



Australian Government

UEEEL0039 Design, install and verify compliance and functionality of general electrical installations

Release: 3

UEEEL0039 Design, install and verify compliance and functionality of general electrical installations

Modification History

Release 3. Minor Change. Typographic error in prerequisites corrected.

Release 2. Updated superseded imported Pre-Requisite units.

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

Application

This unit involves the skills and knowledge required to design, install, inspect and test to verify an electrical installation is safe and complies with regulatory requirements.

It includes working safely; designing, installing, commissioning and fault finding of electrical installations; visual inspections and mandatory testing; following workplace procedures; and completing mandatory reporting requirements.

The skills and knowledge described in this unit require a licence or permit to practice in the workplace where work is carried out on electrical installations which are designed to operate at voltages greater than 50 volt (V) alternating current (a.c.) or 120 V direct current (d.c.).

Competency development activities in this unit are subject to regulations directly related to licensing. Where a licence or permit to practice is not held, a relevant contract of training, such as an Australian Apprenticeship, may be required.

Additional and/or other conditions may apply in some jurisdictions subject to regulations related to electrical work. Practice in the workplace and during training is also subject to work health and safety (WHS)/occupational health and safety (OHS) regulations.

Those holding an 'Unrestricted Electrician's Licence' or equivalent issued in an Australian state or territory meet the requirements of this unit and its prerequisite requirements.

A 'licensed electrician' who requires this unit to demonstrate currency for regulatory purposes may be required to undertake this unit to demonstrate their currency with verification of compliance requirements. In this case they are deemed to have met the prerequisites for this unit provided that they hold a current 'electricians licence' or its equivalent issued in an Australian state or territory; and, have recently been in employment as a licensed electrician sufficient to evidence current knowledge of applicable standards and regulations.

Pre-requisite Unit

HLTAID009 Provide cardiopulmonary resuscitation

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0016 Document and apply measures to control WHS risks associated with

electrotechnology work

UEECD0019 Fabricate, dismantle and assemble utilities industry components

UEECD0020 Fix and secure electrotechnology equipment

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0003 Arrange circuits, control and protection for general electrical installations

UEEEL0005 Develop and connect electrical control circuits

UEEEL0008 Evaluate and modify low voltage heating equipment and controls

UEEEL0009 Evaluate and modify low voltage lighting circuits, equipment, and controls

UEEEL0010 Evaluate and modify low voltage socket outlets circuits

UEEEL0012 Install low voltage wiring, appliances, switchgear and associated accessories

UEEEL0014 Isolate, test and troubleshoot low voltage electrical circuits

UEEEL0018 Select wiring systems and cables for low voltage general electrical installations

UEEEL0019 Solve problems in direct current (d.c.) machines

UEEEL0020 Solve problems in low voltage a.c. circuit

UEEEL0021 Solve problems in electromagnetic devices

UEEEL0023 Terminate cables, cords and accessories for low voltage circuits

UEEEL0024 Test and connect alternating current (a.c.) rotating machines

UEEEL0025 Test and connect transformers

UEEEL0047 Identify, shut down and restart systems with alternate supplies

UETDRRF004 Perform rescue from a live LV panel

and

UEECD0043 Solve problems in direct current circuits

or

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

Competency Field

Electrical

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to design, install, inspect and test an electrical installation

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** WHS/OHS control measures for the site are identified and applied
- 1.2** WHS/OHS risk control measures and workplace procedures are followed in preparation for work
- 1.3** Safety hazards, which have not previously been identified, are noted and risk control measures are implemented
- 1.4** Installation documentation and/or relevant industry standard are reviewed and applied
- 1.5** Appropriate person/s is consulted to ensure work is coordinated with others involved on the worksite
- 1.6** Need to test or measure live electrical work is determined in accordance with WHS/OHS requirements and conducted in accordance with workplace safety procedures
- 1.7** Circuits, machines and/or plant are isolated in accordance with WHS/OHS job requirements and workplace procedures
- 1.8** Installation of wiring, appliances, switchgear, control gear and associated accessories is planned and appropriately sequenced in consultation with relevant person/s
- 1.9** Locations of appliances, switchgear, accessories and cable routes are planned within the constraints of building structure, other services, specifications and regulatory requirements
- 1.10** Tools, equipment and testing devices needed to verify compliance are obtained in accordance with workplace procedures and checked for correct operation and safety
- 1.11** Preparatory work is checked to ensure it complies with planned specifications and no damage has occurred

