmospheres	40
UEENEEM040A	Conduct testing of hazardous areas installations — dust atmospheres	40
UEENEEM041A	Conduct testing of hazardous area installations — pressurisation	40
UEENEEM042A	Conduct visual inspection of hazardous areas installations	40
UEENEEM043A	Conduct detailed inspection of hazardous areas installations — coal mining	40
UEENEEM044A	Conduct detailed inspection of hazardous areas installations — gas atmospheres	40
UEENEEM045A	Conduct detailed inspection of hazardous areas installations — dust atmospheres	40
UEENEEM046A	Conduct detailed inspection of hazardous areas installations — pressurisation	40
UEENEEM078A	Manage compliance of hazardous areas	20

Group D – Qualification Elective Units You may complete units to a maximum weighting of 80		**Weighting Points**
UEENEEC006B	Prepare tender submissions for electrotechnology projects	60
UEENEED116A	Develop computer network services	120
UEENEED110A	Set up, create and implement content for a web server	120
UEENEED111A	Develop, implement and test object oriented code	140
UEENEED144A	Commission industrial computer systems	20
UEENEED145A	Modify-redesign of industrial computer systems	20
UEENEEG131A	Evaluate performance of low voltage electrical apparatus	40
UEENEEG180A	Develop detailed and complex drawings for electrical systems using CAD systems	60
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
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
UEENEEM054A	Plan electrical installations for hazardous areas — gas atmospheres	20
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 explosion-protected equipment — dust atmospheres	60

Group E – Qualification Elective Units You must complete units to a minimum weighting of 180 You may select all your elective units from this Group		**Weighting Points**
UEENEEC007B	Manage contract variations	40
UEENEEE127A	Use advanced computational processes to provide solutions to energy sector engineering problems	80
UEENEEE128A	Develop engineering solutions to photonic system problems	80
UEENEEE160A	Provide engineering solutions for uses of materials and thermodynamic effects	80
UEENEEE161A	Analyse static and dynamic parameters of electrical equipment	80
UEENEEE162A	Select drive components for electrical equipment design	80
UEENEEE163A	Analyse materials for suitability in electrical equipment	80
UEENEEE164A	Design electrical machine drives and production layout plans	80
UEENEEE078B	Contribute to risk management in electrotechnology systems	20

UEENEEH147A	Assess electronic apparatus compliance	60
UEENEEH184A	Modify digital signal processing (DSP) based sub-systems	80
UEENEEH185A	Design signal-conditioning subsystems	80
UEENEEH188A	Design and develop electronics - computer systems projects	40
UEENEEI123A	Design electronic control systems	60
UEENEEI128A	Set up and configure controls on complex fluid systems	80
UEENEEI129A	Set up electronically controlled mechanically operated complex systems	80
UEENEEI130A	Set up electronically controlled robotically operated complex systems	80
UEENEEI153A	Design and configure Human-Machine Interface (HMI) networks	60
UEENEEI154A	Design and use advanced programming tools PC networks and HMI Interfacing	120
UEENEEM052A	Classify hazardous areas — gas atmospheres	40
UEENEEM053A	Classify hazardous areas — dust atmospheres	40
UEENEEM057A	Design explosion-protected electrical systems and installations — gas atmospheres	20
UEENEEM058A	Design explosion-protected electrical systems and installations — dust atmospheres	20
UEENEEM059A	Design explosion-protected electrical systems and installations — pressurisation	20
UEENEEM075A	Design explosion-protected electrical systems — Coal mining	20
UEENEEM079A	Design of gas detection systems	20

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

Custom Content Section

Not applicable.