GQA PAA\VQSET Level 2 NVQ Certificate in Laboratory and Associated Technical Activities

Industrial Science

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Centre Qualification Handbook

Competence-based Qualifications

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CONTENTS PAGE

INTRODUCTION TO THE HANDBOOK

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

This Qualification Handbook has been developed to ensure that GQA 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 2 NVQ CERTIFICATE 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 health and safety procedures; maintaining efficient and effective working relationships; and using information recording systems 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 214

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 310

Achieving the Qualification

For the Industrial Science Pathway learners must complete 6 Units.

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

Mandatory Units

Unit No.	Unit Name	Credit Value
LAT2-001	Follow health and safety procedures for scientific or technical activities	5
LAT2-003	Use information recordings systems for scientific or technical activities	6
LAT3-002	Maintain effective and efficient working relationships for scientific or technical activities	5

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
LAT2-012	Carry out simple scientific or technical tests using manual equipment	7

LAT2-013	Carry out simple scientific or technical tests using automated equipment	10
LAT2-014	Prepare scientific or technical samples for testing activities	8
LAT2-015	Carry out sampling operations for scientific or technical tests	5

Option Group B

Unit No.	Unit Name	Credit Value
LAT2-004	Carry out routine maintenance, cleaning and checking of scientific or technical equipment	6
LAT2-005	Maintain stocks of resources, equipment and consumables for scientific or technical use	4
LAT2-006	Prepare compounds and solutions for scientific or technical use	13
LSC2-020	Following aseptic procedures in the laboratory environment	9

Progression

This Certificate 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 GQA website www.GQAQualifiactions.com 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.

GQA 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 GQA. 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 GQA.

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 GQA 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 GQA.

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. GQA'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 GQA 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

LEVEL 2 NVQ CERTIFICATE IN LABORATORY AND ASSOCIATED TECHNICAL ACTIVITIES – INDUSTRIAL SCIENCE

CONTENT OF THE QUALIFICATION

MANDATORY UNITS

UNIT LAT2-001	**FOLLOW HEALTH AND SAFETY PROCEDURES FOR SCIENTIFIC OR TECHNICAL ACTIVITIES**
LEVEL	**2**
CREDIT VALUE	**5**
GUIDED LEARNING HOURS	**35**

Unit Overview

This unit covers the skills and knowledge needed to prove the competences required to follow health and safety procedures in a workplace where scientific or technical activities are performed. The learner is required to observe all legal, statutory and organisational requirements, and the learner must be able to identify any hazards and potential risks to health and safety. They must also follow workplace emergency procedures, to ensure their own safety and that of their colleagues and others. They will be required to work to the relevant standard operation procedures, legislation and organisational policy, and to use good techniques and practices.

The learner's responsibilities will require them to comply with health and safety requirements and organisational policy and procedures for the work that is undertaken. They must be able to recognise the limitations of their own competence with the work, and ask for appropriate help and advice in when it is needed. They will work under a high level of supervision, 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 an understanding of their work, in order to safely apply the appropriate scientific or technical principles and practices. They will be competent in the safe use of the materials, equipment, consumables and instruments used to perform their work activities, and with the procedures appropriate to their job. Their depth of knowledge will be sufficient to provide a sound basis for safely carrying out the scientific or technical activities, to a level that will allow the department to meet any agreed targets.

The learner will understand the safety precautions required when carrying out the scientific or technical activities for all operations and processes. They will be required to demonstrate safe working practices throughout, and will understand their responsibility for taking the necessary safeguards to protect 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 health and safety procedures for scientific or technical activities	1.1. Ensure that their work is carried out in accordance with workplace procedures 1.2. Identify health and safety standard operating procedures for all of the following: • Workplace hazards • Manual handling • Unsafe practices • VDU and RSI policies • Spillages • Other (please specify) 1.3. Follow 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. Identify any breaches to health and safety procedures and report them to the appropriate person as soon as possible 1.7. Ensure that they maintain and keep tidy their work area to a standard of health and safety which is consistent 1.8. Prepare, maintain and use equipment and materials in accordance with manufacturers' instructions and local safety regulations 1.9. Recognise hazardous materials used in their work activities 1.10. Recognise three of the following workplace hazardous substances: • 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 1.11. Follow established procedures to protect themselves and others during work activities 1.12. Follow the correct procedure when an emergency arises or is suspected

2. Know how to follow health and safety procedures 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 standard operating procedures, as set down in local operating manuals and schemes of work 2.4. Explain the importance of following manufacturers' instructions 2.5. Describe the techniques and processes they must use correctly in the workplace 2.6. Explain importance of wearing protective clothing, gloves and eye protection when handling hazardous materials 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. Identify the 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 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 local procedures for emergency evacuation (including escape routes and assembly points) 2.13. Describe the location of fire alarms call points and how to operate them 2.14. Describe the location of spillage kits, and the procedures to follow in the event of spillages of chemicals and/or biological fluids and materials 2.15. Describe the control of substances hazardous to health (COSHH) regulations, and their application in the workplace 2.16. Describe the types of hazards which may be present in the workplace and how these can be controlled 2.17. Describe the correct storage and disposal procedures for hazardous materials

