

1. Module details**Module name****Signs - Types and Construction****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

NUE030

Discipline code

0703110

2. Module purpose

This module provides knowledge and skills relating to the installation and maintenance of illuminated signs (cold-cathode illumination systems).

3. Prerequisites

NE175 Workshop Practice.
NE172 Electrical Wiring and Equipment 1.

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**Cold cathode illumination systems****General requirements**

AS/NZS
Codes of practice
Legislative requirements
Workplace safety requirements
Types (I and II) (AS/NZS 3832)

Component parts

Glass and electrodes
Tube supports
HV cabling
Electrode caps and sleeves
Transformers and circuitry
Earthing continuity in sign construction
Control circuitry and flashers

Principle of operation

High voltage and ionisation
Gas types and tube colour
Fluorescent powders
Coloured glass

	<p>Safety, isolation, testing and tagging</p> <p>Installation and maintenance techniques</p> <p>Mounting</p> <p>Hardware</p> <p>Wind loadings and additional support</p> <p>Maintenance requirements of AS/NZS 3832:1998</p>
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	Describe the general requirements for the installation of illuminated signs.
Assessment criteria	<p>1.1 State the relevant legislative requirements.</p> <p>1.2 Define type I and type II systems.</p> <p>1.3 Describe the general features and requirements of type I system in terms of AS/NZS 3832.</p> <p>1.4 State the various OH&S issues associated with illuminated signs.</p>
Learning outcome 2	Describe the function of the component parts of a cold-cathode illumination system.
Assessment criteria	<p>2.1 Name and identify all components in a cold-cathode illumination system.</p> <p>2.2 State the function of each component part of a cold-cathode illumination system.</p>

Learning outcome 3	Explain the principles of operation of a cold-cathode illumination systems.
Assessment criteria	<p>3.1 Describe the process of ionisation in gases.</p> <p>3.2 Explain how different colours are achieved.</p>
Learning outcome 4	Explain the isolation and tagging procedures to enable safe working to occur.
Assessment criteria	<p>4.1 Demonstrate correct isolation procedures for illuminated signs.</p> <p>4.2 Demonstrate correct isolator tagging and lock out procedures for electric signs.</p>
Learning outcome 5	Demonstrate installation and maintenance techniques with respect to illuminated signs.
Assessment criteria	<p>5.1 Apply proper techniques for mounting signs.</p> <p>5.2 Determine support/bracing to account for wind loadings.</p> <p>5.3 Describe and demonstrate the maintenance procedures outlined in AS/NZS 3832.</p>
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: <ul style="list-style-type: none"> - 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.