2 Select wiring systems, cables, control and protection for general electrical installations

- 2.1** Wiring system is selected and suitable for the environments in which it will operate
- 2.2** Cable conductor sizes are selected to meet current-carrying capacity requirements and voltage-drop and earth fault-loop impedance limitations in accordance with relevant industry standards
- 2.3** Protective devices are selected to meet the required switching and tripping currents coordination and discrimination for overload and short circuit protection in accordance with relevant industry technical standards
- 2.4** Earthing system components are selected to meet multiple earthed neutral (MEN) system in accordance with relevant industry standards
- 2.5** Residual current devices (RCDs) are selected to meet the required circuit switching and tripping currents in accordance with relevant industry technical standards
- 2.6** Switchgear/control gear is selected to meet current and voltage requirements and confirmed suitable for environmental conditions (ingress protection (IP) ratings) and functional requirements
- 2.7** Switchboards are arranged to accommodate control and protective devices, links, safety services and other distributor equipment in accordance with relevant industry technical standards

3 Install low voltage (LV) wiring and associated accessories

- 3.1** Wiring and accessories are installed and terminated to comply with technical standards and job specifications and requirements
- 3.2** Cables and conductors are terminated at accessories in accordance with manufacturer specifications and regulatory requirements
- 3.3** Ongoing compliance and safety inspection of installed wiring systems and testing of installed circuits is undertaken
- 3.4** Defects revealed through ongoing compliance and safety inspection and tests are rectified

4 Install and connect LV

- 4.1** Appliances, switchgear and accessories are installed to

appliances, switchgear and associated accessories	comply with technical standards and job specifications and requirements with sufficient access to affect terminations, adjustment and maintenance
4.2	Wiring is terminated at appliances, switchgear and accessories in accordance with manufacturer specifications and functional and regulatory requirements
4.3	Ongoing compliance and safety inspections of the installed appliances, switchgear and accessories are undertaken
4.4	Defects revealed through ongoing compliance and safety inspection are rectified
5 Visually inspect and conduct safety testing on electrical installation	5.1
	Wiring is checked for suitability within the environments in which it is installed to ensure it is suitably protected from damage or overheating in accordance with relevant industry standards
5.2	Cable conductor sizes are compliant with current-carrying capacity, voltage-drop and fault-loop impedance limitations in accordance with relevant industry standards
5.3	Protection methods and devices are verified as meeting coordination requirements for overload and short-circuit protection in accordance with relevant industry standards
5.4	Switchgear and control gear rating is verified as being appropriate and meets functional requirements in accordance with relevant industry standards
5.5	Electrical equipment inspection and testing evidence is cited and verified in accordance with WHS/OHS safety regulations
5.6	Earthing system and components are located correctly, and conductor selection sizes are verified
5.7	Markings on switchboards are checked for accuracy and clarity and comply with requirements
5.8	Mandatory tests are conducted in accordance with relevant industry standards
5.9	Testing is conducted to verify fault-loop impedance is sufficiently low and RCDs operate in accordance with

relevant industry standards

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| 6 Report inspection and test findings | 6.1 | WHS/OHS risk control work completion measures and procedures are followed |
| | 6.2 | Worksite is cleaned and made safe in accordance with workplace procedures |
| | 6.3 | Non-compliance defects are identified and reported in accordance with workplace procedures |
| | 6.4 | Recommendations for rectifying defects are made in accordance with workplace procedures |
| | 6.5 | Mandatory documentation is completed in accordance with workplace procedures |

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

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|---|--|
| Designing, installing and verifying compliance and functionality of at least two general electrical installations must include: | <ul style="list-style-type: none">• a main switchboard supplying more than one circuit each for:<ul style="list-style-type: none">• lighting• socket outlets• fixed appliances• one installation must include a circuit supplying a three phase load• one installation must include a safety service or alternate supply• one installation must include a distribution board separate from the main switchboard |
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Unit Mapping Information

This unit replaces and is not equivalent to UEENEEG105A Verify compliance and functionality of low voltage general electrical installations.

