

**1. Module details****Module name****Mains Layout: Overhead Mains Design****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**

NUE232

**Discipline code**

0703130

**2. Module purpose**

This module provides the skills necessary to perform routine overhead mains and street lighting supply designs not requiring detailed calculations or profiling.

**3. Prerequisites**

NUE229 Mains Layout: Data Acquisition.

**4. Relationship to competency standards**

This module addresses Unit 4.2 of the E.S.I. National Competency Standards for Overhead Line Work and Cable Jointing.

**5. Content****Pole sizes and foundations**pole staking  
foundation types  
sinking depths**Pole and hardware selection**construction layout guides  
insulator selection  
mechanical loads  
calculation of forces  
king bolt spacings  
size and position of stays  
main design software**Clearances/bridging**statutory clearances  
other authorities e.g. Telstra  
joint and common use poles  
bridging, phasing and earthing**Public lighting design and luminaries**policy  
tariffs and charges  
types of luminaries  
column types and foundations  
outreach and bracket types  
mounting heights  
method of control

	supply and conductors used
<b>6. Assessment strategy</b>	
<b>Assessment methods</b>	Short answer questions (written, oral or graphic or computer based). Suitable practical exercises which assess the skills required of each learning outcome.
<b>Conditions of assessment</b>	Theory room for written tests together with practical field observation. Learners must demonstrate competence in all learning outcomes to the standard described by the assessment criteria and perform all activities in a safe manner in accordance with State Occupational Health and Safety Acts and Regulations, Codes of Practice and Work Procedures when applicable.
<b>7. Learning outcome details</b>	
<b>Learning outcome 1</b>	Select pole sizes and foundations.
<b>Assessment criteria</b>	1.1 Identify and select pole sizes and foundations against industry standards. Determine sinking depths based on industry standards. 1.2 Determine the requirements for pole staking as per current industry standards and practices. <i>Note These performances will be assessed in combination with learning outcomes 2 and 3.</i>
<b>Learning outcome 2</b>	<b>Calculate mechanical loads, select and position constructions and stays.</b>
<b>Assessment criteria</b>	2.1 Generate a design for the staying of a termination pole which includes the calculation of a resultant force. <i>Note These performances will be assessed in combination with learning outcomes 1 and 2.</i>

**Learning outcome 3**      **Check clearances, nominate types of bridging and earthing.**

- Assessment criteria**
- 3.1      Extract the relevant data from various manuals to industry standard accuracy.
  - 3.2      Generate the design for a small extension of the HV/LV distribution system to a new pole substation which includes the selection of new pole positions, conductor types, stringing, tensions and sags, correct pole sizes, constructions, stays, bridging types, earthing and phasing requirements.

**Learning outcome 4**      **Prepare a design for a small public lighting installation.**

- Assessment criteria**
- 4.1      Determine pole sizes, method of supply, lighting circuit control and conductor size as per codes of practice.
  - 4.2      Select bracket sizes, luminaries types and mounting heights as per codes of practice.
  - 4.3      Generate a simple Rate 1 overhaul public lighting installation design using the data collected from 4.1 and 4.2 to industry standard accuracy.

**8. Delivery of the module**

**Delivery strategy**      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 sequence other than indicated in the body of this module descriptor.

**Resource requirements**      Enterprise construction manuals  
 Relevant Australian standards  
 Enterprise work manuals and standing instructions  
 Acts and Regulations

**Occupational health and safety requirements**      Students should be made aware of Occupational Health and Safety issues in all situations and be expected to demonstrate safe working practices at all times. Electrical safety must be emphasised.