	2.18. Describe the hazards associated with chemicals, radioactive substances and biological material 2.19. Describe the reasons for cleaning work surfaces and equipment 2.20. Explain why it is important to differentiate and segregate categories of waste 2.21. Describe the correct procedures for the storage, transport and disposal of waste

UNIT LAT2-003	**USE INFORMATION RECORDINGS SYSTEMS FOR SCIENTIFIC OR TECHNICAL ACTIVITIES**
LEVEL	**2**
CREDIT VALUE	**6**
GUIDED LEARNING HOURS	**48**

Unit Overview

This unit covers the skills and knowledge needed to prove the competences required to operate information recording systems for scientific or technical activities, in accordance with approved procedures and practices. The learner will be expected to select and use relevant knowledge, ideas, skills and procedures to complete well-defined tasks and address straightforward problems. They will be expected to complete tasks and procedures and exercise autonomy and judgement subject to overall direction or guidance. They will be required to work to the relevant workplace procedures, legislation and organisational policy, and to use good scientific or technical techniques and practices.

On completion of workplace activities, the learner will be required to show they have completed well-defined, generally routine tasks and address straightforward problems, selecting and using the relevant scientific or technical skills and procedures. They will be expected to show they have identified, gathered and used relevant information to inform their actions and identify how effective these 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 work under a team leader, whilst taking responsibility for their own actions in the completion of tasks and procedures, whilst exercising a degree of autonomy and judgement. They will also be responsible for the quality and accuracy of the work that they carry out.

The learner's underpinning knowledge will provide a good understanding of scientific or technical facts, procedures and ideas to complete well-defined tasks and address straightforward problems in the workplace. They will have an understanding of the workplace process used, and its application, and will know about the scientific or technical equipment, materials and consumables in adequate depth to provide a sound background for carrying out the activities to the required specification. They will know how to interpret workplace information and ideas and be aware of the types of resources that are relevant to these scientific or technical activities.

The learner will understand the safety precautions required when carrying out the 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. Use information recordings systems for scientific or technical activities	1.1. Ensure that their work is carried out in accordance with workplace procedures 1.2. Keep information systems up to date and store the information correctly and accurately 1.3. Use two of the following types of information system: • Paper based • Computer based • Telephone • Fax 1.4. Maintain the security and confidentiality of information at all times 1.5. Complete required back-up procedures regularly 1.6. Retrieve required information and distribute according to deadlines 1.7. Establish four of the following for work related activity: • Date of request • Person requesting activity • Work location • Scheme of work • Work activity requirements • Materials/resources needed 1.8. Communicate information to the relevant people when using information systems 1.9. Take appropriate action in the event of problems, to minimise hazards, waste loss of materials or resources and report to the relevant people 1.10. Resolve two of the following problems associated with work activity: • Incorrect identification of requirements • Missing information • Poor/unclear written request • Requests exceed available supply 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. Communicate information systems data with relevant people to include one of the following: • Supervisor • Manager • Team leader • Head of department • Health and safety officer • Teacher or trainer

	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 use information recordings systems 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. Describe the importance of correct identification, and any unique workplace coding system 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. Describe the skills and procedures needed to do the routine tasks and work activities allocated 2.9. Describe the importance of completing tasks and procedures to the required organisational standard 2.10. Describe the different types of information systems that can be used, including recording, filing, retrieval of information and distribution systems 2.11. Explain how to use backup systems and why they are important 2.12. Explain how to ensure the confidentiality and security of information at all times and why this is important 2.13. Explain why it is important to work within given time deadlines 2.14. Describe the methods to use for information storage and access 2.15. Explain why it is important to establish requirements accurately 2.16. Describe what documentation should be used 2.17. Describe who are the relevant people that should be supplied with the recorded information 2.18. Explain how to identify problems, and what is the appropriate action to take within the limits of their responsibility

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 workplace 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

OPTION GROUP A

UNIT LAT2-012	**CARRY OUT SIMPLE SCIENTIFIC OR TECHNICAL TESTS USING MANUAL EQUIPMENT**
LEVEL	**2**
CREDIT VALUE	**7**
GUIDED LEARNING HOURS	**59**

Unit Overview

This unit covers the skills and knowledge needed to prove the competences required to carry out simple scientific or technical tests using manual equipment, in accordance with approved procedures and practices. The learner will be expected to select and use relevant knowledge, ideas, skills and procedures to complete well-defined tasks and address straightforward problems. They will be expected to complete tasks and procedures and exercise autonomy and judgement subject to overall direction or guidance. They will be required to work to the relevant workplace procedures, legislation and organisational policy, and to use good scientific or technical techniques and practices.