Links

Companion Volume implementation guides are found in VETNet - -

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

Assessment Requirements for UEEEL0039 Design, install and verify compliance and functionality of general electrical installations

Modification History

Release 3. Minor Change. Typographic error in prerequisites corrected.

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Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and include:

- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements
- safely measuring the parameters for the whole or any part of a direct current (d.c.) circuit
- safely isolating circuits/equipment, including:
 - preparing a safe work method statement (SWMS) or job safety analysis (JSA) for effective safe isolation
 - identifying source of supply to be isolated
 - applying switching-off, lock-out and tagging procedures
 - applying safe methods for confirming isolation
- determining maximum demand and selecting cables for an installation, including mains, sub-mains and final sub-circuits
- selecting suitable equipment and switchgear for a particular installation or part of an installation for compliance with industry standards
- determining the maximum fault-loop impedance for a circuit
- determining protective conductor and active conductor sizes for each circuit to ensure earth fault-loop impedance is sufficiently low to operate the circuit protective device
- installing and terminating consumer's mains for an installation in accordance with AS/NZS 3000 Electrical installations (known as the Australian/New Zealand Wiring Rules) and local supply authority requirements, including:
 - unprotected consumers mains to minimise the risk of short circuit current
 - drawing-in, placing and fixing cables
 - cable and conductor terminations
 - correct preparation for fitting and connection of electricity network operator equipment
 - ensuring correct polarity

- selecting and installing control and protection devices in accordance with AS/NZS 3000 Electrical installations (known as the Australian/New Zealand Wiring Rules)
- installing and terminating sub-circuit cabling at switchboards and connection to accessories, including:
 - drawing-in, placing and fixing cables
 - application of accessories
 - correct interconnection between switchgear, protection devices and links
 - use of adequately sized cables
 - correct marking of equipment
 - clear identification of circuit neutral conductors
 - correct polarity
- completing visual inspection of installations for compliance with industry standards
- conducting and reporting mandatory testing to ensure:
 - insulation resistance of mains, sub-mains and final sub-circuits in accordance with regulatory requirements
 - earth continuity of the main earthing conductor, protective earthing conductors, combined protective earthing and neutral (PEN) conductors, and bonding conductors in accordance with regulatory requirements
 - polarity of active, neutral and earth conductors in accordance with regulatory requirements
 - correct connections of active, neutral and protective earthing conductors are tested to ensure no short circuits between conductors, no transposition of conductors that could result in the earthing system or exposed conductive parts becoming energised, and no interconnection of conductors between different circuits, in accordance with regulatory requirements
 - verification that earth fault-loop impedance limitations are not exceeded in accordance with regulatory requirements
 - residual current devices (RCDs) have been correctly installed, their function verified, and the isolation of all switched poles verified in accordance with regulatory requirements
- identifying causes of non-compliance from test results
- identifying and rectifying faults in electrical circuits and equipment.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- electrical safety, including:
 - safety workplace procedures for working on electrical systems, circuits and apparatus
 - safe working practices as a normal part of carrying out electrical installation work
 - isolation and lock-out workplace procedures
 - tools and equipment needed to conduct electrical installation compliance inspection and

- testing
- relevant emergency response plan and first aid requirements
- selection and use of fire extinguishers to control an electrical fire at an accident site
- WHS/OHS, including:
 - legislation and regulations and the fundamental principles that apply
 - identifying potential workplace hazards
 - procedures for undertaking safety checks
 - working with a group to identify effective hazard control measures
 - working with a group to modify and/or develop safe work methods
 - techniques for the identification, control and reporting of hazardous substances/materials
 - awareness and reporting of asbestos, silica and hazardous gases
 - legal responsibilities for employers and employees
 - WHS/OHS practices
 - employers' and employees' own "duty of care"
 - safety committees and their role
 - development, modification and application of SWMS or JSA
 - purpose and process of reporting WHS/OHS incidents
 - safety procedures for working with electrical circuits and equipment
 - procedures for safe and effective isolation of electrical supply
 - regulations for the supervision of apprentices and trainees
 - selection and use of fire extinguishers to control electrical fire at an accident site
- methods to rescue a person in contact with live electrical conductors or equipment, including:
 - safety of the rescuer
 - establishing the source voltage level
 - rescue process 'dos' and 'don'ts'
- application of emergency first aid requirements for an electric shock victim, including:
 - calling for help
 - initiating first aid
 - applying cardiopulmonary resuscitation (CPR)
- dangers of high voltage (HV) equipment and distribution systems, including:
 - step, touch and induced voltages
 - sources of induced voltage and stored energy
 - creepage and clearance requirements
 - application of safe working procedures in the vicinity of HV equipment
- effects of electric current, including:
 - physiological effects of current
 - principles by which an electric current can produce heat, light, motion and a chemical reaction
- single path d.c. circuits including:
 - arrangement of energy source, protection device, switch and load in a circuit

