



Stage 6 Syllabus

ELECTROTECHNOLOGY

Curriculum Framework

Part B

Units of Competency and HSC Requirements

for implementation from 2008

Electrotechnology (120 indicative hours)

Electrotechnology (240 indicative hours)

2008

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Published by Board of Studies NSW
GPO Box 5300
Sydney 2001
Australia

Tel: (02) 9367 8111

Fax: (02) 9367 8484

Internet: www.boardofstudies.nsw.edu.au

September 2008

ISBN 978 1 74147 990 4

2008644

Acknowledgement

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The Electrotechnology Curriculum Framework

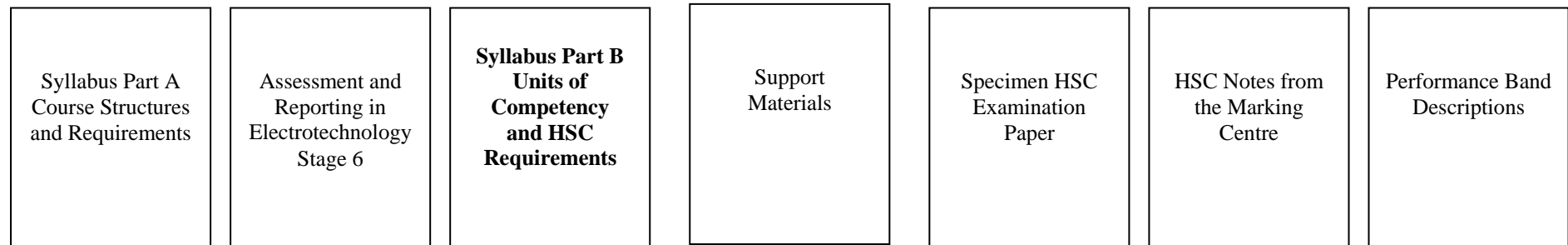
The Electrotechnology Curriculum Framework has been developed to provide students with the opportunity to gain credit towards the NSW Higher School Certificate and credit towards national vocational qualifications in the electrotechnology industry under the Australian Qualifications Framework. The Framework is based on the national Electrotechnology Training Package (UEE07).

This Industry Curriculum Framework incorporates all Higher School Certificate Electrotechnology VET courses including:

- courses delivered by schools
- courses delivered by TAFE colleges
- courses delivered by other Registered Training Organisations on behalf of schools or TAFE colleges.

This document, Part B of the *Electrotechnology Curriculum Framework Stage 6 Syllabus*, contains the text of the units of competency from the Electrotechnology Training Package (UEE07). Each examinable unit of competency is accompanied by HSC requirements and advice. The HSC requirements and advice column indicates the depth of study required for the purposes of the HSC. The terms, concepts and content contained in that column must be included in programming and delivery for the HSC.

Electrotechnology Curriculum Framework Stage 6 Syllabus Documentation



Electrotechnology Curriculum Framework – Units of Competency contained in Part B

This document contains the following units of competency together with HSC requirements and advice for each examinable unit. The HSC requirements and advice column indicates the depth of study required for the purposes of the HSC. The terms, concepts and content contained in that column must be included in programming and delivery for the HSC.

Unit code	Unit title	HSC indicative hours of credit	Page numbers
UEENEEC010B	Deliver a service to customers	10	11 – 23
UEENEEE001B	Apply OHS practices in the workplace	15	24 – 40
UEENEEE002B	Dismantle, assemble and fabricate electrotechnology components	30	41 – 57
UEENEEE003B	Solve problems in extra-low voltage single path circuits	30	58 – 71
UEENEEE004B	Solve problems in multiple path d.c. circuits	35	72 – 85
UEENEEE005B	Fix and secure equipment	15	86 – 99
UEENEEE048B	Carry out routine work activities in an electrotechnology environment	25	100 – 119

The following units of competency are available for download from the Electrotechnology Part B of the syllabus on the Board's website (www.boardofstudies.nsw.edu.au):

UEENEEA002B	Select electronic components	15	120 – 123
UEENEEED002B	Assemble, set-up and test personal computers	40	124 – 129
UEENEEED004B	Use engineering applications software	40	130 – 133
UEENEEED005B	Enter and verify operating instructions in microprocessor equipped devices	15	134 – 139
UEENEEED043B	Install and configure a computer operating system and software	40	140 – 144
UEENEEED046B	Set up and configure basic local area network	40	145 – 149
UEENEEEE007B	Use drawings, diagrams, schedules and manuals	25	150 – 153
UEENEEEE008B	Lay wiring/cabling and terminate accessories for extra-low voltage circuits	30	154 – 159
UEENEEEE023B	Solve basic problems in electronic and digital equipment	40	160 – 164