On completion of workplace activities, the learner will be required to show they have completed well-defined, generally routine tasks and can address straightforward problems, selecting and using the relevant scientific or technical skills and procedures. They will be expected to show they have identified, gathered and used relevant information to inform their actions and identify how effective these 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 work under a team leader, whilst taking responsibility for their own actions in the completion of tasks and procedures, whilst exercising a degree of autonomy and judgement. They will also be responsible for the quality and accuracy of the work that they carry out.

The learner's underpinning knowledge will provide a good understanding of scientific or technical facts, procedures and ideas to complete well-defined tasks and address straightforward problems in the workplace. They will have an understanding of the workplace process used, and its application, and will know about the scientific or technical equipment, materials and consumables in adequate depth to provide a sound background for carrying out the activities to the required specification. They will know how to interpret workplace information and ideas and be aware of the types of resources that are relevant to these scientific or technical activities.

The learner will understand the safety precautions required when carrying out the 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 simple scientific or technical tests using manual equipment	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 doing scientific or technical activities 1.3. Carry out all of the following operations for manual equipment: • Transport samples in the workplace, and store them appropriately • Select a suitable work area for the manual tests • Select and set up the necessary equipment correctly • Use the necessary quantity of sample for the manual tests • Dispose of waste safely and correctly • Ensure that the test done meet the specification for the required quality and accuracy 1.4. Obtain the appropriate equipment and materials for the manual tests required 1.5. Use one of the following resources: • Materials • Utilities 1.6. Check two of the following conditions for the scientific or technical test: • Health and safety environment • Time • Recording system • Cleanliness • External influence giving rise to variations 1.7. Conduct manual laboratory tests on samples in accordance with the correct procedures and techniques 1.8. Record the results of manual tests in accordance with workplace procedures 1.9. Dispose of waste items from manual laboratory tests in accordance with workplace procedures 1.10. Return equipment and materials that can be used for future testing to the correct storage location 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 simple scientific or technical tests using manual equipment	2.1. Explain the health and safety requirements of the area in which they are carrying out the scientific or technical activities 2.2. Explain the implications of not taking account of legislation, regulations, standards and guidelines when conducting scientific or technical activities 2.3. Explain 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. Explain the lines of communication and responsibilities in their department, and their links with the rest of the organisation 2.7. Explain the limits of their own authority and to whom they should report if they have problems that they cannot resolve 2.8. Explain the minimum size/volume of sample required for the scientific or technical tests conducted 2.9. Explain the types of sample and container used for transport and scientific or technical testing 2.10. Describe how to assess if a sample is suitable for analysis 2.11. Describe how to use and take a reading from manual test kits used in the workplace 2.12. Explain the procedure to be followed when samples do not match up with the test output specification or accompanying documentation 2.13. Explain the procedure to be followed when a broken or leaking sample is identified in the workplace 2.14. Explain the procedure to be followed if a hazardous or high risk sample was received in the workplace 2.15. Explain the methods used for numbering and labelling samples in the workplace 2.16. Explain the procedures for storing tested samples when archiving is required 2.17. Explain the factors which might adversely affect the integrity of the sample during storage or transport

UNIT LAT2-013	**CARRY OUT SIMPLE SCIENTIFIC OR TECHNICAL TESTS USING AUTOMATED EQUIPMENT**
LEVEL	**2**
CREDIT VALUE	**10**
GUIDED LEARNING HOURS	**70**

Unit Overview

This unit covers the skills and knowledge needed to prove the competences required to carry out simple scientific or technical tests using automated equipment, in accordance with approved procedures and practices. The learner will be expected to select and use relevant knowledge, ideas, skills and procedures to complete well-defined tasks and address straightforward problems. They will be expected to complete tasks and procedures and exercise autonomy and judgement subject to overall direction or guidance. They will be required to work to the relevant workplace procedures, legislation and organisational policy, and to use good scientific or technical techniques and practices.

On completion of workplace activities, the learner will be required to show they have completed well-defined, generally routine tasks and can address straightforward problems, selecting and using the relevant scientific or technical skills and procedures. They will be expected to show they have identified, gathered and used relevant information to inform their actions and identify how effective these 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 work under a team leader, whilst taking responsibility for their own actions in the completion of tasks and procedures, whilst exercising a degree of autonomy and judgement. They will also be responsible for the quality and accuracy of the work that they carry out.

The learner's underpinning knowledge will provide a good understanding of scientific or technical facts, procedures and ideas to complete well-defined tasks and address straightforward problems in the workplace. They will have an understanding of the workplace process used, and its application, and will know about the scientific or technical equipment, materials and consumables in adequate depth to provide a sound background for carrying out the activities to the required specification. They will know how to interpret workplace information and ideas and be aware of the types of resources that are relevant to these scientific or technical activities.

