LEVEL 3 NVQ DIPLOMA IN LABORATORY AND ASSOCIATED TECHNICAL ACTIVITIES INDUSTRIAL SCIENCE

Centre Qualification Handbook

Competence-based Qualifications

GQA, Unit 1, 12 O' Clock Court, Attercliffe Road, Sheffield, S4 7WW
Tel: 01142 720033, Email: Info@gqaqualifications.com,
Website: www.gqaqualifications.com

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INTRODUCTION TO THE HANDBOOK

This qualification sits within the Regulated Qualifications Framework (RQF).

This Qualification Handbook has been developed to ensure that PAA\VQ-SET Centres understand the requirements of the qualification. The Handbook contains the following information:

- Qualification Structure
- Assessment Requirements
- Assessment Methods
- Glossary
- Qualification Units

This Qualification Handbook has been developed to provide support in the implementation of the qualification as well as giving information to ensure that the assessment and quality assurance is consistent, robust and reliable within each centre and nationally. The handbook also contains details of the skills and/or knowledge the learner must obtain to achieve the units and qualification.

Qualification Structure

This section of the handbook summarises the content of the qualification and the skills and/or knowledge learners that achieve it can be expected to gain. It also outlines the units required to achieve the qualification and will give the learner an idea of how long the qualification will take to achieve through the Total Qualification Time (TQT) and how much contact time they can expect through the Guided Learning Hours (GLH). It also provides information about possible progression opportunities once the qualification has been achieved.

Assessment Requirements

The assessment requirements for the qualification will cover any specific information about how the qualification may be assessed, such as whether assessors require specific qualifications or occupational competence and whether simulation is permitted in the achievement process.

Assessment Methods

This section summarises the different assessment methods and types of evidence that support assessment; these may be used to demonstrate competence or the achievement of knowledge and understanding.

Qualification Units

The unit overview summarises the content of the unit and the skills and/or knowledge the learner will have gained on achievement of the unit. The units may also contain additional information in the assessment context which will describe the areas to be covered and any appropriate assessment guidance and evidence requirements which will outline additional assessment requirements and should be built into assessment plans and included on assessment records. The unit detail will also confirm whether simulation is permitted for that particular unit.

Qualification Assessment and Support Materials

Centres will be sent the following qualification assessment and support materials:

- Assessment Forms – it is not mandatory to use these forms. Centres may wish to use their own assessment documentation – these should be approved by the External Verifier prior to use.
- Learner Guide
- Qualification Handbook
- Registration Spreadsheet & Certification Claim Forms

LEVEL 3 NVQ DIPLOMA IN LABORATORY AND ASSOCIATED TECHNICAL ACTIVITIES – INDUSTRIAL SCIENCE

Qualification Summary

This qualification provides recognition of the skills and knowledge of individuals who work in a laboratory in an educational or industrial environment. It covers maintaining health and safety; and maintaining efficient and effective working relationships for scientific or technical activities. It contains two Pathways: Education Science and Industrial Science.

Total Qualification Time (TQT) and Guided Learning Hours (GLH)

Guided Learning Hours (GLH)

Guided Learning Hours are the time the learner is under the immediate supervision or guidance of a lecturer, supervisor, tutor or other appropriate provider or education or training.

The GLH for this qualification is 300

Total Qualification Time (TQT)

Total Qualification Time is comprised of 2 elements:

1. GLH
   plus
2. an estimate of the number of hours a learner will reasonably be likely to spend in preparation, study or any other form of participation in education or training, including assessment, which takes place as directed by (but not under the immediate supervision of) a lecturer, supervisor, tutor or other appropriate provider or education or training

The TQT for this qualification is 480

Achieving the Qualification

For the Industrial Science Pathway learners must complete 8 Units.

Learners must achieve 2 Common Mandatory Units, 3 Pathway specific Mandatory Units and 3 Optional Units; 2 of which must be taken from Group A.

Mandatory Units

Unit No.	Unit Name	Credit Value
LAT3-001	Maintain health and safety in a scientific or technical workplace	5
LAT3-002	Maintain effective and efficient working relationships for scientific or technical activities	5
LAT3-003	Carry out scientific or technical testing operations	12
LAT3-004	Access and communicate scientific or technical information to authorised personnel	6
LAT3-005	Provide technical advice and guidance for scientific or technical activities	12

Optional Units

Learners must achieve 3 Optional Units; 2 of which must be taken from Group A.

Option Group A

Unit No.	Unit Name	Credit Value
LAT3-006	Plan scientific or technical sampling and testing activities	8
LAT3-007	Carry out complex scientific or technical testing operations	12
LAT3-008	Carrying out complex scientific or technical sampling operations	8
LAT3-009	Carry out scientific or technical investigations	9
LAT3-010	Carry out small scale processing	8
LAT3-011	Diagnose faults, repair and maintain scientific or technical equipment for workplace activities	8
LSC3-015	Measuring, weighing and preparing compounds and solutions for laboratory use	16

Option Group B

Unit No.	Unit Name	Credit Value
LAT3-013	Maintain and control stocks of all resources, equipment and consumables for scientific or technical activities	4
LAT3-014	Make presentations for scientific or technical activities in the workplace	6
LAT3-015	Assess their own scientific or technical knowledge and skills for workplace activities	4
LAT3-016	Provide training for scientific or technical activities in the workplace	8
LAT3-017	Provide scientific or technical leadership for a workplace team	16
LSC2-020	Following aseptic procedures in the laboratory environment	9

Progression

This Diploma is part of a suite of qualifications developed from the Laboratory and Associated Technical Activities National Occupational Standards (NOS) at Levels 2 to 4.

Further information can be found on the PAA\VQ-SET website www.paa-uk.org or on the Register of Regulated Qualifications website http://register.ofqual.gov.uk

ASSESSMENT REQUIREMENTS

Assessors must ensure that, when assessing the skills, knowledge and/or understanding, the evidence produced by learners is:

- Valid – does evidence meet the requirements described in the unit?
- Authentic – has the learner produced the evidence?
- Current – has the evidence been produced recently and does it demonstrate current competence?
- Sufficient – is there enough evidence to demonstrate competence?

to enable reliable and consistent judgements to be made about the achievement of all the requirements of the unit(s) and qualification.

PAA\VQ-SET Centres must ensure that people involved in the assessment process have the appropriate expertise and are adequately informed and supported to fulfil their responsibilities.

ASSESSMENT STRATEGY

Below is the information to support the assessment requirements of the qualification:

- Mandatory use of evidence from workplace performance
- Use of Simulation
- Occupational competence of assessors and verifiers

Mandatory use of evidence from workplace performance

a. Unless the use of simulation is expressly permitted within the qualification or unit specific evidence requirements, evidence must demonstrate the learner's competence in a real or realistic environment.

b. Knowledge and Understanding will be assessed via (pre-set and/or free form) questions, or by inference from performance, which cover three primary types of knowledge:

- Knowledge of facts and procedures
- Understanding of principles, concepts and underpinning procedures
- How to apply principles and procedures in specific contexts

All questions must be asked by the assessor at appropriate moments throughout the assessment process, preferably linked to observed activity and/or review of documentary evidence. The questions asked of, and answers provided by, the learner must be recorded.

Use of Simulation

c. The qualification or unit specific assessment requirements will define where evidence from simulation is acceptable, and in which contexts.

Simulation should be used only where direct evidence of learner performance cannot be obtained. Under these circumstances simulation may be used for summative assessment. Reasons for the use of simulation should be made clear to and agreed by the external verifier and should include the following details:

- which competence (and standards) the simulation was designed to assess;
- the kind of equipment, facilities and physical environment proposed for the simulation of performance. It is unlikely that the External Verifier will approve a simulation if it does not involve real plant and equipment;

- how the simulated activity relates to the learner's normal work context in terms of the pressures of time, access to resources and access to information, and the communication media; and
- how the simulation was set up and conducted, preferably supported by physical evidence such as photographs or inspection of a test rig.

Assessors, internal verifiers and external verifiers should monitor the proportion of evidence generated via simulations to ensure that it is not the primary source of a learner's claim to competence.

d. Under these circumstances simulations are reserved for aspects of competence illustrated by the following contexts:

- where demonstration of emergency shutdown and related safety procedures would be; **dangerous and/or disruptive** to plant/environment/individuals; **too costly** such as total plant shutdown or dealing with spillage of dangerous substances; where **issues of confidentiality** restrict access to real work opportunities;
- demonstrating specific aspects of the operation which rarely or never occur due to effective quality assurance systems;
- the capacity to integrate disparate knowledge to cope with unforeseen events and to solve problems; or
- aspects of working relationships and communications for which no opportunity has presented for the use of naturally occurring workplace evidence of learner performance.

e. Simulation must enable the individual to demonstrate competence in a real or realistic work environment. In this context this means in specialist centres which replicate the workplace in terms of equipment and environment, reflect normal working situations and use relevant industrial or commercial standards and procedures. Short work placements or non-realistic work environments which do not replicate the pressures and requirements of normal commercial or industrial activities will not be acceptable. The bulk of the learner's evidence should be drawn from their normal working activity and not consist of artificially contrived opportunities for one-off demonstration of competence. Similarly equipment must be that used in current commercial and industrial contexts. Procedures and standards used should be those which are nationally or internationally recognised or devised by specific companies as standard operating procedure.

f. Simulation must enable the individual to acquire his/her skills and knowledge in a realistic work environment. In this context this means in specialist centres which replicate the workplace in terms of equipment and environment, it reflects normal working situations and uses relevant industrial or commercial standards and procedures. Where possible providers should attempt to replicate the pressures and requirements of normal commercial or industrial activities. Equipment must be that used in current commercial and industrial contexts. Procedures and standards used should be those which are nationally or internationally recognised or devised by specific companies as standard operating procedure.

g. Circumstances outside of those listed in Section D above may also be considered suitable for the use of simulation with the agreement of the External Verifier and PAA\VQ-SET. Under these circumstances simulation may be used for formative assessment only.

Occupational competence of Assessor and Verifiers

h. Assessors:

- must be competent in the units they are assessing. This is shown through the assessor having achieved the award they are assessing OR providing quality evidence to the external verifier that they are able to make valid judgements of the competence of learners. This could be done through a combination of a) personal interview, b) review of employment histories and/or c) examination of the assessor's judgement during assessments.
- must have a working knowledge of awards and a full understanding of that part of the award for which they have responsibility.
- should hold or be working towards suitable qualifications for assessment, as defined by PAA\VQ-SET.

i. Internal verifiers:

- must be either working in the appropriate sector itself OR they must be able to demonstrate they possess practical and up-to-date knowledge of current working practices appropriate to the sector in which they are carrying out verification practices; and
- must be appointed by a PAA\VQ-SET recognised centre
- must have a working knowledge of the awards they are internally verifying
- should hold or be working towards suitable qualifications for verification, as defined by PAA\VQ-SET.

ASSESSMENT METHODS AND TYPES OF EVIDENCE

The following section gives information on the different assessment methods/types of evidence that support assessment. The following assessment methods/types of evidence may be used to demonstrate competence or that the learner has achieved the required level of knowledge and understanding.

Observation of Performance

Observation allows the assessor to see learners carrying out their work activities. It will take place primarily in the workplace but can also be undertaken in a training scheme. Natural discussion should take place where possible during observation, allowing the assessor to ask questions relating to what they are observing at the time. Assessors must capture their observations either by a written report and/or other methods (e.g. video, audio recording).

Questioning

This method of assessment can be used to ensure that the learner has knowledge and understanding to support their skills. Questions can be used to check knowledge - these questions can either be verbal during or at the end of an observation, or they can be set in a written format in formal or informal conditions. As some units may focus entirely on learners' knowledge, assessors may encourage a variety of evidence to meet the requirements of the unit – use of verbal and/or written questions, learner statements and professional discussion (see below). Verbal questioning or professional discussion should be captured, either by written notes or audio recording.

Products

Work product evidence may be generated as a result of work activities undertaken by learners, and could include reports, letters, or records of work carried out.

Witness Statement or Testimony

A Witness Statement or Testimony is confirmation by others that the learner carried out an activity or series of activities relevant to the requirements of the unit. It could be written by the learner and signed by the witness to confirm that it did take place, or the witness may write the statement. Alternatively, the assessor could speak to the witness and record the discussion. The statement can then be used as evidence within an assessment.

There may be occasions when an Expert Witness may be required to contribute to the assessment process. PAA\VQ-SET's definition of an Expert Witness is 'an experienced employee who works in partnership with the assessor, by observing the learner carrying out their duties and recording their observations in line with the assessment procedures'. It should be noted that while the Expert Witness makes a valued contribution to the assessment process, it is the assessor who makes the assessment decision.

Simulation

Simulations are a source of performance evidence showing how an activity is carried out. Simulations require careful planning to ensure that they reflect as near as possible "real life" conditions and the requirements of the qualification(s). As a result of this the costs to set up a simulation may be considerable. Simulations are likely to be used in the following situations:

- they occur infrequently (e.g. dealing with emergencies)
- they involve unusual working conditions (e.g. working in isolation, outside the workplace)
- the work is hazardous
- it is not cost effective

Any use of simulation should be discussed and agreed with the PAA\VQ-SET External Verifier and approved prior to implementation.

Recognition of Prior Learning (RPL)

This is the process whereby credit is given to experienced individuals for their previous achievements. It requires careful mapping of the individual's experience to the unit(s) to ensure that it meets the requirements. This exercise must be referred to the External Verifier to ensure that all the evidence presented is acceptable.

Professional Discussion

A Professional Discussion gives the learner the opportunity to tell their assessor what they are doing and why they are doing it in a particular way. The discussion should be supported by appropriate evidence – an observation report, work product or witness testimony. Professional Discussions should be planned to give the learner the chance to prepare, and should be recorded.

Learner Statements

A Learner Statement is an account of an activity that took place, described by the learner. A detailed statement could demonstrate skill, and also provides evidence of knowledge and understanding. Learner statements should be authenticated by an appropriate person.

Photographs and use of other media

Photographs and use of other media, e.g. video and audio, can provide detail of work activities carried out and questioning. Photographs are more effective when used with supporting statements. Video and audio evidence should be effectively referenced to allow specific activities or questioning to be found easily. It is important to note that if photographs and other media are to be used, the learner and assessor should ensure that permission is gained from all people who may be involved.

