edexcel

Pearson Edexcel Level 2 NVQ Certificate in Laboratory and Associated Technical Activities

Specification

NVQ/Competence-based qualification

First registration June 2011

Issue 3

Edexcel, BTEC and LCCI qualifications

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This specification is Issue 3. Key changes are sidelined. We will inform centres of any changes to this issue. The latest issue can be found on our website.

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All information in this specification is correct at time of publication.

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Changes to Issue 2

This specification has been updated to Issue 3 to clarify the combination of optional units required to complete each pathway:

- **Industrial Science Pathway**

  Must complete two units from Group A and one from Group B

- **Education Science Pathway**

  Must complete two units from Group A and one from Group B

Contents

Qualification title covered by this specification

This specification gives you the information you need to offer the Pearson Edexcel Level 2 NVQ Certificate in Laboratory and Associated Technical Activities:

Qualification title	Qualification Number (QN)	Accreditation start date
Pearson Edexcel Level 2 NVQ Certificate in Laboratory and Associated Technical Activities	600/1664/4	01/06/11

This qualification has been accredited within the Qualifications and Credit Frameworkand is eligible for public funding as determined by the Department for Education (DfE) under Sections 96 and 97 of the Learning and Skills Act 2000.

For details on funding availability, please check the learning Aim Reference Service where relevant.

You should use the Qualification Number (QN), when you wish to seek public funding for your learners. Each unit within a qualification will also have a unique reference number, which is listed in this specification.

The qualification title and unit reference numbers will appear on the learners' final certification document. Learners need to be made aware of this when they are recruited by the centre and registered with Edexcel.

Key features of the Level 2 NVQ Certificate in Laboratory and Associated Technical Activities

This qualification:

- is nationally recognised
- is based on the Level 2 Laboratory and Associated Technical Activities (NOS). The NOS, assessment requirements/strategy and qualification structure(s) are owned by SEMTA.

The Pearson Edexcel Level 2 NVQ certificate in Laboratory and Associated Technical Activities has been approved as a components for the Level 2 Laboratory Technicians Apprenticeship framework.

What is the purpose of this qualification?

The Pearson Edexcel Level 2 NVQ Certificate in Laboratory and Associated Technical Activities provides recognition of the skills and knowledge of individuals who work in a laboratory. It covers health and safety; effective working relationships; dealing with laboratory specimens/samples and communicating information. It contains two Pathways: Industrial Science and Education Science.

Who is this qualification for?

This qualification is for all learners aged 18 and above who are capable of reaching the required standards.

Edexcel's policy is that the qualification should:

- be free from any barriers that restrict access and progression
- ensure equality of opportunity for all wishing to access the qualification(s).

What are the potential job roles for those working towards this qualification?

- Analytical scientist
- Biochemist
- Biomedical scientist
- Biologist
- Biotechnologist
- Clinical scientist
- Microbiologist
- Physicist
- Research scientist

- Education laboratory technician
- Laboratory technician
- Medical laboratory assistant
- Scientific laboratory technician

What progression opportunities are available to learners who achieve this qualification?

Progression from this qualification can be to other relevant level 2 and/or level 3 qualifications, for example:

- Edexcel Level 2 NVQ Diploma in Laboratory Science
- Edexcel Level 3 NVQ Diploma in Laboratory Science
- Edexcel Level 3 NVQ Diploma in Laboratory and Associated Technical Activities.

Further information is available in *Annexe A*.

What is the qualification structure for the Pearson Edexcel Level 2 NVQ Certificate in Laboratory and Associated Technical Activities?

Individual units can be found in the *Units* section. The level and credit value are given on the first page of each unit.

Within the Pearson Edexcel Level 2 Certificate in Laboratory and Associated Technical Activities learners may achieve one of the following pathways: Education Science or Industrial Science.

For the Education Science pathway learners must achieve a minimum of 31 credits by completing three common mandatory units and three pathway specific optional units. Two of these optional units should be taken from Group A and one of these optional units should be taken from Group B, within the Education Science pathway.

For the Industrial Science pathway learners must achieve a minimum of 31 credits by completing three common mandatory units and three pathway specific optional units. Two of these optional units should be taken from Group A and one of these optional units should be taken from Group B, within the Industrial Science pathway.

Unit	Title	Credit	Level
Common Mandatory units			
Unit 1:	Follow health and safety procedures for scientific or technical activities	5	2
Unit 2:	Maintain effective and efficient working relationships for scientific or technical activities	5	3
Unit 3:	Use information recordings systems for scientific or technical activities	6	2

Unit	Title	Credit	Level
Education Science Pathway Must complete two units from Group A and one from Group B			
Group A - Optional units			
Unit 4:	Carry out routine maintenance, cleaning and checking of scientific or technical equipment	6	2
Unit 8:	Prepare resources and equipment for scientific or technical learning activities	6	2
Unit 9:	Clean and tidy the workplace after scientific or technical learning activities	5	2
Unit 10:	Provide scientific or technical support for learning activities	6	2
Group B - Optional units			
Unit 5:	Maintain stocks of resources, equipment and consumables for scientific or technical use	4	2
Unit 6:	Prepare compounds and solutions for scientific or technical use	13	2
Unit 7:	Demonstrate scientific or technical methods, techniques and skills to others in the workplace	8	3
Unit 11:	Prepare new scientific or technical methods, resources and equipment for learning activities	12	2

Unit	Title	Credit	Level
Industrial Science Pathway Must complete two units from Group A and one from Group B			
Group A - Optional units			
Unit 12:	Carry out simple scientific or technical tests using manual equipment	7	2
Unit 13:	Carry out simple scientific or technical tests using automated equipment	10	2
Unit 14:	Prepare scientific or technical samples for testing activities	8	2
Unit 15:	Carry out sampling operations for scientific or technical tests	5	2
Group B - Optional units			
Unit 4:	Carry out routine maintenance, cleaning and checking of scientific or technical equipment	6	2
Unit 5:	Maintain stocks of resources, equipment and consumables for scientific or technical use	4	2
Unit 6:	Prepare compounds and solutions for scientific or technical use	13	2
Unit 16:	Following aseptic procedures in the laboratory environment	9	2

How is the qualification graded and assessed?

The overall grade for the qualification is a 'pass'. The learner must achieve all the required units within the specified qualification structure.

To pass a unit the learner must:

- achieve **all** the specified learning outcomes
- satisfy **all** the assessment criteria by providing sufficient and valid evidence for each criterion
- show that the evidence is their own.
- The qualifications are designed to be assessed:
- in the workplace or
- in conditions resembling the workplace, as specified in the assessment requirements/strategy for the sector, or
- as part of a training programme.

