



Australian Government

UEE61521 Advanced Diploma of Instrumentation and Control Engineering

Release 3

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Modification History

Release 3. This is the second release of this qualification in the UEE Electrotechnology Training Package. Modifications include:

- Superseded units updated
- The following units added to electives (see UEE Release 5.0 Companion Volume Implementation Guide for mapping of deleted UEE units to imported ICT units):
 - ICTTEN409
 - ICTNWK426
 - ICTPRG549
 - ICTPRG534
 - ICTWEB447.

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 Updated superseded elective units.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 design and validate and/or evaluate process control equipment and systems, manage risk, estimate and manage projects and provide technical advice or sales. It also provides competencies to install, set up, test, develop, select, commission, maintain, and diagnose faults or malfunctions of equipment and systems.

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

Entry Requirements

There are no entry requirements for this qualification

Packaging Rules

A total of **2160 weighting points** comprising:

1740 core weighting points listed below; plus

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

Choose a total of **420 weighting points** elective units from the list below, of which between **0 and 170 weighting points** can be taken from Group A; and between **0 and 80 weighting points**

can be taken from Group B; and between **0 and 80 weighting points** can be taken from Group C; and between **0 and 80 weighting points** can be taken from Group D; and between **180 and 420 weighting points** must be taken from Group E; or all **420 weighting points** can be taken from Group E

Up to **170 weighting points** of the general elective units Group A, may be selected 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-requisite 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
UEECD0003	Apply industry and community standards to engineering activities	20
UEECD0004	Apply material science to solving electrotechnology engineering problems	60
UEECD0005	Apply physics to solving electrotechnology engineering problems	60
UEECD0007	Apply work health and safety regulations, codes and practices in the workplace	20
UEECD0010	Compile and produce an energy sector detailed report	60
UEECD0014	Develop design briefs for electrotechnology projects	40
UEECD0016	Document and apply measures to control WHS risks associated with electrotechnology work*	20
UEECD0017	Establish and follow a competency development plan in an electrotechnology engineering discipline	120
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	20

	procedures	
UEECD0026	Manage risk in electrotechnology activities	60
UEECD0036	Provide engineering solutions for problems in complex multiple path circuits	60
UEECD0039	Provide solutions to basic engineering computational problems*	60
UEECD0043	Solve problems in direct current circuits*	80
UEECD0045	Solve problems in multiple path extra-low voltage (ELV) a.c. circuits*	40
UEECD0051	Use drawings, diagrams, schedules, standards, codes and specifications*	40
UEECD0055	Write specifications for industrial electronics and control projects	40
UEECD0056	Apply methods to maintain currency of industry developments	20
UEECS0033	Use engineering applications software on personal computers	40
UEEIC0013	Develop, enter and verify discrete control programs for programmable 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
UEEIC0021	Find and rectify faults in process final control elements*	40
UEEIC0022	Install instrumentation and control apparatus and associated equipment*	20
UEEIC0023	Install instrumentation and control cabling and tubing*	20
UEEIC0029	Set up and adjust PID control loops*	40
UEEIC0030	Set up and adjust advanced PID process control loops*	40
UEEIC0031	Set up and configure human-machine interface (HMI) and industrial networks*	60
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 components and systems*	40
UEEIC0047	Use instrumentation drawings, specifications, standards and equipment manuals*	40
UEEIC0048	Verify compliance and functionality of instrumentation and control installations*	40
UEEIC0049	Manage instrumentation and control projects*	40
UEEIC0050	Plan instrumentation and control projects*	60
UEERE0013	Develop strategies to address environmental and sustainability issues in the energy sector	20
UEERL0004	Disconnect - reconnect electrical equipment connected to low voltage (LV) installation wiring*	60

Group A: Imported and common elective units**Weighting Points**

BSBINS501	Implement information and knowledge management systems	50
BSBLDR522	Manage people performance	70
BSBSTR501	Establish innovative work environments	50
BSBSTR502	Facilitate continuous improvement	60
BSBTWK502	Manage team effectiveness	60

