

SEMLATA3-11

Diagnose faults, repair and maintain scientific or technical equipment for workplace activities



Overview

This unit covers the competences you need to diagnose faults, repair and maintain scientific or technical equipment for workplace activities, in accordance with approved procedures and practices. You will be expected to identify and use relevant understanding, methods and skills to complete tasks and address problems that, whilst well defined, have a measure of complexity. You will be expected to initiate and complete tasks and procedures as well as exercise autonomy and judgement within limited parameters. You will also be aware of different perspectives or approaches used within the workplace.

On completion of workplace activities, you will be required to show you have addressed problems that, whilst well defined, may be complex and non-routine. You will be expected to show you have identified, selected and used appropriate scientific or technical skills, methods and procedures. You will use appropriate investigation to inform actions and review how effective these methods have been.

Your responsibilities will require you to comply with organisational policy and procedures for the scientific or technical operations undertaken, and to report any problems with the activities, materials or equipment that you cannot personally resolve, or that are outside your permitted authority, to the relevant people. You will be expected to initiate and complete tasks and procedures, including, where relevant, taking responsibility for supervising or guiding others. You will be expected to exercise autonomy and judgement within limited parameters, taking personal responsibility for your own actions and for the quality and accuracy of the work that you carry out. You will be expected to work to instructions, with a minimum of supervision, either on your own or as part of a team

Your underpinning knowledge will enable you to use factual, procedural and theoretical understanding to complete scientific or technical tasks and address problems that, whilst well defined, may be complex and non-routine. You will be able to interpret and evaluate relevant workplace information and ideas. You will have an understanding of the scientific or technical process used, and its application, and will know about the equipment, materials and consumables in adequate depth to provide a sound background for carrying out the activities to the required specification.

You will understand the safety precautions required when carrying out scientific or technical activities. You will be required to demonstrate safe working practices throughout, and will understand the responsibility you owe to yourself and others in the workplace.

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Performance criteria

You must be able to:

- P1 ensure that your work is carried out in accordance with workplace procedures
- P2 use safe practices and the appropriate personal protection equipment (PPE) when doing scientific or technical activities
- P3 confirm that the scientific or technical equipment is in a safe and usable condition, according to established procedures
- P4 identify accurately any equipment faults or problems and report those outside your control to the relevant people
- P5 identify and interpret the required information from the manufacturers' instructions and diagrams, in accordance with established operating procedure
- P6 employ the appropriate test equipment and measurement to locate the source of the fault
- P7 perform repair or maintenance in accordance with manufacturers' instructions, diagrams and relevant health and safety procedures
- P8 organise the repair of defective equipment when other specialists are required
- P9 dispose of defective equipment that is beyond repair, in accordance with workplace procedures
- P10 test and confirm that the equipment is operating correctly, within calibration specifications, in accordance with workplace procedures
- P11 maintain records of repairs, maintenance and checks completed in accordance with workplace procedures
- P12 communicate the required information about the work done, in accordance with departmental and organisational procedures

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Knowledge and understanding

You need to know and understand:

Sector specific

- K1 the health and safety requirements of the area in which you are carrying out the scientific or technical activities
- K2 the implications of not taking account of legislation, regulations, standards and guidelines when conducting scientific or technical activities
- K3 the scientific or technical techniques and processes you must use correctly in the workplace

You need to know and understand:

Organisation specific

- K4 the importance of wearing protective clothing, gloves and eye protection for scientific or technical activities
- K5 the importance of correct identification, and any unique workplace coding system
- K6 the organisational requirements for maintaining the security of the workplace (e.g. access or aseptic conditions)
- K7 the lines of communication and responsibilities in your department, and the links with the rest of the organisation
- K8 the limits of your own authority and to whom you should report if you have problems that you cannot resolve

You need to know and understand:

Equipment/Process specific

- K9 the manufacturers' specifications and recommendations for the maintenance and calibration of the scientific or technical equipment
- K10 where to obtain, and how to interpret drawings, circuit diagrams, specifications, manufacturers' manuals and other technical documents needed for the fault-finding or maintenance activities
- K11 the methods used for visually checking, and cleaning, of scientific or technical equipment
- K12 the different types, condition and quantities of consumables required for the range of scientific or technical equipment maintained
- K13 the methods for maintaining personal health and safety during the maintenance of equipment
- K14 the methods for maintaining personal hygiene
- K15 how to check that the scientific or technical equipment is working correctly and in accordance with the manufacturer's specifications
- K16 how to evaluate the different types of equipment fault, and how these must be dealt with
- K17 how to use appropriate tools and equipment to locate the source of a fault or carry out maintenance activities

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- K18 the procedures to be followed to investigate faults or maintenance activities
- K19 the department or person to whom equipment faults should be reported
- K20 the methods used for keeping records of the maintenance, cleaning and calibration of scientific or technical equipment, and why this is important
- K21 the procedure for the disposal of any waste produced and any equipment beyond repair
- K22 the document control and reporting procedures that should be used
- K23 the reasons why effective communication is important, and the methods used for communicating effectively

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Additional Information

Scope/range related to performance criteria

You must be able to:

1. carry out all of the following operations
 - 1.1 adhere to procedures or systems in place for risk assessment, COSHH, use of personal protective equipment, electricity at work and other relevant safety regulations
 - 1.2 ensure the safe isolation of scientific or technical equipment (such as electrical and fluids supply)
 - 1.3 follow manufacturers' instructions, drawings and procedures for repair or maintenance
 - 1.4 check that the tools and equipment used are in a safe and usable condition
 - 1.5 ensure that the scientific or technical equipment is kept free from foreign objects, dirt or other contamination
 - 1.6 carry out auditory and visual checks on the operation of the equipment
 - 1.7 identify fault and isolate components where appropriate to determine the corrective action
 - 1.8 confirm that the equipment is ready for use
 - 1.9 return all repair and maintenance tools, equipment and waste to the correct locations on completion of the activities
 - 1.10 ensure that accurate, complete and legible records are kept of the repair and maintenance activities
2. carry out maintenance and cleaning on **two** of the following scientific or technical categories:
 - 2.1 biological equipment and/or instruments
 - 2.2 chemical equipment and/or instruments
 - 2.3 electronic equipment and/or instruments
 - 2.4 weighing and measuring equipment and/or instruments
 - 2.5 information technology equipment
 - 2.6 engineering machines, equipment and/or instruments
 - 2.7 other technical equipment or instruments
3. record and communicate details of work done, to the appropriate people, using:
 - 3.1 verbal reportplus **one** method from the following:
 - 3.2 written or typed report
 - 3.3 computer-based record
 - 3.4 specific workplace documentation
 - 3.5 electronic mail

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