GLOSSARY

Term	Definition
Access Arrangements	Arrangements that are approved in advance of an examination or assessment to allow achievement to be demonstrated by learners with a disability, special learning needs (including where the learner's first language is not English, Welsh or Irish) or to avoid unlawful discrimination
Appeal	The process through which an awarding organisation may be challenged on the outcome of an enquiry about results or, where appropriate, other procedural decisions affecting a centre or an individual learner
Assessment	The process of making judgements about the extent to which a learner's work meets the requirements of a unit, or any additional assessment requirements of a qualification
Assessor	A person who assesses a learner's work
Award of Qualifications	A certificate (electronic or paper-based) issued to an individual that recognises their achievement
Award	A qualification with a TQT value between 10 and 129
Awarding Organisation	A body recognised by the qualifications regulators to award qualifications
Centre	An organisation accountable to an awarding organisation for assessment arrangements leading to the award of qualifications
Centre Recognition	A process through which a centre wishing to offer an award or awards is confirmed as being able to maintain the required quality and consistency of assessment, and comply with other requirements of the awarding organisation
Certificate (1) for a Unit or Qualification	A record of attainment of a qualification issued by an awarding organisation
Certificate (2)	A qualification with a TQT value between 130 and 369
Credit	An award that may be made to a learner in recognition of the achievement of a unit or qualification
Credit Value	The number of credits that may be awarded to a learner for the successful achievement of a unit or qualification
Diploma	A qualification with a TQT value of 370 or above
Guided Learning Hours	The number of hours of teacher-supervised or directed study time required to teach a qualification or unit of a qualification
Learning Time	The amount of time a learner at the level of the unit is expected to take, on average, to complete the unit to the standard required

Term	Definition
Level	An indication of the relative demand, complexity and/or depth of achievement, and/or the autonomy of the learner in demonstrating that achievement
Mandatory Units	Units that must be achieved for the qualification to be awarded
National Occupational Standards (NOS)	Describe what a person needs to do, know and understand in a job to carry out the role in a consistent and competent way
Optional Unit	A unit that a learner may choose to complete to achieve the required number of units for award of the qualification
Pathway	A route to the achievement of a qualification that requires particular units to be achieved and is identified by an endorsement to a qualification title
Qualification	An award made to a Learner for the achievement of the required units or other components for that qualification
Qualification Level	An indication of the relative demand, complexity and/or depth of achievement, and/or the autonomy of the learner, represented by a qualification
Qualifications Regulators	Government-designated statutory organisations required to establish national standards for qualifications and secure consistent compliance with them
Recognition of Prior Learning (RPL)	A method of assessment that considers whether a learner can demonstrate that they can meet the assessment requirements for a unit through knowledge, understanding or skills they already possess and do not need to develop through a course of learning
Sector Skills Council	A body responsible for formulating and reviewing occupational standards for a specific sector across the UK, and for supporting the development of units and qualifications based on these standards. Each SSC is an employer-led, independent organisation and is licensed by government
Standardisation Of Assessment	A process to ensure that assessment leading to the award of qualifications is applied consistently by individuals, centres and awarding organisations
Unique Learner Number (ULN)	The unique number that is used to identify an individual learner
Unit	A component of a qualification

CONTENT OF THE QUALIFICATION

MANDATORY UNITS

UNIT LAT3-001	**MAINTAIN HEALTH AND SAFETY IN A SCIENTIFIC OR TECHNICAL WORKPLACE**
LEVEL	**3**
CREDIT VALUE	**5**
GUIDED LEARNING HOURS	**35**

Unit Overview

This unit covers the skills and knowledge needed to prove the competences required to maintain health and safety in a workplace where scientific or technical activities are performed. The learner is required to observe all legal, statutory and organisational requirements, and they must be able to identify any hazards and potential risks to health and safety. They must also know what actions to take in case of an emergency and, as well as ensuring their own safety, they must show responsibility towards their colleagues and others. They will be expected to initiate and complete tasks and procedures as well as exercise autonomy and judgement within specified parameters. They will also be aware of different perspectives or approaches used within the workplace.

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

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

The learner's underpinning knowledge will enable them to use factual, procedural and theoretical understanding to complete workplace tasks and address problems that, whilst well defined, may be complex and non-routine. They will be able to interpret and evaluate relevant workplace information and ideas. They 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.

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

Assessment Guidance and Evidence Requirements

The learner should provide evidence to meet all the required knowledge and understanding within this unit. This could be provided through different types of evidence and assessment methods, for example learner statements, questioning and professional discussion which should be recorded for verification.

Competence will be demonstrated by the learner achieving all Assessment Criteria, and providing a range of supporting evidence which may include observation reports, learner statements, witness statements, product of work, etc.

The Evidence Requirements for this unit are identified in the Assessment Criteria.

This unit must be assessed in a work environment and is subject to the requirements set out in the Assessment Strategy given in this Qualification Handbook.

Learning Outcome and Assessment Criteria

Learning outcomes **The learner will:**	**Assessment criteria** **The learner can:**
1. Maintain health and safety in a scientific or technical workplace	1.1. Ensure that their work is carried out in accordance with workplace procedures 1.2. Identify health and safety workplace procedures for all of the following: • Workplace hazards • Manual handling • Unsafe practices • VDU and RSI policies • Spillages • Other (please specify) 1.3. Comply with established procedures for both of the following: • Workplace emergency (e.g. injury, spillage) • Workplace evacuation (e.g. fire, gas leak) 1.4. Accurately assess health and safety in relation to their work and the workplace 1.5. Use safe practices and the appropriate personal protective clothing and equipment for the work 1.6. Use safe handling practices for three of the following, in accordance with approved procedures: • Flammables (liquid or solid) • Corrosive material • Equipment or tools • Toxic/harmful material • Biological material • Radioactive material • Water reactive material • Explosive material • Extreme temperature • Compressed gas • Pyrophoric material • Oxidiser • Unstable reactive • Sensitising/irritant substance • Manual handling/lifting loads 1.7. Identify and rectify any breaches to health and safety procedures and report them to the appropriate person as soon as possible

	1.8. Make recommendations on, or if appropriate, take action on both of the following: • Areas where the work practices do not fully comply with health and safety requirements • Improvements to handling and/or storage of materials, substances or equipment 1.9. Maintain the security of the workplace, in accordance with organisational requirements 1.10. Maintain and keep tidy their work area to a standard of health and safety which is consistent with local policies and legal requirements 1.11. Use equipment and materials in accordance with manufacturers' instructions and local safety regulations 1.12. Dispose of waste materials and substances safely and correctly 1.13. Take the appropriate precautions to protect their self and others during work activities 1.14. Follow the correct procedure when an emergency arises or is suspected 1.15. Identify and recommend health and safety improvements to their work area and/or environment 1.16. Communicate the required information about the work done, to authorised people, in accordance with departmental and organisational procedures 1.17. Record and communicate details of work done, to the appropriate people, using: • Verbal report Plus one method from the following: • Written or typed report • Specific workplace documentation • Computer-based record • Electronic mail
2. Know how to maintain health and safety in a scientific or technical workplace	2.1. Describe the health and safety requirements of the area in which they are carrying out the scientific or technical activities 2.2. Describe the implications of not taking account of legislation, regulations, standards and guidelines when conducting scientific or technical activities 2.3. Describe the workplace procedures, as set down in local operating manuals and schemes of work 2.4. Describe the importance of following manufacturers' instructions 2.5. Describe the techniques and processes they must use correctly in the workplace 2.6. Describe the importance of wearing protective clothing, gloves and eye protection for scientific or technical activities

2.7. Describe the specific safety precautions to be taken when working with scientific or technical equipment and computer-based systems (to include such things as safety guidance relating to the use of visual display unit (VDU) equipment and work station environment (such as lighting, seating, positioning of equipment), and repetitive strain injury (RSI))

2.8. Describe the identity of health and safety representatives (such as the Laboratory Safety Officer, Staff Health & Safety Representatives and First-Aiders)

2.9. Describe the location and correct use of emergency equipment (such as fire extinguishers, including the situations in which different types of fire extinguishers are used)

2.10. Describe the organisational requirements for maintaining the security of the workplace (e.g. access or aseptic conditions)

2.11. Describe the lines of communication and responsibilities in their department, and their links with the rest of the organisation

2.12. Describe the limits of their own authority and to whom they should report if they have problems that they cannot resolve

2.13. Explain why risks in the workplace should be assessed, and the correct action to be taken

2.14. Describe the local procedures for emergency evacuation (including escape routes and assembly points)

2.15. Describe the location of fire alarm call points and how to operate them

2.16. Describe the location of spillage kits and the procedures to follow in the event of spillages of chemicals and/or biological fluids and materials

2.17. Explain how to identify and recommend health and safety improvements to their work area and/or environment

2.18. Describe the control of substances hazardous to health (COSHH) regulations, and their application in the workplace

2.19. Describe the range of signs and symbols used for the warning of workplace hazards and prohibited practices

2.20. Describe the types of hazards which may be present in the workplace and how these can be minimised

2.21. Describe the correct storage and disposal procedures for hazardous materials

2.22. Describe the hazards associated with chemicals, radioactive substances and/or biological materials

	2.23. Explain what constitutes dangerous occurrences and hazardous malfunctions in the workplace and why these must be reported 2.24. Explain how to lift and carry loads safely, and use the manual and mechanical aids available in the workplace 2.25. Describe the importance of safe storage of tools, equipment and materials 2.26. Describe the reasons for cleaning work surfaces and equipment 2.27. Explain why it is important to differentiate and segregate categories of waste 2.28. Describe the correct procedures for the storage, transport and disposal of waste

UNIT LAT3-002	**MAINTAIN EFFECTIVE AND EFFICIENT WORKING RELATIONSHIPS FOR SCIENTIFIC OR TECHNICAL ACTIVITIES**
LEVEL	**3**
CREDIT VALUE	**5**
GUIDED LEARNING HOURS	**25**

Unit Overview

This unit covers the skills and knowledge needed to prove the competences required to maintain effective and efficient working relationships in a workplace where scientific or technical activities are performed, in accordance with approved procedures and practices. The learner 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. They will be expected to initiate and complete tasks and procedures as well as exercise autonomy and judgement within specified parameters. They will also be aware of different perspectives or approaches used within the workplace.

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

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

The learner's underpinning knowledge will enable them to use factual, procedural and theoretical understanding to complete workplace tasks and address problems that, whilst well defined, may be complex and non-routine. They will be able to interpret and evaluate relevant workplace information and ideas. They 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.

The learner will understand the safety precautions required when carrying out scientific or technical activities. They will be required to demonstrate safe working practices throughout, and will understand the responsibility they owe to themselves and others in the workplace.

Assessment Guidance and Evidence Requirements

The learner should provide evidence to meet all the required knowledge and understanding within this unit. This could be provided through different types of evidence and assessment methods, for example learner statements, questioning and professional discussion which should be recorded for verification.

Competence will be demonstrated by the learner achieving all Assessment Criteria, and providing a range of supporting evidence which may include observation reports, learner statements, witness statements, product of work, etc.

The Evidence Requirements for this unit are identified in the Assessment Criteria.

This unit must be assessed in a work environment and is subject to the requirements set out in the Assessment Strategy given in this Qualification Handbook.

Learning Outcome and Assessment Criteria

Learning outcomes **The learner will:**	**Assessment criteria** **The learner can:**
1. Maintain effective and efficient working relationships for scientific or technical activities	1.1. Ensure that their work is carried out in accordance with standard operating procedures 1.2. Use safe practices and the appropriate personal protection clothing and equipment (PPE) when doing scientific or technical activities 1.3. Establish and maintain effective working relationships in the workplace 1.4. Sustain positive working relationships by all of the following: • Working in teams • Supporting others • Being cooperative and flexible • Providing clear and accurate information 1.5. Maintain working relationships with two of the following: • Colleagues in their own working group • Supervisors/managers • More senior professionals/scientists • Colleagues outside their normal working group • Persons external to their organisation 1.6. Meet workplace standards for timekeeping, appearance and behaviour 1.7. Deal with disagreements in an amicable and constructive way, so that good relationships are maintained 1.8. Maintain communication with others, to ensure that they are kept informed about any work plans or activities which may affect them 1.9. Be aware of the limits of their skills, and seek assistance from others in a polite and courteous way without causing undue disruption to normal work activities 1.10. Review their personal performance and development, with the appropriate people, at regular intervals 1.11. Review personal development objectives and targets, to include one of the following: • Dual or multi-skilling • Training on new equipment/technology • Understanding of company working practices, procedures, plans and policies • Increased responsibility • Other specific requirements 1.12. Communicate the required information about the work done, to authorised people, in accordance with departmental and organisational procedures

	1.13. Record details of work done, and communicate the details to the appropriate people, using: • Verbal report Plus one method from the following: • Written or typed report • Specific company documentation • Computer-based record • Electronic mail
2. Know how to maintain effective and efficient working relationships for scientific or technical activities	2.1. Describe the health and safety requirements of the area in which they are carrying out the scientific or technical activities 2.2. Describe the implications of not taking account of legislation, regulations, standards and guidelines when conducting scientific or technical activities 2.3. Describe the scientific or technical techniques and processes they must use correctly in the workplace 2.4. Explain the importance of wearing protective clothing, gloves and eye protection for scientific or technical activities 2.5. Explain the importance of correct identification, and any unique workplace coding system 2.6. Describe the interactions which take place between their scientific or technical speciality and others where the same speciality is used 2.7. Explain how their scientific or technical work activities may affect others within the department and the workplace 2.8. Describe the lines of communication and responsibilities in their department, and their links with the rest of the organisation 2.9. Describe the limits of their own authority and to whom they should report if they have problems that they cannot resolve 2.10. Describe the lines of accountability within the department 2.11. Describe the reasons why good working relationships are important 2.12. Explain how to create and maintain good working relationships 2.13. Describe the methods of working effectively with others 2.14. Describe the problems that can affect relationships in the workplace 2.15. Describe the procedures for dealing with disagreements within the workplace 2.16. Describe the departmental performance review process, and their role in this process 2.17. Describe the reasons why effective communication is important, and the methods used for communicating effectively

UNIT LAT3-003	**CARRY OUT SCIENTIFIC OR TECHNICAL TESTING OPERATIONS**
LEVEL	**3**
CREDIT VALUE	**12**
GUIDED LEARNING HOURS	**57**

Unit Overview

This unit covers the skills and knowledge needed to prove the competences required to carry out scientific or technical testing activities, in accordance with approved procedures and practices. The learner 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. They will be expected to initiate and complete tasks and procedures as well as exercise autonomy and judgement within limited parameters. They will also be aware of different perspectives or approaches used within the workplace.

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

The learner's responsibilities will require them 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 they cannot personally resolve, or that are outside their permitted authority, to the relevant people. They will be expected to initiate and complete tasks and procedures, including, where relevant, responsibility for supervising or guiding others. They will be expected to exercise autonomy and judgement within limited parameters, taking personal responsibility for their own actions and for the quality and accuracy of the work that they carry out. They will be expected to work to instructions, with a minimum of supervision, either on their own or as part of a team

The learner's underpinning knowledge will enable them 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. They will be able to interpret and evaluate relevant workplace information and ideas. They 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.

The learner will understand the safety precautions required when carrying out scientific or technical activities. They will be required to demonstrate safe working practices throughout, and will understand the responsibility they owe to themselves and others in the workplace.

Assessment Guidance and Evidence Requirements

The learner should provide evidence to meet all the required knowledge and understanding within this unit. This could be provided through different types of evidence and assessment methods, for example learner statements, questioning and professional discussion which should be recorded for verification.

