

1. Module details**Module name****Electrical Wholesale Technology I****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

NUE001

Discipline code

0703120

2. Module purpose

To provide students with a general knowledge of electrical systems and their components. Students will learn to identify the most common electrical equipment, switchgear and accessories and the situations in which these are used. Also, requirements and procedures in relation to the supply of electricity and responsibilities for safety of installations are covered. Students will develop skills in discussion aspects of electrical work with both laypersons, tradepersons and industry authorities.

3. Prerequisites

Nil.

4. Relationship to competency standards

This module provides some of the underpinning knowledge and skills in the Electrical Contracting Industry Award (ECIA) Competency Standards.

5. Content**Electrical equipment, switch gear and wiring accessories**
identification

ratings

selecting materials from catalogues and data bases

Electrical distribution in buildings

single and three phase systems

distribution components (mains, submains, final subcircuits, main switchboard, distribution board)

purpose of main switchboards and distribution boards

power rating of typical appliances and equipment

importance of earthing

Electrical / electronic systems

system level functions of power and control devices

controllers (function, application)

Supply of electricity and safety

responsibilities

standards and regulations

procedures and documentation

6. Assessment strategy

Assessment methods

Questioning, written tests / assignments, practical exercises.

Conditions of assessment

Normal learning and assessment will be conducted in a classroom / laboratory environment.

7. Learning outcome details

Learning outcome 1

Identify and select common electrical equipment, switch gear and wiring accessories employed and through research and laboratory reports.

Assessment criteria

- 1.1 Identify common items of electrical equipment, appliances switch gear and wiring accessories.
- 1.2 Explain how electrical equipment, appliances switch gear and wiring accessories are selected and rated.
- 1.3 Select items of electrical equipment, appliances switch gear and wiring accessories from manufacturers catalogues / data base given item description and application.

Learning outcome 2

Describe how electricity is distributed in buildings and premises.

Assessment criteria

- 2.1 State the difference between single and three phase supplies in terms of number of conductors, electrical potential between conductors and conductors and earth and the advantages of a three phase system.
- 2.2 Identify the main components for distributing and controlling electrical power in a building.
- 2.3 Describe the purpose of a main switchboard and distribution boards.
- 2.4 List typical power ratings for various types of electrical equipment and appliances.
- 2.5 Explain the importance of earthing in the electrical system.

Learning outcome 3	Identify and describe the system level function of various electrical / electronic devices used to power and control machinery and plant equipment.
Assessment criteria	<p>3.1 Identify and describe the functions of limit switches, proximity switches, detectors, sensors, relays, contactors, overload devices, isolators, push buttons and motor starters.</p> <p>3.2 Describe the function of programmable and discrete controllers in terms of inputs and outputs and how they are used to control the operation of machines and plant equipment.</p>
Learning outcome 4	Explain the requirements and processes for the supply of electricity and ensuring the safety of electrical installations.
Assessment criteria	<p>4.1 List the responsibilities described in electrical safety legislation and related regulations.</p> <p>4.2 Describe the scope of Australian Standards and local regulation covering the requirements of electrical installations and the supply of electricity.</p>
8. Delivery of the module	
Delivery strategy	<p>Delivery strategies must be suitable for both theoretical and / or practical learning and module purpose. It is recommended that learning and assessment be facilitated in a holistic manner which may require a learning outcome sequence other than that indicated in the body of this module. Also an integrated theory / practice approach should be used where students learn by experimentation and through research and laboratory reports.</p>
Resource requirements	<p>Specialised facilities and equipment The training provider should have access to:</p> <ul style="list-style-type: none"> • a range of manufacturers catalogue or computer data base • Australian Standards • real or simulated installations • sample documentation. <p>Training staff and assessors Integrated theory and practical lessons.</p>

Learning resources

The references listed below should not be regarded as a definitive list and should be amended and updated on a regular basis. This list is not intended to be prescriptive as it is realised that many teachers / trainers have assembled their own references and resources.

Occupational health and safety requirements

A safe and healthy environment will be provided for students in regards to classroom and laboratory safety.