
Overview

This unit covers the competences you need to carry out scientific or technical testing 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, 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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Carry out scientific or technical testing operations

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 performing scientific or technical activities
- P3 identify conditions for scientific or technical tests to be done
- P4 establish the requirements for the scientific or technical tests to be done
- P5 select the appropriate testing methods from procedures for the testing requirements
- P6 prepare the resources needed for the testing operations
- P7 prepare the test samples in accordance with the procedures and check their integrity
- P8 carry out the required tests in accordance with the procedures
- P9 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 their 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 why it is important to follow safe operating procedures when using equipment and / or materials
- K10 the principles and procedures for testing
- K11 the purposes of testing, and the specific use to which the test results are to be put
- K12 the relevant testing methods that can be used to achieve the purpose of testing
- K13 why calibration is important and how to check calibration
- K14 how to check the sample identity and it's integrity
- K15 the range of methods used to prepare samples
- K16 how to identify defective equipment and the appropriate action to take
- K17 the methods can be used for controlling test variables
- K18 the concepts of repeatability and reproducibility
- K19 the range of equipment available for testing, and how to choose the most appropriate equipment
- K20 the potential impact of the test on health, safety and the environment
- K21 the methods can be used for dealing with the handling, storage and disposal of materials
- K22 the cleaning materials and the methods for their use
- K23 the methods of safe storage that can be used
- K24 the document control and reporting procedures that should be used

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K25 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. identify conditions for scientific or technical test that include two of the following:
 - 1.1 test environment
 - 1.2 time recording system
 - 1.3 test criteria
 - 1.4 cleanliness
 - 1.5 safety factors
 - 1.6 external influence that can variations
2. establish requirements for **one** of the following types of test:
 - 2.1 plastics/polymers
 - 2.2 petroleum/petrochemical
 - 2.3 product/process quality
 - 2.4 metal/metallurgy
 - 2.5 chemicals/pharmaceuticals
 - 2.6 omissions/leaks/contamination
 - 2.7 material/physical properties
 - 2.8 mechanical properties
 - 2.9 other (please specify)
3. prepare **all** of the following resources for testing operations:
 - 3.1 consumables
 - 3.2 utilities/facilities
 - 3.3 instruments
 - 3.4 test materials
 - 3.5 equipment
4. carry out **two** of the following pre-test check on equipment and test instruments:
 - 4.1 calibration
 - 4.2 cleanliness
 - 4.3 serviceability
 - 4.4 setup conditions
5. carry out integrity checks that include **three** of the following:
 - 5.1 free from subsequent defects
 - 5.2 damage and decomposition
 - 5.3 homogeneity
6. record and communicate details of work done, to the appropriate people, using:
 - 6.1 verbal reportplus **one** method from the following:
 - 6.2 written or typed report
 - 6.3 computer-based record
 - 6.4 specific workplace documentation
 - 6.5 electronic mail

Developed by

SEMTA

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