



Australian Government

**UEENEEG185A Select effective and
efficient light sources and luminaries for
given locations and designs**

Release: 2

UEENEEG185A Select effective and efficient light sources and luminaries for given locations and designs

Modification History

Not applicable.

Unit Descriptor

Unit Descriptor **1) Scope:**

1.1) Descriptor

This unit covers the selecting effective and efficient light sources and luminaries for a given location and lighting design. It encompasses, applying knowledge of light sources and luminaries and given lighting design parameters, complying with standards and documenting justification for the selections made.

Application of the Unit

Application of the Unit **2)**

This competency standard unit, together with its pre-requisite provides the foundation for specific application competencies in a number of areas.

Licensing/Regulatory Information

License to practice **3)**

The skills and knowledge described in this unit do not require a license to practice 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.

Pre-Requisites

Prerequisite Unit(s) 4)

Competencies 4.1)

Granting competency in this unit shall be made only after competency in the following unit(s) has/have been confirmed.

UEENEEG1 84A Provide photometric data for illumination system design

Literacy and numeracy skills 4.2)

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 Volume 2, Part 3 'Literacy and Numeracy'

Reading 5 Writing 5 Numeracy 5

Employability Skills Information

Employability Skills 5)

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 Skill requirements.

Elements and Performance Criteria Pre-Content

6) Elements describe the essential outcomes of a competency standard unit

Performance Criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the Evidence Guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1 Prepare to select light sources and luminaries	1.1 OHS procedures for a given work area are identified, obtained and understood.
	1.2 The parameters of the lighting design are obtained from a design brief, job specification or by consultation with the client.
	1.3 Compliance and recommended illumination parameters for particular situations and tasks are obtained and understood.
	1.4 Lighting manufacturers' technical information for products under consideration are obtained and understood
2 Select light sources and luminaries	2.1 OHS risk control work measures and procedures are followed.
	2.2 Knowledge of light sources and luminaries are applied to selecting light sources and luminaries appropriate to given lighting design parameters.
	2.3 Selected light sources and luminaries are within the illumination compliance requirements and standards for the given design.
	2.4 Selected light sources and luminaries are documented, including justification for conclusion, in accordance with established procedures.
	2.5 Documentation of the selected light sources and luminaries is forwarded to appropriate personnel in accordance with established procedures.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

8) This describes the essential skills and knowledge and their level, required for this unit.

Evidence shall show that knowledge has been acquired of providing photometric data for illumination system design.

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

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Light sources and luminaries

Evidence shall show an understanding of light sources, lamps and luminaires to an extent indicated by the following aspects:

T1 Types of light sources and their historic development including the practical requirements, advantages and disadvantages of light sources encompassing:

- incandescent
- electrical discharge in gases
- tubular fluorescent
- compact fluorescent types
- phosphor types
- low pressure sodium
- high pressure sodium
- metal halide
- mercury vapour
- tungsten halogen cycle lamps
- neon and advertising tube types
- LED technologies

T2 Each practical lamp type is designated in terms encompassing:

- luminous efficacy
- spectral output
- colour rendering
- longevity of operation
- supply requirements and control equipment
- cost
- sustainability and recycling

T3 Types of luminaire encompassing:

- general design and types
- provision of data on luminaires
- methods of light control
- properties of optical systems: refractors, reflectors, diffusers
- luminance control techniques

REQUIRED SKILLS AND KNOWLEDGE

- luminaires and auxiliaries
- Australian Standards for indoor and outdoor luminaires
- calculation of utilisation factors
- provision of photometric data
- luminance of various fittings

T4 Natural lighting and building design

T5 Techniques used to minimise energy expenditure

T6 Specific application lamps

- specific task lamps
- germicidal lamps
- indoor agricultural or hydroponic lamps

Evidence Guide

EVIDENCE GUIDE

9) 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 9.1)

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.

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 judgment.

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.

Critical aspects of evidence required to demonstrate competency in this unit 9.2)

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 shall be demonstrated on at least two occasions in accordance with the 'Assessment Guidelines – UEE11'. Evidence shall also comprise:

- 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:
 - 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:
 - Providing photometric data for illumination system design as described in 8) and including:
 - A Obtaining illumination parameters from a design brief, job specification or by consultation with the client.
 - B Understanding compliance and recommended illumination parameters for particular situations and tasks.
 - C Understanding manufacturers' technical information.

- D Selecting appropriate light sources and luminaries
- E Documenting selected light sources and luminaries including justification for the selections made
- F Dealing with unplanned events

Context of and specific resources for assessment 9.3)

This unit should be assessed as it relates to normal work practice using procedures, information and resources typical of a workplace. This should include:

OHS policy and work procedures and instructions.

Suitable work environment, facilities, equipment and materials to undertake actual work as prescribed in this unit.

These should be used in the formal learning/assessment environment.

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.

The resources used for assessment should reflect current industry practices in relation to selecting effective and efficient light sources and luminaries for given locations and designs.

**Method of
assessment**

9.4)

This unit shall be assessed by methods given in Volume 1, Part 3 'Assessment Guidelines'.

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.

**Concurrent
assessment and
relationship with
other units**

9.5)

There are no concurrent assessment recommendations for this unit.

Range Statement

RANGE STATEMENT

10) 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.

This unit shall be demonstrated in relation to at least three of the following:

- An application using incandescent lamps for colour rendition
- Outside security lighting
- A high bay application
- Highway lighting
- Store/shop lighting
- A school or training classroom
- Localised task lighting
- A flood-lighting application
- A situation integrating some natural daylight

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 Volume 2, Part 2.1.

Unit Sector(s)

Not applicable.

Competency Field

Competency Field	11)
	Electrical