The learner will understand the safety precautions required when carrying out the 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 simple scientific or technical tests using automated equipment	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 doing scientific or technical activities 1.3. Carry out all of the following operations for automated equipment: • Transport samples in the workplace and store them appropriately • Seek any necessary instruction/training on the operation of the equipment, when appropriate • Check that equipment guards are in place and are correctly adjusted • Ensure that samples have been loaded correctly and are held securely • Check that the operating program for the automated equipment is at the correct start point, and that the samples are at the correct location the test • Follow the defined operating procedures for the automated equipment, and apply safe working practices and procedures at all times • Confirm with a qualified professional that equipment settings are adjusted, as and when required, to maintain the required accuracy • Confirm with a qualified professional that the test results produced meet the required specification for quality and accuracy 1.4. Confirm that the laboratory equipment is set up and ready for operation 1.5. Carry out two of the following equipment checks: • Calibration • Serviceability • Cleanliness and preparation 1.6. Check that the laboratory conditions are appropriate for the tests to be done 1.7. Check two of the following conditions for the scientific or technical test: • Health and safety environment • Time • Recording system • Cleanliness • External influence giving rise to variations 1.8. Use one of the following resources: • Materials • Utilities 1.9. Follow the defined procedures for starting and running the laboratory equipment

	1.10. Load and unload samples from laboratory equipment in accordance with procedures and analyser / equipment specifications 1.11. Deal promptly and effectively with error messages or equipment faults that are within their control and report those that cannot be solved 1.12. Monitor the equipment process and ensure that the output readings are to the required specification 1.13. Shut down the equipment to a safe condition on conclusion of the activities 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 simple scientific or technical tests using automated equipment	2.1. Explain the health and safety requirements of the area in which they are carrying out the scientific or technical activities 2.2. Explain the implications of not taking account of legislation, regulations, standards and guidelines when conducting scientific or technical activities 2.3. Explain 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. Explain the lines of communication and responsibilities in their department, and their links with the rest of the organisation 2.7. Explain the limits of their own authority and to whom they should report if they have problems that they cannot resolve 2.8. Explain the minimum size/volume of sample required for the scientific or technical tests conducted 2.9. Explain the types of sample and container used for transport and scientific or technical testing 2.10. Describe how to assess if a sample is suitable for analysis 2.11. Describe how to start and shut down the scientific or technical equipment, including what to do in an emergency

	2.12. Explain why is it important to carry out pre-test checks and identify the status of the equipment before starting tests 2.13. Describe how to load samples from the testing equipment and how to initiate sample tests 2.14. Explain the appropriate action to take when sampling or equipment errors occur 2.15. Describe how to unload samples from the test equipment, and how to store them during the testing process 2.16. Explain the procedure to be followed when samples do not match up with the test output specification or accompanying documentation 2.17. Explain the procedure to be followed when a broken or leaking sample is identified in the workplace 2.18. Explain the procedure to be followed if a hazardous or high risk sample is received in the workplace 2.19. Explain the methods used for numbering and labelling samples in the workplace 2.20. Explain the procedures for storing tested samples when archiving is required 2.21. Explain the factors which might adversely affect the integrity of the sample during storage or transport

UNIT LAT2-014 **PREPARE SCIENTIFIC OR TECHNICAL SAMPLES FOR TESTING ACTIVITIES**

LEVEL **2**

CREDIT VALUE **8**

GUIDED LEARNING HOURS **58**

Unit Overview

This unit covers the skills and knowledge needed to prove the competences required to prepare scientific or technical samples for testing, in accordance with approved procedures and practices. The learner will be expected to select and use relevant knowledge, ideas, skills and procedures to complete well-defined tasks and address straightforward problems. They will be expected to complete tasks and procedures and exercise autonomy and judgement subject to overall direction or guidance. They will be required to work to the relevant workplace procedures, legislation and organisational policy, and to use good scientific or technical techniques and practices.

On completion of workplace activities, the learner will be required to show they have completed well-defined, generally routine tasks and can address straightforward problems, selecting and using the relevant scientific or technical skills and procedures. They will be expected to show they have identified, gathered and used relevant information to inform their actions and identify how effective these 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 work under a team leader, whilst taking responsibility for their own actions in the completion of tasks and procedures, whilst exercising a degree of autonomy and judgement. They will also be responsible for the quality and accuracy of the work that they carry out.

The learner's underpinning knowledge will provide a good understanding of scientific or technical facts, procedures and ideas to complete well-defined tasks and address straightforward problems in the workplace. They will have an understanding of the workplace process used, and its application, and will know about the scientific or technical equipment, materials and consumables in adequate depth to provide a sound background for carrying out the activities to the required specification. They will know how to interpret workplace information and ideas and be aware of the types of resources that are relevant to these scientific or technical activities.