Assessment requirements/strategy

The assessment strategy for this qualification has been included in *Annexe D*. It has been developed by SEMTA in partnership with employers, training providers, awarding organisations and the regulatory authorities. The assessment strategy includes details on:

- criteria for defining realistic working environments
- roles and occupational competence of assessors, expert witnesses, internal verifiers and standards verifiers
- quality control of assessment
- evidence requirements.

Evidence of competence may come from:

- **current practice** where evidence is generated from a current job role
- a **programme of development** where evidence comes from assessment opportunities built into a learning/training programme whether at or away from the workplace
- the **Recognition of Prior Learning (RPL)** where a learner can demonstrate that they can meet the assessment criteria within a unit through knowledge, understanding or skills they already possess without undertaking a course of learning. They must submit sufficient, reliable and valid evidence for internal and standards verification purposes. RPL is acceptable for accrediting a unit, several units or a whole qualification
- a **combination** of these.

It is important that the evidence is:

Valid	relevant to the standards for which competence is claimed
Authentic	produced by the learner
Current	sufficiently recent to create confidence that the same skill, understanding or knowledge persist at the time of the claim
Reliable	indicates that the learner can consistently perform at this level
Sufficient	fully meets the requirements of the standards.

Types of evidence (to be read in conjunction with the assessment strategy in Annexe D)

To successfully achieve a unit the learner must gather evidence which shows that they have met the required standard in the assessment criteria. Evidence can take a variety of different forms including the examples below. Centres should refer to the assessment strategy for information about which of the following are permissible.

- direct observation of the learner's performance by their assessor (O)
- outcomes from oral or written questioning (Q&A)
- products of the learner's work (P)
- personal statements and/or reflective accounts (RA)
- outcomes from simulation, where permitted by the assessment strategy (S)
- professional discussion (PD)
- assignment, project/case studies (A)
- authentic statements/witness testimony (WT)
- expert witness testimony (EPW)
- evidence of Recognition of Prior Learning (RPL).

The abbreviations may be used for cross-referencing purposes.

Learners can use one piece of evidence to prove their knowledge, skills and understanding across different assessment criteria and/or across different units. It is, therefore, not necessary for learners to have each assessment criterion assessed separately. Learners should be encouraged to reference the assessment criteria to which the evidence relates.

Evidence must be made available to the assessor, internal verifier and Edexcel standards verifier. A range of recording documents is available on the Pearson website: www.pearson.com. Alternatively, centres may develop their own.

Centre recognition and approval

Centre recognition

Centres that have not previously offered Edexcel vocational qualifications need to apply for and be granted centre recognition as part of the process for approval to offer individual qualifications. New centres must complete both a centre recognition approval application and a qualification approval application.

Existing centres will be given 'automatic approval' for a new qualification if they are already approved for a qualification that is being replaced by the new qualification and the conditions for automatic approval are met. Centres already holding Edexcel approval are able to gain qualification approval for a different level or different sector via Edexcel online.

Approvals agreement

All centres are required to enter into an approvals agreement which is a formal commitment by the head or principal of a centre to meet all the requirements of the specification and any linked codes or regulations. Pearson will act to protect the integrity of the awarding of qualifications, if centres do not comply with the agreement. This could result in the suspension of certification or withdrawal of approval.

Quality assurance

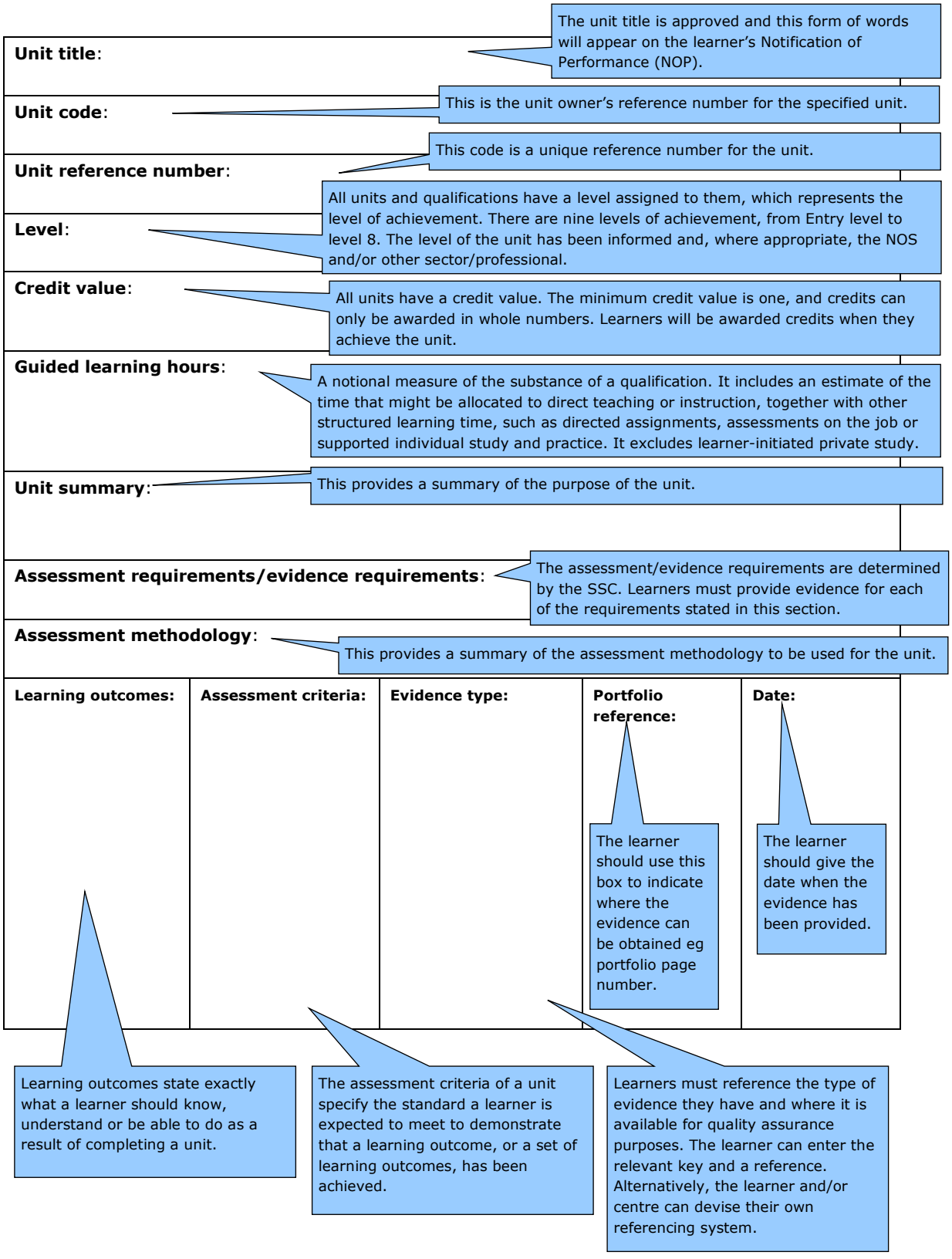
Detailed information on Pearson's quality assurance processes is given in *Annexe B*.