- purpose of each component in the circuit
- consequences of open circuits, closed circuits and short circuits
- multiple path d.c. circuits, including:
 - circuit configurations and connection of energy source, protection device, switch and load in a circuit
 - relationship between the parameters of voltage, current, resistance and power dissipation in the whole or any part of the circuit
 - methods of determining circuit behaviour for variation in any of the parameters from measured and calculated values
- alternating voltage and current generation, phase relationships, energy in an alternating current (a.c.) circuit, including:
 - sinusoidal voltage generation and resulting current
 - terms: period, maximum value, peak-to-peak value, instantaneous value, average value, root-mean-square (RMS) value and frequency
 - three phase generation
 - relationship between the phase voltages generated in a three phase alternator and the conventions for identifying each
 - method of determining the phase sequence or phase rotation of a three phase supply
 - methods of determining power and energy supplied by three phase circuits
- techniques to read, sketch and interpret electrical diagrams, including:
 - conventions used in documenting electrical information
 - interpreting schematic, block and wiring diagrams, plans and schedules
 - sketching and marking up electrical drawings and diagrams
- safe isolation of equipment, including:
 - requirements and techniques for preparation of a SWMS or JSA for effective safe isolation
 - safe methods for identifying source of supply to be isolated
 - switching-off, lock-out and tagging procedures
 - safe methods for confirming effective and safe isolation
 - following safe testing procedures
 - AS/NZS 3000 Electrical installations (known as the Australian/New Zealand Wiring Rules) requirements for dealing with unused conductors and equipment
- fundamental safety principles of AS/NZS 3000 Electrical installations (known as the Australian/New Zealand Wiring Rules), including:
 - definition of terms
 - direct contact with live parts
 - indirect contact with live parts
 - thermal effects of current
 - over-current
 - earth faults
 - abnormal voltages

- spread of fire
- mechanical injury
- external influences
- fundamental principles of installation design; selection and installation of equipment; means of compliance (including alterations, additions and repairs), and verification of compliance
- protective and functional earthing, including:
 - AS/NZS 3000 Electrical installations (known as the Australian/New Zealand Wiring Rules) requirements
 - purpose of protective and functional earthing
 - parts of a protective earthing system
 - earthing arrangements, earthing of equipment and equipotential bonding
 - methods of determining the earth fault-loop impedance for a circuit
 - alternate earthing systems only when required by local regulatory authorities (e.g. TT low voltage supply earthing system in dairy sheds in New Zealand)
- protective earthing conductor and active conductor sizes for each circuit to ensure earth fault-loop impedance is sufficiently low to operate the circuit protective device
- multiple earthed neutral (MEN) system and its application, including:
 - protective earthing (PE) and neutral (N) conductors in a consumer's installation and their relationship to the protective earth neutral (PEN) conductor in the electricity distributor's system or sub-main to an outbuilding
 - importance of the MEN link when a fault occurs
 - likely consequences of the absence of the MEN link or high impedance in the PEN conductor when a fault occurs
 - requirements for installation of a MEN link in an installation and an outbuilding
- control and protection requirements for installations and equipment, including:
 - AS/NZS 3000 Electrical installations (known as the Australian/New Zealand Wiring Rules) requirements
 - minimum fault levels specified by electricity distributors
 - method for assessing prospective short circuit current
 - devices for protection against overload and short circuit current
 - methods and arrangement for protection against short circuit currents, overload and earth leakage currents
 - coordination of overload and short circuit protection devices
 - coordination between conductors and overload protection devices
 - causes of over-voltage and under-voltage
 - device requirements for protection against over-voltage and under-voltage
 - selection and installation of RCDs
 - limitation of an RCD to protect against contact with live parts
 - devices for functions of isolation, emergency, mechanical maintenance and functional control
- AS/NZS 3000 Electrical installations (known as the Australian/New Zealand Wiring Rules)

requirements for installation of separated extra-low voltage (SELV) and protected extra-low voltage (PELV) systems, including:

- purpose and configuration of PELV and SELV
- earthing requirements and testing of SELV and PELV circuits
- cable selection for single and three phase mains and sub-mains for single and multiple installations including:
 - AS/NZS 3000 Electrical installations (known as the Australian/New Zealand Wiring Rules) requirements
 - AS/NZS 3008.1.1 Electrical installations - Selection of cables - Cables for alternating voltages up to and including 0.6/1 kV - Typical Australian installation condition requirements for selection of cables
 - methods of determining maximum demand
 - selecting cables for a given situation based on:
 - suitability of the cable insulation
 - installation methods and external influences affecting cable current-carrying capacity
 - fault-loop impedance
 - effects of harmonic current on cable current-carrying capacity
 - installation methods and external influences affecting cable current-carrying capacity
 - voltage-drop limitation
 - short circuit performance consideration
- cable selection for final sub-circuits, including:
 - AS/NZS 3000 Electrical installations (known as the Australian/New Zealand Wiring Rules) requirements
 - AS/NZS 3008.1.1 Electrical installations - Selection of cables Cables for alternating voltages up to and including 0.6/1 kV - Typical Australian installation condition requirements for selection of cables
 - maximum demand on final sub-circuits
 - selecting cables for a given situation based on:
 - suitability of the cable insulation
 - installation methods and external influences effecting cable current-carrying capacity
 - effect of earth fault-loop impedance and voltage-drop limitations on circuit route length
- installation of electrical equipment in given damp situations, including:
 - AS/NZS 3000 Electrical installations (known as the Australian/New Zealand Wiring Rules) requirements
 - areas specified as damp situations
 - limitation on the installation of equipment in classified zones
 - selection and location of equipment suitable for installation in given classified zones
 - use of RCD, SELV and PELV for damp situations
 - equipotential bonding in showers and bathrooms and swimming and spa pools
- methods for the installation, modification and testing of electrical installations and equipment for construction and demolition sites, complying with AS/NZS 3012 Electrical installations -

Construction and demolition sites and applicable workplace safety legislation, including:

- supply requirements
- switchboards for the purpose of construction and demolition
- protection of circuits
- construction wiring
- lighting
- socket outlets
- circuits for lifts
- calibration of instruments
- inspection and testing methods
- initial and periodic inspection and testing
- installation of aerial conductors and underground wiring, including:
 - AS/NZS 3000 Electrical installations (known as the Australian/New Zealand Wiring Rules) requirements
 - types and application of aerial conductors
 - aerial span limitations and required clearances
 - selection of aerial supporting poles/post and struts for a given application
 - use and requirements of catenary support systems
 - acceptable cable types and protection for underground wiring categories
 - underground wiring depth and protection
 - underground wiring clearances from other services
- electrical installations in hazardous areas, including:
 - AS/NZS 3000 Electrical installations (known as the Australian/New Zealand Wiring Rules) requirements
 - types of areas classified as a hazardous area
 - standards to which the selection, installation, inspection and maintenance of electrical equipment shall comply
 - additional training required to work competently with electrical equipment for hazardous areas
- installation and termination requirements for electrical cables, including:
 - AS/NZS 3000 Electrical installations (known as the Australian/New Zealand Wiring Rules) requirements
 - typical cable routes through buildings, structures and premises
 - application of wiring accessories
 - drawing-in, placing and fixing of cables
 - cable and conductor terminations
 - maintaining fire rating integrity
 - application of flat thermoplastic sheathed (TPS), circular TPS, steel wire armoured (SWA), fire rated and flexible cables
- requirements for the installation and connection of consumers mains, including:
 - AS/NZS 3000 Electrical installations (known as the Australian/New Zealand Wiring

