



Australian Government

Department of Education, Employment and Workplace Relations

CUFLGT301A Prepare, install and test lighting equipment

Revision Number: 1

CUFLGT301A Prepare, install and test lighting equipment

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to install and test lighting equipment for productions in the film, television and live events industries. Testing and tagging of electrical equipment must be carried out by a person with the relevant certificate of competency according to the performance specifications of: • Australian Standard 3760: 2000 In-service safety inspection and testing of electrical equipment • Australian Standard 3002: 1985 Electrical installations - shows and carnivals. In some states and territories, a licensed electrician is required to undertake the tasks outlined in the fifth element. A licensed rigger is required for the installation of some rigging equipment.
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Application of the Unit

Application of the unit	Lighting technicians or lighting assistants generally undertake the role described in this unit under the supervision of a lighting designer, technical director or senior lighting technician. They install and test equipment according to a lighting plan. On some productions and outside broadcasts, a qualified gaffer/chief electrician supervises the installation/rigging of lighting equipment and required power sources. Skills associated with operating lighting equipment during productions are covered in: • CUFLGT302A Record and operate standard lighting cues • CUFLGT402A Set up, record and operate lighting cues and effects.
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Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.
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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Clarify lighting requirements for productions	1. Confirm overall lighting requirements with reference to lighting documentation and in consultation with relevant production personnel 2. Calculate power requirements and identify and confirm that power sources and locations meet production requirements 3. Correctly identify patching, colour and focus requirements 4. Identify the need for additional equipment or materials and organise timely acquisition according to enterprise procedures
Prepare lighting equipment for installation	5. Use test equipment to identify faults and to ensure lighting equipment is safe and operational 6. Refer complex repairs to technical specialists according to enterprise procedures 7. Prepare and assemble colour, equipment and accessories in readiness for installation and or transportation when required 8. Pre-rig lighting equipment as required according to safety and licensing requirements 9. Prepare and/or roll extension leads, looms and cables to meet design specifications, enterprise standards and legal requirements
Install lighting	10. Install required rigging and accessories according to statutory and enterprise safety requirements 11. Test, install and hang lanterns and accessories according to the lighting plan, scale and manufacturer specifications 12. Install power supplies according to lighting plans, location standards, manufacturer specifications and safety regulations 13. Patch lanterns and accessories according to lighting or patch plans 14. Safely and neatly secure and correctly label rated cabling so that it is clear of moving elements 15. Angle and focus lanterns according to lighting plans and artistic requirements 16. Check the safety of equipment both during and after installation according to legal requirements
Install lighting control	17. Correctly connect dimmers to power, assign and turn on

ELEMENT	PERFORMANCE CRITERIA
system	18. Install and configure <i>control desk and peripherals</i> according to production requirements 19. Run and connect control cables and secure safely 20. Patch lanterns and channels to dimmers according to lighting or patch plan sheets and location procedures/conditions
Ensure electrical safety	21. Complete installation and testing according to legislative and OHS requirements 22. Check three-phase distribution and power calculations in collaboration with licensed electricians as required 23. Check that power supply is sufficient for load requirements and that distribution of electrical loading is within limits 24. Ensure that cables used are correctly rated, including three-phase cable to dimmers, and that three-phase supplies are balanced 25. Ensure that cabling and connectors meet legislative and OHS requirements
Test and adjust lighting	26. <i>Test all aspects of lighting</i> , including communication system, control desk and peripherals using appropriate techniques and according to safety requirements 27. Identify the need for adjustments and make modifications accordingly 28. Liaise with appropriate production personnel to confirm that lighting installation meets requirements 29. Complete lighting documentation accurately, legibly and concisely and make updates as required
Disassemble lighting equipment	30. Break down and carry lighting equipment and accessories, employing safe lifting techniques 31. Clean and safely pack equipment into cases to avoid damage and prepare for transport as required 32. Report and document equipment that is damaged and requires maintenance to the relevant production personnel 33. Leave the worksite in the original or improved condition

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- communication, literacy and teamwork skills sufficient to:
 - work effectively as a member of a production team
 - interpret lighting plans
 - interpret written and verbal instructions
- organisational and planning skills sufficient to assemble and test lighting equipment in a logical sequence
- initiative in the context of making practical suggestions that result in minor modifications to lighting plans
- technical skills sufficient to:
 - use tools and test equipment necessary to install and maintain lighting equipment
 - use different types of light-measuring devices
 - operate and interpret information readouts from a colour temperature meter
- numeracy skills sufficient to:
 - make mathematical calculations necessary for the safe assembly, installation and testing of equipment, e.g. power requirements, binary calculations for setting DMX dip switches
 - use a scale ruler

Required knowledge

- industry knowledge, including:
 - roles and responsibilities of production personnel
 - industry terminology relevant to lighting operations
 - issues and challenges that arise in the context of installing and testing lighting equipment
 - format of lighting plans and the meaning of different components, including an understanding of scale, position and orientation
- different types of hardware used for lighting installation, e.g. screws, nuts, bolts
- types of lanterns, lighting systems, control systems, and lighting accessories and their relevance to different types of production
- the range of colour gels available and the way in which different colours are used in lighting, including the relationship between colour and light
- techniques for rigging and hanging lighting equipment within licensing requirements
- basic principles of lighting, e.g. key, fill and back light
- relevant workers' compensation and OHS legislation

REQUIRED SKILLS AND KNOWLEDGE

- safety regulations and industry safety codes that affect the installation of lighting equipment and working with power, including OHS legislation

Evidence Guide

EVIDENCE GUIDE

The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

Critical aspects for assessment and evidence required to demonstrate competency in this unit

Evidence of the following is essential:

- application of a range of technical lighting knowledge and manual techniques to the installation of lighting equipment so that the lighting set-up meets production and safety requirements
- application of safe working practices when installing lighting equipment
- ability to work cooperatively in a team environment.