What resources are required?

Each qualification is designed to support learners working in the Laboratory and Associated Technical Activities sector. Physical resources need to support the delivery of the qualifications and the assessment of the learning outcomes and must be of industry standard. Centres must meet any specific resource requirements outlined in *Annexe D: Assessment requirements/strategy*. Staff assessing the learner must meet the requirements within the overarching assessment strategy for the sector.

Unit format

Each unit in this specification contains the following sections.



Units

Unit 1: Follow health and safety procedures for scientific or technical activities

Unit reference number: T/601/9366

Level: 2

Credit value: 5

Guided learning hours: 35

Unit summary

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 requirements

Assessment requirements are set down in Annexe D: Assessment strategy.

Assessment methodology

This unit is assessed in the workplace. Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
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 & 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			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
2 Follow health and safety procedures for scientific or technical activities (continued)	2.1 Ensure that they maintain and keep tidy their work area to a standard of health and safety which is consistent 2.2 Prepare, maintain and use equipment and materials in accordance with manufacturers' instructions and local safety regulations 2.3 Recognise hazardous materials used in their work activities			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	2.4 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 2.5 Follow established procedures to protect themselves and others during work activities 2.6 Follow the correct procedure when an emergency arises or is suspected			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
3	Know how to follow health and safety procedures for scientific or technical activities	3.1	Describe the health and safety requirements of the area in which they are carrying out the scientific or technical activities			
		3.2	Describe the implications of not taking account of legislation, regulations, standards and guidelines when conducting scientific or technical activities			
		3.3	Describe the standard operating procedures, as set down in local operating manuals and schemes of work			
		3.4	Explain the importance of following manufacturers' instructions			
		3.5	Describe the techniques and processes they must use correctly in the workplace			
		3.6	Explain importance of wearing protective clothing, gloves and eye protection when handling hazardous materials			
		3.7	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))			
		3.8	Identify the health and safety representatives (such as the Laboratory Safety Officer, Staff Health & Safety Representatives and First-Aiders)			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	3.9 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) 3.10 Describe the lines of communication and responsibilities in their department, and their links with the rest of the organisation 3.11 Describe the limits of their own authority and to whom they should report if they have problems that they cannot resolve			
4 Know how to follow health and safety procedures for scientific or technical activities (continued)	4.1 Describe the local procedures for emergency evacuation (including escape routes and assembly points) 4.2 Describe the location of fire alarms call points and how to operate them 4.3 Describe the location of spillage kits, and the procedures to follow in the event of spillages of chemicals and/or biological fluids and materials 4.4 Describe the control of substances hazardous to health (COSHH) regulations, and their application in the workplace 4.5 Describe the types of hazards which may be present in the workplace and how these can be controlled 4.6 Describe the correct storage and disposal procedures for hazardous materials			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	4.7 Describe the hazards associated with chemicals, radioactive substances and biological material 4.8 Describe the reasons for cleaning work surfaces and equipment 4.9 Explain why it is important to differentiate and segregate categories of waste 4.10 Describe the correct procedures for the storage, transport and disposal of waste			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 2: Maintain effective and efficient working relationships for scientific or technical activities

Unit reference number: D/601/9569

Level: 3

Credit value: 5

Guided learning hours: 25

Unit summary

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 requirements

Assessment requirements are set down in Annexe D: Assessment strategy.

Assessment methodology

This unit is assessed in the workplace. Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
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			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	1.7 Deal with disagreements in an amicable and constructive way, so that good relationships are maintained			
2 Maintain effective and efficient working relationships for scientific or technical activities (continued)	2.1 Maintain communication with others, to ensure that they are kept informed about any work plans or activities which may affect them 2.2 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 2.3 Review their personal performance and development, with the appropriate people, at regular intervals 2.4 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 2.5 Communicate the required information about the work done, to authorised people, in accordance with departmental and organisational procedures			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	2.6 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			
	3.1 Describe the health and safety requirements of the area in which they are carrying out the scientific or technical activities 3.2 Describe the implications of not taking account of legislation, regulations, standards and guidelines when conducting scientific or technical activities 3.3 Describe the scientific or technical techniques and processes they must use correctly in the workplace 3.4 Explain the importance of wearing protective clothing, gloves and eye protection for scientific or technical activities 3.5 Explain the importance of correct identification, and any unique workplace coding system 3.6 Describe the interactions which take place between their scientific or technical speciality and others where the same speciality is used			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
3	Know how to maintain effective and efficient working relationships for scientific or technical activities	3.7	Explain how their scientific or technical work activities may affect others within the department and the workplace			
		3.8	Describe the lines of communication and responsibilities in their department, and their links with the rest of the organisation			
		3.9	Describe the limits of their own authority and to whom they should report if they have problems that they cannot resolve			
4	Know how to maintain effective and efficient working relationships for scientific or technical activities (continued)	4.1	Describe the lines of accountability within the department			
		4.2	Describe the reasons why good working relationships are important			
		4.3	Explain how to create and maintain good working relationships			
		4.4	Describe the methods of working effectively with others			
		4.5	Describe the problems that can affect relationships in the workplace			
		4.6	Describe the procedures for dealing with disagreements within the workplace			
		4.7	Describe the departmental performance review process, and their role in this process			
		4.8	Describe the reasons why effective communication is important, and the methods used for communicating effectively			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 3: Use information recordings systems for scientific or technical activities

Unit reference number: H/601/9377

Level: 2

Credit value: 6

Guided learning hours: 48

Unit summary

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 requirements

Assessment requirements are set down in Annexe D: Assessment strategy.