- Rules) and local supply authority requirements
- underground and overhead consumers mains
- terminating consumers mains at pillars, pits, mains connection boxes and consumers switchboard
- unprotected consumers mains to minimise the risk of short circuit current
- bonding conductors where required
- ensuring correct polarity
- termination of sub-circuit cabling at switchboards and connection to components, including:
 - correct interconnection between switchgear, protection devices and links'
 - correct preparation for fitting and connection of local supply authority equipment
 - use of adequately sized cables
 - correct marking of equipment
 - clear identification of circuit neutral conductors
 - correct polarity
- AS/NZS 3000 Electrical installations (known as the Australian/New Zealand Wiring Rules) requirements and supply authority requirements to install final sub-circuit wiring into switchboards and connection to switchboard equipment
- location of switchboards and arrangement of switchboard equipment in installations, including:
 - AS/NZS 3000 Electrical installations (known as the Australian/New Zealand Wiring Rules) requirements
 - accessibility and restricted locations of switchboards
 - identification of main switchboards
 - construction requirements of switchboards
 - arrangement and identification of switchboard equipment
 - arrangement and installation of metering equipment
 - switchboard wiring and fire-protective measures
 - protection against switchboard internal arc faults
- key safety issues of transformers and AS/NZS 3000 Electrical installations (known as the Australian/New Zealand Wiring Rules) requirements, including:
 - risks and safety control measures associated with connection and disconnection of instrument transformers
 - safe working procedures when connecting and testing transformers
 - requirements and restrictions on the installation and use of transformers
- electric motor selection, starting method and overload protection, including:
 - types of motor enclosures suitable for given environmental conditions
 - criteria for selecting motor starters and overload protection
 - types and connection arrangements for direct-on-line, reduced voltage starters and variable speed drives
 - thermal, magnetic and thermistor overload protection methods
- legislated regulations, including:

- legislation and regulations that require installations and equipment to be inspected and tested to ensure they are safe
- responsible persons/bodies for ensuring electrical installations are safe
- results of tests that show an electrical installation is safe for connection to supply
- verification of compliance of an electrical installation, including:
 - AS/NZS 3000 Electrical installations (known as the Australian/New Zealand Wiring Rules) requirements
 - requirements for visual inspection to determine installation compliance with relevant specific installation standards
 - AS/NZS 3000 Electrical installations (known as the Australian/New Zealand Wiring Rules) mandatory test requirements and the application of mandatory tests following guidance of AS/NZS 3017 Electrical installations - Verification guidelines
- mandatory testing of an electrical installation including:
 - earth continuity, insulation resistance, polarity, sub-mains and final sub-circuits, correct circuit connections, earth fault-loop impedance and RCD operation
 - functional tests to ensure active/s and neutral for the same circuit are clearly identified with their circuit protection device
 - tests that show all circuits and devices operate as intended
 - techniques to determine fault level at a particular point in an installation
- documentation, including:
 - results of tests conducted on an installation to comply with requirements and ensure the installation is safe
 - documentation of the results of testing an installation as required by the electricity distributor
 - documentation of periodic inspection and testing of construction site wiring and equipment in accordance with requirement
 - documentation of periodic testing and inspection of electrical equipment, including tagging requirements
- systematic method of commissioning and decommissioning electrical equipment and installations, including:
 - commissioning, including:
 - circuit voltage testing
 - phase rotation and polarity checks
 - systematic loading up
 - correct installation functioning
 - instrument/control parameter checks
 - dangers of mechanical damage to cables and equipment
 - decommissioning, including:
 - identification of all circuits
 - impact on other equipment
 - isolation
 - tagging

- testing
- securing and earthing where required
- safe removal of equipment and termination of unused cable
- dangers of mechanical damage to cables and equipment
- diagnosing and rectifying faults in electrical apparatus and associated circuits, including:
 - recognising symptoms of open circuit, short circuit, incorrect connections, insulation failure, unsafe condition, apparatus/component failure and related mechanical failure
 - methods and tests to identify faults in circuits and/or equipment
 - ensuring fault rectification/repair and/or equipment replacement complies with AS/NZS 3000 Electrical installations (known as the Australian/New Zealand Wiring Rules) and other relevant standards.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessors must also hold a current ‘Unrestricted Electricians Licence’ issued in an Australian state or territory to assess the units of competency relating to the Electrical Regulatory Authorities Council (or their successor) Essential Performance Capabilities for licensing and that require a licence to practice.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions. It is recognised that, in some circumstances, assessment in part or full can occur outside the workplace. However, it must be in accordance with industry and regulatory policy.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, facilities, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, relevant industry standards, codes of practice and operation manuals.

Links

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