Australian Government

UEENEEH110A Install commercial video/audio system components

Release: 2

INDUSTRY SKILLS COUNCILS
Creating Australia's Future

UEENEEH110A Install commercial video/audio system components

Modification History

Not applicable.

Unit Descriptor

Unit Descriptor **1) Scope:**

1.1) Descriptor

This unit covers installation of components for audio/video facilities in buildings and premises. The unit encompasses working safely and to specifications and standards, matching equipment with that specified for a given location, terminating and interconnecting cables/conductors and completing the necessary installation documentation.

Application of the Unit

Application of the Unit **2)**

This unit is intended for competency development in entry-level employment based programs incorporated in approved contracts of training or approved training programs.

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.

Note:

License to practice **3)**

1. Compliance with permits may be required in various jurisdictions and typically relates to the operation of plant, machinery and equipment such as elevating work platforms, powder operated fixing tools, power operated tools, vehicles, road signage and traffic control, lifting equipment and the like. Permits may also be required for some work environments such as confined spaces, working aloft, near live electrical apparatus and site rehabilitation.

2. Compliance may be required in various jurisdictions relating to currency in First Aid, confined space, lifting and risk safety measures.

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.

UEENEEE101A	Apply Occupational Health and Safety regulations, codes and practices in the workplace
UEENEEE102A	Fabricate, assemble and dismantle utilities industry components
UEENEEE105A	Fix and secure electrotechnology equipment
UEENEEE107A	Use drawings, diagrams, schedules, standards, codes and specifications
UEENEEE108A	Lay wiring/cabling and terminate accessories for extra-low voltage (ELV) circuits

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 3 Writing 3 Numeracy 3

Employability Skills Information

Employability Skills **5)**

This unit contains Employability Skills

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 install audio/video components and systems.	1.1 OHS procedures for a given work area are identified, obtained and understood through established routines.
	1.2 Established OHS risk control measures are

ELEMENT	PERFORMANCE CRITERIA	
		followed in preparation for the work.
	1.3	Safety hazards, which have not previously been identified, are reported and advise on risk control measures, are sought from the work supervisor.
	1.4	The nature and location of the work is obtained from work supervisor or other appropriate person to establish the scope of work to be undertaken.
	1.5	Advice is sought from the work supervisor and/or other appropriate person to ensure the work is co-ordinated effectively with others.
	1.6	Sources of materials that may be required for the work are established in accordance with established routines.
	1.7	Tools, equipment and testing devices needed to carry out the work are obtained and checked for correct operation and safety.
2 Install audio/video components and systems.	2.1	Established OHS risk control measures for carrying out the work are followed.
	2.2	Circuits/components are checked as being isolated where necessary in strict accordance OHS requirements and procedures.
	2.3	Audio/video components are installed to comply to standards and job specifications with sufficient excess to affect terminations.
	2.4	Accessories are installed straight and square in the required locations and within acceptable tolerances.
	2.5	Cables and conductors are terminated at accessories in accordance with manufacture's specifications and regulatory requirements.
	2.6	Procedures for referring non-routine events to immediate supervisor for directions are followed.

ELEMENT	PERFORMANCE CRITERIA	
	2.7	The installation is carried out efficiently without waste of materials or damage to apparatus, circuits or the surrounding environment and using sustainable energy practices.
3 Complete installation work and report.	3.1	OHS work completion risk control measures and procedures are followed.
	3.2	Work site is cleaned and made safe in accordance with established procedures.
	3.3	Work supervisor is notified of the completion of the installation work in accordance with established routines.

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 safe working practices and installing commercial audio/video system components.

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

KS01-EH110A Commercial audio/video system installation

Evidence shall show an understanding of commercial audio/video system installation, applying safe working practices and relevant Standards, Codes and Regulations to an extent indicated by the following aspects

T1. Sound reproduction fundamentals

- Sound wave propagation
- Timbre of sound
- Effects of other medium of sound waves
- Characteristics of the human ear
- Difference between mono and stereo
- Surround sound principles

T2. Audio reproduction, electronic components

- Preamplifiers amplifier encompassing:
  - Function in the reproduction chain
  - Typical circuit arrangements
- Power and integrated amplifiers encompassing:
  - Function in the reproduction chain
  - Typical circuit arrangements
- Graphic equalizers encompassing:
  - Function in the reproduction chain
  - Typical circuit arrangements
- Component installation and interconnections

T3. Audio reproduction, speaker fundamentals

- Types of speaker drives and their operating mechanism
- Speaker cabinet characteristics
- Purpose and circuit arrangement of typical cross-over networks
- Speaker connections