Assessment methodology

This unit is assessed in the workplace. Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
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			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	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			
2 Use information recordings systems for scientific or technical activities (continued)	2.1 Communicate information to the relevant people when using information systems 2.2 Take appropriate action in the event of problems, to minimise hazards, waste loss of materials or resources and report to the relevant people 2.3 Resolve two of the following problems associated with work activity: – incorrect identification of requirements – missing information – poor/unclear written request – requests exceed available supply 2.4 Work safely at all times, complying with health and safety, environmental and other relevant regulations and guidelines			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	2.5 Communicate the required information about the work done, in accordance with departmental and organisational procedures 2.6 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 2.7 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			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
3	Know how to use information recordings systems for scientific or technical activities	3.1	Describe the health and safety requirements of the area in which they are carrying out the scientific or technical activities			
		3.2	Describe the implications of not taking account of legislation, regulations, standards and guidelines when conducting scientific or technical activities			
		3.3	Describe the scientific or technical techniques and processes they must use correctly in the workplace.			
		3.4	Explain the importance of wearing protective clothing, gloves and eye protection for scientific or technical activities			
		3.5	Describe the importance of correct identification, and any unique workplace coding system			
		3.6	Describe the lines of communication and responsibilities in their department, and their links with the rest of the organisation			
		3.7	Describe the limits of their own authority and to whom they should report if they have problems that they cannot resolve.			
		3.8	Describe the skills and procedures needed to do the routine tasks and work activities allocated			
		3.9	Describe the importance of completing tasks and procedures to the required organisational standard			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
4 Know how to use information recordings systems for scientific or technical activities (continued)	4.1 Describe the different types of information systems that can be used, including recording, filing, retrieval of information and distribution systems 4.2 Explain how to use backup systems and why they are important 4.3 Explain how to ensure the confidentiality and security of information at all times and why this is important 4.4 Explain why it is important to work within given time deadlines 4.5 Describe the methods to use for information storage and access 4.6 Explain why it is important to establish requirements accurately 4.7 Describe what documentation should be used 4.8 Describe who are the relevant people that should be supplied with the recorded information 4.9 Explain how to identify problems, and what is the appropriate action to take within the limits of their responsibility			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 4: Carry out routine maintenance, cleaning and checking of scientific or technical equipment

Unit reference number: K/601/9378

Level: 2

Credit value: 6

Guided learning hours: 46

Unit summary

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 the 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 requirements

Assessment requirements are set down in Annexe D: Assessment strategy.

Assessment methodology

This unit is assessed in the workplace. Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
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			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	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			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	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			
2 Carry out routine maintenance, cleaning and checking of scientific or technical equipment (continued)	2.1 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 2.2 Confirm the correct operation and operating tolerances of the scientific or technical equipment, in accordance with established procedures 2.3 Record details of maintenance and operation checks, according to departmental procedures 2.4 Test the equipment to confirm that it functions correctly, and record the equipment status			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	2.5 Communicate the required information about the work done, in accordance with departmental and organisational procedures 2.6 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			
3 Know how to carry out routine maintenance, cleaning and checking of scientific or technical equipment	3.1 Explain the health and safety requirements of the area in which they are carrying out the scientific or technical activities 3.2 Explain the implications of not taking account of legislation, regulations, standards and guidelines when conducting scientific or technical activities 3.3 Explain the scientific or technical techniques and processes they must use correctly in the workplace 3.4 Explain the importance of wearing protective clothing, gloves and eye protection for scientific or technical activities 3.5 Explain the importance of correct identification, and any unique workplace coding system			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	3.6 Explain the lines of communication and responsibilities in their department, and their links with the rest of the organisation 3.7 Explain the limits of their own authority and to whom they should report if they have problems that they cannot resolve 3.8 Explain the manufacturers' specifications and recommendations for the maintenance and calibration of the scientific or technical equipment			
4 Know how to carry out routine maintenance, cleaning and checking of scientific or technical equipment (continued)	4.1 Explain the methods used for visually checking, and cleaning, of scientific or technical equipment 4.2 Explain the different types, condition and quantities of consumables required for the range of scientific or technical equipment maintained 4.3 Explain the methods for maintaining personal health and safety during the maintenance of equipment 4.4 Describe how to check that the scientific or technical equipment is working correctly and in accordance with the manufacturer's specifications			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	4.5 Explain the common types of equipment fault, and how these must be dealt with 4.6 Explain the department or person to whom equipment faults should be reported 4.7 Explain the methods used for keeping records of the maintenance, cleaning and calibration of scientific or technical equipment, and why this is important 4.8 Explain the procedures for disposal of any waste produced or of any equipment beyond repair			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 5: Maintain stocks of resources, equipment and consumables for scientific or technical use

Unit reference number: M/601/9379

Level: 2

Credit value: 4

Guided learning hours: 37

Unit summary

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 requirements

Assessment requirements are set down in Annexe D: Assessment strategy.

Assessment methodology

This unit is assessed in the workplace. Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
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)			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	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			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	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			
2 Maintain stocks of resources, equipment and consumables for scientific or technical use (continued)	2.1 Label and store items in the correct environment and location according to recommended procedures 2.2 Correctly handle and transport stock items, using the appropriate methods and techniques 2.3 Handle and transport both of the following types of material: – scientific or technical chemicals – scientific or technical equipment 2.4 Dispose, in the appropriate manner and locations, of stock or items that are damaged or outside acceptable limits for scientific or technical use 2.5 Access and update records for scientific or technical stock levels in the information system 2.6 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			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	2.7 Communicate the required information about the work done, in accordance with departmental and organisational procedures 2.8 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			
3 Know how to maintain stocks of resources, equipment and consumables for scientific or technical use	3.1 Explain the health and safety requirements of the area in which they are carrying out the scientific or technical activities 3.2 Explain the implications of not taking account of legislation, regulations, standards and guidelines when conducting scientific or technical activities 3.3 Explain the scientific or technical techniques and processes they must use correctly in the workplace. 3.4 Explain the importance of wearing protective clothing, gloves and eye protection for scientific or technical activities 3.5 Explain the importance of correct identification, and any unique workplace coding system			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	3.6 Explain the lines of communication and responsibilities in their department, and their links with the rest of the organisation 3.7 Explain the limits of their own authority and to whom they should report if they have problems that they cannot resolve 3.8 Describe why it is important to maintain accurate records for scientific or technical resources, equipment and consumables 3.9 Explain the types and range of scientific or technical resources, equipment and consumables used in the workplace, and how they have to be checked			
4 Know how to maintain stocks of resources, equipment and consumables for scientific or technical use (continued)	4.1 Describe how to check the packaging information on stock (such as batch numbers and expiry dates) 4.2 Describe how and explain why it is important to identify materials or chemicals that should not be stored together 4.3 Explain the range of storage environments used to store scientific or technical resources, equipment and consumables for workplace use 4.4 Describe how to label new stock items correctly, and how to record the information in the workplace information system			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	4.5 Describe where and how stock items should be stored so they remain suitable for scientific or technical use 4.6 Describe how to monitor and control stock levels for scientific or technical use 4.7 Describe how to dispose of waste or damaged stock items, in accordance with workplace procedures. 4.8 Describe how to resolve issues with delivered damaged or incomplete replacement stock			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 6: Prepare compounds and solutions for scientific or technical use

Unit reference number: H/601/9380

Level: 2

Credit value: 13

Guided learning hours: 99

Unit summary

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 requirements

Assessment requirements are set down in Annexe D: Assessment strategy.