Unit code	Unit title	HSC indicative hours of credit	Page numbers
UEENEEE032B	Document occupational hazards and risks in computer systems	15	165 – 169
UEENEEE038B	Participate in development and follow a personal competency development plan	10	170 – 173
UEENEEE040B	Identify and select components/accessories/materials for electrotechnology work activities	15	174 – 179
UEENEEE041B	Use routine equipment/plant/technologies in an electrotechnology environment	20	180 – 185
UEENEEF007B	Set up the wireless capabilities of communications and data storage devices	30	186 – 191
UEENEEH001B	Carry out basic repairs to computer equipment by replacement of modules/sub-assemblies	30	192 – 197
UEENEEH002B	Carry out basic repairs to electronic apparatus by replacement of components	30	198 – 203
UEENEEH004B	Set up and test residential audio/video equipment	30	204 – 209
UEENEEJ002B	Prepare refrigeration tubing and fittings	30	210 – 215
UEENEEK012B	Provide basic sustainable energy solutions for energy reduction in domestic premises	25	216 – 221
UEENEEK013B	Apply sustainable energy practice in daily activities	30	222 – 225
UEENEEK014B	Promote sustainable energy practice in the community	25	226 – 229
UEENEEC001B	Maintain documentation	10	230 – 233
UEENEEED001B	Use basic computer applications relevant to a workplace	10	234 – 237
UEENEEE020B	Provide basic instruction in the use of electrotechnology apparatus	10	238 – 242
Appendix 1	Language, Literacy and Numeracy	–	243 – 249
Appendix 2	Essential knowledge and associated skills	–	250 – 270
Appendix 3	Assessment methods	–	271 – 274
Appendix 4	Definitions/Glossary	–	275 – 298

The following **Key to Units** explains the purpose of each part of the layout of the units.

Key to Units

Training Package	Electrotechnology (UEE07)	Indicates the Training Package to which the unit of competency belongs.		HSC Requirements and Advice
Unit title	Deliver a service to customers	The sector or specialisation of the Electrotechnology industry to which the unit of competency mainly applies.		HSC Indicative Hours
Unit code	UEENEEC010B	Competency field	Commercial	Hours recognised for HSC credit. → 10

Unit descriptor	This unit covers the interacting with customers to identify and meet their service needs. It encompasses following community and enterprise policies and standards, identifying customer needs, identifying and resolving problems/issues and maintaining records.			General description of the scope of work function to which the unit of competency applies and the general abilities needed.
Application of the unit	This unit is intended for competency development entry-level employment-based program.			
Employability skills	The required outcomes described in this unit of competency contain applicable facets of Electrotechnology qualification in which this unit of competency is packaged will assist in identifying Employability Skills requirements.			Indicates that this unit of competency contains employability skills.
Prerequisite unit(s)	Competencies	There are no prerequisite competencies for this unit.		
Units of competencies expected to have been achieved prior to undertaking training in the unit.	Literacy and numeracy skills	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.		Inform the reading, writing and maths skill levels needed to achieve competence in the unit.
		Reading 3	Writing 3	
Licence to practise	The skills and knowledge described in this unit do not require a licence to practise in the work area directly related to occupational health and safety and where applicable contracts of training support regulations.			

Indicates how technical standards, codes of practice and regulatory requirements apply to the unit of competency and whether a licence to practise is required.

The way in which the unit of competency is intended to be used in a learning program or qualification.

Required Skills and Knowledge	HSC Requirements and Advice
<p>This describes the essential skills and knowledge and their level required for this unit.</p> <p>Evidence must show that knowledge has been acquired of safe working practices and delivering a service to customers.</p> <p>All knowledge and skills detailed in this unit should be contextualised to current industry practices and technologies.</p> <p>The extent of the essential knowledge and associated skills (EKAS) required is given in <i>Appendix 2</i> of this Syllabus. It forms an integral part of this unit.</p> <p>2.2.1 Enterprise communication methods</p> <p>2.2.2 Enterprise work activities records</p> <p>2.2.4 Problem solving techniques</p> <p>2.2.5 Enterprise customer relations protocols</p> <p>2.2.6 Enterprise quality management systems, basics</p> <p>2.2.13 User instruction techniques</p> <p>2.18.1 Occupational Health and Safety principles.</p> <div data-bbox="143 914 887 1062" style="border: 1px solid black; padding: 5px; margin-top: 20px;"> <p>This section describes the essential skills and knowledge required for this unit. The knowledge component that is either explicit or implicit to effective performance.</p> </div> <div data-bbox="262 1203 719 1351" style="border: 1px solid black; padding: 5px; margin-top: 20px; width: fit-content;"> <p>Indicates the industry curriculum framework to which the unit of competency belongs.</p> </div> <div data-bbox="741 1251 1173 1329" style="border: 1px solid black; padding: 5px; margin-top: 20px; width: fit-content;"> <p>Date of release for the HSC.</p> </div>	<p>Key Terms and Concepts</p> <ul style="list-style-type: none"> • active listening • appropriate personnel • communication methods <div data-bbox="1496 395 2096 525" style="border: 2px solid black; padding: 5px; margin-top: 10px;"> <p>Key terms and concepts to be addressed when undertaking this unit of competency for the purposes of the HSC.</p> </div> <ul style="list-style-type: none"> • customer preferences, needs and expectations • customer referrals • effective interpersonal skills • electrotechnology work environment • establishing good work habits • follow-up and feedback • handling complaints and difficult customers • hazard identification and risk control • internal and external customers • lines of reporting and communication • OHS policy and procedures • Open, closed and reflective questions • personal attributes • personal presentation standards • problem-solving • quality system procedures • quality assurance • reporting and recording • safe work practices and procedures • scope of responsibility • seeking assistance • service quality • verbal, non-verbal and written communication • work records • working safely with electricity • workplace/enterprise policy and procedures • workplace/enterprise products and services.

