



Australian Government

UEEEL0063 Provide photometric data for illumination system design

Release: 1

UEEEL0063 Provide photometric data for illumination system design

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 provide photometric data for illumination system design.

It includes preparing and providing photometric data, and documenting justification of the data.

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

Pre-requisite Unit

Not applicable

Competency Field

Electrical

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to provide photometric data

PERFORMANCE CRITERIA

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

- 1.1** Work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures for a given work area are identified, obtained and applied
- 1.2** Illumination parameters of the design are obtained from a design brief, job specification and/or consultations

		with the client
	1.3	Illumination parameters for particular situations and tasks are obtained and applied in accordance with relevant industry standards
	1.4	Lighting manufacturer specification for products are obtained and reviewed
2	Provide photometric data	
	2.1	WHS/OHS risk control work measures and workplace procedures are followed
	2.2	Photometric data is calculated for applications and variety of appropriate lighting products
	2.3	Data illumination is in accordance with relevant industry standards
	2.4	Data is documented in accordance with workplace procedures
	2.5	Photometric data documentation is forwarded to appropriate person/s in accordance with workplace procedures

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.

Providing photometric data must include at least the following:

- determination of lighting levels for specific situations
- interpretation of manufacturer photometric data
- determination of lighting level transitions where safety is a consideration
- calculations using the inverse square law
- measurement of lighting levels using a light (lux) meter

- presentation of a simple photometric report
- present a report (lighting levels) on an existing installation

Unit Mapping Information

This unit replaces and is equivalent to UEENEEG184A Provide photometric data for illumination system design.

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 UEEEL0063 Provide photometric data for illumination system design

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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 three occasions and include:

- obtaining illumination parameters from a design brief, job specification or by consultation with the client
- understanding compliance and recommended illumination parameters for particular situations and tasks
- understanding manufacturers' technical information
- documenting photometric data, including justification for conclusions
- dealing with unplanned events
- applying industry standards
- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements, including using risk control measures
- following workplace procedures
- providing photometric data, including:
 - applying manufacturer specifications
 - calculating photometric data.

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:

- photometric principles, vision and colour, including:
 - nature of light encompassing:
 - dual nature of light electromagnetic spectrum
 - frequency and wavelength (nm)
 - photometric principles and definitions encompassing:
 - scope and definitions from AS/NZS 1680.1 Interior and workplace lighting - General principles and recommendations, and AS ISO 1000 – 1998 The international system of units (SI) and its application

- luminous flux, definition and unit of measurement
- luminous intensity, definition and International System of Units (SI) unit of measurement
- radians and steradians
- illuminance and luminance
- basic optics, reflection and refraction
- reflectance and transmittance
- diffuse surfaces
- the point source and the inverse square law
- cosine law
- relationship between watts and lumens
- older imperial measurements (such as the footcandle or lumen per square foot and candlepower)
- physiology of the eye and light detection encompassing:
 - scotopic, mesopic and photopic vision
 - contrast sensitivity
 - colour vision – rods and cones
 - light levels and recognition of colour
 - adaptation
 - accommodation and visual acuity
 - brightness and lightness
 - image detection
 - glare and comfort
 - cognition and visual perception
- colour encompassing:
 - Munsell and CIE colour system
 - chromaticity coordinates
 - black body radiation and colour temperature
 - uniform chromaticity scale diagrams
 - factors determining colour appearance
- photometry encompassing:
 - the integrating sphere
 - distribution photometry
 - selected requirements of AS/NZS 1680.3 Interior and workplace lighting - Measurement, calculation and presentation of photometric data
 - the goniophotometer
 - measurement of luminous flux
 - measurement of luminance and cut-off angle
 - measurement of illuminance (single luminaire)
 - graphical representation of photometric data

- test reports and data presentation
- lux meters and measuring equipment
- required light levels for various situations in accordance with Australian/New Zealand Standards
- relevant industry standards
- relevant job safety assessments or risk mitigation processes
- relevant manufacturer specifications and operating instructions
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace 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, tools, facilities, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, relevant industry standards, codes of practice and operation manuals.

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