Assessment methodology

This unit is assessed in the workplace. Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
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			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	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)			
2 Prepare compounds and solutions for scientific or technical use (continued)	2.1 Measure specific volumes of liquids and weights of solids for scientific or technical use 2.2 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)			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	2.3 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 2.4 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) 2.5 Communicate the required information about the work done, in accordance with departmental and organisational procedures			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	2.6 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			
3 Know how to prepare compounds and solutions for scientific or technical use	3.1 Explain the health and safety requirements of the area in which they are carrying out the scientific or technical activities 3.2 Explain the implications of not taking account of legislation, regulations, standards and guidelines when conducting scientific or technical activities 3.3 Explain the scientific or technical techniques and processes they must use correctly in the workplace. 3.4 Explain the importance of wearing protective clothing, gloves and eye protection for scientific or technical activities 3.5 Explain the importance of correct identification, and any unique workplace coding system 3.6 Explain the lines of communication and responsibilities in their department, and their links with the rest of the organisation			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	3.7 Explain the limits of their own authority and to whom they should report if they have problems that they cannot resolve 3.8 Describe how to calculate mass/mole calculations			
4 Know how to prepare compounds and solutions for scientific or technical use (continued)	4.1 Describe how to convert between metric and imperial measures and vice versa 4.2 Describe how to select the appropriate balance and scale for less than 100mg, 100mg to 5g, and 5g and above 4.3 Describe how to check that their equipment is clean, dry, free of chips and ready for use 4.4 Describe how to measure and weigh solids and liquids for scientific or technical use 4.5 Describe how to convert between different units of concentration (such as moles/litre, grams/litre, percent mass per volume and parts per million) 4.6 Describe how to calculate dilution factors and dilution volumes to make solutions from concentrated stock solutions 4.7 Describe how to choose the appropriate measuring equipment for the scale, accuracy and precision required for the task 4.8 Describe how to clean and maintain weighing and measuring equipment (such as pipettes, balances)			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 7: Demonstrate scientific or technical methods, techniques and skills to others in the workplace

Unit reference number: Y/601/9733

Level: 3

Credit value: 8

Guided learning hours: 56

Unit summary

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

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

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

The learner's underpinning knowledge will enable them to use factual, procedural and theoretical understanding to complete scientific or technical tasks and address problems that, whilst well defined, may be complex and non-routine. They will be able to interpret and evaluate relevant workplace information and ideas. They will have an understanding of the scientific or technical process used, and its application, and will know about the equipment, materials and consumables in

adequate depth to provide a sound background for carrying out the activities to the required specification.

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

Assessment requirements

Assessment requirements are set down in Annexe D: Assessment strategy.

Assessment methodology

This unit is assessed in the workplace. Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
1 Demonstrate scientific or technical methods, techniques and skills to others in the workplace	1.1 Ensure that their work is carried out in accordance with workplace procedures 1.2 Use safe practices and the appropriate personal protection equipment (PPE) when performing scientific or technical activities 1.3 Agree the learning/training objectives of the demonstration with the relevant people 1.4 Agree the requirements for the demonstration with one of the following people: – supervisor – manager – team leader – head of department – health and safety officer – teacher or trainer 1.5 Gather relevant and accurate information for the demonstration			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	1.6 Establish both of the following for the demonstration: – scientific or technical methods and skills – health and safety precautions Plus six of the following: – place for the demonstration – start and finish time for the demonstration – the number of learners/students – equipment required – services required (e.g. gas, electricity) – materials required – workplace procedures to be used – consumables required 1.7 Prepare the content of the demonstration to meet the learning needs of learner/students			
2 Demonstrate scientific or technical methods, techniques and skills to others in the workplace (continued)	2.1 Confirm that the location for the demonstration allows for optimum visibility and conforms to health and safety requirements and regulations and guidelines 2.2 Prepare answers to anticipated questions 2.3 Demonstrate scientific or technical methods, techniques and skills in a manner appropriate to learner/student's needs			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	2.4 Demonstrate methods and skills in one of the following locations: – timetabled lessons – other supervised events – outside activities 2.5 Work safely at all times, complying with health and safety, environmental and other relevant regulations and guidelines 2.6 Communicate the required information about the work done, in accordance with departmental and organisational procedures 2.7 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			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
3	Know how to demonstrate scientific or technical methods, techniques and skills to others in the workplace	3.1	Describe the health and safety requirements of the area in which they are carrying out the scientific or technical activities			
		3.2	Describe the implications of not taking account of legislation, regulations, standards and guidelines when conducting scientific or technical activities			
		3.3	Describe the scientific or technical techniques and processes they must use correctly in the workplace			
		3.4	Explain the importance of wearing protective clothing, gloves and eye protection for scientific or technical activities			
		3.5	Explain the importance of correct identification, and any unique workplace coding system			
		3.6	Describe the organisational requirements for maintaining the security of the workplace (e.g. access or aseptic conditions)			
		3.7	Describe the lines of communication and responsibilities in their department, and their links with the rest of the organisation			
		3.8	Describe the limits of their own authority and to whom they should report if they have problems that they cannot resolve			
		3.9	Describe what are the approved scientific or technical working practices and why it is important to follow them at all times			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	3.11 Describe what are the basic techniques and skills required to help prepare for scientific or technical demonstrations 3.12 Explain how to select the materials and equipment for the demonstration activity 3.13 Explain how to prepare resources for demonstration activity			
4 Know how to demonstrate scientific or technical methods, techniques and skills to others in the workplace (continued)	4.1 Explain how to demonstrate the scientific or technical methods, techniques skills to others in the workplace 4.2 Explain how to promote best working practice amongst learners/students 4.3 Explain how to monitor learner/student's learning activities 4.4 Explain how to encourage learners/students to ask questions 4.5 Describe what learning activities can be prepared by learners/students, and how to help them to prepare for the demonstration activities 4.6 Describe what hazards are associated with the demonstration activities 4.7 Describe the range of scientific or technical methods and skills that can be demonstrated 4.8 Explain how to deal with spillages and what action to take			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	4.9 Describe what are the procedures for the safe storage and handling of materials and equipment 4.10 Explain how to identify problems that might occur in the demonstration 4.11 Describe what are appropriate actions to take in the event of problems 4.12 Explain when and how to use remedial, supportive and / or prohibitive actions 4.13 Explain the reasons why effective communication is important, and the methods used for communicating effectively			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 8: Prepare resources and equipment for scientific or technical learning activities

Unit reference number: K/601/9381

Level: 2

Credit value: 6

Guided learning hours: 35

Unit summary

This unit covers the skills and knowledge needed to prove the competences required to prepare scientific or technical resources and equipment for learning 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 facts, procedures and ideas to complete well-defined tasks and address straightforward problems in the workplace. They will have an understanding for the scientific or technical activities process used, and its application, and will know about the equipment, materials and consumables in adequate depth to provide a sound background for carrying out the activities to the required specification. They will know how to interpret workplace information and ideas and be aware of the types of information 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 requirements

Assessment requirements are set down in Annexe D: Assessment strategy.