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

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 assessment is used, it must include the application of the competency in the normal work environment and the application of the competency in a realistically simulated work environment. That is, in some circumstances, assessment in part or full can occur in a simulated environment, but it must be in accordance with industry and regulatory policy.

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.

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 judgement.

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.

Before the critical aspects of evidence are considered all prerequisites must be met.

Evidence for competence in this unit shall be considered holistically. Each element and associated performance criteria demonstrated within the timeframes typically specified in the performance criteria and range statement shall also comprise:

The evidence guide is critical in assessment as it provides information to the RTO and assessor about how the unit of competency may be demonstrated.

Each element and associated performance criteria demonstrated within the timeframes typically specified in the performance criteria and range statement shall also comprise:

- 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
- apply sustainable energy principles and practices as specified in the performance criteria and Range Statement
- demonstrated consistent performance across a representative range of contexts from the prescribed items below:
 - deliver a service to customers as described in the range statement including:
 - interacting with customers appropriately
 - identifying customer needs accurately
 - identifying and resolving customer issues promptly and amicably
 - delivering a service
 - reflecting on the completed service positively
 - dealing with unplanned events by drawing on essential knowledge and skills to provide appropriate solutions incorporated in a holistic assessment with the above listed items.

Provides a summary of appropriate assessment methods and what they encompass.

Particular knowledge and skills essential to effective performance.

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 related 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 delivering a service to customers.</p>	<p>This unit shall be assessed by methods given in <i>Appendix 3 of this Syllabus</i>.</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, competence in this unit may be assessed concurrently with any unit or units that require formal documentation.</p>

Indicates the acceptable methods of assessment as specified in the Training Package.

Identifies where benefits may be derived by assessing two or more units concurrently or sequentially.

Environment and resources acceptable for assessing achievement of competency.

Informs of the resources needed when simulating a real workplace and indicates when simulation of the workplace may be viable or necessary.

Element	Performance Criteria	Range Statement	HSC Requirements and Advice
<p>1 Interact with customers.</p> <div data-bbox="143 502 551 817" style="border: 1px solid black; padding: 5px; margin-top: 20px;"> <p>Elements of competency are the basic building blocks of the unit of competency. They describe, in terms of outcome, the significant functions and tasks that a person in a particular area of work is able to perform.</p> </div>	<p>1.1 Communication with customers is conducted in a professional and courteous manner according to established procedures.</p> <div data-bbox="546 1134 1077 1305" style="border: 1px solid black; padding: 5px; margin-top: 20px;"> <p>The performance criteria indicate the level of performance that is required for each element. These are used as the tools for assessment.</p> </div>	<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 must be demonstrated by delivering a service to customers in any of the electrotechnology disciplines.</p> <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 of this Syllabus.</i></p> <div data-bbox="1025 938 1556 1062" style="border: 1px solid black; padding: 5px; margin-top: 20px;"> <p>The range of context and conditions to which performance criteria apply.</p> </div>	<p>Learning experiences for the HSC must address:</p> <p>Importance of communication in an electrotechnology work environment.</p> <p>Types of communication:</p> <ul style="list-style-type: none"> • verbal • non-verbal • written. <p>Types of customers including:</p> <ul style="list-style-type: none"> • internal <ul style="list-style-type: none"> ○ workmates/colleagues/employees ○ departments • external. <p>A knowledge of:</p> <ul style="list-style-type: none"> • wo • rel • inc • cu <p>The i</p> <p>communication</p> <ul style="list-style-type: none"> • appropriate language • clear voice audible volume courteous tone active listening asking questions or rephrasing to clarify or confirm understanding. <p>The importance of communicating in a language that is:</p> <ul style="list-style-type: none"> • clear • concise • directive • purposeful • correct • courteous • culturally sensitive. <p>An awareness of the importance of following workplace/enterprise set routines and procedures.</p> <div data-bbox="1601 694 2033 865" style="border: 1px solid black; padding: 5px; margin-top: 20px;"> <p>Indicates the depth of study required for purposes of the HSC for the corresponding performance criteria.</p> </div>