The learner will understand the safety precautions required when carrying out the 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. Prepare scientific or technical samples for 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 doing scientific or technical activities 1.3. Ensure that they establish the identity of the sample and check it's integrity 1.4. Check sample integrity against two of the following factors: • Defects • Damage • Decomposition • Homogeneity • Other (please specify) 1.5. Confirm the relevant controlled conditions for sample preparation are present 1.6. Check two of the following controlled conditions: • Health and safety environment • Time • Recording system • Cleanliness • External influence giving rise to variations 1.7. Prepare samples for scientific or technical testing in accordance with workplace procedures 1.8. Prepare samples using two of the following methods: • Grinding • Pulverising • Dividing • Mixing • Centrifuging • Filtering/sieving • Diluting • Weighing • Hydrating • Siphoning • Other (please specify) 1.9. Identify and store test samples correctly until required 1.10. Deal with any waste material in accordance with workplace procedures 1.11. Work safely at all times, complying with health and safety, environmental and other relevant regulations and guidance 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 prepare scientific or technical samples for testing activities	2.1. Explain the health and safety requirements of the area in which they are carrying out the scientific or technical activities 2.2. Explain the implications of not taking account of legislation, regulations, standards and guidelines when conducting scientific or technical activities 2.3. Explain 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. Explain the lines of communication and responsibilities in their department, and their links with the rest of the organisation 2.7. Explain the limits of their own authority and to whom they should report if they have problems that they cannot resolve 2.8. Describe what methods of sample preparation to use 2.9. Explain why the right sample preparation conditions are important 2.10. Describe how to control sample preparation conditions 2.11. Describe how to check integrity and identity of samples prepared 2.12. Explain the types of sample and container used for transport and scientific or technical testing 2.13. Explain the types of equipment used to prepare samples 2.14. Explain why it is important to carry out pre-use check and identify the status of equipment before it is used to prepare samples 2.15. Describe how to load and unload equipment used in sample preparation 2.16. Explain the procedure to be followed when samples do not match up with the accompanying documentation 2.17. Explain the procedure to be followed when a broken or leaking sample is identified in the workplace

	2.18. Explain the procedure to be followed if a hazardous or high risk sample was received in the workplace 2.19. Explain the methods used for numbering and labelling samples in the workplace 2.20. Explain the procedures for storing prepared samples when archiving is required 2.21. Explain the factors which might adversely affect the integrity of the sample during storage or transport

UNIT LAT2-015 **CARRY OUT SAMPLING OPERATIONS FOR SCIENTIFIC OR TECHNICAL TESTS**

LEVEL **2**

CREDIT VALUE **5**

GUIDED LEARNING HOURS **42**

Unit Overview

This unit covers the skills and knowledge needed to prove the competences required to carry out sampling operations for scientific or technical tests, in accordance with approved procedures and practices. The learner will be expected to select and use relevant knowledge, ideas, skills and procedures to complete well-defined tasks and address straightforward problems. They will be expected to complete tasks and procedures and exercise autonomy and judgement subject to overall direction or guidance. They will be required to work to the relevant workplace procedures, legislation and organisational policy, and to use good scientific or technical techniques and practices.

On completion of workplace activities, the learner will be required to show they have completed well-defined, generally routine tasks and can address straightforward problems, selecting and using the relevant scientific or technical skills and procedures. They will be expected to show they have identified, gathered and used relevant information to inform their actions and identify how effective these 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 work under a team leader, whilst taking responsibility for their own actions in the completion of tasks and procedures, whilst exercising a degree of autonomy and judgement. They will also be responsible for the quality and accuracy of the work that they carry out.

The learner's underpinning knowledge will provide a good understanding of scientific or technical facts, procedures and ideas to complete well-defined tasks and address straightforward problems in the workplace. They will have an understanding of the workplace process used, and its application, and will know about the scientific or technical equipment, materials and consumables in adequate depth to provide a sound background for carrying out the activities to the required specification. They will know how to interpret workplace information and ideas and be aware of the types of resources that are relevant to these scientific or technical activities.

The learner will understand the safety precautions required when carrying out the 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 sampling operations for scientific or technical tests	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 doing scientific or technical activities 1.3. Ensure that the correct equipment and materials for the sampling process are available for use 1.4. Collect samples in the parameters specified in the standard operating procedure 1.5. Collect samples following all of the following operations: • Adhering to procedures or systems in place for risk assessment, COSHH, personal protective equipment and other relevant safety regulations • Checking that all the equipment is in a safe and usable working condition (such as undamaged, safety devices in place and operational) • Ensuring that sufficient quantities of all required materials are obtained • Obtaining all the necessary data, documentation and specifications for the sampling process • Collecting and labelling samples in the required quantities • Cleaning/disposing of sampling equipment and materials appropriately • Ensuring that the work area is clear and tidy, and that waste is disposed of in the correct manner • Ensuring that safe working practices and procedures are applied at all times 1.6. Collect samples using five of the following parameters: • Location for sampling • Sample cycle time • Sampling access points • Sampling frequency • Sampling duration • Other (please specify) 1.7. Label and identify collected samples correctly 1.8. Maintain the condition of the samples and store in the correct location 1.9. Maintain the condition of samples by two of the following methods: • Preservation • Transportation • Aseptic container • Other (please specify) 1.10. Communicate the required information about the work done, in accordance with departmental and organisational procedures