Competence will be demonstrated by the learner achieving all Assessment Criteria, and providing a range of supporting evidence which may include observation reports, learner statements, witness statements, product of work, etc.

The Evidence Requirements for this unit are identified in the Assessment Criteria.

This unit must be assessed in a work environment and is subject to the requirements set out in the Assessment Strategy given in this Qualification Handbook.

Learning Outcome and Assessment Criteria

Learning outcomes **The learner will:**	**Assessment criteria** **The learner can:**
1. Carry out scientific or technical testing operations	1.1. Ensure that their work is carried out in accordance with workplace procedures 1.2. Use safe practices and the appropriate personal protection equipment (PPE) when performing scientific or technical activities 1.3. Identify conditions for scientific or technical tests to be done 1.4. Identify conditions for scientific or technical test that include two of the following: • Test environment • Test criteria • Safety factors • Time recording system • Cleanliness • External influence that can variations 1.5. Establish the requirements for the scientific or technical tests to be done 1.6. Establish requirements for one of the following types of test: • Plastics/polymers • Metal/metallurgy • Material/physical properties • Petroleum/petrochemical • Chemicals/pharmaceuticals • Mechanical properties • Product/process quality • Omissions/leaks/contamination • Other (please specify) 1.7. Select the appropriate testing methods from procedures for the testing requirements 1.8. Prepare the resources needed for the testing operations 1.9. Prepare all of the following resources for testing operations: • Consumables • Test materials • Utilities/facilities • Equipment • Instruments 1.10. Prepare the test samples in accordance with the procedures and check their integrity 1.11. Carry out the required tests in accordance with the procedures 1.12. Carry out two of the following pre-test check on equipment and test instruments: • Calibration • Serviceability • Cleanliness • Setup conditions

	1.13. Carry out integrity checks that include three of the following: • Free from subsequent defects • Damage and decomposition • Homogeneity 1.14. Communicate the required information about the work done, in accordance with departmental and organisational procedures 1.15. Record and communicate details of work done, to the appropriate people, using: • Verbal report Plus one method from the following: • Written or typed report • Specific workplace documentation • Computer-based record • Electronic mail
2. Know how to carry out scientific or technical testing operations	2.1. Describe the health and safety requirements of the area in which they are carrying out the scientific or technical activities 2.2. Describe the implications of not taking account of legislation, regulations, standards and guidelines when conducting scientific or technical activities 2.3. Describe the scientific or technical techniques and processes they must use correctly in the workplace 2.4. Explain the importance of wearing protective clothing, gloves and eye protection for scientific or technical activities 2.5. Explain importance of correct identification, and any unique workplace coding system 2.6. Describe the organisational requirements for maintaining the security of the workplace (e.g. access or aseptic conditions) 2.7. Describe the lines of communication and responsibilities in their department, and their links with the rest of the organisation 2.8. Describe the limits of their own authority and to whom they should report if they have problems that they cannot resolve 2.9. Explain why it is important to follow safe operating procedures when using equipment and / or materials 2.10. Describe the principles and procedures for testing 2.11. Describe the purposes of testing, and the specific use to which the test results are to be put 2.12. Describe the relevant testing methods that can be used to achieve the purpose of testing 2.13. Explain why calibration is important and how to check calibration 2.14. Explain how to check the sample identity and it's integrity 2.15. Describe the range of methods used to prepare samples

	2.16. Explain how to identify defective equipment and the appropriate action to take 2.17. Describe the methods that can be used for controlling test variables 2.18. Describe the concepts of repeatability and reproducibility 2.19. Describe the range of equipment available for testing, and how to choose the most appropriate equipment 2.20. Describe the potential impact of the test on health, safety and the environment 2.21. Describe the methods can be used for dealing with the handling, storage and disposal of materials 2.22. Describe the cleaning materials and the methods for their use 2.23. Describe the methods of safe storage that can be used 2.24. Describe the document control and reporting procedures that should be used 2.25. Explain the reasons why effective communication is important, and the methods used for communicating effectively

UNIT LAT3-004	**ACCESS AND COMMUNICATE SCIENTIFIC OR TECHNICAL INFORMATION TO AUTHORISED PERSONNEL**
LEVEL	**3**
CREDIT VALUE	**6**
GUIDED LEARNING HOURS	**39**

Unit Overview

This unit covers the skills and knowledge needed to prove the competences required to access and communicate scientific or technical information to authorised personnel, in accordance with approved procedures and practices. The learner 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. They will be expected to initiate and complete tasks and procedures as well as exercise autonomy and judgement within limited parameters. They will also be aware of different perspectives or approaches used within the workplace.

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

The learner's responsibilities will require them 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 they cannot personally resolve, or that are outside their permitted authority, to the relevant people. They will be expected to initiate and complete tasks and procedures, including, where relevant, responsibility for supervising or guiding others. They will be expected to exercise autonomy and judgement within limited parameters, taking personal responsibility for their own actions and for the quality and accuracy of the work that they carry out. They will be expected to work to instructions, with a minimum of supervision, either on their own or as part of a team

Their underpinning knowledge will enable them 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. They will be able to interpret and evaluate relevant workplace information and ideas. They 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.

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

Assessment Guidance and Evidence Requirements

The learner should provide evidence to meet all the required knowledge and understanding within this unit. This could be provided through different types of evidence and assessment methods, for example learner statements, questioning and professional discussion which should be recorded for verification.

Competence will be demonstrated by the learner achieving all Assessment Criteria, and providing a range of supporting evidence which may include observation reports, learner statements, witness statements, product of work, etc.

The Evidence Requirements for this unit are identified in the Assessment Criteria.

This unit must be assessed in a work environment and is subject to the requirements set out in the Assessment Strategy given in this Qualification Handbook.

Learning Outcome and Assessment Criteria

Learning outcomes **The learner will:**	**Assessment criteria** **The learner can:**
1. Access and communicate scientific or technical information to authorised personnel	1.1. Ensure that their work is carried out in accordance with workplace procedures 1.2. Use safe practices and the appropriate personal protection equipment (PPE) when performing scientific or technical activities 1.3. Ensure the data integrity of the laboratory information system 1.4. Follow procedures correctly to ensure the security and confidentiality of laboratory information 1.5. Access existing and record new information on the laboratory information system 1.6. Search and access data from the information system for three of the following: • Test/sample information • Process information • Output quality information • Cost/budget information • Work delivery information • Other (please specify) 1.7. Produce and distribute laboratory information system reports in accordance with procedures 1.8. Communicate scientific or technical information to three of the following customers: • Other department • Technical expert • Team members • External organisation • Other (please specify) 1.9. Communicate four of the following types of information: • Instructions • Test results • Progress/analysis report • Work requirements • Services available • Other (please specify) 1.10. Ensure the integrity of the laboratory information system by all of the following: • Using the correct start-up/shutdown procedures • Following good practice for logging on/off • Information is passed to authorised people only • Following anti-virus protocols 1.11. Communicate the required information about the work done, in accordance with departmental and organisational procedures

	1.12. Record and communicate details of work done, to the appropriate people, using: • Verbal report Plus one method from the following: • Written or typed report • Specific workplace documentation • Computer-based record • Electronic mail
2. Know how to access and communicate scientific or technical information to authorised personnel	2.1. Describe the health and safety requirements of the area in which they are carrying out the scientific or technical activities 2.2. Describe the implications of not taking account of legislation, regulations, standards and guidelines when conducting scientific or technical activities 2.3. Describe the scientific or technical techniques and processes they must use correctly in the workplace 2.4. Explain the importance of wearing protective clothing, gloves and eye protection for scientific or technical activities 2.5. Explain the importance of correct identification, and any unique workplace coding system 2.6. Describe the organisational policies that exist for the use and application of licensed computer software 2.7. Describe the organisational policies that exist for the use of anti-virus and anti-spy software protection 2.8. Describe the organisational policies that exist on data protection and the data protection act 2.9. Describe the organisational requirements for maintaining the security of the workplace (e.g. access or aseptic conditions) 2.10. Describe the lines of communication and responsibilities in their department, and their links with the rest of the organisation 2.11. Describe the limits of their own authority and to whom they should report if they have problems that they cannot resolve 2.12. Describe the basic set-up and operation of the laboratory records system and the peripheral devices that are used (such as mouse, keyboard, VDU, printer and barcode reader) 2.13. Describe the correct start-up and shutdown procedures to be used for the computer system 2.14. Explain how to access the computer information database and the use of software manuals and related documents to aid efficient operation of the relevant scientific or technical records 2.15. Explain how to deal with system problems (such as error messages received, peripherals which do not respond as expected, obvious faults with the equipment or connecting leads)

	2.16. Explain how to access and communicate data effectively, and how to identify key information when recording and forwarding messages accurately 2.17. Describe where to obtain the information that they need to carry out their job, the form in which the information is expressed and why it should be up to date 2.18. Describe the different forms of communication available to them, and how they are used 2.19. Explain why it is important to communicate clearly and to give all of the information necessary to the audience 2.20. Describe the organisational and/or workplace procedures for acknowledging and responding to incoming and outgoing information 2.21. Describe the organisational and/or workplace procedures for recording scientific or technical information 2.22. Describe the document control and reporting procedures that should be used 2.23. Explain the reasons why effective communication is important, and the methods used for communicating effectively

UNIT LAT3-005	**PROVIDE TECHNICAL ADVICE AND GUIDANCE FOR SCIENTIFIC OR TECHNICAL ACTIVITIES**
LEVEL	**3**
CREDIT VALUE	**12**
GUIDED LEARNING HOURS	**57**

Unit Overview

This unit covers the skills and knowledge needed to prove the competences required to provide technical advice and guidance for scientific or technical activities, in accordance with approved procedures and practices. The learner 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. They will be expected to initiate and complete tasks and procedures as well as exercise autonomy and judgement within limited parameters. They will also be aware of different perspectives or approaches used within the workplace.

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

The learner's responsibilities will require them 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 they cannot personally resolve, or that are outside their permitted authority, to the relevant people. They will be expected to initiate and complete tasks and procedures, including, where relevant, responsibility for supervising or guiding others. They will be expected to exercise autonomy and judgement within limited parameters, taking personal responsibility for their own actions and for the quality and accuracy of the work that they carry out. They will be expected to work to instructions, with a minimum of supervision, either on their own or as part of a team

The learner's underpinning knowledge will enable them 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. They will be able to interpret and evaluate relevant workplace information and ideas. They 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.

The learner will understand the safety precautions required when carrying out scientific or technical activities. They will be required to demonstrate safe working practices throughout, and will understand the responsibility they owe to themselves and others in the workplace.

Assessment Guidance and Evidence Requirements

The learner should provide evidence to meet all the required knowledge and understanding within this unit. This could be provided through different types of evidence and assessment methods, for example learner statements, questioning and professional discussion which should be recorded for verification.

Competence will be demonstrated by the learner achieving all Assessment Criteria, and providing a range of supporting evidence which may include observation reports, learner statements, witness statements, product of work, etc.

The Evidence Requirements for this unit are identified in the Assessment Criteria.

This unit must be assessed in a work environment and is subject to the requirements set out in the Assessment Strategy given in this Qualification Handbook.

Learning Outcome and Assessment Criteria

Learning outcomes **The learner will:**	**Assessment criteria** **The learner can:**
1. Provide technical advice and guidance for scientific or technical activities	1.1. Ensure that their work is carried out in accordance with workplace procedures 1.2. Use safe practices and the appropriate personal protection equipment (PPE) when performing scientific or technical activities 1.3. Work safely at all times, complying with health and safety legislation, regulations and other relevant guidelines 1.4. Ensure that they have accurate and up-to-date information on the scientific or technical activities for which advice and guidance is being sought 1.5. Determine the extent of the advice and guidance required 1.6. Provide valid and up-to-date information, advice and guidance, as necessary 1.7. Provide technical advice and guidance for two of the following groups of people: • Colleagues • Contractors • Customers (e.g. distributors, end users, clients) • Others in related technical activity areas 1.8. Provide technical support for two of the following scientific or technical activities: • Providing technical support • Planning sampling and testing • Complex testing • Complex sampling • Carrying out investigations • Small scale processing • Demonstration and instruction • Team leading/coaching 1.9. Provide technical advice and guidance on four of the following: • Equipment operating detail (function) • Equipment performance parameters • Physical characteristics (dimensions, weight) • Environment considerations/operating conditions • Scientific or technical methods • Processing requirements • Work instructions or procedures • Output volume required • Resource requirements • Equipment/component interfacing • Specific or specialist equipment required • Resource usage • Timing/delivery details • Cost/budget estimation/details • Quality requirements/control • Maintenance/cleaning/calibration frequency • Aseptic procedures

	• Training required • Customer interface requirements • Safety/regulations/guideline requirements 1.10. Analyse any problems in full and provide effective advice that will maintain the quality and progress of the work 1.11. Deal appropriately with all of the following: • Reported problems found during the scientific or technical activity • Recorded deviations from agreed plans and schedules • Customer requests/complaints 1.12. Communicate the required information about the work done, in accordance with departmental and organisational procedures 1.13. Record and communicate details of work done, to the appropriate people, using: • Verbal report Plus one method from the following: • Written or typed report • Specific workplace documentation • Computer-based record • Electronic mail
2. Know how to provide technical advice and guidance for scientific or technical activities	2.1. Describe the health and safety requirements of the area in which they are carrying out the scientific or technical activities 2.2. Describe the implications of not taking account of legislation, regulations, standards and guidelines when conducting scientific or technical activities 2.3. Describe the scientific or technical techniques and processes they must use correctly in the workplace 2.4. Describe the importance of wearing protective clothing, gloves and eye protection for scientific or technical activities 2.5. Explain the importance of correct identification, and any unique workplace coding system 2.6. Describe the organisational requirements for maintaining the security of the workplace (e.g. access or aseptic conditions) 2.7. Describe the lines of communication and responsibilities in their department, and their links with the rest of the organisation 2.8. Describe the limits of their own authority and to whom they should report if they have problems that they cannot resolve 2.9. Describe the regulations and guidelines that are relevant to the work area 2.10. Explain how to obtain information on regulations and guidelines 2.11. Explain how to obtain and interpret drawings, charts, specifications and other documents that can be used when giving technical advice and guidance

	2.12. Describe the activities for which the technical guidance is being given 2.13. Explain how to identify opportunities for giving technical advice, guidance and support 2.14. Explain how to plan and prepare for providing technical guidance 2.15. Describe the methods and techniques involved in problem solving 2.16. Explain how to deal with customer complaints and requests 2.17. Explain how to review and adjust approaches to the provision of technical guidance, in the light of experience gained (such as offering written summaries of guidance) 2.18. Describe the techniques for offering and providing technical guidance (such as verbally, one to one, one to many, in written form, using diagrams, drawings or other technical information) 2.19. Explain how to use a variety of communication methods, in appropriate combination (such as verbal, verbal/written combinations) 2.20. Describe the document control and reporting procedures that should be used 2.21. Explain the reasons why effective communication is important, and the methods used for communicating effectively

OPTION GROUP A

UNIT LAT3-006	**PLAN SCIENTIFIC OR TECHNICAL SAMPLING AND TESTING ACTIVITIES**
LEVEL	**3**
CREDIT VALUE	**8**
GUIDED LEARNING HOURS	**41**

Unit Overview

This unit covers the skills and knowledge needed to prove the competences required to plan scientific or technical sampling and testing activities, in accordance with approved procedures and practices. The learner 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. They will be expected to initiate and complete tasks and procedures as well as exercise autonomy and judgement within limited parameters. They will also be aware of different perspectives or approaches used within the workplace.

