Training Package	Information and Communications Technology (ICA05)	**HSC Requirements and Advice**
Title	**Care for computer hardware**	
Unit code **ICAS3234B**	**Unit sector** Support	**HSC Indicative Hours** **20**
Unit descriptor	This unit defines the competency required to manage the selection, maintenance and location of hardware. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.	
Prerequisite units	There are no prerequisites for this unit.	
Employability skills	This unit contains employability skills.	

Required skills and knowledge This section describes the skills and knowledge required for this unit.		**HSC Requirements and Advice**
Required skills	**Required knowledge**	**Key Terms and Concepts**
• Diagnosis of hardware problems • Ability to work safely, in respect of the specific hardware • Selection of appropriate hardware for a given situation • Problem solving skills • Communication and comprehension of basic workplace documents • Clear and precise communication • Ability to set up and maintain hardware • Interpretation of user manuals and help functions.	• General OH&S principles and responsibilities • OH&S principles specific to equipment powered by mains electricity • Viruses, worms and other security issues • System hardware and associated peripherals functions • Potential environmental effects of common types of hardware • Importance of maintenance • Handling of high-impedance devices • Span of quality levels in common hardware • Software related to hardware operations.	• cleaning materials and techniques • diagnostic tools and software • hardware components and their function • hardware problems • maintenance and storage of hardware, peripherals and media • occupational health and safety (OHS) principles and responsibilities • warranty, replacement and upgrade.

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 this Training Package.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	Context of and specific resources for assessment	Method of assessment	Guidance information for assessment
Evidence of the following is essential: • assessment must ensure the ability to establish safe work practices, establish siting requirements for system hardware and associated peripheral devices, establish maintenance practices and determine appropriate hardware quality standards. To demonstrate competency in this unit the learner will require access to: • hardware • software and diagnostic tools • records and reports.	Hardware encompasses all the physical connections that allow electronic communication to take place. Hardware is intertwined with software and this unit addresses software/hardware connections. The breadth, depth and complexity of knowledge and skills in this competency would cover selecting, adapting and transferring skills and knowledge to new environments and providing technical advice and some leadership in resolution of specified problems. This would be applied across a range of roles in a variety of contexts with some complexity in the extent and choice of options available. Assessment must ensure: • performance of a defined range of skilled operations, usually within a range of broader related activities involving known routines, methods and procedures, where some discretion and judgement is required in the selection of equipment, services or contingency measures and within known time constraints would be characteristic. • applications may involve some responsibility for others. Participation in teams including group or team coordination may be involved.	The purpose of this unit is to define the standard of performance to be achieved in the workplace. In undertaking training and assessment activities related to this unit, consideration should be given to the implementation of appropriate diversity and accessibility practices in order to accommodate people who may have special needs. Additional guidance on these and related matters is provided in ICA05 Section 1. • Competency in this unit should be assessed using summative assessment to ensure consistency of performance in a range of contexts. This unit can be assessed either in the workplace or in a simulated environment. However, simulated activities must closely reflect the workplace to enable full demonstration of competency. • Assessment will usually include observation of real or simulated work processes and procedures and/or performance in a project context as well as questioning on underpinning knowledge and skills. The questioning of team members, supervisors, subordinates, peers and clients where appropriate may provide valuable input to the assessment process. The interdependence of units for assessment purposes may vary with the particular project or scenario.	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. An individual demonstrating this competency would be able to: • understand hardware related issues for safe and secure operation of electronic components • demonstrate basic theoretical knowledge of hardware and software interoperability • safely remove and replace hardware components • conduct maintenance on hardware parts. Additionally, an individual demonstrating this competency would be able to: • demonstrate some relevant theoretical knowledge • apply a range of well-developed skills • apply known solutions to a variety of predictable problems • perform processes that require a range of well-developed skills where some discretion and judgement is required • interpret available information, using discretion and judgement • take responsibility for own outputs in work and learning • communicate with team members to clarify job requirements • take limited responsibility for the output of others • maintain knowledge of industry products and services.

