



**Australian Government**

# **UEE51011 Diploma of Instrumentation and Control Engineering**

**Release 3**

## UEE51011 Diploma of Instrumentation and Control Engineering

### Modification History

Release	Action	Core/Elective	Details	Points
2	Add	Group D	UEENEED152A Design embedded controller control systems	80
2	Edit	Core	Edit Name to reflect correct Unit title UEENEEI102A Solve problems in pressure measurement components and systems	40
2	Edit	Core	Edit Name to reflect correct Unit title UEENEEI103A Solve problems in density_level measurement components and systems	40
2	Edit	Core	Edit Name to reflect correct Unit title UEENEEI104A Solve problems in flow measurement components and systems	40
2	Edit	Core	Edit Name to reflect correct Unit title UEENEEI105A Solve problems in temperature measurement components and systems	40
2	Edit	Core	Edit Name to reflect correct Unit title UEENEEI106A Set up and adjust PID control loops	40
2	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
2	Edit	Group B	Edit Name to reflect correct Unit title UEENEEI114A Trouble shoot process control systems	60

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

3	Edit	Core	Correct title of UEENEEE117A - Implement and monitor energy sector OHS policies and procedures	20
3	Edit	Core	Correct title of UEENEEE119A - Solve problems in multiple path extra low voltage (ELV) a.c. circuits	40
3	Edit	Core	Correct title of UEENEEE124A - Compile and produce an energy sector detailed report	60
3	Edit	Core	Correct title of UEENEEI103A Solve problems in density/level measurement components and systems	40
3	Edit	Core	Correct title of UEENEEI107A Install instrumentation and control cabling and tubing	20
3	Edit	Core	Correct title of UEENEEK132A - Develop strategies to address environmental and sustainability issues in the energy sector	20
3	Edit	Core	Correct title of UEENEEP013A - Disconnect - reconnect control devices connected to low voltage installation wiring	60
3	Edit	Elective	Correct title of UEENEEED101A Use computer applications relevant to a workplace	20
3	Edit	Elective	Correct title of UEENEEED104A Use engineering applications software on personal computers	40
3	Edit	Elective	Correct title of UEENEEED110A Set up, create and implement content for a web server	120
3	Edit	Elective	Correct title of UEENEEED111A Develop, implement and test object oriented code	140
3	Edit	Elective	Correct title of UEENEEED144A Commission industrial computer systems	20
3	Edit	Elective	Correct title of UEENEEED145A Modify-redesign of industrial computer systems	20
3	Edit	Elective	Correct title of UEENEEG131A Evaluate performance of low voltage electrical apparatus	40
3	Edit	Elective	Correct title of UEENEEI115A Trouble shooting in medical equipment control systems	120

3	Edit	Elective	Correct title of UEENEEI117A Calibrate, adjust and test measuring instruments	40
3	Edit	Elective	Correct title of UEENEEI122A Assist in commissioning process and instrumentation control systems	40
3	Edit	Elective	Correct title of UEENEEI126A Provide solutions to pneumatic-hydraulic system operations	80
3	Edit	Elective	Correct title of UEENEEI148A Solve problems in single phase electronic power control circuits	60

## Description

### Scope

This qualification provides competencies to install, set up, test, develop, select, commission, maintain and diagnose faults/malfunctions of equipment and systems for the measurement, recording, monitoring and control of physical/chemical phenomenon and related process control 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 480 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		Weighting Points
All Core competency standard units to be achieved		
UEENEEE038B	Participate in development and follow a personal competency development plan	20
UEENEEE075B	Write specifications for industrial electronics and control 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
UEENEEE119A	Solve problems in multiple path extra low voltage (ELV) a.c. circuits	40
UEENEEE124A	Compile and produce an energy sector detailed report	60
UEENEEE137A	Document and apply measures to control OHS risks associated with electrotechnology work	20
UEENEEI101A	Use instrumentation drawings, specification, standards and	40

	equipment manuals	
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
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
<b>Total points in core</b>		<b>1120</b>

**Elective Competency Standard Units**

Complete Elective units to achieve a total of weighting of 480 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 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	180
<b>B</b>	<b>Qualification Elective Units</b>	0	100
<b>C</b>	<b>Qualification Elective Units</b>	0	120
<b>D</b>	<b>Qualification Elective Units</b> You may select all your elective units from this Group	260	480

<b>Group A – Imported and Common Elective Units</b>		<b>Weighting Points</b>
You may complete units to a maximum weighting of 180		
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
UEENEED101A	Use computer applications relevant to a workplace	20
UEENEED009B	Comply with scheduled and preventative maintenance	20

	program processes	
UEEENEEE020B	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 180 points



<b>Group B – Qualification Elective Units</b>		<b>Weighting Points</b>
You may complete units to a maximum weighting of 100		
UEENEED104A	Use engineering applications software on personal computers	40
UEENEEH102A	Repairs basic electronic apparatus faults by replacement of components	40
UEENEEH111A	Troubleshoot single phase input d.c. power supplies	40
UEENEEH112A	Troubleshoot digital sub-systems	80
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 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
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

<b>Group C – Qualification Elective Units</b>		<b>Weighting Points</b>
You may complete units to a maximum weighting of 120		
UEENEEC005B	Estimate electrotechnology projects	40
UEENEED116A	Develop computer network services	120
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
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
UEENEEM078A	Manage compliance of hazardous areas	20
UEENEEM038A	Conduct testing of hazardous areas installations — coal	40

	mining	
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

<b>Group D – Qualification Elective Units</b>		<b>Weighting Points</b>
You must complete units to a minimum weighting of 260 You may select all your elective units from this Group		
UEENEEM006B	Prepare tender submissions for electrotechnology projects	60
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
UEENEED152A	Design embedded controller control systems	80
UEENEED131A	Evaluate performance of low voltage electrical apparatus	40
UEENEED180A	Develop detailed and complex drawings for electrical systems using CAD systems	60
UEENEED127A	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

**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.