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

The learner's responsibilities will require them 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 they cannot personally resolve, or that are outside their permitted authority, to the relevant people. They will be expected to initiate and complete tasks and procedures, including, where relevant, responsibility for supervising or guiding others. They will be expected to exercise autonomy and judgement within limited parameters, taking personal responsibility for their own actions and for the quality and accuracy of the work that they carry out. They will be expected to work to instructions, with a minimum of supervision, either on their own or as part of a team

The learner's underpinning knowledge will enable them 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. They will be able to interpret and evaluate relevant workplace information and ideas. They 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.

The learner will understand the safety precautions required when carrying out scientific or technical activities. They will be required to demonstrate safe working practices throughout, and will understand the responsibility they owe to themselves and others in the workplace.

Assessment Guidance and Evidence Requirements

The learner should provide evidence to meet all the required knowledge and understanding within this unit. This could be provided through different types of evidence and assessment methods, for example learner statements, questioning and professional discussion which should be recorded for verification.

Competence will be demonstrated by the learner achieving all Assessment Criteria, and providing a range of supporting evidence which may include observation reports, learner statements, witness statements, product of work, etc.

The Evidence Requirements for this unit are identified in the Assessment Criteria.

This unit must be assessed in a work environment and is subject to the requirements set out in the Assessment Strategy given in this Qualification Handbook.

Learning Outcome and Assessment Criteria

Learning outcomes **The learner will:**	**Assessment criteria** **The learner can:**
1. Plan scientific or technical sampling and testing activities	1.1. Ensure that their work is carried out in accordance with workplace procedures 1.2. Use safe practices and the appropriate personal protection equipment (PPE) when performing scientific or technical activities 1.3. Carry out all of the following when determining and producing the plans: • Use the correct issue of workplace information • Check that all essential information and data needed to produce the plans is available • Collect relevant information on the scientific or technical requirements, operations, methods and resources • Determine the availability of resources required • Ensure that the activities to be carried out fall within budget constraints • Ensure that health and safety regulations and safe working practices are taken into account • Ensure that the influence of working conditions is recognised and included in the plans • Present the plans in the appropriate formats 1.4. Collect the information needed to prepare the plan 1.5. Identify health and safety issues and safe working practices and procedures that must be followed 1.6. Identify the operations to be carried out and determine their sequence 1.7. Establish which methods are required and what resources are to be used 1.8. Identify any special requirements and incorporate them in the plan 1.9. Produce plans for both of the following scientific or technical activities: • Testing • Sampling 1.10. Deal effectively with problems within their control and report those that cannot be solved 1.11. Provide technical advice and guidance on four of the following: • Space required • Cost/budget • Timescales • Utilities required • Description of the activities to be carried out • The sequence in which the activities will take place • The documentation to be used (such as drawings, specifications, quality assurance, surveys) • People required who have the necessary skills and knowledge

	• The raw materials required (such as type of material, form of material, amount of material) • Consumable materials required (such as chemicals, reagents) • Environmental/legislative requirements that must be met • Special/specific safety equipment required (such as fume extraction, fire equipment) 1.12. Carry out all of the following on completion of the planning activities: • Validation and evaluation of the planning systems and procedures used • Suggested improvements to their process of planning • Recommendations for improvements or changes to the scientific or technical activities that were planned 1.13. Communicate the required information about the work done, in accordance with departmental and organisational procedures 1.14. Record and communicate details of work done, to the appropriate people, using: • Verbal report Plus one method from the following: • Written or typed report • Specific workplace documentation • Computer-based record • Electronic mail
2. Know how to plan scientific or technical sampling and testing activities	2.1. Describe the health and safety requirements of the area in which they are carrying out the scientific or technical activities 2.2. Describe the implications of not taking account of legislation, regulations, standards and guidelines when conducting scientific or technical activities 2.3. Describe the scientific or technical techniques and processes they must use correctly in the workplace 2.4. Explain the importance of wearing protective clothing, gloves and eye protection for scientific or technical activities 2.5. Explain the importance of correct identification, and any unique workplace coding system 2.6. Describe the organisational requirements for maintaining the security of the workplace (e.g. access or aseptic conditions) 2.7. Describe the lines of communication and responsibilities in their department, and their links with the rest of the organisation 2.8. Describe the limits of their own authority and to whom they should report if they have problems that they cannot resolve 2.9. Explain how to access information on health and safety regulations and guidelines relating to the sampling and testing activities to be used and plans being produced

	2.10. Describe the implications of not taking account of legislation, regulations, standards and guidelines when producing the laboratory plans 2.11. Explain how to access and use the appropriate information and documentation systems 2.12. Describe the materials, formats, codes and conventions that are used in preparing the plans 2.13. Describe the main planning methods and techniques in use, and what problems could occur in them 2.14. Describe the factors to be taken into account when preparing the plans, especially those covering working conditions and safety 2.15. Describe the main types of resources involved with different types of sampling and testing activity, and the typical timescales for providing them 2.16. Describe the normal timescales for carrying out specific sampling and testing activities, and how and why they vary 2.17. Describe the development of the sampling and testing plans (to include both master documents and working instructions, along with their purpose, content and status) 2.18. Explain how to prepare the plans (to include the structure, style, clarity and compliance with relevant standards) 2.19. Describe the process used in the organisation to validate the plans produced 2.20. Describe the control procedure for ensuring that the plans are maintained up to date 2.21. Describe the procedures for changing the plans and why control procedures are needed 2.22. Explain the importance of maintaining records; what needs to be recorded and where records are kept 2.23. Describe the problems that can occur during the implementation of the plan and how these problems can be rectified 2.24. Describe the document control and reporting procedures that should be used 2.25. Explain the reasons why effective communication is important, and the methods used for communicating effectively

UNIT LAT3-007	**CARRY OUT COMPLEX SCIENTIFIC OR TECHNICAL TESTING OPERATIONS**
LEVEL	**3**
CREDIT VALUE	**12**
GUIDED LEARNING HOURS	**57**

Unit Overview

This unit covers the skills and knowledge needed to prove the competences required to carry out complex scientific or technical testing activities, in accordance with approved procedures and practices. They will be expected to identify and use relevant understanding, methods and skills to complete tasks and address problems that, while well defined, have a measure of complexity. They will be expected to initiate and complete tasks and procedures as well as exercise autonomy and judgement within limited parameters. They will also be aware of different perspectives or approaches used within the workplace.

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

The learner's responsibilities will require them 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 they cannot personally resolve, or that are outside their permitted authority, to the relevant people. They will be expected to initiate and complete tasks and procedures, including, where relevant, taking responsibility for supervising or guiding others. They will be expected to exercise autonomy and judgement within limited parameters, taking personal responsibility for their own actions and for the quality and accuracy of the work that they carry out. They will be expected to work to instructions, with a minimum of supervision, either on their own or as part of a team

The learner's underpinning knowledge will enable them 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. They will be able to interpret and evaluate relevant workplace information and ideas. They 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.

The learner will understand the safety precautions required when carrying out scientific or technical activities. They will be required to demonstrate safe working practices throughout, and will understand the responsibility they owe to themselves and others in the workplace.

Assessment Guidance and Evidence Requirements

The learner should provide evidence to meet all the required knowledge and understanding within this unit. This could be provided through different types of evidence and assessment methods, for example learner statements, questioning and professional discussion which should be recorded for verification.

Competence will be demonstrated by the learner achieving all Assessment Criteria, and providing a range of supporting evidence which may include observation reports, learner statements, witness statements, product of work, etc.

The Evidence Requirements for this unit are identified in the Assessment Criteria.

This unit must be assessed in a work environment and is subject to the requirements set out in the Assessment Strategy given in this Qualification Handbook.

Learning Outcome and Assessment Criteria

Learning outcomes **The learner will:**	**Assessment criteria** **The learner can:**
1. Carry out complex scientific or technical testing operations	1.1. Ensure that their work is carried out in accordance with workplace procedures 1.2. Use safe practices and the appropriate personal protection equipment (PPE) when performing scientific or technical activities 1.3. Carry out testing operations that have two of the following complex components: • Multi stage testing operations • Multitasking testing • Multi-parameter or control factors • Environmentally sensitive outcomes • Spontaneity/suddenness of test event • Very cold/hot test temperatures involved • Noisy/vibrating/turbulent elements involved • Involves substances hazardous to health • High level of skill/experience needed • Complex sample components 1.4. Identify conditions for the complex scientific or technical tests to be done 1.5. Identify conditions for the test that include two of the following: • Test environment • Test criteria • Safety factors • Time recording system • Cleanliness • External influence/factors 1.6. Establish the requirements for the tests to be done 1.7. Identify hazards and assess risks against testing requirements 1.8. Select the appropriate testing methods from procedures for the testing requirements 1.9. Prepare the resources needed for the testing operations 1.10. Prepare all of the following resources for the testing operations: • Consumables • Test materials • Utilities/facilities • Equipment • Test instruments 1.11. Prepare the test samples in accordance with the procedures and check their integrity 1.12. Carry out the required tests in accordance with the procedures

	1.13. Carry out two of the following pre-test check on equipment and test instruments: • Calibration • Serviceability • Cleanliness • Setup conditions 1.14. Check three of the following test sample integrity factors: • Free from defects • Damage and decomposition • Arrangement of like parts • Common elements or characteristics 1.15. Communicate the required information about the work done, in accordance with departmental and organisational procedures 1.16. Record and communicate details of work done, to the appropriate people, using: • Verbal report Plus one method from the following: • Written or typed report • Specific workplace documentation • Computer-based record • Electronic mail
2. Know how to carry out complex scientific or technical testing operations	2.1. Describe the health and safety requirements of the area in which they are carrying out the scientific or technical activities 2.2. Describe the implications of not taking account of legislation, regulations, standards and guidelines when conducting scientific or technical activities 2.3. Describe the scientific or technical techniques and processes they must use correctly in the workplace 2.4. Explain the importance of wearing protective clothing, gloves and eye protection for scientific or technical activities 2.5. Explain the importance of correct identification, and any unique workplace coding system 2.6. Describe the organisational requirements for maintaining the security of the workplace (e.g. access or aseptic conditions) 2.7. Describe the lines of communication and responsibilities in their department, and their links with the rest of the organisation 2.8. Describe the limits of their own authority and to whom they should report if they have problems that they cannot resolve 2.9. Explain why it is important to follow safe operating procedures when using equipment and/or materials 2.10. Describe the principles and procedures for the scientific or technical testing 2.11. Describe the purposes of testing, and the specific use to which the test results are to be put

	2.12. Describe the hazards/difficulties associated with complex testing 2.13. Describe the relevant testing methods that can be used to achieve the purpose of testing 2.14. Explain why calibration is important and how to check calibration 2.15. Explain how to check the sample identity and it's integrity 2.16. Describe the range of methods used to prepare samples 2.17. Explain how to identify defective equipment and the appropriate action to take 2.18. Describe the methods that can be used for controlling test variables 2.19. Describe the concepts of repeatability and reproducibility 2.20. Describe the range of equipment available for testing, and how to choose the most appropriate equipment 2.21. Describe the potential impact of the test on health, safety and the environment 2.22. Describe the methods that can be used for dealing with the handling, storage and disposal of materials 2.23. Describe the cleaning materials and the methods for their use 2.24. Describe the methods of safe storage that can be used 2.25. Describe the document control and reporting procedures that should be used 2.26. Explain the reasons why effective communication is important, and the methods used for communicating effectively

UNIT LAT3-008	**CARRYING OUT COMPLEX SCIENTIFIC OR TECHNICAL SAMPLING OPERATIONS**
LEVEL	**3**
CREDIT VALUE	**8**
GUIDED LEARNING HOURS	**41**

Unit Overview

This unit covers the skills and knowledge needed to prove the competences required to carry out complex scientific or technical sampling activities, in accordance with approved procedures and practices. The learner 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. They will be expected to initiate and complete tasks and procedures as well as exercise autonomy and judgement within limited parameters. They will also be aware of different perspectives or approaches used within the workplace.

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

The learner's responsibilities will require them 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 they cannot personally resolve, or that are outside their permitted authority, to the relevant people. They will be expected to initiate and complete tasks and procedures, including, where relevant, taking responsibility for supervising or guiding others. They will be expected to exercise autonomy and judgement within limited parameters, taking personal responsibility for their own actions and for the quality and accuracy of the work that they carry out. They will be expected to work to instructions, with a minimum of supervision, either on their own or as part of a team

The learner's underpinning knowledge will enable them 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. They will be able to interpret and evaluate relevant workplace information and ideas. They 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.

The learner will understand the safety precautions required when carrying out scientific or technical activities. They will be required to demonstrate safe working practices throughout, and will understand the responsibility they owe to themselves and others in the workplace.

Assessment Guidance and Evidence Requirements

The learner should provide evidence to meet all the required knowledge and understanding within this unit. This could be provided through different types of evidence and assessment methods, for example learner statements, questioning and professional discussion which should be recorded for verification.

Competence will be demonstrated by the learner achieving all Assessment Criteria, and providing a range of supporting evidence which may include observation reports, learner statements, witness statements, product of work, etc.

The Evidence Requirements for this unit are identified in the Assessment Criteria.

This unit must be assessed in a work environment and is subject to the requirements set out in the Assessment Strategy given in this Qualification Handbook.