Context of and specific resources for assessment

Assessment must ensure:

- practical demonstration of skills through the installation and testing of lighting equipment for an actual production
- completion of tasks within workplace time constraints
- involvement of and interaction with a team to reflect the collaborative nature of the technical production process
- use of industry-standard equipment
- access to a lighting plan from which the candidate is able to work
- access to a production and production venue
- access to a range of lighting equipment and accessories as identified in the range statement
- access to appropriate learning and assessment support when required
- use of culturally appropriate processes and techniques appropriate to the language and literacy capacity of learners and the work being performed.

Method of assessment

A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:

- direct questioning combined with review of portfolios of evidence and third-party workplace reports of on-the-job performance

EVIDENCE GUIDE	
	• direct observation of the candidate installing lighting equipment • inspection of lighting equipment set-up by the candidate to assess workability and safety issues • verbal or written questioning to assess knowledge of equipment, techniques and how to interpret a lighting plan.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • CUFLGT302A Record and operate standard lighting cues • CUSOHS301A Follow occupational health and safety procedures.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Lighting documentation may include:

- building specifications, room layouts
- carnet (for international travel) hire or loan contracts
- colour cutting/coding schedules
- colour list
- colour lists, plots
- cue synopsis
- equipment instructions and/or manufacturer instructions and specifications
- floor sheets
- focus details
- full equipment schedule
- hire and loan agreements
- international faxes
- lantern schedules
- lighting plan
- patch sheet
- power requirements
- production schedule
- transport or equipment lists
- venue procedures.

Production personnel may include:

- camera assistant
- camera operator
- director
- director of photography
- floor manager
- grip
- head of department
- lighting designer
- lighting personnel
- producer
- production manager
- set designers

RANGE STATEMENT	
	• supervisor • technical director • other technical/specialist staff.
<i>Productions</i> may include:	• animated productions • commercials • documentaries • EFP (electronic field production) • ENG (electronic news gathering) • feature films • filmed events or performances • live events • live or pre-recorded television productions • multi-camera • music video • short films • single-camera • theatre productions.
<i>Test equipment</i> may include:	• analogue or digital multimeters • continuity tester • DMX cable tester • test lamps.
<i>Lighting equipment</i> may include:	• architectural fixtures • digital moving lights (intelligent lights) • lanterns • special effects units, e.g.: • electrical/electronic props • strobes, mirror balls and motors, smoke machines, fog machines • ultraviolet light, oil and water crackers, effects projectors • studio and location units • theatre-based units.
<i>Rigging and accessories</i> may include:	• boom arms • chain blocks/motors and other rigging equipment installed by a licensed rigger • hook clamps • H-stands • mobile booms • safety chains • scaffold clamps

RANGE STATEMENT	
	• spansets, slings, shackles • spigots • T-bars • telescopic stands • truss • winch-up stands.
<i>Lanterns and accessories</i> may include:	• lanterns and luminaires, e.g.: • fresnel • profile • HMI (hydrargyrum medium arc-length iodide) • plasma, e.g. fluorescent • theatre-based units • studio and location units • special effects • moving lights • digital moving lights (intelligent lights) • lantern accessories, e.g.: • profile shutters • gobo holders • fresnel/PC barn doors • colour frames • manually operated colour changers • irises • colour scrollers • animation discs • gobo rotators and other effects accessories • range of lamps, e.g.: • incandescent • plasma • discharge • PAR (parabolic aluminised reflector) • low-voltage.
<i>Dimmers</i> may include:	• analogue • multiplexed analogue dimmers • multiplexed digital dimmers • rheostat-based dimmers • self-contained dimmable controllers

RANGE STATEMENT	
	• single-unit, e.g. follow spot.
<i>Control desk and peripherals</i> may include:	• control desk peripherals, e.g.: • monitors • printers • external memory storage, e.g. memory card or floppy disk • riggers' controls • desk lamps • control cables effects units and back-up units • effects units • back-up units • additional control modules, e.g. fader wings • manual desks • manual/memory desks ('rock' desks) • moving light desks • push-button memory desks ('theatre' desks).
<i>Aspects of lighting</i> to be <i>tested</i> may include:	• correct fitting of colour and accessories • data flows • dimmer profiles • functioning of riggers' and designer controls • installation of automated software • operational function of equipment • patching of equipment • selection of control protocols • valid DMX signals/line.

Unit Sector(s)

Unit sector	
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Competency field

Competency field	Media and entertainment production - lighting
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Co-requisite units

Co-requisite units		