Assessment methodology

This unit is assessed in the workplace. Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
1 Prepare resources and equipment for scientific or technical learning 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 Confirm that the workplace has been cleared of previous activities and that services are working effectively 1.4 Obtain information about the scientific or technical learning activities to be carried out 1.5 Obtain information about the resources and identify what is required for learning activities 1.6 Prepare and equip for one of the following learning activities: – timetabled lessons – other supervised events – outside activities 1.7 Obtain and allocate sufficient resources for the learning activities			
2 Prepare resources and equipment for scientific or technical learning activities (continued)	2.1 Distribute resources within the workplace according to the learners' requirements 2.2 Ensure that all resources are used in cost effective manner			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	2.3 Check hazards or potential risks in six of the following categories: – equipment – workplace – students/learners – services (e.g. gas) – techniques used – materials/consumables – procedures – atmosphere 2.4 Identify accurately any hazards or risks associated with the preparation of resources and take the appropriate action 2.5 Work safely at all times, complying with health and safety, environmental and other relevant regulations and guidelines 2.6 Communicate the required information about the work done, in accordance with departmental and organisational procedures			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	2.7 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			
3 Know how to prepare resources and equipment for scientific or technical learning activities	3.1 Explain the health and safety requirements of the area in which they are carrying out the scientific or technical activities 3.2 Explain the implications of not taking account of legislation, regulations, standards and guidelines when conducting scientific or technical activities 3.3 Explain the scientific or technical techniques and processes they must use correctly in the workplace. 3.4 Explain the importance of wearing protective clothing, gloves and eye protection for scientific or technical activities 3.5 Explain the importance of correct identification, and any unique workplace coding system 3.6 Explain the lines of communication and responsibilities in their department, and their links with the rest of the organisation			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	3.7 Explain the limits of their own authority and to whom they should report if they have problems that they cannot resolve 3.8 Describe the basic techniques and scientific or technical knowledge required to help prepare resources and equipment for student/learner learning activities 3.9 Describe how to locate other sources from which further scientific or technical knowledge can be obtained 3.10 Describe what learning activities can be prepared for			
4 Know how to prepare resources and equipment for scientific or technical learning activities (continued)	4.1 Describe what hazards are associated with the learning activities 4.2 Describe what is the appropriate action to take with hazards 4.3 Describe how to identify appropriate scientific or technical resources, consumables and equipment for learning activities 4.4 Describe how to prepare the appropriate scientific or technical resources, consumables and equipment for learning activities 4.5 Describe how to identify defective scientific or technical resources, consumables or equipment and the appropriate action to take			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	4.6 Describe how to check that services are working effectively and safely and what action to take if they are not 4.7 Describe how to allocate resources cost effectively 4.8 Describe how to confirm that the workplace is fit to use 4.9 Describe when and how to use risk assessments			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 9: Clean and tidy the workplace after scientific or technical learning activities

Unit reference number: M/601/9382

Level: 2

Credit value: 5

Guided learning hours: 34

Unit summary

This unit covers the skills and knowledge needed to prove the competences required to clean and tidy the workplace after scientific or technical learning 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 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 requirements

Assessment requirements are set down in Annexe D: Assessment strategy.

Assessment methodology

This unit is assessed in the workplace. Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
1 Clean and tidy the workplace after scientific or technical learning 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 Identify any workplace hazards associated with any materials, resources, consumables and equipment to be cleared 1.4 Check hazards and potential risks in all of the following categories: – equipment – workplace environment – people – services e.g. gas, electricity – procedures – materials or consumable 1.5 Take appropriate action against identified hazards and clean up any spillages safely 1.6 Clean and tidy after one of the following learning activities: – timetabled lessons – other supervised events – outside activities			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	1.7 Ensure that all resources and equipment are cleaned and replenished as necessary before returning to their correct location for storage			
2 Clean and tidy the workplace after scientific or technical learning activities (continued)	2.1 Dispose of waste safely and in accordance with workplace procedures 2.2 Confirm that the workplace is in a fit condition for further learning activities to relevant people 2.3 Confirm workplace is fit for use with relevant people to include one of the following: – supervisor – manager – team leader – head of department – health and safety officer – teacher or trainer 2.4 Work safely at all times, complying with health and safety, environmental and other relevant regulations and guidelines 2.5 Communicate the required information about the work done, in accordance with departmental and organisational procedures			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	2.6 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			
3 Know how to clean and tidy the workplace after scientific or technical learning activities	3.1 Explain the health and safety requirements of the area in which they are carrying out the scientific or technical activities 3.2 Explain the implications of not taking account of legislation, regulations, standards and guidelines when conducting scientific or technical activities 3.3 Explain the scientific or technical techniques and processes they must use correctly in the workplace. 3.4 Explain the importance of wearing protective clothing, gloves and eye protection for scientific or technical activities 3.5 Explain the importance of correct identification, and any unique workplace coding system 3.6 Explain the lines of communication and responsibilities in their department, and their links with the rest of the organisation			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	3.7 Explain the limits of their own authority and to whom they should report if they have problems that they cannot resolve 3.8 Describe the hazards or risks associated with cleaning and tidying after scientific or technical learning activities			
4 Know how to clean and tidy the workplace after scientific or technical learning activities (continued)	4.1 Describe what is the appropriate action to take with hazards 4.2 Describe how to deal with spillages and what action to take 4.3 Describe how to check that services are working effectively and safely and what action to take if they are not 4.4 Describe how to store scientific or technical materials, resources, consumables and equipment safely and correctly 4.5 Describe the procedures for the safe storage and handling of scientific or technical materials, resources, consumables and equipment 4.6 Describe when and how to use risk assessment while cleaning and tidying the workplace 4.7 Explain the techniques and processes used for cleaning and tidying the workplace 4.8 Describe how to confirm when the workplace is fit to use.			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 10: Provide scientific or technical support for learning activities

Unit reference number: T/601/9383

Level: 2

Credit value: 6

Guided learning hours: 48

Unit summary

This unit covers the skills and knowledge needed to prove the competences required to assist teachers or trainers with scientific or technical learning 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 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 requirements

Assessment requirements are set down in Annexe D: Assessment strategy.