	1.11. 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 sampling operations for scientific or technical tests	2.1. Explain the health and safety requirements of the area in which they are carrying out the scientific or technical activities 2.2. Explain the implications of not taking account of legislation, regulations, standards and guidelines when conducting scientific or technical activities 2.3. Explain 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. Explain the lines of communication and responsibilities in their department, and their links with the rest of the organisation 2.7. Explain the limits of their own authority and to whom they should report if they have problems that they cannot resolve 2.8. Explain the sampling methods and procedures used in the environment where they are taken 2.9. Explain the range of equipment and materials used for sampling in the environment where they are taken 2.10. Explain the documentation and labelling systems that should be used to ensure sample traceability after sampling 2.11. Explain the methods used for keeping records of sampling operations, and why this is important 2.12. Explain the principles and techniques of maintaining the sample integrity following collection 2.13. Describe how to identify defective sampling equipment, and the actions to be taken 2.14. Explain the methods used for the handling, storage and disposal of materials 2.15. Explain the materials and methods used in the sampling process

OPTION GROUP B

UNIT LAT2-004	**CARRY OUT ROUTINE MAINTENANCE, CLEANING AND CHECKING OF SCIENTIFIC OR TECHNICAL EQUIPMENT**
LEVEL	**2**
CREDIT VALUE	**6**
GUIDED LEARNING HOURS	**46**

Unit Overview

This unit covers the skills and knowledge needed to prove the competences required to assist with the routine maintenance, cleaning and checking of scientific or technical equipment used, in accordance with approved procedures and practices. The learner will be expected to select and use relevant knowledge, ideas, skills and procedures to complete well-defined tasks and address straightforward problems. They will be expected to complete tasks and procedures and exercise autonomy and judgement subject to overall direction or guidance. They will be required to work to the relevant workplace procedures, legislation and organisational policy, and to use good scientific or technical techniques and practices.

On completion of workplace activities, the learner will be required to show they have completed well-defined, generally routine tasks and can address straightforward problems, selecting and using the relevant scientific or technical skills and procedures. They will be expected to show they have identified, gathered and used relevant information to inform their actions and identify how effective these 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 work under a team leader, whilst taking responsibility for their own actions in the completion of tasks and procedures, whilst exercising a degree of autonomy and judgement. They will also be responsible for the quality and accuracy of the work that they carry out.

The learner's underpinning knowledge will provide a good understanding of scientific or technical facts, procedures and ideas to complete well-defined tasks and address straightforward problems in the workplace. They will have an understanding of the workplace process used, and its application, and will know about the scientific or technical equipment, materials and consumables in adequate depth to provide a sound background for carrying out the activities to the required specification. They will know how to interpret workplace information and ideas and be aware of the types of resources that are relevant to these scientific or technical activities.

The learner will understand the safety precautions required when carrying out the 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 routine maintenance, cleaning and checking of scientific or technical equipment	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 doing scientific or technical activities 1.3. Carry out all of the following operations: • Adhere to procedures for compliance with risk assessment, COSHH, use of personal protective equipment and other relevant safety regulations • Ensure the safe isolation of laboratory equipment (such as electrical and fluids supply) • Follow manufacturers' instructions, drawings and procedures for routine maintenance • Check that the scientific or technical tools and equipment used are in a safe and usable condition • Ensure that the equipment is kept free from foreign objects, dirt or other contamination • Carry out auditory and visual checks on the operation of scientific or technical equipment • Confirm that the scientific or technical equipment is operating correctly and is ready for use • Return all tools, equipment and waste to the correct locations on completion of the maintenance activities • Ensure that accurate, complete and legible records are kept of the 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 and report any equipment faults accurately to the team leader 1.6. Perform routine maintenance in accordance with manufacturers' instructions and relevant health and safety legislation 1.7. 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 1.8. Confirm the correct operation and operating tolerances of the scientific or technical equipment, in accordance with established procedures 1.9. Record details of maintenance and operation checks, according to departmental procedures