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

ICTICT214	Operate application software packages	20
UEECD0030	Prepare electrotechnology/utilities drawings using manual drafting and CAD equipment and software*	60
UEECD0031	Prepare engineering drawings using manual drafting and CAD for electrotechnology applications*	60
UEEEEC0060	Repairs basic electronic apparatus faults by replacement of	40

	components*	
UEEEEC0075	Troubleshoot single phase input d.c power supplies*	40
UEEEL0007	Develop detailed electrical drawings*	60
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
UEEHA0025	Install explosion-protected equipment and associated apparatus and wiring systems*	60
UEEHA0026	Maintain equipment associated with hazardous areas*	60
UEEIC0004	Calibrate, adjust and test measuring instruments*	40
UEEIC0033	Set up gas analysis measuring and control instruments*	20
UEEIC0035	Set up scientific analysis measuring and control instruments*	20
UEEIC0036	Set up water analysis measuring and control instruments*	20
UEEIC0037	Set up weighting measuring and control instruments*	20
UEEIC0045	Troubleshoot medical equipment control systems*	120
UEEIC0046	Troubleshoot process control systems*	60
Group C: General elective units		Weighting Points
UEECD0032	Produce detailed electrotechnology/utilities drawings using CAD equipment and software*	60
UEECO0001	Estimate electrotechnology projects	40
UEEHA0020	Conduct detailed inspection of electrical installations for hazardous areas*	40
UEEHA0038	Conduct visual and close inspection of electrical installations for hazardous areas*	40
UEEIC0003	Assist in commissioning process and instrumentation control systems*	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
UEEIC0026	Provide solutions to fluid circuit operations*	60
UEEIC0027	Provide solutions to pneumatic-hydraulic system operations*	80
UEEIC0042	Solve problems in single phase electronic power control circuits*	60
UEEIC0044	Troubleshoot measuring and analysis systems*	40
Group D: General elective units		Weighting Points
ICTNWK426	Install and configure client-server applications and services	60
ICTPRG534	Deploy applications to production environments	40
ICTPRG549	Apply intermediate object-oriented language skills	60
ICTTEN409	Commission an electronic system	50
ICTWEB447	Build basic website using development software and ICT tools	20
UEECO0014	Prepare tender submissions for electrotechnology projects*	60
UEECS0004	Commission industrial computer systems*	20
UEECS0014	Develop computer network services*	120
UEECS0019	Develop, implement and test object-oriented code*	140
UEECS0025	Modify/redesign industrial computer systems*	20
UEECS0031	Set up, create and implement content for a web server*	120
UEEEL0006	Develop detailed and complex drawings for electrical systems using CAD systems*	60
UEEEL0011	Evaluate performance of low voltage electrical apparatus*	40
UEEHA0029	Plan electrical installations for hazardous areas*	20
UEEIC0001	Analyse complex electronic circuits controlling fluids	80

UEEIC0005	Configure and maintain industrial control system networks*	60
UEEIC0010	Develop and test code for microcontroller devices	60
Group E: General elective units		Weighting Points
UEECD0001	Analyse materials for suitability in electrical equipment*	80
UEECD0002	Analyse static and dynamic parameters of electrical equipment	80
UEECD0012	Contribute to risk management in electrotechnology systems	20
UEECD0015	Develop engineering solutions to photonic system problems*	80
UEECD0037	Provide engineering solutions for uses of materials and thermodynamic effects	80
UEECD0049	Use advanced computational processes to provide solutions to energy sector engineering problems*	80
UEECO0003	Manage contract variations	40
UEEEEC0005	Assess electronic apparatus compliance	60
UEEEEC0011	Design and develop electronics/computer systems projects	40
UEEEEC0014	Design signal-conditioning sub-systems	80
UEEEEC0045	Modify digital signal processing (DSP) based sub-systems	80
UEEHA0008	Design gas detection systems	20
UEEIC0006	Design and configure Human-Machine Interface (HMI) networks	60
UEEIC0007	Design and use advanced programming tools, PC networks and HMI Interfacing	120

Qualification Mapping Information

This qualification replaces and is equivalent to UEE61511 Advanced Diploma of Instrumentation and Control Engineering

Links

Companion Volume Implementation Guides are found in VETNet -

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