Learning Outcome and Assessment Criteria

Learning outcomes **The learner will:**	**Assessment criteria** **The learner can:**
1. Carrying out complex scientific or technical sampling operations	1.1. Ensure that their work is carried out in accordance with workplace procedures 1.2. Use safe practices and the appropriate personal protection equipment (PPE) when performing scientific or technical activities 1.3. Identify conditions for the scientific or technical sampling to be done 1.4. Establish the requirements for the sampling to be done 1.5. Carry out sampling operations that have two of the following complex components: • Multi stage sampling operations • Multitasking sampling • Multi-parameter or control factors • Environmentally sensitive outcomes • Spontaneity/suddenness of sample event • Very cold/hot sample temperatures involved • Noisy/vibrating/turbulent elements involved • Involves substances hazardous to health • High level of skill/experience needed • Complex sample components 1.6. Identify hazards and assess risks against sampling requirements 1.7. Identify conditions for sample that include two of the following: • Sample environment • Sample criteria • Safety factors • Time recording system • Cleanliness • External influence that can cause variations 1.8. Select the appropriate sampling methods from procedures for the sampling requirements 1.9. Prepare the resources needed for the sampling operations 1.10. Prepare all of the following resources for sampling operations: • Consumables • Sample equipment/instruments • Utilities/facilities 1.11. Carry out the required sampling in accordance with the procedures 1.12. Label, package and store collected samples in accordance with the procedures 1.13. Communicate the required information about the work done, in accordance with departmental and organisational procedures

	1.14. Record and communicate details of work done, to the appropriate people, using: • Verbal report Plus one method from the following: • Written or typed report • Specific workplace documentation • Computer-based record • Electronic mail
2. Know how to carrying out complex scientific or technical sampling operations	2.1. Describe the health and safety requirements of the area in which they are carrying out the scientific or technical activities 2.2. Describe the implications of not taking account of legislation, regulations, standards and guidelines when conducting scientific or technical activities 2.3. Describe the scientific or technical techniques and processes they must use correctly in the workplace 2.4. Explain the importance of wearing protective clothing, gloves and eye protection for scientific or technical activities 2.5. Explain the importance of correct identification, and any unique workplace coding system 2.6. Describe the organisational requirements for maintaining the security of the workplace (e.g. access or aseptic conditions) 2.7. Describe the lines of communication and responsibilities in their department, and their links with the rest of the organisation 2.8. Describe the limits of their own authority and to whom they should report if they have problems that they cannot resolve 2.9. Explain why it is important to follow safe operating procedures when using equipment and/or materials 2.10. Describe the principles and procedures for sampling 2.11. Describe the purposes of sampling, and the specific use to which the sample results are to be put 2.12. Describe the hazards/difficulties associated with complex sampling 2.13. Describe the relevant sampling methods that can be used to achieve the purpose of sampling 2.14. Describe the range of methods used to collect samples 2.15. Explain how to identify defective sampling equipment and the appropriate action to take 2.16. Describe the methods that can be used for controlling sample variables 2.17. Describe the range of equipment available for sampling, and how to choose the most appropriate equipment

	2.18. Describe the potential impact of the sample on health, safety and the environment 2.19. Describe the range of methods used for labelling, packaging, handling, storage of samples 2.20. Describe the sample records database and tracking system 2.21. Describe the types of handling and sorting system used, and the procedures and practices used for transferring samples within the workplace 2.22. Describe the document control and reporting procedures that should be used 2.23. Explain the reasons why effective communication is important, and the methods used for communicating effectively

UNIT LAT3-009	**CARRY OUT SCIENTIFIC OR TECHNICAL INVESTIGATIONS**
LEVEL	**3**
CREDIT VALUE	**9**
GUIDED LEARNING HOURS	**52**

Unit Overview

This unit covers the skills and knowledge needed to prove the competences required to carry out scientific or technical investigation activities, in accordance with approved procedures and practices. The learner 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. They will be expected to initiate and complete tasks and procedures as well as exercise autonomy and judgement within limited parameters. They will also be aware of different perspectives or approaches used within the workplace.

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

The learner's responsibilities will require them 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 they cannot personally resolve, or that are outside their permitted authority, to the relevant people. They will be expected to initiate and complete tasks and procedures, including, where relevant, taking responsibility for supervising or guiding others. They will be expected to exercise autonomy and judgement within limited parameters, taking personal responsibility for their own actions and for the quality and accuracy of the work that they carry out. They will be expected to work to instructions, with a minimum of supervision, either on their own or as part of a team

The learner's underpinning knowledge will enable them 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. They will be able to interpret and evaluate relevant workplace information and ideas. They 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.

The learner will understand the safety precautions required when carrying out scientific or technical activities. They will be required to demonstrate safe working practices throughout, and will understand the responsibility they owe to themselves and others in the workplace.

Assessment Guidance and Evidence Requirements

The learner should provide evidence to meet all the required knowledge and understanding within this unit. This could be provided through different types of evidence and assessment methods, for example learner statements, questioning and professional discussion which should be recorded for verification.

Competence will be demonstrated by the learner achieving all Assessment Criteria, and providing a range of supporting evidence which may include observation reports, learner statements, witness statements, product of work, etc.

The Evidence Requirements for this unit are identified in the Assessment Criteria.

This unit must be assessed in a work environment and is subject to the requirements set out in the Assessment Strategy given in this Qualification Handbook.

Learning Outcome and Assessment Criteria

Learning outcomes **The learner will:**	**Assessment criteria** **The learner can:**
1. Carry out scientific or technical investigations	1.1. Ensure that their work is carried out in accordance with workplace procedures 1.2. Use safe practices and the appropriate personal protection equipment (PPE) when performing scientific or technical activities 1.3. Carry out investigations into one of the following: • A non-compliance problem • The properties of a new material • Applications of a new material • Identifying a substance • Resolution technical problem • Cost reduction programme • Quality assurance review • Hazard/accident 1.4. Obtain and collate appropriate scientific or technical information which assists the investigation 1.5. Evaluation information from two of the following sources: • New external standards/regulations • Manufacturer's instructions • Equipment technical reviews • Material technical reviews • COSHH data sheets • Environmental reports • In-company archives • Operating procedures • Test reports • Accident reports • Health and safety documentation 1.6. Use two of the following resources to complete the investigations: • Other staff • Equipment • Materials • Allotted time 1.7. Analyse the information correctly and evaluate it against the objective of the investigation 1.8. Prioritise the tasks within the investigation and follow the appropriate procedures 1.9. Use the specified resources required to complete the investigations 1.10. Follow set procedures to deal with contingencies arising during investigations 1.11. Conduct investigations in accordance with the established plans

	1.12. Deal with contingencies for one of the following: • Equipment failure • Delays • Changes in variables • Safety/environmental change 1.13. Communicate the required information about the work done, in accordance with departmental and organisational procedures 1.14. Record and communicate details of work done, to the appropriate people, using: • Verbal report Plus one method from the following: • Written or typed report • Specific workplace documentation • Computer-based record • Electronic mail
2. Know how to carry out scientific or technical investigations	2.1. Describe the health and safety requirements of the area in which they are carrying out the scientific or technical activities 2.2. Describe the implications of not taking account of legislation, regulations, standards and guidelines when conducting scientific or technical activities 2.3. Describe the scientific or technical techniques and processes they must use correctly in the workplace 2.4. Explain the importance of wearing protective clothing, gloves and eye protection for scientific or technical activities 2.5. Explain the importance of correct identification, and any unique workplace coding system 2.6. Describe the organisational requirements for maintaining the security of the workplace (e.g. access or aseptic conditions) 2.7. Describe the lines of communication and responsibilities in their department, and their links with the rest of the organisation 2.8. Describe the limits of their own authority and to whom they should report if they have problems that they cannot resolve 2.9. Describe the principles and procedures for investigations 2.10. Describe the techniques that are relevant to the scientific or technical investigation 2.11. Explain how to source and access relevant standards 2.12. Describe the acceptable operating conditions for conducting investigations 2.13. Describe the implications of deviations from set procedures 2.14. Describe the essential features of an investigation plan and why this must be followed

	2.15. Describe the range of equipment used for investigations 2.16. Describe the procedures for recording and reporting the investigations done 2.17. Explain how to identify and deal with contingencies 2.18. Describe the limits and constraints for investigations that are done 2.19. Describe the procedures used to deal with deviations from investigation plans 2.20. Explain what the procedures are for using contingency plans when deviations from investigation plans occur 2.21. Describe the document control and reporting procedures that should be used 2.22. Explain the reasons why effective communication is important, and the methods used for communicating effectively

UNIT LAT3-010	**CARRY OUT SMALL SCALE PROCESSING**
LEVEL	**3**
CREDIT VALUE	**8**
GUIDED LEARNING HOURS	**45**

Unit Overview

This unit covers the skills and knowledge needed to prove the competences required to carry out small scale processing activities, in accordance with approved procedures and practices. The learner 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. They will be expected to initiate and complete tasks and procedures as well as exercise autonomy and judgement within limited parameters. They will also be aware of different perspectives or approaches used within the workplace.

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

The learner's responsibilities will require them 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 they cannot personally resolve, or that are outside their permitted authority, to the relevant people. They will be expected to initiate and complete tasks and procedures, including, where relevant, taking responsibility for supervising or guiding others. They will be expected to exercise autonomy and judgement within limited parameters, taking personal responsibility for their own actions and for the quality and accuracy of the work that they carry out. They will be expected to work to instructions, with a minimum of supervision, either on their own or as part of a team

The learner's underpinning knowledge will enable them 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. They will be able to interpret and evaluate relevant workplace information and ideas. They 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.

The learner will understand the safety precautions required when carrying out scientific or technical activities. They will be required to demonstrate safe working practices throughout, and will understand the responsibility they owe to themselves and others in the workplace.

Assessment Guidance and Evidence Requirements

The learner should provide evidence to meet all the required knowledge and understanding within this unit. This could be provided through different types of evidence and assessment methods, for example learner statements, questioning and professional discussion which should be recorded for verification.

Competence will be demonstrated by the learner achieving all Assessment Criteria, and providing a range of supporting evidence which may include observation reports, learner statements, witness statements, product of work, etc.

The Evidence Requirements for this unit are identified in the Assessment Criteria.

This unit must be assessed in a work environment and is subject to the requirements set out in the Assessment Strategy given in this Qualification Handbook.

Learning Outcome and Assessment Criteria

Learning outcomes **The learner will:**	**Assessment criteria** **The learner can:**
1. Carry out small scale processing	1.1. Ensure that their work is carried out in accordance with workplace procedures 1.2. Use safe practices and the appropriate personal protection equipment (PPE) when performing scientific or technical activities 1.3. Set the conditions for small scale processing and take the appropriate action to maintain them 1.4. Maintain two of the following controlled conditions during processing: • Health and safety • Environment • Allotted time • Recording systems • Cleanliness and hygiene 1.5. Confirm the calibration status of equipment and prepare it correctly for the processing operation 1.6. Produce small scale quantities required against specification 1.7. Produce small scale processing qualifies for one of the following: • Testing the viability of a proposed large-scale manufacturing method • Meeting a customer's requirements for a specialist product not required in any great quantity • Producing small quantities of products to be used in sampling • Testing or other investigations such as reference standards or design evaluation 1.8. Maintain the specified controlled conditions for processing and record required information 1.9. Take specified action in the event of abnormal occurrences and report them to the relevant people 1.10. Record all of the following processing information: • Sample identification • Calculations and data • Results of small scale processing • Conditions of in-process test 1.11. Communicate the required information about the work done, in accordance with departmental and organisational procedures 1.12. Record and communicate details of work done, to the appropriate people, using: • Verbal report Plus one method from the following: • Written or typed report • Specific workplace documentation • Computer-based record • Electronic mail

2. Know how to carry out small scale processing	2.1. Describe the health and safety requirements of the area in which they are carrying out the scientific or technical activities 2.2. Describe the implications of not taking account of legislation, regulations, standards and guidelines when conducting scientific or technical activities 2.3. Describe the scientific or technical techniques and processes they must use correctly in the workplace 2.4. Describe the importance of wearing protective clothing, gloves and eye protection for scientific or technical activities 2.5. Describe the importance of correct identification, and any unique workplace coding system 2.6. Describe the organisational requirements for maintaining the security of the workplace (e.g. access or aseptic conditions) 2.7. Describe the lines of communication and responsibilities in their department, and their links with the rest of the organisation 2.8. Describe the limits of their own authority and to whom they should report if they have problems that they cannot resolve 2.9. Describe the principles and procedures for small scale processing 2.10. Describe the essential features of a process plan and how to follow it 2.11. Explain how to source and access relevant standards 2.12. Describe the operating conditions that are necessary to conduct the small scale processing, and how to maintain them 2.13. Explain why it is important to follow set procedures 2.14. Describe the range of equipment used for small scale processing 2.15. Explain why it is important to follow the correct data recording and reporting procedures 2.16. Describe the methods that can be used for dealing with the handling, storage and disposal of materials 2.17. Describe the cleaning materials and methods that should be used 2.18. Describe the range of resources needed for small scale processing 2.19. Describe the reporting procedure in the event of deviations from processing plans 2.20. Describe the document control and reporting procedures that should be used 2.21. Describe the reasons why effective communication is important, and the methods used for communicating effectively

UNIT LAT3-011	**DIAGNOSE FAULTS, REPAIR AND MAINTAIN SCIENTIFIC OR TECHNICAL EQUIPMENT FOR WORKPLACE ACTIVITIES**
LEVEL	**3**
CREDIT VALUE	**8**
GUIDED LEARNING HOURS	**43**

Unit Overview

This unit covers the skills and knowledge needed to prove the competences required to diagnose faults, repair and maintain scientific or technical equipment for workplace activities, in accordance with approved procedures and practices. The learners 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. They will be expected to initiate and complete tasks and procedures as well as exercise autonomy and judgement within limited parameters. They will also be aware of different perspectives or approaches used within the workplace.

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

The learner's responsibilities will require them 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 they cannot personally resolve, or that are outside their permitted authority, to the relevant people. They will be expected to initiate and complete tasks and procedures, including, where relevant, taking responsibility for supervising or guiding others. They will be expected to exercise autonomy and judgement within limited parameters, taking personal responsibility for their own actions and for the quality and accuracy of the work that they carry out. They will be expected to work to instructions, with a minimum of supervision, either on their own or as part of a team

The learner's underpinning knowledge will enable them 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. They will be able to interpret and evaluate relevant workplace information and ideas. They 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.

The learner will understand the safety precautions required when carrying out scientific or technical activities. They will be required to demonstrate safe working practices throughout, and will understand the responsibility they owe to themselves and others in the workplace.

Assessment Guidance and Evidence Requirements

The learner should provide evidence to meet all the required knowledge and understanding within this unit. This could be provided through different types of evidence and assessment methods, for example learner statements, questioning and professional discussion which should be recorded for verification.

Competence will be demonstrated by the learner achieving all Assessment Criteria, and providing a range of supporting evidence which may include observation reports, learner statements, witness statements, product of work, etc.

The Evidence Requirements for this unit are identified in the Assessment Criteria.

This unit must be assessed in a work environment and is subject to the requirements set out in the Assessment Strategy given in this Qualification Handbook.