Assessment methodology

This unit is assessed in the workplace. Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
1 Provide scientific or technical support for learning 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 Adopt appropriate working practices when supporting student activities and performance 1.4 Support teachers or trainers and follow their instructions when monitoring the learner activities 1.5 Follow instructions from one of the following supervisors: – supervisor – manager – team leader – head of department – health and safety officer – teacher or trainer 1.6 Provide scientific or technical support with all of the following activities: – timetabled lessons – other supervised events – outside activities			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	1.7 Provide scientific or technical support with all of the following elements: – equipment – services (e.g. gas, electricity) – materials – procedures – techniques – consumables 1.8 Instruct the students/learners correctly and clearly on best working practices			
2 Provide scientific or technical support for learning activities (continued)	2.1 Encourage the students/learners to adopt best working practices when carrying out learning activities 2.2 Monitor the student/learner activities and adhere to procedures and health and safety requirements 2.3 Take the appropriate action to address problems encountered before, during and after learning activities 2.4 Work safely at all times, complying with health and safety, environmental and other relevant regulations and guidelines 2.5 Report problems or concerns from the learning activities to the relevant people			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	2.6 Communicate the required information about the work done, in accordance with departmental and organisational procedures 2.7 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			
3 Know how to provide scientific or technical support for learning activities	3.1 Explain the health and safety requirements of the area in which they are carrying out the scientific or technical activities 3.2 Explain the implications of not taking account of legislation, regulations, standards and guidelines when conducting scientific or technical activities 3.3 Explain the scientific or technical techniques and processes they must use correctly in the workplace. 3.4 Explain the importance of wearing protective clothing, gloves and eye protection for scientific or technical activities 3.5 Explain the importance of correct identification, and any unique workplace coding system			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	3.6 Explain the lines of communication and responsibilities in their department, and their links with the rest of the organisation 3.7 Explain the limits of their own authority and to whom they should report if they have problems that they cannot resolve 3.8 Describe the basic techniques and knowledge required to help with student/learner learning activities 3.9 Describe how to promote best scientific or technical working practices amongst student/learners			
4 Know how to provide scientific or technical support for learning activities (continued)	4.1 Describe how to encourage learners to ask questions 4.2 Describe what scientific or technical hazards risks are associated with the learning activities 4.3 Describe what scientific or technical risks as associated with their own and the learners' activities 4.4 Describe what is the appropriate action to take with hazards 4.5 Describe how to deal with spillages, equipment failures and breakages 4.6 Describe how to identify problems with learners and the student/learner learning activities			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	4.7 Describe what are appropriate actions to take in the event of problems before, during and after learning activities 4.8 Describe when and how to use remedial, supportive and/or prohibitive actions.			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 11: Prepare new scientific or technical methods, resources and equipment for learning activities

Unit reference number: A/601/9384

Level: 2

Credit value: 12

Guided learning hours: 81

Unit summary

This unit covers the skills and knowledge needed to prove the competences required to assist with the development and preparation of new scientific or technical methods, resources and equipment for use in new or modified learning 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 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 requirements

Assessment requirements are set down in Annexe D: Assessment strategy.

Assessment methodology

This unit is assessed in the workplace. Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
1 Prepare new scientific or technical methods, resources and equipment for learning 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 Clarify the requirements of the new method, resources or equipment to be used with relevant people 1.4 Clarify the new or modified method with one of the following people: – supervisor – manager – team leader – head of department – health and safety officer – teacher or trainer 1.5 Confirm that the new or modified method is appropriate and cost effective for the learning activity			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	1.6 Identify the requirements needed for one of the following new or modified learning activities: – timetabled lessons – other supervised events – outside activities 1.7 Identify the resources and/or equipment required for the new or modified learning activity method 1.8 Assess and give advice on the hazards and risks associated with the preparation of the new or modified method			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
2 Prepare new scientific or technical methods, resources and equipment for learning activities (continued)	2.1 Assess and give advice on three of the following hazards and risks: – harmful/toxic material – sensitising/irritant material – high voltage item – highly flammable material – oxidising material – extreme temperature item – radioactive material – corrosive material – biohazard material – electrostatic discharge item – manual handling 2.2 Test the procedure for the new or modified methods and record the results 2.3 Evaluate and modify the new or modified method in partnership with the relevant people			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	2.4 Evaluate all of the following for the new or modified learning activities with relevant people: – equipment – services (e.g. gas, electricity) – time required – costs – materials – procedures – techniques – hazards and risks – learning outcomes 2.5 Work safely at all times, complying with health and safety, environmental and other relevant regulations and guidelines 2.6 Communicate the required information about the work done, in accordance with departmental and organisational procedures			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	2.7 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			
3 Know how to prepare new scientific or technical methods, resources and equipment for learning activities	3.1 Explain the health and safety requirements of the area in which they are carrying out the scientific or technical activities 3.2 Explain the implications of not taking account of legislation, regulations, standards and guidelines when conducting scientific or technical activities 3.3 Explain the scientific or technical techniques and processes they must use correctly in the workplace. 3.4 Explain the importance of wearing protective clothing, gloves and eye protection for scientific or technical activities 3.5 Explain the importance of correct identification, and any unique workplace coding system 3.6 Explain the lines of communication and responsibilities in their department, and their links with the rest of the organisation			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	3.7 Explain the limits of their own authority and to whom they should report if they have problems that they cannot resolve 3.8 Describe the basic techniques and scientific or technical knowledge required to prepare and test new or modified methods 3.9 Describe the types of scientific or technical methods can be prepared and tested			
4 Know how to prepare new scientific or technical methods, resources and equipment for learning activities (continued)	4.1 Describe the scientific or technical resources are required and available 4.2 Describe the learning activity constraints are in force 4.3 Describe what constitutes a scientific or technical hazard 4.4 Describe when and how to undertake a risk assessment 4.5 Describe how to test the new or modified scientific or technical method 4.6 Describe how to organise their work according to workplace deadlines 4.7 Describe how to record and evaluate the results of the new or modified scientific or technical method 4.8 Describe how to modify the scientific or technical method, and when this may be required 4.9 Describe what documentation should be used for new or modified learning activities			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 12: Carry out simple scientific or technical tests using manual equipment

Unit reference number: F/601/9385

Level: 2

Credit value: 7

Guided learning hours: 59

Unit summary

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 requirements

Assessment requirements are set down in Annexe D: Assessment strategy.

