

Training Package	Electrotechnology (UEE07)		HSC Requirements and Advice
Unit title	Lay wiring/cabling and terminate accessories for extra-low voltage circuits		HSC Indicative Hours
Unit code	UEENEEE008B	Competency field	30
		Electrotechnology	

Unit descriptor	This unit covers the laying of wiring/cabling, connection of accessories and continuity and insulation resistance testing of circuits intended to operate at extra-low voltage. Typically this includes circuits and accessories for ELV powered devices, security, controls, integrated systems, audio/video systems. It encompasses the principles of single source, single load power circuits, control circuits and communications circuits, safe working practices and following work processes that satisfy electrical principles for safety and functionality.
Application of the unit	This unit is intended for competency development in entry-level employment based programs incorporated in approved contracts of training.
Employability skills	The required outcomes described in this unit of competency contain applicable facets of Employability Skills. The Employability Skills Summary of the qualification in which this unit of competency is packaged will assist in identifying Employability Skills requirements.
Prerequisite unit(s)	<p>Competencies</p> <p>Granting competency in this unit shall be made only after competency in the following unit(s) has/have been confirmed:</p> <ul style="list-style-type: none"> • UEENEEE005B Fix and secure equipment • UEENEEE007B Use drawings, diagrams, schedules and manuals. <p>For the full prerequisite chain details for this unit please refer to Table 2 in Volume 1, Part 2 [of UEE07 Training Package].</p> <p>Literacy and numeracy skills</p> <p>Participants are best equipped to achieve competency in this unit if they have reading, writing and numeracy skills indicated by the following scales. Description of each scale is given in <i>Appendix 1</i> of this Syllabus.</p> <p>Reading 3 Writing 3 Numeracy 3</p>
Licence to practise	<p>The skills and knowledge described in this unit do not require a licence to practise in the workplace. However, practice in this unit is subject to regulations directly related to occupational health and safety and where applicable contracts of training such as apprenticeships.</p> <p>Note: Compliance with permits may be required in various jurisdictions and typically relates to the operation of plant, machinery and equipment such as elevating work platforms, powder operated fixing tools, power operated tools, vehicles, road signage and traffic control, lifting equipment. Permits may also be required for some work environments such as confined spaces, working aloft, near live electrical apparatus and site rehabilitation.</p>

Required Skills and Knowledge

This describes the essential skills and knowledge and their level **required** for this unit.

Evidence shall show that knowledge has been acquired of safe working practices and laying wiring/cablings and terminate accessories for extra-low voltage circuits.

All knowledge and skills detailed in this unit should be contextualised to current industry practices and technologies.

The extent of the essential knowledge and associated skills (EKAS) required is given in *Appendix 2* of this Syllabus. It forms an integral part of this unit.

- 2.1.1 Cable protection and support
- 2.1.2 Cable types and applications
- 2.1.3 Cables in buildings, structures and premises
- 2.1.4 Basic cable and conductor terminations
- 2.5.5 Technical standards, regulations and codes for extra-low voltage work
- 2.5.11 Environmental and heritage awareness
- 2.18.1 Occupational Health and Safety principles.

Evidence Guide

This provides essential advice for assessment of the unit. It must be read in conjunction with the Performance Criteria and the Range Statement of the unit and the Training Package Assessment Guidelines.

The Evidence Guide forms an integral part of this unit. It must be used in conjunction with all parts of the unit and performed in accordance with the Assessment Guidelines of this Training Package.

Overview of assessment	Critical aspects of evidence required to demonstrate competency in this unit
<p>Longitudinal competency development approaches to assessment, such as Profiling, require data to be reliably gathered in a form that can be consistently interpreted over time. This approach is best utilised in Apprenticeship programs and reduces assessment intervention. It is the industry-preferred model for apprenticeships. However, where summative (or final) assessment is used it is to include the application of the competency in the normal work environment or, at a minimum, the application of the competency in a realistically simulated work environment. 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.</p> <p>Methods chosen for a particular assessment will be influenced by various factors. These include the extent of the assessment, the most effective locations for the assessment activities to take place, access to physical resources, additional safety measures that may be required and the critical nature of the competencies being assessed.</p> <p>The critical safety nature of working with electricity, electrical equipment, gas or any other hazardous substance/material carries risk in deeming a person competent. Sources of evidence need to be 'rich' in nature to minimise error in judgment.</p> <p>Activities associated with normal everyday work have a bearing on the decision as to how much and how detailed the data gathered will contribute to its 'richness'. Some skills are more critical to safety and operational requirements while the same skills may be more or less frequently practised. These points are raised for the assessors to consider when choosing an assessment method and developing assessment instruments. Sample assessment instruments are included for Assessors in the Assessment Guidelines of this Training Package.</p>	<p>Before the critical aspects of evidence are considered all prerequisites must be met.</p> <p>Evidence for competence in this unit shall be considered holistically. Each element and associated performance criteria shall be demonstrated on at least two occasions in accordance with the 'Assessment Guidelines – UEE07'. Evidence shall also comprise:</p> <ul style="list-style-type: none"> • a representative body of performance criteria demonstrated within the timeframes typically expected of the discipline, work function and industrial environment. In particular this shall incorporate evidence that shows a candidate is able to: <ul style="list-style-type: none"> - implement Occupational Health and Safety workplace procedures and practices, including the use of risk control measures as specified in the performance criteria and range statement - apply sustainable energy principles and practices as specified in the performance criteria and Range Statement - demonstrate an understanding of the essential knowledge and associated skills as described in this unit. It may be required by some jurisdictions that RTOs provide a percentile graded result for the purpose of regulatory or licensing requirements. - demonstrate an appropriate level of skills enabling employment - conduct work observing the relevant Anti Discrimination legislation, regulations, policies and workplace procedures • demonstrated consistent performance across a representative range of contexts from the prescribed items below: <ul style="list-style-type: none"> - lay wiring/cabling and terminate accessories for extra-low voltage in power and control circuits as described in the Range Statement and including: <ul style="list-style-type: none"> ▪ understanding the nature of the work ▪ selecting appropriate tools, cables and accessories ▪ following appropriate cable routes ▪ installing cable and accessories to requirements ▪ terminating cables and accessories to manufacture's specifications and requirements ▪ cleaning worksite ▪ notifying completion of work using established procedures.