Elements	Performance criteria	Range Statement	HSC requirements and advice
1 Establish safe work practices.	1.1 Determine, record and apply relevant legal requirements and ***OH&S standards*** to the installation and maintenance of computer ***hardware***.	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. ***OH&S standards*** may include: • correct posture • lighting • type of desk • type of monitor • style of chair • typing position • repetitive strain injury prevention • ventilation • light position • correct lifting method • electrical safety • monitor time • exposure.	**Learning experiences for the HSC must address:** Working knowledge of a range of computer hardware and their function including: • work station • computer • network • server • peripherals - input device - output device - storage device. Knowledge of: • general occupational health and safety (OHS) principles and responsibilities • OHS principles specific to - equipment powered by mains - high impedance devices ▪ cathode-ray tube (CRT) monitor ▪ system unit power supply ▪ backup power supply - hazardous materials • OHS standards for - posture - lighting - an ergonomic workstation - prevention of occupational overuse syndrome (OOS) - ventilation - manual handling - electrical safety - monitor time and exposure • legal requirements including - licensing - placement of cabling and installation of fixed cabling - electrical installation - electronic performance - testing and tagging of electrical equipment on a regular basis.
	1.2 Determine, record and apply requirements specified by ***hardware*** manufacturers.	***Hardware*** may include but is not limited to: • workstations • personal computers • modems or other connectivity devices • networks • DSL modems • remote sites • servers.	
	1.3 Determine, record and apply ***safe work practices***, taking into account legal and manufacturer requirements.	***Safe work practices*** may include but are not limited to: • handling of mains electricity • handling of high-impedance devices • handling of hazardous material.	

Elements	Performance criteria	Range Statement	HSC requirements and advice

			Interpretation of manufacturer's user manuals and help functions.
			
			Details recorded in a hardware register including:
			• complementary metal oxide semi-conductor (CMOS) settings
			• type and amount of computer memory
			• central processing unit (CPU) type and speed
			• peripherals installed and their settings
			• operating system and version
			• software installed and version.
			
			An awareness of safe work practices including:
			• OHS induction training (general, work activity and location specific)
			• selection of appropriate tools for the task
			• correct use, maintenance and storage of tools
			• correct handling, application, transport and storage of materials
			• safe posture (sitting, standing, bending and lifting)
			• correct manual handling (lifting and transferring)
			• correct use of fire fighting equipment:
			  - fire blanket
			  - fire extinguishers
			• hazard identification and risk control
			• access to first aid kits
			• procedures to follow in the event of an emergency
			• effective communication and teamwork
			• adherence to work instructions, organisation/ company policy and standard operating procedures
			  - housekeeping/clean-up procedures with due consideration to OHS and the environment.

2 Establish location requirements for hardware and peripherals.	2.1 Determine and apply suitable ***environmental conditions*** for hardware and peripherals.	***Environmental conditions*** may consist of, but is not limited to: • dust • heat • extreme cold • temperature stability • air circulation	**Learning experiences for the HSC must address:** Consideration of environmental factors including: • dust • temperature • air circulation • moisture.

Elements	Performance criteria	Range Statement	HSC requirements and advice
		• moisture.	Knowledge of: • potential environmental effects of common types of hardware • appropriate environmental conditions for hardware. Knowledge of siting requirements and set-up procedures for a range of system hardware and peripheral devices.
	2.2 Determine and apply ***system protection devices***.	***System protection devices*** may include but are not limited to: • surge protection • uninterruptible power supplies.	**Learning experiences for the HSC must address:** An awareness of the consequences of: • power surges and 'brownouts' • interrupted power • viruses and destructive software • unauthorised access to computer system. System protection devices including: • surge protection • uninterruptible power supply (UPS) devices • anti-virus protection • user authorisation procedures.
	2.3 Determine and apply requirements when moving ***hardware***.	***Hardware*** may include but is not limited to: • workstations • personal computers • modems or other connectivity devices • networks • DSL modems • remote sites • servers. ***Peripherals*** may include but are not limited to: • printers, scanners, tape cartridges • speakers, multimedia equipment • personal computer fax/modems • input equipment may include mouse, touch pad, keyboard, pens • mobile phones, palmtops and personal digital assistants (PDAs), laptops and desktop computers	**Learning experiences for the HSC must address:** Procedures for securing hardware and peripherals prior to move/relocation. An awareness of legal requirements for weight limits. A knowledge of correct manual handling techniques when: • moving • lifting/carrying • loading/unloading • working at heights • bending and twisting • using mechanical aids.