	1.10. Test the equipment to confirm that it functions correctly, and record the equipment status 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 routine maintenance, cleaning and checking of scientific or technical equipment	2.1. Explain the health and safety requirements of the area in which they are carrying out the scientific or technical activities 2.2. Explain the implications of not taking account of legislation, regulations, standards and guidelines when conducting scientific or technical activities 2.3. Explain 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. Explain the lines of communication and responsibilities in their department, and their links with the rest of the organisation 2.7. Explain the limits of their own authority and to whom they should report if they have problems that they cannot resolve 2.8. Explain the manufacturers' specifications and recommendations for the maintenance and calibration of the scientific or technical equipment 2.9. Explain the methods used for visually checking, and cleaning, of scientific or technical equipment 2.10. Explain the different types, condition and quantities of consumables required for the range of scientific or technical equipment maintained 2.11. Explain the methods for maintaining personal health and safety during the maintenance of equipment 2.12. Describe how to check that the scientific or technical equipment is working correctly and in accordance with the manufacturer's specifications 2.13. Explain the common types of equipment fault, and how these must be dealt with 2.14. Explain the department or person to whom equipment faults should be reported 2.15. Explain the methods used for keeping records of the maintenance, cleaning and calibration of scientific or technical equipment, and why this is important 2.16. Explain the procedures for disposal of any waste produced or of any equipment beyond repair

UNIT LAT2-005 **MAINTAIN STOCKS OF RESOURCES, EQUIPMENT AND CONSUMABLES FOR SCIENTIFIC OR TECHNICAL USE**

LEVEL **2**

CREDIT VALUE **4**

GUIDED LEARNING HOURS **37**

Unit Overview

This unit covers the skills and knowledge needed to prove the competences required to assist with the maintenance of stocks of resources, equipment and consumables for scientific or technical use, in accordance with approved procedures and practices. The learner will be expected to select and use relevant knowledge, ideas, skills and procedures to complete well-defined tasks and address straightforward problems. They will be expected to complete tasks and procedures and exercise autonomy and judgement subject to overall direction or guidance. They will be required to work to the relevant workplace procedures, legislation and organisational policy, and to use good scientific or technical techniques and practices.

On completion of workplace activities, the learner will be required to show they have completed well-defined, generally routine tasks and can address straightforward problems, selecting and using the relevant scientific or technical skills and procedures. They will be expected to show they have identified, gathered and used relevant information to inform their actions and identify how effective these 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 work under a team leader, whilst taking responsibility for their own actions in the completion of tasks and procedures, whilst exercising a degree of autonomy and judgement. They will also be responsible for the quality and accuracy of the work that they carry out.

The learners underpinning knowledge will provide a good understanding of scientific or technical facts, procedures and ideas to complete well-defined tasks and address straightforward problems in the workplace. They will have an understanding of the workplace process used, and its application, and will know about the scientific or technical equipment, materials and consumables in adequate depth to provide a sound background for carrying out the activities to the required specification. They will know how to interpret workplace information and ideas and be aware of the types of resources that are relevant to these scientific or technical activities.

The learner will understand the safety precautions required when carrying out the 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 stocks of resources, equipment and consumables for scientific or technical use	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 doing scientific or technical activities 1.3. Count stocks and confirm that they are with the maximum/minimum levels required for the scientific or technical activities 1.4. Check stock levels for three of the following: • Biological specimens and materials • Electrical/electronic components/sub-assemblies • Scientific chemicals • Analysers, equipment or instruments • Scientific or technical consumables • Other (please specify) 1.5. 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 1.6. Check the packaging information on individual stock items, and confirm that critical details are within acceptable limits 1.7. Check packaging for five of the following information: • Batch numbers • Expiry dates • Quantities • Safety data sheets • Delivery dates • Hazard labels • Volumes • Weights • Condition received 1.8. Identify, record and communicate requirements to replenish stocks at specified re-order levels 1.9. Check new stocks received against purchase orders and delivery notes and notify relevant people of any discrepancies or breakages 1.10. Label and store items in the correct environment and location according to recommended procedures 1.11. Correctly handle and transport stock items, using the appropriate methods and techniques 1.12. Handle and transport both of the following types of material: • Scientific or technical chemicals • Scientific or technical equipment

	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 scientific or technical stock levels in the information system 1.15. Access and update information on the information system for all of the following: • Booking items out from stock • Booking items into stock • Stock check levels • Stock usage 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 stocks of resources, equipment and consumables for scientific or technical use	2.1. Explain the health and safety requirements of the area in which they are carrying out the scientific or technical activities 2.2. Explain the implications of not taking account of legislation, regulations, standards and guidelines when conducting scientific or technical activities 2.3. Explain 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. Explain the lines of communication and responsibilities in their department, and their links with the rest of the organisation 2.7. Explain the limits of their own authority and to whom they should report if they have problems that they cannot resolve 2.8. Describe why it is important to maintain accurate records for scientific or technical resources, equipment and consumables 2.9. Explain the types and range of scientific or technical resources, equipment and consumables used in the workplace, and how they have to be checked 2.10. Describe how to check the packaging information on stock (such as batch numbers and expiry dates)

