| Training Package | Electrotechnology (UEE06) | | | HSC Requirements and Advice |
|---|---|---|---|---|
| Unit title | **Carry out basic repairs to computer equipment by replacement of modules/sub-assemblies** | | | HSC Indicative Hours |
| Unit code | **UEENEEH001A** | Competency field | Electronics | **30** |

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| **Unit descriptor** | This unit deals with the repair of computer equipment by replacement of slot/plug connected modules/sub-assemblies. It encompasses safe working practices, following written and oral instruction and procedures, basic testing techniques, dismantling and assembling apparatus and disconnecting and reconnecting components. |
| **Application of the unit** | This unit may apply to persons entering work in electrotechnology and may be used in school-based vocational programs. |
| **Prerequisite unit(s)** | **Competencies**<br>Granting competency in this unit shall be made only after competency in the following unit(s) has/have been confirmed:<br>UEENEEE002A Dismantle, assemble and fabricate electrotechnology components<br>UEENEEE007A Use drawings, diagrams, schedules and manuals<br>*and*<br>UEENEEE004A Solve problems in multiple path circuits<br>*or*<br>UEENEEE023A Solve basic problems in electronic and digital equipment. |
| | **Literacy and numeracy skills**<br>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 *Appendix 1* of this Syllabus.<br>Reading 3 Writing 3 Numeracy 3 |
| **Licence to practise** | The skills and knowledge described in this unit do not require a licence to practise in the workplace provided equipment is not connected to installation wiring at voltage above 50 V a.c. or 120 V d.c. 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.<br>Note: 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.<br>2. Compliance may be required in various jurisdictions relating to currency in First Aid, confined space, lifting and risk safety measures. |

## Required Skills and Knowledge

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 carrying out basic repairs to electronic apparatus by replacement of modules/sub-assemblies.

The extent of the essential knowledge and associated skills (EKAS) required is given in *Appendix 2* of this Syllabus. It forms an integral part of this unit.

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| 2.1.8 | Electronic cable and conductor terminations |
| 2.4.11 | Personal computers, hardware structure |
| 2.18.1 | Occupational Health and Safety principles |
| 2.18.9 | Electronic safe working practices. |

## Evidence Guide

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 | Critical aspects of evidence required to demonstrate competency in this unit |
|---|---|
| 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.<br><br>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.<br><br>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.<br><br>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. | Before the critical aspects of evidence are considered all prerequisites shall be met.<br><br>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 – UEE06'. Evidence shall also comprise:<br>• 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:<br>- 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<br>- apply sustainable energy principles and practices as specified in the performance criteria and range statement<br>- demonstrate an understanding of the essential knowledge and associated skills as described in this unit – the learner's performance outcome is reported in accordance with the preferred approach; where required by the regulated environment, this will be a percentile graded result<br>- demonstrate an appropriate level of skills enabling employment<br>- conduct work observing the relevant Anti Discrimination legislation, regulations, polices and workplace procedures<br>• demonstrated consistent performance across a representative range of contexts from the prescribed items below:<br>- carry out basic repairs to computer equipment by replacement of modules/sub-assemblies as described in the Range Statement and including:<br>▪ following manufacturer service instructions for access to components<br>▪ removing at least three different functional types of modules/sub-assemblies in the work instructions<br>▪ replacing modules/sub-assemblies to manufacturer requirements<br>▪ repairing damaged wires/ribbon cable to an industry standard and without damage to other equipments; includes minor soldering<br>▪ reassembling the computer equipment correctly<br>▪ testing computer equipment operation<br>▪ 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.<br><br>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. |

## Evidence Guide cont/d

| Context of and specific resources for assessment | Method of assessment | Concurrent assessment and relationship with other units |
|---|---|---|
| This unit should be assessed as it relates to normal work practice using procedures, information and resources typical of a workplace. This should include:<br>• OHS policy and work procedures and instructions<br>• suitable work environment, facilities, equipment and materials to undertake actual work as prescribed in this unit.<br><br>These should be used in the formal learning/assessment environment.<br><br>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.<br><br>The resources used for assessment should reflect current industry practices in relation to carrying out basic repairs to electronic apparatus by replacement of modules/sub-assemblies. | This unit shall be assessed by methods given in *Appendix 3* of this Syllabus.<br><br>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. | For optimisation of training and assessment effort, competency development in this unit may be arranged concurrently with unit:<br>• UEENEEE002A Dismantle, assemble and fabricate electro technology components<br>• UEENEEE007A Use drawings, diagrams, schedules and manuals<br>*and*<br>• UEENEEE003A Solve problems in single path extra low voltage circuits<br>• UEENEEE004A Solve problems in multiple path circuits<br>*or*<br>• UEENEEE023A Solve basic problems in electronics and digital equipment. |

# Evidence Guide cont/d

## Key competencies

Evidence of achievement of particular key competencies is assessed in the context of the following performance criteria.

*Performance level 1* Competence needed to undertake activities efficiently and with sufficient self management to meet the explicit requirements of the activity and to make judgments about quality of outcome against established criteria.

*Performance level 2* Competence needed to manage activities requiring the selection, application and integration of a number of elements and to select from established criteria to judge quality of process and outcome.

