HLTART405C Install and maintain environmental control systems

Release: 1

HLTART405C Install and maintain environmental control systems

Modification History

HLT07 Version 4	HLT07 Version 5	Comments
HLTART405B Install and maintain environmental control systems	HLTART405C - Install and maintain environmental control systems	Unit updated in V5. ISC upgrade changes to remove references to old OHS legislation and replace with references to new WHS legislation. No change to competency outcome.

Unit Descriptor

Descriptor	This unit of competency describes the skills and knowledge required to install and maintain environmental control (EC) devices to a clinician's or rehabilitation engineering prescription

Application of the Unit

Application	This unit applies to workers within a rehabilitative environment requiring a broad knowledge base in assistive technology and the ability to apply solutions to a defined range of typical problems

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Not Applicable

Employability Skills Information

Employability Skills	This unit contains Employability Skills

Elements and Performance Criteria Pre-Content

Elements define the essential outcomes of a unit of competency.	The Performance Criteria specify the level of performance required to demonstrate achievement of the Element. Terms in italics are elaborated in the Range Statement.

Elements and Performance Criteria

ELEMENT	**PERFORMANCE CRITERIA**
1. Using prescriptions or scoping descriptions determine the client requirements for environmental control	1.1 Consider *prescription*/*scoping* description and confirm all the required information has been provided. 1.2 Discuss and agree upon installation requirements with clients and (where relevant) other appropriate *professionals*.
2. Select appropriate user interfaces, control systems and effectors	2.1 Manufacture, assemble and/or modify an appropriate system to meet client requirements 2.2 Assess the *environmental control system* for operational competency 2.3 Document specifications for modification, installation, operation and maintenance in accordance with organisation policies and procedures

ELEMENT	PERFORMANCE CRITERIA
3. Install environmental control systems	3.1 Select appropriate system and components for installation and/or medication of the *environmental control systems*
	3.2 Specify and implement arrangements for alterations to *services* and the built environment to facilitate installation of the EC system where appropriate
	3.3 Install environmental control system using hand tools and/or machinery in accordance with WHS requirements, relevant standards and manufacturer's specifications
	3.4 Arrange a trial of the system with the client in accordance with organisation policies and procedures
	3,5 Program the control systems to client requirements
	3.6 Mount or position user interfaces using appropriate supports
	3.7 Provide specified power supply adaptations
4. Maintain environmental control systems	4.1 Diagnose EC, interface and computer faults at user level
	4.2 Diagnose EC faults using appropriate diagnostic tools
	4.3 Identify EC system faults and rectify at a module level.
5. Maintain accurate records	5.1 Establish and maintain records in accordance with organisation policies and procedures
	5.2 Store records in line with organisation policies and procedures

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

REQUIRED SKILLS AND KNOWLEDGE

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

Essential knowledge:

The candidate must be able to demonstrate essential knowledge required to effectively do the task outlined in elements and performance criteria of this unit, manage the task and manage contingencies in the context of the identified work role

This includes knowledge of:

- Appropriate practices to ensure efficient use of resources
- Hardware/firmware setup for commonly used assistive technology systems
- Safety and environmental aspects of relevant organisation activities
- Software setup for commonly used environmental control (EC) systems
- The full range of procedures to install an appropriate EC system
- Awareness of organisation policies and procedures in relation to
    - the scope of the role of the rehabilitation technician:
    - workplace procedures
    - recording/documentation of processes and techniques
- Awareness of installation requirements of commercially available EC systems and electrical products
- Awareness of appropriate range and application of input devices
- Awareness of appropriate EC systems, electrical and telecommunication standards, terminology and troubleshooting requirements
- Awareness of the role of other practitioners in the field and in related fields including their roles, capabilities and limitations
- Awareness of Australian wiring code

Essential skills:

It is critical that the candidate demonstrate the ability to:

- Communicate with clients and others
- Evaluate, problem solve and address a variety of commercially available EC system mounting and installation problems
- Identify design or performance problems and bring them to the attention of the appropriate person
- Identify EC system faults and rectify at a module level
- Identify environmental systems and appropriate means of control
- Liaise with suitably qualified trades people
- Maintain accurate records
- Make mounting and installation adjustments

REQUIRED SKILLS AND KNOWLEDGE

- Measure fundamental angles, masses and lengths
- Read and make engineering drawings and sketches
- Select appropriate materials and techniques
- Select/design/mount user interface/s mounting device in conjunction with the therapist or rehabilitation engineer
- Use design skills in the appropriate selection of materials for EC systems and ancillary component manufacture and/or modification
- Use electrical/electronic measurement tools to diagnose external faults
- Use hand tools and machinery to undertake adjustments and modifications as required

In addition, the candidate must be able to effectively do the task outlined in elements and performance criteria of this unit, manage the task and manage contingencies in the context of the identified work role

This includes the ability to:

- Apply procedures and processes including reporting requirements
- Communicate and work effectively with work colleagues, associates and clients including team work and client confidentiality
- Communicate with client in order to obtain clear and precise information about proper use, maintenance and function of the device and/or its modifications
- Manage time and workload
- Use english literacy skills to the level required for fulfil job role in a safe manner
- Use numeracy skills to the level required to fulfil job role

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, the Range Statement and the Assessment Guidelines for this Training Package.