	2.11. Describe how and explain why it is important to identify materials or chemicals that should not be stored together 2.12. Explain the range of storage environments used to store scientific or technical resources, equipment and consumables for workplace use 2.13. Describe how to label new stock items correctly, and how to record the information in the workplace information system 2.14. Describe where and how stock items should be stored so they remain suitable for scientific or technical use 2.15. Describe how to monitor and control stock levels for scientific or technical use 2.16. Describe how to dispose of waste or damaged stock items, in accordance with workplace procedures 2.17. Describe how to resolve issues with delivered damaged or incomplete replacement stock

UNIT LAT2-006	**PREPARE COMPOUNDS AND SOLUTIONS FOR SCIENTIFIC OR TECHNICAL USE**
LEVEL	**2**
CREDIT VALUE	**13**
GUIDED LEARNING HOURS	**99**

Unit Overview

This unit covers the skills and knowledge needed to prove the competences required to measure, weigh and prepare compounds and solutions for scientific or technical use, in accordance with approved procedures and practices. The learner will be expected to select and use relevant knowledge, ideas, skills and procedures to complete well-defined tasks and address straightforward problems. They will be expected to complete tasks and procedures and exercise autonomy and judgement subject to overall direction or guidance. They will be required to work to the relevant workplace procedures, legislation and organisational policy, and to use good scientific or technical techniques and practices.

On completion of workplace activities, the learner will be required to show they have completed well-defined, generally routine tasks and address straightforward problems, selecting and using the relevant scientific or technical skills and procedures. They will be expected to show they have identified, gathered and used relevant information to inform their actions and identify how effective these 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 work under a team leader, whilst taking responsibility for their own actions in the completion of tasks and procedures, whilst exercising a degree of autonomy and judgement. They will also be responsible for the quality and accuracy of the work that they carry out.

The learner's underpinning knowledge will provide a good understanding of scientific or technical facts, procedures and ideas to complete well-defined tasks and address straightforward problems in the workplace. They will have an understanding of the workplace process used, and its application, and will know about the scientific or technical equipment, materials and consumables in adequate depth to provide a sound background for carrying out the activities to the required specification. They will know how to interpret workplace information and ideas and be aware of the types of resources that are relevant to these scientific or technical activities.

The learner will understand the safety precautions required when carrying out the 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. Prepare compounds and solutions for scientific or technical use	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 doing scientific or technical activities 1.3. Use two of the following types of protective clothing and equipment: • Laboratory coat/apron/overall • Dust mask/respirator • Gloves • Safety glasses or goggles • Full face visor or shield • Fume cupboard 1.4. Use balances for accurately weighing out materials 1.5. Carry out weighing activities using balances (scales), using two of the following accuracies: • Grams • Milligrams • Micrograms 1.6. Measure out required concentrations of liquids for scientific or technical use 1.7. Measure out solutions, using two of the following: • Automated pipettes • Graduated/bulb pipettes • Syringes • Graduated cylinders/beakers/tubes • Burettes • Volumetric flasks • Other (please specify) 1.8. Measure specific volumes of liquids and weights of solids for scientific or technical use 1.9. Calculate the concentrations of solutions, the amounts and volumes required, using two of the following: • Moles per litre • Grams per litre • Parts per million • Mass percent • Other (please specify) 1.10. Make up known volumes of solutions to a specified concentration, using both of the following: • By measuring and dissolving the correct amount of solid in the correct volume of diluent/solvent • By dilution from a concentrated stock solution

	1.11. Weigh and prepare three of the following types of compound or solution: • Solids that do not readily lose or gain weight (moisture or solvent) • Solids that readily lose or gain weight (moisture or solvent) • Solutions (by dilution from a known concentration) • Solutions (at actual molecular weight) 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 prepare compounds and solutions for scientific or technical use	2.1. Explain the health and safety requirements of the area in which they are carrying out the scientific or technical activities 2.2. Explain the implications of not taking account of legislation, regulations, standards and guidelines when conducting scientific or technical activities 2.3. Explain 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. Explain the lines of communication and responsibilities in their department, and their links with the rest of the organisation 2.7. Explain the limits of their own authority and to whom they should report if they have problems that they cannot resolve 2.8. Describe how to calculate mass/mole calculations 2.9. Describe how to convert between metric and imperial measures and vice versa 2.10. Describe how to select the appropriate balance and scale for less than 100mg, 100mg to 5g, and 5g and above 2.11. Describe how to check that their equipment is clean, dry, free of chips and ready for use 2.12. Describe how to measure and weigh solids and liquids for scientific or technical use

	2.13. Describe how to convert between different units of concentration (such as moles/litre, grams/litre, percent mass per volume and parts per million) 2.14. Describe how to calculate dilution factors and dilution volumes to make solutions from concentrated stock solutions 2.15. Describe how to choose the appropriate measuring equipment for the scale, accuracy and precision required for the task 2.16. Describe how to clean and maintain weighing and measuring equipment (such as pipettes, balances)

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)