T4. Loud speakers and microphones

- Loud speaker construction and applications
- Operation of circuits and cross over networks

REQUIRED SKILLS AND KNOWLEDGE

- Optimum layout of speaker systems
- Principle and operation of microphones
- Speaker and microphone installation in connections

T5. Specialist audio/video cabling installation and termination

- Features of high performance audio and video cables and interconnects
- High performance audio and video cables and interconnects encompassing:
  - Installation methods and limitations
  - Terminations techniques as specified by cable manufacturers

T6. Professional audio electronics

- Complex audio systems used for live sound or theatre application
- Connections and phasing of equipment
- Optimum signal levels for the acoustic environment
- Connection and adjustment of signal processing units
- Tuning, adjustment and diagnosis of systems

T7. Video and display set up

- Projectors encompassing:
  - Aspect ratio
  - Screen size
  - Orientation
  - Throw distance, vertical elevation and horizontal orientation
- Direct view monitors adjustments

T8. Audio/video control equipment

  - Types of control devices and their operating principles
  - Control equipment arrangement in an audio/video system

T9. Audio/video recording and replay components basic faults and repairs

- Sub-system components (i.e. functional blocks) and their operating parameters
- Common faults, their symptoms and cause.
- Fault location procedures and testing points
- Device adjustments - audio/video recording and replay components are audio cassette player/recorders, compact disk players, video cassette player/recorder, digital versatile disk and super audio compact players.

T10 Electronic Safe working practice encompassing:

- Risk management and assessment of risk:
  - Principle and purpose of risk management, and
  - Processes for conducting a risk assessment
- Hazards associated with low-voltage, extra-low voltage and high-currents:
  - Parts of an electronic systems and equipment that operate at low-voltage and

REQUIRED SKILLS AND KNOWLEDGE

extra-low voltage,
- Parts of an electronic systems and equipment where high-currents are likely.

- Risks and control measures associated with high-voltage:
  - Parts of an electronic systems and equipment that operate at high-voltage,
  - The terms used - 'touch voltage', 'step voltage', 'induced voltage' and 'creepage' as they relate to the hazards of high-voltage, and
  - Control measures used for dealing with the hazards of high-voltage.
- Risks and control measures associated with low voltage:
  - Risks associated with installation, fault finding, maintenance and repair.
  - Control measures before, while and after working on electronic systems or equipment
  - Isolation and tagging-off procedures.
  - Risks and restrictions in working live.
  - Control measures for working live.
- Safety, selection, use, maintenance and care of test equipment:
  - Safety characteristics of electrical testing devices,
  - Chemical cleaning solvents, glues and joining wastes used in electronics,
  - Safe use of electrical testing device, and
  - Checks and storage methods for maintaining the safety of testing devices.

Evidence Guide

EVIDENCE GUIDE

9) The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for this Training Package. .

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 must 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 accord 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 influence decisions about how/how much 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 shall 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 work performance 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, polices and workplace procedures

- Demonstrated consistent performance across a representative range of contexts from the prescribed items below:
  - Install commercial audio/video system components as described in 8) and including:

A Reading and interpreting drawings of system arrangements and component locations.

B Placing and securing components and accessories accurately.

C Maintaining fire integrity.

D Connecting apparatus and associated components to comply with requirements.

E 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.

Note:

Successful completion of relevant vendor training may be used to contribute to evidence on which competency is deemed. In these cases the alignment of outcomes of vendor training with performance criteria and critical aspects of evidence shall be clearly identified.

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 by this unit.

These should be part of the formal learning/assessment environment.

Note:

Where simulation is considered a suitable strategy for assessment, conditions 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 installing commercial audio/video system components.

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)**

For optimisation of training and assessment effort, competency development in this unit may be arranged concurrently with unit:

UEENEEE102A Fabricate, assemble and dismantle utilities industry components

UEENEEE105A Fix and secure electrotechnology equipment

UEENEEE107A Use drawings, diagrams, schedules, standards, codes and specifications

UEENEEE108A Lay wiring/cabling and terminate accessories for extra-low voltage (ELV) circuits

The critical aspects of occupational health and safety covered in unit UEENEEE101A and other discipline specific occupational health and safety units shall be incorporated in relation to 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 installing and connecting a typically representative range of commercial audio/video system components in buildings and premises on at least two occasions.

Note:

Examples of systems are dedicated audio and video facilities in meeting rooms, video conferencing facilities, and centrally controlled audio/video facilities across a number of locations.

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)**

Electronics