Critical aspects for assessment and evidence required to demonstrate this competency unit:	- The individual being assessed must provide evidence of specified essential knowledge as well as skills - Observation of workplace performance is essential for assessment of this unit - Consistency of performance should be demonstrated over the required range of situations relevant to the

EVIDENCE GUIDE

	workplace
	• Where, for reasons of safety, space, or access to equipment and resources, assessment takes place away from the workplace, the assessment environment should represent workplace conditions as closely as possible
Access and equity considerations:	• All workers in the health industry should be aware of access and equity issues in relation to their own area of work
	• All workers should develop their ability to work in a culturally diverse environment
	• In recognition of particular health issues facing Aboriginal and Torres Strait Islander communities, workers should be aware of cultural, historical and current issues impacting on health of Aboriginal and Torres Strait Islander people
	• Assessors and trainers must take into account relevant access and equity issues, in particular relating to factors impacting on health of Aboriginal and/or Torres Strait Islander clients and communities
Context of and specific resources for assessment:	• Assessment should replicate workplace conditions as far as possible.
	• Simulations may be used to represent workplace conditions as closely as possible.
	• Where, for reasons of safety, access to equipment and resources and space, assessment takes place away from the workplace, simulations should be used to represent workplace conditions as closely as possible.
	• Resources essential for assessment include:
	• access to an appropriate workplace
	• access to normal supporting departments/professions

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EVIDENCE GUIDE

Method of assessment	• Observation in the work place
	• Written assignments/projects
	• Case study and scenario as a basis for discussion of issues and strategies to contribute to best practice.
	• Questioning
	• Role play simulation
Related units:	This unit should be undertaken before or in conjunction with this unit
	• HLTART404B Install and maintain augmentative and alternative communication (AAC) devices

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.   Add any 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.

RANGE STATEMENT

Environmental Control Systems/Units may include:	- Human/Technology Interface:
	  - control interface (hardware by which the client may access the device)
	  - selection techniques (access method used by clients)
	  - selection methods (direct or indirect coded access)
	  - selection set (language code)
	  - users visual display
	- Processor:
	  - X10 coding systems
	  - infrared/ultrasonic/Bluetooth and other transmission methods
	  - setting recall
	  - output control
	- Outputs
	  - to external devices including infrared, ultrasonic, X10 coding, home automation systems, serial, parallel, USB
	- Physical construction
	  - size
	  - portability
	  - ease of mounting

Relevant professionals may include:	- Rehabilitation engineers - Medical practitioner - Special education teacher - Speech pathologist - Occupational therapist - Social worker - Psychologist - Orthotist - Physiotherapist - Architect - Electrician - Telecommunication engineers

RANGE STATEMENT

Prescription information sources may include:	• Architectural requirements • Occupational therapy assessment • Social work/psychology assessment • Educational requirements
Selection criteria may include:	• Client's ability to use the EC interfaces • Functional posture and ability of the client • EC system cost benefit • Ability to service and maintain the system • Availability of EC systems and maintenance capacity: locally, interstate and overseas • Electrician assessment
Operational competency includes:	• Optimising the ergonomics of the client interface with respect to the client's residual function
Services include:	• Electrical • Power • Gas • Telephone • Data transmission modalities

RANGE STATEMENT

Modification, installation and maintenance may include;

- Adaptation of commercially available components for use with the EC system, AAC device or wheelchair controls
- Design and manufacture of unique components and devices for use with the EC system
- Adaptation of alternative manufacturer's components to provide an effective EC system
- Selection/design and installation of a power supply for all the elements of the EC system as required
- Selection and installation of commercially available mounting systems
- Programming/setting of protocols and codes for communication between parts of an EC system
- Identify EC system faults and rectify at a module level
- Record system settings (software/hardware)
- Maintain cabling and connectors, switches and other interfaces including mounting systems
- Replace/maintain batteries
- Observe infection control and universal precautions for keyboards/interfaces

RANGE STATEMENT

Hand tools, measuring instruments and machinery may include:

- Hand tools:
    - general maintenance tools
    - general metal and plastic cutting tools
    - general metal an plastic forming tools
    - general soldering tools
- Measuring instruments:
    - multimeter
    - oscilloscope
    - logic probe
    - continuity tester
    - dial callipers
- Power tools:
- Drill
    - angle grinder
    - jig saw
    - linisher
    - grinder
    - guillotine
    - lathe
    - drill/mill
    - power saw/hacksaw
    - bandsaw
    - router

Unit Sector(s)

Not Applicable

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