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	2.4 Determine and apply suitable storage principles for ***hardware*** and associated ***peripherals*** and media.	• Bluetooth devices, universal serial bus (USB), Firewire (IEEE 1394).	**Learning experiences for the HSC must address:** An awareness of possible consequences of inappropriate storage of hardware, peripherals and media. Points to consider when storing hardware, peripherals and media including: • climatic effects • OHS considerations • stability • security • ease of access.
3 Establish maintenance practices.	3.1 Determine maintenance requirements specified by the ***equipment*** manufacturer.	***Equipment*** may include but is not limited to: • workstations • personal computers • modems or other connectivity devices • printers • hard drives • DSL modems • monitors • switches • hubs • personal digital assistant (PDA) • other peripheral devices.	**Learning experiences for the HSC must address:** The importance of regular maintenance. An awareness of suggested maintenance schedules in user documentation or warranty conditions supplied by the manufacturer. Maintenance requirements including: • tasks - cleaning (inside and outside) - testing functionality - diagnostic testing - replace/repair components - reloading/upgrading software - periodic physical checks for damaged cables - replacement of consumables • frequency • appropriate tools and techniques.
	3.2 Produce ***maintenance*** schedules, including removal of dust and grease build-up.	***Maintenance*** may include: • on-site response • remote diagnostics • return to depot.	**Learning experiences for the HSC must address:** Establishment of maintenance schedules and practices for equipment. Techniques for cleaning: • the monitor • a keyboard • a mouse

Elements	Performance criteria	Range Statement	HSC requirements and advice

			• the system unit
			• printers
			  - laser
			  - inkjet
			• drives.
			
			Materials required for cleaning including:
			• lint-free cloth
			• glass-cleaning spray
			• small brush
			• can of compressed air
			• vacuum cleaner
			• antistatic wristband
			• damp cloth and mild detergent
			• specialised cleaning kit.

	3.3 Perform diagnostic functions, including replacing suspect ***components*** with other serviceable ***components*** and reloading of associated ***software***.	***Components*** may include:
		• motherboards
		• CMOS battery
		• central processing unit (CPU)
		• CD and DVD drives
		• interface cards
		• drives
		• fax/modem cards
		• RAM upgrades
		• CPU upgrades.
		
		Software may include but is not limited to:
		• commercial
		• in-house
		• packaged
		• customised software.
			Learning experiences for the HSC must address:
			
			Function of a range of components including:
			• motherboard
			• complementary metal oxide semiconductor (CMOS) battery
			• CPU
			• interface cards
			• drives
			• fax/modem cards
			• random access memory (RAM) upgrades.
			
			Signs of incorrect function of components.
			
			Working knowledge of diagnostic testing to determine cause of hardware problems.
			
			Problem-solving process to identify root cause of the problem:
			• identify possible cause of the problem
			• remove hardware/software that may mask/confuse the issue
			• test theory by
			  - replacing offending item
			  - using diagnostic tool.
			
			Safe maintenance and removal and replacement of hardware components.

Elements	Performance criteria	Range Statement	HSC requirements and advice
	3.4 Determine whether unserviceable ***components*** are replaceable through warranty, replacement or upgrade.		**Learning experiences for the HSC must address:** An awareness of: • warranty conditions • available component upgrades • source of replacement/upgrade. Company/organisation hardware replacement policy including: • identifying supplier/s • obtaining quote/s • gaining purchase authority.
	3.5 Perform diagnostic functions using the ***operating system*** and third-party diagnostic tools.	***Operating system*** may include but is not limited to: • Linux 6.0 or above • Windows 98 or above • Apple OS 8 or above.	**Learning experiences for the HSC must address:** General features, selection and use of diagnostic tools and software appropriate to the task including: • tools/software supplied with the operating system • third party diagnostic software/tool • diagnostic card. An awareness of details recorded in a maintenance report/card including: • job reference number • brief description of the problem • name of technician completing maintenance • date maintenance performed • time taken to complete the task • description of action to rectify the problem • description of follow-up action required • other comments.
4 Determine appropriate hardware quality standards.	4.1 Consider and apply ***business requirements*** in respect of hardware matters.	***Business requirements*** may include: • cost and quality • robustness • industry standard components • capability for further system upgrades.	**Learning experiences for the HSC must address:** Selection of appropriate hardware and software taking into consideration business requirements including: • nature of business • user requirement(s) • size of the company/organisation • cost • quality • robustness

Elements	Performance criteria	Range Statement	HSC requirements and advice
			• industry standard components • capability for further system upgrade. Basic knowledge of hardware and software interoperability.
	4.2 Determine and apply quality standards to the selection of appropriate ***hardware*** and associated ***peripherals***.	***Hardware*** may include but is not limited to: • workstations • personal computers • modems or other connectivity devices • networks • DSL modems • remote sites • servers. ***Peripherals*** may include but are not limited to: • printers, scanners, tape cartridges • speakers, multimedia equipment • personal computer fax/modems • input equipment may include mouse, touch pad, keyboard, pens, • mobile phones, palmtops and personal digital assistants (PDAs), laptops and desktop computers • Bluetooth devices, universal serial bus (USB), Firewire (IEEE 1394).	**Learning experiences for the HSC must address:** Knowledge of span of quality levels in common hardware.