



Australian Government

UEECD0015 Develop engineering solutions to photonic system problems

Release: 1

UEECD0015 Develop engineering solutions to photonic system problems

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to develop engineering solutions to photonic system problems.

It includes preparing and developing engineering solutions for photonic systems problems, and applying problem-solving techniques. It also includes testing, documenting and implementing engineering solutions.

The skills and knowledge described in this unit require a licence or permit to practice in the workplace where work is carried out on electrical installations which are designed to operate at voltages greater than 50 volt (V) alternating current (a.c.) or 120 V direct current (d.c.).

Competency development activities in this unit are subject to regulations directly related to licensing. Where a licence or permit to practice is not held, skills and knowledge described in this unit require a relevant contract of training, such as an Australian Apprenticeship.

Additional and/or other conditions may apply in some jurisdictions subject to regulations related to electrical work. Practice in the workplace and during training is also subject to work health and safety (WHS)/occupational health and safety (OHS) regulations.

No other licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEEECD0065 Solve problems in basic electronic circuits

or

UEECD0043 Solve problems in direct current circuits

or

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

Competency Field

Cross Discipline

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to develop engineering solution for photonic systems problems

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1 WHS/ OHS processes and workplace procedures for a given work area are identified, obtained and applied

1.2 WHS/OHS risk control measures and workplace procedures in preparation for the work are followed

1.3 Photonic system problems are determined from performance specifications and/or reports and in consultation with relevant person/s

1.4 Activities are planned in accordance with workplace procedures for timelines in consultation with others involved

1.5 Strategies are identified, developed and implemented

2 Develop engineering solutions

2.1 WHS/OHS risk control measures and workplace procedures for carrying out the work are followed

2.2 Photonic technology, operation, device characteristics and applications are applied to developing solutions to photonic system problems

2.3 Parameters, specifications and performance requirements of photonic system problems are obtained in accordance with workplace procedures

2.4 Resolving photonic system problems is analysed to provide solutions in accordance with workplace procedures

	2.5	Unplanned events are responded to in accordance with WHS/OHS requirements and workplace procedures
	2.6	Quality of work is monitored and responded to in accordance with workplace procedures and/or relevant industry standards
3 Test, document and implement engineering solutions for photonic problems	3.1	Solutions to photonic problems are tested and modified as required in accordance with workplace procedures
	3.2	Solutions and instructions for implementation are documented in accordance with WHS/OHS requirements and workplace procedures
	3.3	Relevant person/s required to implement solutions to photonic system problems is coordinated in accordance with relevant industry standards and workplace procedures
	3.4	Justification for solutions used to solve photonic system problems is documented in work records in accordance with relevant industry standards

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Developing engineering solutions must include • at least two solution applications the following:

Unit Mapping Information

This unit replaces and is equivalent to UEENEEE128A Develop engineering solutions to photonic system problems.

Links

Companion Volume implementation guides are found in VETNet - -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEECD0015 Develop engineering solutions to photonic system problems

Modification History

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Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and include:

- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements, including
 - using risk control measures
- dealing with unplanned events in accordance with problem-solving techniques and workplace procedures
- determining photonic system problems
- developing engineering solutions for photonic system problems
- documenting instruction for implementation of solutions
- documenting justification of solutions implemented
- forming strategies for solution development and implementation
- implement engineering solutions for photonic system problems
- obtaining photonic system parameters, specifications and performance requirements
- preparing to develop engineering solution for photonic system problems
- testing and solving photonic system problems.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- problem-solving techniques
- relevant development and implementation strategies
- relevant industry standards
- relevant manufacturer specifications
- relevant photonic principles and applications, including:
 - components for wavelength-division multiplexing (WDM) systems
 - concepts of optical transmission
 - environmental advantages and impacts of optical technology

- geometric optics
- introduction to photonic components
- operating principles of optical couplers and their characteristics
- operational principles of key photonic devices
- photonic components and component technologies
- photonic components and their roles in photonic devices
- relevant job safety assessments or risk mitigation processes
- relevant testing techniques
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace instruction, quality, policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in suitable workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated suitable workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or simulations
- relevant and appropriate materials, facilities, tools and equipment currently used in industry
- resources that reflect current industry practices in relation to developing engineering solutions to photonic system problems
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

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<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>