*Performance level 3* Competence needed to evaluate and reshape processes, to establish and use principles in order to determine appropriate ways of approaching activities and to establish criteria for judging quality of process and outcome.

| Key competencies | Example of application | Performance level |
|---|---|---|
| How are ideas and information communicated within this competency? | Refer to the following Performance Criteria for examples of application:<br>3.4 | 1 |
| How can information be collected, analysed and organised? | Refer to the following Performance Criteria for examples of application:<br>1.3; 1.4 | 1 |
| How are activities planned and organised? | Refer to the following Performance Criteria for examples of application:<br>1.1 to 1.6 | 1 |
| How is team work used within this competency? | Refer to the following Performance Criteria for examples of application:<br>1.4; 3.2 | 1 |
| How are mathematical ideas and techniques used? | Refer to the following Performance Criteria for examples of application:<br>NA | – |
| How are problem solving skills applied? | Refer to the following Performance Criteria for examples of application:<br>2.4; 2.7 | 1 |
| How is use of technology applied? | Refer to the following Performance Criteria for examples of application:<br>2.4; 2.7 | 1 |

# Evidence Guide cont/d

## Skills enabling employment

Evidence that competency in this unit incorporates skills enabling employment is assessed in the context of the following performance.

The Competency Standard Units incorporate a range of employment-based skills that are expected of individuals in a workplace. The skills for employment set out below should be achieved and confirmed consistent with Competency Standard Unit requirements and relative to the qualification to which the unit contributes. Assessment must be applied holistically and confirm that the critical aspects of evidence have been demonstrated to the required level.

| Skills for employment | Critical aspects of evidence | Example of application |
|---|---|---|
| 1 Developing and using skills within a real workplace | Demonstrates an ability to develop and use spatial, dexterity and technology skills as well as health, safety and housekeeping skills meaningful to a workplace environment. | Refer to the following Performance Criteria for examples of application:<br>All |
| 2 Learning to learn in the workplace | Demonstrates an ability to access, confirm and learn – can acquire knowledge and culture related to and used in a workplace environment. | Refer to the following Performance Criteria for examples of application:<br>All |
| 3 Reflecting on the outcome and process of work task | Demonstrates an ability to reflect on performance of the work task, its outcome and the process(es) used in completing the task in a workplace environment. | Refer to the following Performance Criteria for examples of application:<br>3.4 |
| 4 Interacting and understanding of the context of the work task | Demonstrates an ability to interact in real work tasks, understand the context of the task within a work environment and speak and write to related personnel/communities to a standard expected in the workplace/industry sector. | Refer to the following Performance Criteria for examples of application:<br>2.4 to 2.7 |
| 5 Planning and organising the meaningful work task | Demonstrates an ability to prepare, organise and complete real work tasks to workplace standards, including selecting appropriate tools/equipment to complete tasks in a workplace environment, and setting and achieving personal goals. | Refer to the following Performance Criteria for examples of application:<br>1.1 to 1.6 |
| 6 Performing the work task in non-routine or contingent situations | Demonstrates an ability to seek and apply solutions to problems, using mathematical and cognitive skills relevant to a workplace environment, and/or seeking advice from appropriate personnel when in doubt. | Refer to the following Performance Criteria for examples of application:<br>2.8 |

| Element | Performance Criteria | Range Statement |
|---|---|---|
| 1 Prepare to repair computer equipment | 1.1 OHS procedures for a given work area are identified, obtained and understood through established routines and procedures. | 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.<br><br>This unit shall be demonstrated in relation to carrying out repairs to personal computers and servers. The repairs shall be limited to:<br>• replacement of at least three slot/plug connected modules/sub-assemblies having different functions and in which the fault has been previously established, and<br>• repair to broken wires/ribbon cable to industry standards, that may include, minor soldering.<br><br>Note: 1. Examples of Modules include self contained hardware components such as motherboards, memory cards, storage devices.<br>2. Examples of Sub-assemblies include collections of integrated components that may form part of a module that are designed to be replaceable for servicing, such as the component part of a hard drive module or motherboard.<br><br>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 *Appendix 4* of this Syllabus. |
| | 1.2 Established OHS risk control measures and procedures are followed in preparation for the work. | |
| | 1.3 The nature of the repair is obtained from documentation or from work supervisor to establish the scope of work to be undertaken. | |
| | 1.4 Advice is sought from the work supervisor to ensure the work is co-ordinated effectively with others. | |
| | 1.5 Sources of materials that may be required for the work are established in accordance with established routines and procedures. | |
| | 1.6 Tools, apparatus and testing devices needed to carry out the work are obtained and checked for correct operation and safety. | |
| 2 Repair computer equipment | 2.1 Established OHS risk control measures and procedures for carrying out the work are followed. | |
| | 2.2 The need to test or measure live is determined in strict accordance with OHS requirements and when necessary conducted within established safety procedures. | |
| | 2.3 Circuits/apparatus are checked as being isolated where necessary in strict accordance with OHS requirements and procedures. | |
| | 2.4 Apparatus is dismantled in accordance with manufacturer's guide and supervisor's instructions. | |
| | 2.5 Modules/sub-assemblies are tagged during the dismantling to help ensure correct and efficient reassembly and stored to protect them against loss or damage. | |

| Element | Performance Criteria | Range Statement |
|---|---|---|
| | 2.6 Repairs are affected efficiently without damage to other components, apparatus or circuits. | |
| | 2.7 Apparatus is assembled in an appropriate sequence with all modules/sub-assemblies and parts correctly placed, secured and connected in accordance with manufacturer's guide or industry practice. | |
| | 2.8 Procedures for referring non-routine events to immediate supervisor for directions are followed. | |
| | 2.9 Repairs are carried out efficiently without waste of materials or damage to apparatus and the surrounding environment or services and using sustainable energy practices. | |
| 3 Complete and report repair work activities | 3.1 OHS work completion risk control measures and procedures are followed. | |
| | 3.2 Repaired computer equipment is prepared and forwarded to appropriate person(s) for testing. | |
| | 3.3 Work area is cleaned and made safe in accordance with established procedures. | |
| | 3.4 Work supervisor is notified of the completion of the repair work in accordance with established procedures. | |