Learning Outcome and Assessment Criteria

Learning outcomes The learner will:	Assessment criteria The learner can:
1. Diagnose faults, repair and maintain scientific or technical equipment for workplace activities	1.1. Ensure that their work is carried out in accordance with workplace procedures 1.2. Use safe practices and the appropriate personal protection equipment (PPE) when performing scientific or technical activities 1.3. Carry out all of the following operations: • Adhere to procedures or systems in place for risk assessment, COSHH, use of personal protective equipment, electricity at work and other relevant safety regulations • Ensure the safe isolation of scientific or technical equipment (such as electrical and fluids supply) • Follow manufacturers' instructions, drawings and procedures for repair or maintenance • Check that the tools and equipment used are in a safe and usable condition • Ensure that the scientific or technical equipment is kept free from foreign objects, dirt or other contamination • Carry out auditory and visual checks on the operation of the equipment • Identify fault and isolate components where appropriate to determine the corrective action • Confirm that the equipment is ready for use • Return all repair and maintenance tools, equipment and waste to the correct locations on completion of the activities • Ensure that accurate, complete and legible records are kept of the repair and maintenance activities 1.4. Confirm that the scientific or technical equipment is in a safe and usable condition, according to established procedures 1.5. Identify accurately any equipment faults or problems and report those outside their control to the relevant people 1.6. Identify and interpret the required information from the manufacturers' instructions and diagrams, in accordance with established operating procedure 1.7. Employ the appropriate test equipment and measurement to locate the source of the fault 1.8. Perform repair or maintenance in accordance with manufacturers' instructions, diagrams and relevant health and safety procedures

	1.9. Carry out maintenance and cleaning on two of the following scientific or technical categories: • Biological equipment and/or instruments • Chemical equipment and/or instruments • Electronic equipment and/or instruments • Weighing and measuring equipment and/or instruments • Information technology equipment • Engineering machines, equipment and/or instruments • Other technical equipment or instruments 1.10. Organise the repair of defective equipment when other specialists are required 1.11. Dispose of defective equipment that is beyond repair, in accordance with workplace procedures 1.12. Test and confirm that the equipment is operating correctly, within calibration specifications, in accordance with workplace procedures 1.13. Maintain records of repairs, maintenance and checks completed in accordance with workplace procedures 1.14. Communicate the required information about the work done, in accordance with departmental and organisational procedures 1.15. Record and communicate details of work done, to the appropriate people, using: • Verbal report Plus one method from the following: • Written or typed report • Specific workplace documentation • Computer-based record • Electronic mail
2. Know how to diagnose faults, repair and maintain scientific or technical equipment for workplace activities	2.1. Describe the health and safety requirements of the area in which they are carrying out the scientific or technical activities 2.2. Describe the implications of not taking account of legislation, regulations, standards and guidelines when conducting scientific or technical activities 2.3. Describe the scientific or technical techniques and processes they must use correctly in the workplace 2.4. Explain the importance of wearing protective clothing, gloves and eye protection for scientific or technical activities 2.5. Explain the importance of correct identification, and any unique workplace coding system 2.6. Describe the organisational requirements for maintaining the security of the workplace (e.g. access or aseptic conditions) 2.7. Describe the lines of communication and responsibilities in their department, and their links with the rest of the organisation

	2.8. Describe the limits of their own authority and to whom they should report if they have problems that they cannot resolve 2.9. Describe the manufacturers' specifications and recommendations for the maintenance and calibration of the scientific or technical equipment 2.10. Describe 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 2.11. Describe the methods used for visually checking, and cleaning, of scientific or technical equipment 2.12. Describe the different types, condition and quantities of consumables required for the range of scientific or technical equipment maintained 2.13. Describe the methods for maintaining personal health and safety during the maintenance of equipment 2.14. Describe the methods for maintaining personal hygiene 2.15. Explain how to check that the scientific or technical equipment is working correctly and in accordance with the manufacturer's specifications 2.16. Explain how to evaluate the different types of equipment fault, and how these must be dealt with 2.17. Explain how to use appropriate tools and equipment to locate the source of a fault or carry out maintenance activities 2.18. Describe the procedures to be followed to investigate faults or maintenance activities 2.19. Describe the department or person to whom equipment faults should be reported 2.20. Describe the methods used for keeping records of the maintenance, cleaning and calibration of scientific or technical equipment, and why this is important 2.21. Describe the procedure for the disposal of any waste produced and any equipment beyond repair 2.22. Describe the document control and reporting procedures that should be used 2.23. Explain the reasons why effective communication is important, and the methods used for communicating effectively

UNIT LSC3-015	**MEASURING, WEIGHING AND PREPARING COMPOUNDS AND SOLUTIONS FOR LABORATORY USE**
LEVEL	**3**
CREDIT VALUE	**16**
GUIDED LEARNING HOURS	**66**

Unit Overview

This unit covers the skills and knowledge needed to prove the competences required to measure, weigh and prepare compounds and solutions for laboratory investigations. Prior to undertaking the laboratory activity, and in accordance with approved procedures and practices, the learner will be required to carry out all the necessary preparations, within the scope of their responsibility. This may include preparing the work area and ensuring that it is in a safe condition to carry out the intended activities, and ensuring that any materials, equipment or other resources required are available and are in a safe and usable condition. The learner will be required to work to the relevant standard operating procedures, legislation and organisational policy, and to follow Good Laboratory Practice (GLP) and/or Good Clinical Practice (GCP)/Good Manufacturing Practice (GMP). The learner will also be required to present records and details of their laboratory work to the appropriate people.

On completion of the laboratory activity, the learner will be required to return their immediate work area to an acceptable condition before undertaking further work. This may involve putting processed paperwork in the correct location, returning and/or storing any materials and equipment in the correct area, identifying any waste and arranging for its disposal, and reporting any defects or damage to the materials and equipment used.

The learner's responsibilities will require them to comply with organisational policy and procedures for the measuring, weighing and preparations undertaken, and to report any problems with the activities, materials or equipment that they cannot personally resolve or that are outside their permitted authority, to the relevant people. The learner will work with a minimum of supervision, either on their own or as part of a team, whilst taking responsibility for their own actions and for the quality and accuracy of the work that they carry out.

The learner's underpinning knowledge will provide a good understanding of their work, and will provide an informed approach to measuring, weighing and preparing compounds and solutions in a laboratory environment. The learner will understand the importance of doing this work efficiently and effectively, and will know what to consider when preparing and tidying up the work area before and after the measuring, weighing and preparation activities. The learner will also know how to deal with problems, and how to achieve their work objectives and targets, in adequate depth to provide a sound basis for carrying out the activities safely and correctly.

The learner will understand the safety precautions required when carrying out laboratory activities. The learner will be required to demonstrate safe working practices throughout, and will understand the responsibility they owe to themselves and others in the workplace.

Assessment Guidance and Evidence Requirements

The learner should provide evidence to meet all the required knowledge and understanding within this unit. This could be provided through different types of evidence and assessment methods, for example learner statements, questioning and professional discussion which should be recorded for verification.

Competence will be demonstrated by the learner achieving all Assessment Criteria, and providing a range of supporting evidence which may include observation reports, learner statements, witness statements, product of work, etc.

The Evidence Requirements for this unit are identified in the Assessment Criteria.

This unit must be assessed in a work environment and is subject to the requirements set out in the Assessment Strategy given in this Qualification Handbook.

Learning Outcome and Assessment Criteria

Learning outcomes The learner will:	Assessment criteria The learner can:
1. Measure, weigh and prepare compounds and solutions for laboratory use	1.1. Ensure that their work is carried out in accordance with standard operating procedures 1.2. Wear the appropriate personal protection equipment (PPE) when handling materials 1.3. Use three of the following types of protective clothing and equipment: • Laboratory coat • Face mask • Gloves • Safety glasses • Other (please specify) 1.4. Use laboratory scales for accurately weighing out materials, using metric/imperial measures 1.5. Carry out weighing activities using balances (scales), using two of the following accuracies: • Grams • Milligrams • Micrograms 1.6. Measure out aliquots of solutions, using four of the following: • Automated pipettes • Graduated/bulb pipettes • Syringes • Graduated cylinders/beakers/tubes • Burettes • Volumetric flasks • Other (please specify) 1.7. Accurately measure pH and conductivity of solutions in the laboratory, using correctly calibrated meters 1.8. Measure out aliquots of liquids into tubes and microtrays for laboratory use and analysis 1.9. Measure liquids and solids for laboratory use and analysis 1.10. Measure pH and/or conductivity, using two of the following: • Handheld pH meter • Bench top pH meter • Combined pH/conductivity meter • Conductivity meter • Other (please specify)

	1.11. Calibrate or check the calibration for two of the following: • pH meter • Balance • Conductivity meter • Pipettes • Other(please specify) 1.12. Calculate the concentrations of solutions, the amounts and volumes required, using four of the following: • Moles per litre • Grams per litre • Parts per million • Mass percent • Other (please specify) 1.13. Make up known volumes of solutions to a specified concentration, using both of the following: • By measuring and dissolving the correct amount of solute in the correct volume of diluent/solvent • By dilution from a concentrated stock solution 1.14. Weigh and prepare three of the following types of compound or solution: • Powders/granulations that do not readily lose or gain weight (moisture or solvent) • Solids that readily lose or gain weight (moisture or solvent) • Liquid samples (by difference) • Liquid samples (direct) 1.15. Communicate the required information about the work done, to authorised people, in accordance with departmental and organisational procedures 1.16. Record details of work done, and communicate the details to the appropriate people, using: • Verbal report Plus one method from the following: • Written or typed report (e.g. laboratory notebook) • Specific company documentation • Computer-based record • Electronic mail
2. Know how to measure, weigh and prepare compounds and solutions for laboratory use	2.1. Describe the health and safety requirements of the area in which they are carrying out the laboratory activities 2.2. Describe the implications of not taking account of legislation, regulations, standards and guidelines when conducting laboratory activities 2.3. Describe the principles of Good Laboratory Practice (GLP) and/or Good Clinical Practice (GCP)/Good Manufacturing Practice (GMP) applied in the workplace 2.4. Describe the importance of wearing protective clothing, gloves and eye protection when handling specimens/samples

	2.5. Describe the importance of correct identification, and any unique organisational or laboratory numbers 2.6. Describe the lines of communication and responsibilities in their department, and their links with the rest of the organisation 2.7. Describe the limits of their own authority and to whom they should report if they have problems that they cannot resolve 2.8. Explain how to calculate mass/mole calculations in metric and/or imperial measures 2.9. Explain how to select the appropriate balance and scale for less than 100mg, 100mg to 5g, and 5g and above 2.10. Explain how to check that a pipette is clean, dry, free of chips and ready for use 2.11. Explain how to check the calibration on a pipette 2.12. Explain how to calibrate and check the calibration on a pH meter 2.13. Explain how to calibrate and check the calibration on a balance 2.14. Explain how to calibrate and check the calibration on a conductivity meter 2.15. Explain how to measure and weigh solids and liquids for laboratory use 2.16. Explain how to convert between different units of concentration (such as moles/litre, grams/litre, percent mass per volume and parts per million) 2.17. Explain how to calculate dilution factors and dilution volumes to make solutions from concentrated stock solutions 2.18. Describe the pH scale as a logarithmic scale for the measurement of the acidity of aqueous solutions, and the importance of pH to biological systems and processes 2.19. Explain how to choose the appropriate measuring equipment for the scale, accuracy and precision required for the task 2.20. Explain how to clean and maintain the pipettes, balances, pH meter probes and conductivity meter probes

OPTION GROUP B

UNIT LAT3-013	**MAINTAIN AND CONTROL STOCKS OF ALL RESOURCES, EQUIPMENT AND CONSUMABLES FOR SCIENTIFIC OR TECHNICAL ACTIVITIES**
LEVEL	**3**
CREDIT VALUE	**4**
GUIDED LEARNING HOURS	**23**

Unit Overview

This unit covers the skills and knowledge needed to prove the competences required to maintain and control stocks of all resources, equipment and consumables for workplace scientific or technical activities, in accordance with approved procedures and practices. The learner 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. They will be expected to initiate and complete tasks and procedures as well as exercise autonomy and judgement within limited parameters. They will also be aware of different perspectives or approaches used within the workplace.

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

The learner's responsibilities will require them 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 they cannot personally resolve, or that are outside their permitted authority, to the relevant people. They will be expected to initiate and complete tasks and procedures, including, where relevant, taking responsibility for supervising or guiding others. They will be expected to exercise autonomy and judgement within limited parameters, taking personal responsibility for their own actions and for the quality and accuracy of the work that they carry out. They will be expected to work to instructions, with a minimum of supervision, either on their own or as part of a team

The learner's underpinning knowledge will enable them 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. They will be able to interpret and evaluate relevant workplace information and ideas. They 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.

The learner will understand the safety precautions required when carrying out scientific or technical activities. They will be required to demonstrate safe working practices throughout, and will understand the responsibility they owe to themselves and others in the workplace.

Assessment Guidance and Evidence Requirements

The learner should provide evidence to meet all the required knowledge and understanding within this unit. This could be provided through different types of evidence and assessment methods, for example learner statements, questioning and professional discussion which should be recorded for verification.

Competence will be demonstrated by the learner achieving all Assessment Criteria, and providing a range of supporting evidence which may include observation reports, learner statements, witness statements, product of work, etc.

The Evidence Requirements for this unit are identified in the Assessment Criteria.

This unit must be assessed in a work environment and is subject to the requirements set out in the Assessment Strategy given in this Qualification Handbook.

Learning Outcome and Assessment Criteria

Learning outcomes The learner will:	Assessment criteria The learner can:
1. Maintain and control stocks of all resources, equipment and consumables for scientific or technical activities	1.1. Ensure that their work is carried out in accordance with workplace procedures 1.2. Use safe practices and the appropriate personal protection equipment (PPE) when performing scientific or technical activities 1.3. Check stock levels for three of the following: • Chemicals • Glassware • Consumables • Equipment • Other (please specify) 1.4. Count stocks and confirm that they are within the maximum/minimum levels required for the scientific or technical activities 1.5. Check the packaging information on individual stock items, and confirm that critical details are within acceptable limits 1.6. Check four of the following for stock items: • Batch numbers • Expiry dates • Quantities • Delivery dates • Hazard labels • Safety data sheets • Volumes • Weights • Good received condition 1.7. Identify, record and communicate requirements to replenish stocks at specified re-order levels 1.8. Check new stocks received against delivery notes; label and store items in the correct environment and location 1.9. Correctly handle and transport stock items, using the appropriate methods and techniques 1.10. Handle and transport all of the following types of material: • Chemical • Equipment • Heavy/bulky items 1.11. Transport stock using all the following methods: • Manual handling • Moving aids (e.g. trolley) • With assistance from others

	1.12. Check stock items held in four of the following storage environments: • Ambient temperature locations • Refrigerators/freezers • Zero or low light locations • Hazardous chemical locations • Equipment locations • Consumable item locations • Secure locations 1.13. Dispose, in the appropriate manner and locations, of stock or items that are damaged or outside acceptable limits for scientific or technical use 1.14. Access and update records for stock levels in the information system 1.15. Access and update scientific or technical information system data for all of the following: • Booking items out from stock • Booking items into stock • Stock check levels 1.16. Communicate the required information about the work done, in accordance with departmental and organisational procedures 1.17. Record and communicate details of work done, to the appropriate people, using: • Verbal report Plus one method from the following: • Written or typed report • Specific workplace documentation • Computer-based record • Electronic mail
2. Know how to maintain and control stocks of all resources, equipment and consumables for scientific or technical activities	2.1. Describe the health and safety requirements of the area in which they are carrying out the scientific or technical activities 2.2. Describe the implications of not taking account of legislation, regulations, standards and guidelines when conducting scientific or technical activities 2.3. Describe the scientific or technical techniques and processes they must use correctly in the workplace 2.4. Explain the importance of wearing protective clothing, gloves and eye protection for scientific or technical activities 2.5. Explain the importance of correct handling techniques and aids when moving chemicals, materials, equipment and consumables 2.6. Explain the importance of correct identification, and any unique workplace coding system 2.7. Describe the organisational requirements for maintaining the security of the workplace (e.g. access or aseptic conditions)

	2.8. Describe the lines of communication and responsibilities in their department, and their links with the rest of the organisation 2.9. Describe the limits of their own authority and to whom they should report if they have problems that they cannot resolve 2.10. Explain why it is important to maintain accurate records for stocks of chemicals, materials, equipment and consumables 2.11. Describe the types and range of chemical, materials, equipment and consumables used, and how they have to be checked 2.12. Explain how to check the packaging information on stock (such as batch numbers and expiry dates) 2.13. Explain how and why it is important to identify materials or chemicals that should not be stored together 2.14. Describe the range of storage environments used to store chemicals, materials, equipment and consumables for use 2.15. Explain how to label new stock items correctly, and how to record the information in the information systems 2.16. Explain where and how stock items should be stored so they remain suitable for use 2.17. Explain how to monitor and control stock levels for all resources 2.18. Explain how to dispose of waste or damaged stock items, in accordance with workplace procedures 2.19. Explain how to resolve issues with receiving damaged or incomplete replacement stock 2.20. Describe the document control and reporting procedures that should be used 2.21. Explain the reasons why effective communication is important, and the methods used for communicating effectively

UNIT LAT3-014	**MAKE PRESENTATIONS FOR SCIENTIFIC OR TECHNICAL ACTIVITIES IN THE WORKPLACE**
LEVEL	**3**
CREDIT VALUE	**6**
GUIDED LEARNING HOURS	**36**

Unit Overview

This unit covers the skills and knowledge needed to prove the competences required to make presentations for scientific or technical activities in the workplace, in accordance with approved procedures and practices. The learner 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. They will be expected to initiate and complete tasks and procedures as well as exercise autonomy and judgement within limited parameters. They will also be aware of different perspectives or approaches used within the workplace.

