

1. Module details**Module name****Standards, Regulations and Specifications****Module duration**

It is expected that students with the appropriate entry knowledge and skills will successfully complete this module in 36 - 40 hours.

Module code

NUE951

Discipline code

1003115

2. Module purpose

To enable students to use standards, regulations and specifications for the purpose of undertaking audits and inspection on equipment, systems and installations.

3. Prerequisites

A good knowledge and application in regard to reading drawings, diagrams and technical manuals.

4. Relationship to competency standards

This module provides part of the underpinning knowledge and skills in the 'Evidence Guide' of specific units of competency in the National Electrotechnology Training Package and provides similar support, where mapped, to equivalent units in the National Metals and Engineering Competency Standards. For details refer to the module to unit maps, available from NUEITAB.

5. Content**OH&S procedures and codes of practice****Applications of standards, regulations, specifications, procedures and other installation requirements****Application of Supply and Installation Rules, Wiring Rules and Telecommunication Rules****Application of architectural and block drawings; wiring and schematic diagrams and cable schedules****Identification of electrical circuitry components related to category for which competency is being sought****Identification of electrical apparatus related to category for which competency is being sought****Identify circuit voltage categories within apparatus****Identify residual electrical hazard after disconnection**

Precautionary action to be taken when applying high voltage insulation testing on circuits to be connected to electronic device controlled apparatus

Electrical test equipment and specified test procedures

Interpretation of electrical test results

Electrical installation inspection procedures

Evaluation of electrical installation compliance

6. Assessment strategy

Assessment methods

Assessment should be progressive reflecting a holistic approach to ensure the module purpose is met. To assist in ensuring validity, reliability and fairness assessment instruments should include practical exercises, assignments and written tests consisting of a number of item types, such as multiple choice, short answer and problem solving.

Conditions of assessment

Learning and assessment will take place in an environment that is conducive to a learner's development.

7. Learning outcome details

Learning outcome 1

OH&S procedures and codes of practice.

Assessment criteria

- 1.1 Describe the essential features of the Worksafe Australia Guidelines NOHSC: 7025 (1998) in the context of State/Territory legislation.
- 1.2 State the differences in the applicability of the generic competencies A, B and C of NOHSC: 7025 (1998).
- 1.3 Describe the important features of relevant Australian Standards.
- 1.4 Describe the important features of legislation relevant to the workplace.

Learning outcome 2

Applications of standards, regulations and installation requirements.

Assessment criteria

- 2.1 Identify the sections in the standards that cover specific aspects of electrical/electronic installations.
- 2.2 Locate clauses in the standards covering a particular aspect of electrical/electronic installations using the List of Content as a guide.
- 2.3 Locate clauses in the standards covering a particular aspect of electrical/electronic installation using the index as a guide.

Learning outcome 3

Applications of standards, regulations and specifications.

Assessment criteria

- 3.1 Explain the terms conductor material, stranding, insulant type, voltage rating, temperature rating, colour coding, sheathing, armour and serving.
- 3.2 State the Australian and international colour standards for cable and cords.
- 3.3 Determine the standards clauses covering the installation requirements for a given cable type and wiring system.

Learning outcome 4

Application of supply and installation rules.

Assessment criteria

- 4.1 Name the legislation and regulations that require installations to be tested to ensure they are safe.
- 4.2 Identify the person/bodies responsible for the various aspects of ensuring electrical installations are safe.
- 4.3 Interpret the legislation and regulations relating to testing.
- 4.4 List the tests to be carried out before an installation or circuit is connected to the supply.

Learning outcome 5

Application of architectural and block drawings, wiring and schematic diagram.

Assessment criteria

- 5.1 Identify and distinguish between block drawing, schematic circuits and wiring diagrams.
- 5.2 List the information contained in the diagrams specified in 5.1.
- 5.3 State the purpose of each of the diagrams specified in 5.1.
- 5.4 Relate typical diagram symbols to physical components.
- 5.5 Identify and distinguish between site plans, floor plans, detail drawings and standard drawings.
- 5.6 From a site plan locate the:
 - service point
 - consumers main
 - main switchboard
 - distribution boards
 - temporary and/or builders supplies.
- 5.7 List the power and lighting outlets required.
- 5.8 Identify the types of luminaires and outlets required.
- 5.9 Identify and locate luminaire switching positions.

Learning outcome 6

Identify residual electrical hazard after disconnect.

Assessment criteria

- 6.1 Explain how supplementary earthing protection is provided by segregation, double insulation and isolation transformers.
- 6.2 Describe the operating principles of Residual Current Devices (RCDs) and how they are classified.
- 6.3 Draw circuit diagrams of various arrangements of residual current devices providing protection for single and three phase final subcircuits.
- 6.4 Draw circuit diagrams of various arrangements of residual current devices providing protection for single and three phase installations.

Learning outcome 7

Demonstrate the ability to conduct the tests required to ensure an electrical installation is safe in accordance with legislative regulations.

Assessment criteria

- 7.1 Demonstrate tests to ensure:
- insulation resistance is adequate
 - earth continuity is such that it will ensure the operation of protection devices under earth fault conditions
 - polarity of active/s and neutral for mains, submains and final subcircuits is correct
 - there is no transposition of earthing and neutral conductors.
- 7.2 Demonstrate tests to ensure active/s and neutral for the same circuit are clearly identified with their circuit protection device.
- 7.3 Demonstrate tests that all circuits and devices (including RCDs) operate as intended.
- 7.4 Show how the results of tests conducted on an installation comply with requirements and ensure the installation is safe.

8. Delivery of the module

Delivery strategy

Delivery strategies must be suitable for learning both theoretical and practical aspects described in the module purpose. It is considered that the most effective method to achieve this is by integration of theory and practice where students learn by experimentation, research and reports. It is recommended that learning and assessment be facilitated in a holistic manner that may require learning outcome sequence other than that indicated in the module.

Resource requirements

Resources should be sufficient for students to carry-out learning activities on an individual basis. This could include:

- Suitable workshops/laboratories
- Suitable tools and equipment.

Occupational health and safety requirements

A safe and healthy environment will be provided for students and teachers as well as the particular safety procedures followed as part of the learning / teaching activity and content.