Evidence Guide cont/d

Context of and specific resources for assessment	Method of assessment	Concurrent assessment and relationship with other units
<p>This unit should be assessed as it relates to normal work practice using procedures, information and resources typical of a workplace.</p> <p>This should include:</p> <ul style="list-style-type: none"> • OHS policy and work procedures and instructions • suitable work environment, facilities, equipment and materials to undertake actual work as prescribed in this unit. <p>These should be used in the formal learning/assessment environment.</p> <p>Note: Where simulation is considered a suitable strategy for assessment, conditions for assessment must be authentic and as far as possible reproduce and replicate the workplace and be consistent with the approved industry simulation policy.</p> <p>The resources used for assessment should reflect current industry practices in relation to laying wiring/cabling and terminate accessories for extra-low voltage circuits.</p>	<p>This unit shall be assessed by methods given in <i>Appendix 3</i> of this Syllabus.</p> <p>Note: Competent performance with inherent safe working practices is expected in the Industry to which this unit applies. This requires that the specified essential knowledge and associated skills are assessed in a structured environment which is primarily intended for learning/assessment and incorporates all necessary equipment and facilities for learners to develop and demonstrate the essential knowledge and skills described in this unit.</p>	<p>For optimisation of training and assessment effort, competency development in this unit may be arranged concurrently with unit:</p> <ul style="list-style-type: none"> • UEENEEE002B Dismantle, assemble and fabricate electrotechnology components • UEENEEE005B Fix and secure equipment • UEENEEE007B Use drawings, diagrams, schedules and manuals.

Element	Performance Criteria	Range Statement
1 Prepare to lay wiring/cabling and connect accessories for extra-low voltage circuits	1.1 OHS procedures for a given work area are obtained and understood through established routines.	<p>This relates to the unit as a whole providing the range of contexts and conditions to which the Performance Criteria apply. It allows for different work environments and situations that will affect performance.</p> <p>This unit shall be demonstrated in relation to laying wiring/cabling and connecting accessories for extra-low voltage power and control cabling systems circuits using:</p> <ul style="list-style-type: none"> • at least one of the following wiring/cabling systems: <ul style="list-style-type: none"> - unenclosed thermoplastic sheathed (TPS) cable - enclosed thermoplastic insulated (TPI) or sheathed cables, and • at least three of the following wiring/cabling systems: <ul style="list-style-type: none"> - single cable - flexible cable - flexible cord - shielded cable - armoured cable - ribbon cable - other similar and like cable. <p>Generic terms used throughout this Vocational Standard shall be regarded as part of the Range Statement in which competency is demonstrated. The definition of these and other terms that apply are given in <i>Appendix 4</i> of this Syllabus.</p>
	1.2 Established OHS risk control measures in preparation for the work are followed.	
	1.3 Safety hazards not previously identified are reported and advice on risk control measures is sought from the work supervisor.	
	1.4 The nature and location of the work is obtained from work supervisor or other appropriate person to establish the scope of work to be undertaken.	
	1.5 Advice is sought from the work supervisor or other appropriate person to ensure the work is coordinated effectively with others.	
	1.6 Sources of materials that may be required for the work are established in accordance with established routines.	
	1.7 Tools, equipment and testing devices needed to carry out the work are obtained and checked for correct operation and safety.	
2 Lay wiring/cabling and connect accessories for extra-low voltage circuits	2.1 Established OHS risk control measures for carrying out the work are followed.	
	2.2 Circuits/machines/plant are checked as being isolated where necessary in strict accordance OHS requirements and procedures.	
	2.3 Wiring and accessories are installed to comply standards and job specifications with sufficient excess to affect terminations.	
	2.4 Accessories are installed straight and square in the required locations and within acceptable tolerances.	

Element	Performance Criteria	Range Statement
	2.5 Cables and conductors are terminated at accessories in accordance with manufacturer's specifications and regulatory requirements.	
	2.6 Cables installed for future service and marked in accordance with the cable identification scheme and terminated in compliance with regulatory requirements.	
	2.7 Procedures for referring non-routine events to immediate supervisor for directions are followed.	
	2.8 Cable installation and termination is carried out efficiently without waste of materials or damage to apparatus, circuits or the surrounding environment and using sustainable energy practices.	
3 Complete and report work activities	3.1 OHS work completion risk control measures and procedures are followed.	
	3.2 Work site is cleaned and made safe in accordance with established procedures.	
	3.3 Work supervisor is notified of the completion of the installation work in accordance with established routines.	