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

The learner's responsibilities will require them 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 they cannot personally resolve, or that are outside their permitted authority, to the relevant people. They will be expected to initiate and complete tasks and procedures, including, where relevant, taking responsibility for supervising or guiding others. They will be expected to exercise autonomy and judgement within limited parameters, taking personal responsibility for their own actions and for the quality and accuracy of the work that they carry out. They will be expected to work to instructions, with a minimum of supervision, either on their own or as part of a team

The learner's underpinning knowledge will enable them 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. They will be able to interpret and evaluate relevant workplace information and ideas. They 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.

The learner will understand the safety precautions required when carrying out scientific or technical activities. They will be required to demonstrate safe working practices throughout, and will understand the responsibility they owe to themselves and others in the workplace.

Assessment Guidance and Evidence Requirements

The learner should provide evidence to meet all the required knowledge and understanding within this unit. This could be provided through different types of evidence and assessment methods, for example learner statements, questioning and professional discussion which should be recorded for verification.

Competence will be demonstrated by the learner achieving all Assessment Criteria, and providing a range of supporting evidence which may include observation reports, learner statements, witness statements, product of work, etc.

The Evidence Requirements for this unit are identified in the Assessment Criteria.

This unit must be assessed in a work environment and is subject to the requirements set out in the Assessment Strategy given in this Qualification Handbook.

Learning Outcome and Assessment Criteria

Learning outcomes **The learner will:**	**Assessment criteria** **The learner can:**
1. Make presentations for scientific or technical activities in the workplace	1.1. Ensure that their work is carried out in accordance with workplace procedures 1.2. Use safe practices and the appropriate personal protection equipment (PPE) when performing scientific or technical activities 1.3. Complete all of the following for planning and delivering the presentation: • Plan the presentation in a logical and structured way for the brief • Prepare the content to meet the needs of the target audience • Rehearse the presentation and amend as appropriate for the content and delivery timescale • Prepare supporting materials (such as, handouts, copies of slides) • Prepare answers to anticipated questions • Use the equipment correctly to deliver the planned presentation • Answer audience questions • Issue the appropriate handouts to the audience following the presentation 1.4. Work safely at all times, complying with health and safety and other relevant regulations and guidelines 1.5. Establish the scope and purpose of the development/research presentation to be delivered 1.6. Determine quality, cost and delivery issues, and the resources needed to deliver the presentation 1.7. Present the data in an appropriate format and structure for the audience 1.8. Obtain appropriate equipment, facilities and resources, and verify its fitness for purpose 1.9. Ensure the venue and equipment are suitable and in good order for the presentation 1.10. Deliver the prepared presentation in the correct media for the audience 1.11. Deliver presentations to both of the following audiences: • Small groups • Large groups 1.12. Make presentations for two of the following scientific or technical activities: • Providing scientific or technical support • Demonstration of equipment or a system • Review of skills or techniques • Curriculum/training activity or investigation • Demonstration of a new/existing process • Team leading/coaching • Other (please specify)

	1.13. Ensure that the audience has the appropriate post-presentation media to support the presentation 1.14. Communicate the required information about the work done, in accordance with departmental and organisational procedures 1.15. Record and communicate details of work done, to the appropriate people, using: • Verbal report Plus one method from the following: • Written or typed report • Specific workplace documentation • Computer-based record • Electronic mail
2. Know how to make presentations for scientific or technical activities in the workplace	2.1. Describe the health and safety requirements of the area in which they are carrying out the scientific or technical activities 2.2. Describe the implications of not taking account of legislation, regulations, standards and guidelines when conducting scientific or technical activities 2.3. Describe the scientific or technical techniques and processes they must use correctly in the workplace 2.4. Explain the importance of wearing protective clothing, gloves and eye protection for scientific or technical activities 2.5. Explain the importance of correct identification, and any unique workplace coding system 2.6. Describe the organisational requirements for maintaining the security of the workplace (e.g. access or aseptic conditions) 2.7. Describe the lines of communication and responsibilities in their department, and their links with the rest of the organisation 2.8. Describe the limits of their own authority and to whom they should report if they have problems that they cannot resolve 2.9. Describe the different types of audience and their scientific or technical information needs 2.10. Explain how to gather relevant and accurate information for the presentation 2.11. Describe the purpose of the presentation and the key messages to be delivered 2.12. Explain how to ensure the content of the presentation is balanced and accurate 2.13. Describe the time available to make presentations 2.14. Describe the advantages and disadvantages of different methods of presentation delivery 2.15. Describe the materials that are appropriate to support presentations (such as handouts, samples, scientific or technical equipment)

	2.16. Explain how to use the presentation equipment correctly 2.17. Describe the scientific or technical questions they might expect to receive as a result of the presentation 2.18. Explain how to judge the effectiveness of the presentation 2.19. Describe the factors that can affect or influence the impact of a presentation (such as room configuration, audio-visual systems, dress code) 2.20. Describe the venue health and safety considerations to be taken into account at any presentation 2.21. Explain the reasons why effective communication is important, and the methods used for communicating effectively

UNIT LAT3-015	**ASSESS THEIR OWN SCIENTIFIC OR TECHNICAL KNOWLEDGE AND SKILLS FOR WORKPLACE ACTIVITIES**
LEVEL	**3**
CREDIT VALUE	**4**
GUIDED LEARNING HOURS	**23**

Unit Overview

This unit covers the skills and knowledge needed to prove the competences required to assess their own scientific or technical knowledge and skills for workplace activities, in accordance with approved procedures and practices. The learner 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. They will be expected to initiate and complete tasks and procedures as well as exercise autonomy and judgement within limited parameters. They will also be aware of different perspectives or approaches used within the workplace.

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

The learner's responsibilities will require them 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 they cannot personally resolve, or that are outside their permitted authority, to the relevant people. They will be expected to initiate and complete tasks and procedures, including, where relevant, taking responsibility for supervising or guiding others. They will be expected to exercise autonomy and judgement within limited parameters, taking personal responsibility for their own actions and for the quality and accuracy of the work that they carry out. They will be expected to work to instructions, with a minimum of supervision, either on their own or as part of a team

The learner's underpinning knowledge will enable them 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. They will be able to interpret and evaluate relevant workplace information and ideas. They 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.

The learner will understand the safety precautions required when carrying out scientific or technical activities. They will be required to demonstrate safe working practices throughout, and will understand the responsibility they owe to themselves and others in the workplace.

Assessment Guidance and Evidence Requirements

The learner should provide evidence to meet all the required knowledge and understanding within this unit. This could be provided through different types of evidence and assessment methods, for example learner statements, questioning and professional discussion which should be recorded for verification.

Competence will be demonstrated by the learner achieving all Assessment Criteria, and providing a range of supporting evidence which may include observation reports, learner statements, witness statements, product of work, etc.

The Evidence Requirements for this unit are identified in the Assessment Criteria.

This unit must be assessed in a work environment and is subject to the requirements set out in the Assessment Strategy given in this Qualification Handbook.

Learning Outcome and Assessment Criteria

Learning outcomes **The learner will:**	**Assessment criteria** **The learner can:**
1. Assess their own scientific or technical knowledge and skills for workplace activities	1.1. Ensure that their work is carried out in accordance with workplace procedures 1.2. Use safe practices and the appropriate personal protection equipment (PPE) when performing scientific or technical activities 1.3. Identify and agree the scientific or technical requirements of their role in the workplace 1.4. Discuss and agree personal work objectives and how they will measure progress 1.5. Discuss and agree workplace performance with one of the following people: • Supervisor • Manager • Team leader • Head of department • Health and safety officer • Teacher or trainer 1.6. Agree scientific or technical work objectives that are all the following: • Specific • Measureable • Achievable • Realistic • Time-bound 1.7. Identify any scientific or technical knowledge, understanding and skills gaps for their workplace role 1.8. Discuss and agree a development plan to address any identified knowledge, understanding and skills gaps 1.9. Undertake agreed development actions and evaluate how they have contributed to their improved performance 1.10. Obtain regular feedback on their scientific or technical performance to meet workplace requirements and milestones 1.11. Work safely at all times, complying with health and safety, environmental and other relevant regulations and guidelines 1.12. Communicate the required information about the work done, in accordance with departmental and organisational procedures 1.13. Record and communicate details of work done, to the appropriate people, using: • Verbal report Plus one method from the following: • Written or typed report • Specific workplace documentation • Computer-based record • Electronic mail

2. Know how to assess their own scientific or technical knowledge and skills for workplace activities	2.1. Describe the health and safety requirements of the area in which they are carrying out the scientific or technical activities 2.2. Describe the implications of not taking account of legislation, regulations, standards and guidelines when conducting scientific or technical activities 2.3. Describe the scientific or technical techniques and processes they must use correctly in the workplace 2.4. Explain the importance of wearing protective clothing, gloves and eye protection for scientific or technical activities 2.5. Explain the importance of correct identification, and any unique workplace coding system 2.6. Describe the organisational requirements for maintaining the security of the workplace (e.g. access or aseptic conditions) 2.7. Describe the lines of communication and responsibilities in their department, and their links with the rest of the organisation 2.8. Describe the limits of their own authority and to whom they should report if they have problems that they cannot resolve 2.9. Explain how to identify and assess the scientific or technical requirements of a work role 2.10. Describe the different ways in which they are set their agreed personal work objectives 2.11. Explain how to assess and identify gaps in their current scientific or technical knowledge, understanding and skills 2.12. Explain how to measure their progress against scientific or technical work objectives 2.13. Describe the type of development activities that can be undertaken to address identified scientific or technical gaps in knowledge, understanding and skills 2.14. Explain how to identify development needs to address any gaps between the requirements of their work role and their current scientific or technical knowledge, understanding and skills 2.15. Explain how to identify whether/how development activities have contributed to their performance 2.16. Explain the reasons why effective communication is important, and the methods used for communicating effectively

UNIT LAT3-016	**PROVIDE TRAINING FOR SCIENTIFIC OR TECHNICAL ACTIVITIES IN THE WORKPLACE**
LEVEL	**3**
CREDIT VALUE	**8**
GUIDED LEARNING HOURS	**52**

Unit Overview

This unit covers the skills and knowledge needed to prove the competences required to provide training for scientific or technical activities in the workplace, in accordance with approved procedures. The learner 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. They will be expected to initiate and complete tasks and procedures as well as exercise autonomy and judgement within limited parameters. They will also be aware of different perspectives or approaches used within the workplace.

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

The learner's responsibilities will require them 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 they cannot personally resolve, or that are outside their permitted authority, to the relevant people. They will be expected to initiate and complete tasks and procedures, including, where relevant, taking responsibility for supervising or guiding others. They will be expected to exercise autonomy and judgement within limited parameters, taking personal responsibility for their own actions and for the quality and accuracy of the work that they carry out. They will be expected to work to instructions, with a minimum of supervision, either on their own or as part of a team

The learner's underpinning knowledge will enable them 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. They will be able to interpret and evaluate relevant workplace information and ideas. They 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.

The learner will understand the safety precautions required when carrying out scientific or technical activities. They will be required to demonstrate safe working practices throughout, and will understand the responsibility they owe to themselves and others in the workplace.

Assessment Guidance and Evidence Requirements

The learner should provide evidence to meet all the required knowledge and understanding within this unit. This could be provided through different types of evidence and assessment methods, for example learner statements, questioning and professional discussion which should be recorded for verification.

Competence will be demonstrated by the learner achieving all Assessment Criteria, and providing a range of supporting evidence which may include observation reports, learner statements, witness statements, product of work, etc.

The Evidence Requirements for this unit are identified in the Assessment Criteria.

This unit must be assessed in a work environment and is subject to the requirements set out in the Assessment Strategy given in this Qualification Handbook.

Learning Outcome and Assessment Criteria

Learning outcomes **The learner will:**	**Assessment criteria** **The learner can:**
1. Provide training for scientific or technical activities in the workplace	1.1. Ensure that their work is carried out in accordance with workplace procedures 1.2. Use safe practices and the appropriate personal protection equipment (PPE) when performing scientific or technical activities 1.3. Discuss the training and instruction activities needed with the relevant person or persons 1.4. Discuss training activities with: • Trainee Plus one of the following: • Supervisor • Manager • Team leader • Head of department • Technical expert • Training provider • Training coordinator • Head teacher 1.5. Analyse the training needs of the individuals to be trained 1.6. Assess and manage risks associated with the training and instruction to be delivered 1.7. Select and prepare training and instruction resources to deliver these activities 1.8. Carry out training for two of the following people: • Trainee technician • Technician • Newly qualified person • Teacher • Trainer 1.9. Select and prepare four of the following training requirements: • Induction • Risk assessment • Curriculum/course modification • Equipment • Appraisal or CPD review • Resources/worksheets • Problem solving task • Scientific or technical technique • Off-site activity • Organisation policy change • Department directives 1.10. Evaluate and review trainee progress during the training process 1.11. Monitor and refine training activities to improve the trainee's attainment of required scientific or technical skills

	1.12. Communicate the required information about the work done, in accordance with departmental and organisational procedures 1.13. Record and communicate details of work done, to the appropriate people, using: • Verbal report Plus one method from the following: • Written or typed report • Specific workplace documentation • Computer-based record • Electronic mail
2. Know how to provide training for scientific or technical activities in the workplace	2.1. Describe the health and safety requirements of the area in which they are carrying out the scientific or technical activities 2.2. Describe the implications of not taking account of legislation, regulations, standards and guidelines when conducting scientific or technical activities 2.3. Describe the scientific or technical techniques and processes they must use correctly in the workplace 2.4. Explain the importance of wearing protective clothing, gloves and eye protection for scientific or technical activities 2.5. Explain the importance of correct identification, and any unique workplace coding system 2.6. Describe the organisational requirements for maintaining the security of the workplace (e.g. access or aseptic conditions) 2.7. Describe the lines of communication and responsibilities in their department, and their links with the rest of the organisation 2.8. Describe the limits of their own authority and to whom they should report if they have problems that they cannot resolve 2.9. Explain how to assess the scientific or technical skills of new trainees 2.10. Explain how to conduct a training needs analysis 2.11. Describe the checks to be made to ensure trainees can learn safely and apply job skills in the workplace 2.12. Explain how to identify and deliver a training plan for trainees 2.13. Explain how to give trainees on-the-job instruction and supervising their work 2.14. Explain how to assess the trainee's progress in acquiring and applying job skills and skills in working with others 2.15. Explain how to gather trainee feedback on their progress and achievements 2.16. Describe the methods used for giving the training feedback on their progress and achievements 2.17. Describe the procedures for keeping training records

	2.18. Describe the procedures for reporting trainees' progress and update performance and development records 2.19. Explain how to work with colleagues and make use of unplanned opportunities 2.20. Explain how to ensure resources are available for training and timescales are realistic 2.21. Explain how to ensure they show fairness, integrity and consistency in their decision making 2.22. Explain what is meant by SMART (specific, measurable, achievable, realistic and time-bound) learning objectives 2.23. Explain how to evaluate effectiveness of training completed and feedback to the relevant people 2.24. Describe the organisational requirements for maintaining the security and confidentiality of any training records kept 2.25. Describe the document control and reporting procedures that should be used 2.26. Explain the reasons why effective communication is important, and the methods used for communicating effectively

UNIT LAT3-017	**PROVIDE SCIENTIFIC OR TECHNICAL LEADERSHIP FOR A WORKPLACE TEAM**
LEVEL	**3**
CREDIT VALUE	**16**
GUIDED LEARNING HOURS	**83**

Unit Overview

This unit covers the skills and knowledge needed to prove the competences required to provide scientific or technical leadership for a workplace team, in accordance with approved procedures and practices. The learner 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. They will be expected to initiate and complete tasks and procedures as well as exercise autonomy and judgement within limited parameters. They will also be aware of different perspectives or approaches used within the workplace.

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

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

The learner's underpinning knowledge will enable them to use factual, procedural and theoretical understanding to complete workplace tasks and address problems that, whilst well defined, may be complex and non-routine. They will be able to interpret and evaluate relevant workplace information and ideas. They 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.

The learner will understand the safety precautions required when carrying out scientific or technical activities. They will be required to demonstrate safe working practices throughout, and will understand the responsibility they owe to themselves and others in the workplace.

Assessment Guidance and Evidence Requirements

The learner should provide evidence to meet all the required knowledge and understanding within this unit. This could be provided through different types of evidence and assessment methods, for example learner statements, questioning and professional discussion which should be recorded for verification.

Competence will be demonstrated by the learner achieving all Assessment Criteria, and providing a range of supporting evidence which may include observation reports, learner statements, witness statements, product of work, etc.

The Evidence Requirements for this unit are identified in the Assessment Criteria.

This unit must be assessed in a work environment and is subject to the requirements set out in the Assessment Strategy given in this Qualification Handbook.

Learning Outcome and Assessment Criteria

Learning outcomes **The learner will:**	**Assessment criteria** **The learner can:**
1. Provide scientific or technical leadership for a workplace team	1.1. Ensure that their work is carried out in accordance with workplace procedures 1.2. Use safe practices and the appropriate personal protection equipment (PPE) when performing scientific or technical activities 1.3. Discuss and agree their teams' workplace performance requirements with one of the following people: • Supervisor • Manager • Team leader • Head of department • Health and safety officer • Teacher or trainer 1.4. Set out and positively communicate the purpose and scientific or technical objectives of the team to all members 1.5. Agree scientific or technical work objectives with their team with targets that are all the following: • Specific • Measureable • Achievable • Realistic • Time-bound 1.6. Involve member in planning how the team will achieve its scientific or technical objectives 1.7. Ensure that each member of the team has personal work objectives and understands how achieving these will contribute to achievement of the team's objectives 1.8. Encourage and support team members to achieve their personal work objectives and those of the team 1.9. Help their team's performance with the following: • Progress against objectives for workplace activities Plus four from the following: • Technical support for a procedure • Problem diagnosis and solution • Technical advice and guidance • Introduction of new equipment • Introduction of new process • A defective product or piece of equipment • Evaluating the possible use of a new raw material within an existing process 1.10. Provide recognition when individual and team objectives have been achieved 1.11. Help individuals and the team find solutions to problems and issues with objectives and the work environment

	1.12. Provide scientific or technical information from all of the following sources: • Changes in legislation • New methods and techniques • Findings from internal activities 1.13. Use two of the following sources of support to help their team: • Scientific or technical documents • Workplace guidelines or procedures • External specialist/associate • New curriculum • Student/learner assessments • New or changes in a scheme of work 1.14. Encourage and recognise creativity and innovation within the team 1.15. Monitor progress and achievement across the team against agreed objectives for workplace activities 1.16. Work safely at all times, complying with health and safety, environmental and other relevant regulations and guidelines 1.17. Communicate the required information about the work done, in accordance with departmental and organisational procedures 1.18. Record and communicate details of work done, to the appropriate people, using: • Verbal report Plus one method from the following: • Written or typed report • Specific workplace documentation • Computer-based record • Electronic mail
2. Know how to provide scientific or technical leadership for a workplace team	2.1. Describe the health and safety requirements of the area in which they are carrying out the scientific or technical activities 2.2. Describe the implications of not taking account of legislation, regulations, standards and guidelines when conducting scientific or technical activities 2.3. Describe the scientific or technical techniques and processes they must use correctly in the workplace 2.4. Explain the importance of wearing protective clothing, gloves and eye protection for scientific or technical activities 2.5. Explain the importance of correct identification, and any unique workplace coding system 2.6. Describe the organisational requirements for maintaining the security of the workplace (e.g. access or aseptic conditions) 2.7. Describe the lines of communication and responsibilities in their department, and their links with the rest of the organisation

	2.8. Describe the limits of their own authority and to whom they should report if they have problems that they cannot resolve 2.9. Explain how to identify and assess the scientific or technical requirements of a work role 2.10. Describe the planning required for the team to achieve its workplace scientific or technical objectives 2.11. Explain how to set and monitor the personal work objectives for the team 2.12. Describe the team's scientific or technical purpose and their corresponding workplace objectives 2.13. Explain how the quality, cost and delivery targets for the team are measured 2.14. Describe the types of support and advice that team members are likely to need and how to respond to these 2.15. Describe the standards of performance for the scientific or technical work of their team and how the organisation measures them 2.16. Explain the reasons why effective communication is important, and the methods used for communicating effectively

UNIT LSC2-020	**FOLLOWING ASEPTIC PROCEDURES IN THE LABORATORY ENVIRONMENT**
LEVEL	**2**
CREDIT VALUE	**9**
GUIDED LEARNING HOURS	**51**

Unit Overview

This unit covers the skills and knowledge needed to prove the competences required to identify and follow aseptic or clean room protocols in the laboratory, in accordance with approved procedures and practices. Prior to undertaking the laboratory activity, the learner will be required to carry out all the necessary preparations within the scope of their responsibility. The learner will be required to work to the relevant standard operating procedures, legislation and organisational policy, and to follow Good Laboratory Practice (GLP) and/or Good Clinical Practice (GCP)/Good Manufacturing Practice (GMP).

The learner's responsibilities will require them to comply with any policies of their organisation in respect of preparing for work and working in aseptic or clean rooms and clean work areas. The learner will be required to report any problems with clean room procedures that they cannot personally resolve, or that are outside their permitted authority, to the relevant people. The learner will be expected to work to verbal/written instructions and standard operating procedures, with a high level of supervision, taking personal responsibility for their own actions and for the quality and accuracy of the work that they carry out. On completion of laboratory activities, the learner will be expected to discard personal protective equipment in the correct location, and in accordance with established policies and procedures.

The learner's underpinning knowledge will be sufficient to provide a sound basis for their work, and will enable them to adopt an informed approach to preparing for and working in aseptic or clean rooms. The learner will have an understanding of the attribute and behaviours required for clean room working, in adequate depth to provide a sound background for carrying out the laboratory activities to the required specification.

The learner will understand the safety precautions required when carrying out laboratory activities. The learner will be required to demonstrate safe working practices throughout, and will understand the responsibility they owe to themselves and others in the workplace.

Assessment Guidance and Evidence Requirements

The learner should provide evidence to meet all the required knowledge and understanding within this unit. This could be provided through different types of evidence and assessment methods, for example learner statements, questioning and professional discussion which should be recorded for verification.

Competence will be demonstrated by the learner achieving all Assessment Criteria, and providing a range of supporting evidence which may include observation reports, learner statements, witness statements, product of work, etc.

The Evidence Requirements for this unit are identified in the Assessment Criteria.

This unit must be assessed in a work environment and is subject to the requirements set out in the Assessment Strategy given in this Qualification Handbook.

Learning Outcome and Assessment Criteria

Learning outcomes The learner will:	Assessment criteria The learner can:
1. Follow aseptic procedures in the laboratory environment	1.1. Ensure that their work is carried out in accordance with standard operating procedures 1.2. Dress in the appropriate personal protection equipment (PPE) required for the clean room or clean work area environment, in accordance with the correct procedure 1.3. Use three of the following types of personal protective equipment for clean room working: ● Body suit ● Face mask ● Gloves ● Respirator ● Air supply ● Other (please specify) 1.4. Prior to entering clean room, carry out all of the following: ● Use the correct issue of job instructions and specifications ● Follow risk assessment procedures and COSHH regulations ● Ensure that they are appropriately dressed and uncontaminated before entering the area ● Carry out their activities in line with organisational procedures ● Store accurate records of their activities, in accordance with appropriate procedures 1.5. Carry out visual quality checks on their personal protection equipment prior to entering the working environment 1.6. Satisfy all the following company clean room/clean work area requirements: ● Use appropriate clothing/personal protective equipment (PPE) (such as suits, gowns, coats, hoods, hats, caps, helmets, other headwear, boots, overshoes, other forms of footwear, safety goggles, visors, gloves) ● Comply with hazard protection (such as breathing apparatus, gloves, apron/smock, other forms of PPE or clothing required) ● Deal appropriately with damaged or dirty clothing/PPE (such as reporting damage, replacement, safe removal and cleaning or disposal, subjected to acid/hazardous substance spills, damaged/dirty labelling) ● Store specified clothing/PPE correctly when not in use ● Ensure the proper cleaning/laundering/maintenance of clothing/PPE ● Dispose of single-use clothing and equipment in the correct location ● Report any hazards or breaches of protocol

	1.7. Follow the correct procedures for entering and exiting the clean room or clean work area 1.8. Use personal protective equipment in one of the following clean room environments: ● Health/disease screening ● Biochemical processing ● Biotechnology processing ● Drug development ● Agro-biotech research ● Other (please specify) 1.9. Follow aseptic techniques in the laboratory 1.10. Identify and follow protocol methods and procedures that satisfy all of the following: ● The safety of people ● Containment/integrity of the specimen/product ● Containment/integrity of the clean room/work area ● Appropriate industry standards and protocols 1.11. Remove personal protection equipment on completion of clean room or clean work area activities, and dispose/store in line with the correct procedure 1.12. Communicate the required information about the work done, to authorised people, in accordance with departmental and organisational procedures 1.13. Record details of the work activity, and communicate the details to the appropriate people, using: ● Verbal report Plus one method from the following: ● Written or typed report ● Specific company documentation ● Computer-based record ● Electronic mail
2. Know how to follow aseptic procedures in the laboratory environment	2.1. Describe the health and safety requirements of the area in which they are carrying out the laboratory activities 2.2. Describe the implications of not taking account of legislation, regulations, standards and guidelines when conducting laboratory activities 2.3. Describe the principles of Good Laboratory Practice (GLP) and/or Good Clinical Practice (GCP)/Good Manufacturing Practice (GMP) applied in the workplace 2.4. Describe the importance of wearing protective clothing, gloves and eye protection when handling materials (such as biochemical substances, biological pathogens and/or antigens), and the equipment used to contain and process them 2.5. Describe the manufactured materials and batch process tracking and records system

2.6. Describe the types of handling and sorting system, and the procedures used for materials undergoing processing in the laboratory facilities

2.7. Describe the importance of correct identification, and any unique organisational or laboratory numbers

2.8. Describe the organisational requirements for maintaining the security of the workplace

2.9. Describe the lines of communication and responsibilities in their department, and their links with the rest of the organisation

2.10. Describe the limits of their own authority and to whom they should report if they have problems that they cannot resolve

2.11. Describe the specific safety precautions to be taken when working in a clean room or clean work area environment

2.12. Describe the correct fitting and use of clothing and personal protective equipment that must be worn in a clean room or clean work area (such as for body, hands, eyes, ears, feet, mouth and face)

2.13. Describe the hazards associated with working in a clean room or clean work area, with laboratory equipment (such as heat, radiation, chemicals, static electricity, high voltages, trapping points on equipment)

2.14. Explain how to put on clean room clothing and footwear correctly

2.15. Describe the procedures for entering and exiting the clean room or clean work area, and the authority needed to do so

2.16. Describe the classification of the relevant clean room or clean work area, and how this impacts upon them

2.17. Describe the industry standards/classifications for clean rooms and clean work areas

2.18. Describe the company requirements for clothing and personal protective equipment, and the reasons why such clothing and equipment must be used

2.19. Describe the procedures and methods for maintaining issued clothing and personal protective equipment

2.20. Explain how to apply procedures for dealing with damaged or dirty clothing and personal protective equipment

2.21. Explain how to store clothing and personal protective equipment correctly

2.22. Describe the laundering/cleaning/maintenance procedures relating to the issued clothing and personal protective equipment

2.23. Describe the aseptic techniques that are applied and used in the laboratory

	2.24. Explain how to dispose correctly of single-use personal protective equipment 2.25. Describe the policy and procedures relating to personal items (such as body lotions, makeup, jewellery, contact lenses, footwear, own clothing)