Assessment methodology

This unit is assessed in the workplace. Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
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			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	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			
2 Carry out simple scientific or technical tests using manual equipment (continued)	2.1 Conduct manual laboratory tests on samples in accordance with the correct procedures and techniques 2.2 Record the results of manual tests in accordance with workplace procedures 2.3 Dispose of waste items from manual laboratory tests in accordance with workplace procedures 2.4 Return equipment and materials that can be used for future testing to the correct storage location 2.5 Communicate the required information about the work done, in accordance with departmental and organisational procedures			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	2.6 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			
3 Know how to carry out simple scientific or technical tests using manual equipment	3.1 Explain the health and safety requirements of the area in which they are carrying out the scientific or technical activities 3.2 Explain the implications of not taking account of legislation, regulations, standards and guidelines when conducting scientific or technical activities 3.3 Explain the scientific or technical techniques and processes they must use correctly in the workplace. 3.4 Explain the importance of wearing protective clothing, gloves and eye protection for scientific or technical activities 3.5 Explain the importance of correct identification, and any unique workplace coding system 3.6 Explain the lines of communication and responsibilities in their department, and their links with the rest of the organisation			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	3.7 Explain the limits of their own authority and to whom they should report if they have problems that they cannot resolve 3.8 Explain the minimum size/volume of sample required for the scientific or technical tests conducted 3.9 Explain the types of sample and container used for transport and scientific or technical testing			
4 Know how to carry out simple scientific or technical tests using manual equipment (continued)	4.1 Describe how to assess if a sample is suitable for analysis 4.2 Describe how to use and take a reading from manual test kits used in the workplace 4.3 Explain the procedure to be followed when samples do not match up with the test output specification or accompanying documentation 4.4 Explain the procedure to be followed when a broken or leaking sample is identified in the workplace 4.5 Explain the procedure to be followed if a hazardous or high risk sample was received in the workplace 4.6 Explain the methods used for numbering and labelling samples in the workplace 4.7 Explain the procedures for storing tested samples when archiving is required 4.8 Explain the factors which might adversely affect the integrity of the sample during storage or transport			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 13: Carry out simple scientific or technical tests using automated equipment

Unit reference number: J/601/9386

Level: 2

Credit value: 10

Guided learning hours: 70

Unit summary

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 requirements

Assessment requirements are set down in Annexe D: Assessment strategy.

Assessment methodology

This unit is assessed in the workplace. Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
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			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	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			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	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			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
2 Carry out simple scientific or technical tests using automated equipment (continued)	2.1 Follow the defined procedures for starting and running the laboratory equipment 2.2 Load and unload samples from laboratory equipment in accordance with procedures and analyser/equipment specifications 2.3 Deal promptly and effectively with error messages or equipment faults that are within their control and report those that cannot be solved 2.4 Monitor the equipment process and ensure that the output readings are to the required specification 2.5 Shut down the equipment to a safe condition on conclusion of the activities 2.6 Communicate the required information about the work done, in accordance with departmental and organisational procedures 2.7 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			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
3 Know how to carry out simple scientific or technical tests using automated equipment	3.1 Explain the health and safety requirements of the area in which they are carrying out the scientific or technical activities 3.2 Explain the implications of not taking account of legislation, regulations, standards and guidelines when conducting scientific or technical activities 3.3 Explain the scientific or technical techniques and processes they must use correctly in the workplace. 3.4 Explain the importance of wearing protective clothing, gloves and eye protection for scientific or technical activities 3.5 Explain the importance of correct identification, and any unique workplace coding system 3.6 Explain the lines of communication and responsibilities in their department, and their links with the rest of the organisation 3.7 Explain the limits of their own authority and to whom they should report if they have problems that they cannot resolve 3.8 Explain the minimum size/volume of sample required for the scientific or technical tests conducted 3.9 Explain the types of sample and container used for transport and scientific or technical testing 3.10 Describe how to assess if a sample is suitable for analysis			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	3.11 Describe how to start and shut down the scientific or technical equipment, including what to do in an emergency			
4 Know how to carry out simple scientific or technical tests using automated equipment (continued)	4.1 Explain why is it important to carry out pre-test checks and identify the status of the equipment before starting tests 4.2 Describe how to load samples from the testing equipment and how to initiate sample tests 4.3 Explain the appropriate action to take when sampling or equipment errors occur 4.4 Describe how to unload samples from the test equipment, and how to store them during the testing process 4.5 Explain the procedure to be followed when samples do not match up with the test output specification or accompanying documentation 4.6 Explain the procedure to be followed when a broken or leaking sample is identified in the workplace 4.7 Explain the procedure to be followed if a hazardous or high risk sample is received in the workplace 4.8 Explain the methods used for numbering and labelling samples in the workplace 4.9 Explain the procedures for storing tested samples when archiving is required 4.10 Explain the factors which might adversely affect the integrity of the sample during storage or transport			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 14: Prepare scientific or technical samples for testing activities

Unit reference number: L/601/9387

Level: 2

Credit value: 8

Guided learning hours: 58

Unit summary

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 requirements

Assessment requirements are set down in Annexe D: Assessment strategy.

Assessment methodology

This unit is assessed in the workplace. Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
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			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	1.7 Prepare samples for scientific or technical testing in accordance with workplace procedures			
2 Prepare scientific or technical samples for testing activities (continued)	2.1 Prepare samples using two of the following methods: – grinding – pulverising – dividing – mixing – centrifuging – filtering/sieving – diluting – weighing – hydrating – siphoning – other (please specify) 2.2 Identify and store test samples correctly until required 2.3 Deal with any waste material in accordance with workplace procedures 2.4 Work safely at all times, complying with health and safety, environmental and other relevant regulations and guidance			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	2.5 Communicate the required information about the work done, in accordance with departmental and organisational procedures 2.6 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			
3 Know how to prepare scientific or technical samples for testing activities	3.1 Explain the health and safety requirements of the area in which they are carrying out the scientific or technical activities 3.2 Explain the implications of not taking account of legislation, regulations, standards and guidelines when conducting scientific or technical activities 3.3 Explain the scientific or technical techniques and processes they must use correctly in the workplace. 3.4 Explain the importance of wearing protective clothing, gloves and eye protection for scientific or technical activities 3.5 Explain the importance of correct identification, and any unique workplace coding system			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	3.6 Explain the lines of communication and responsibilities in their department, and their links with the rest of the organisation 3.7 Explain the limits of their own authority and to whom they should report if they have problems that they cannot resolve 3.8 Describe what methods of sample preparation to use 3.9 Explain why the right sample preparation conditions are important 3.10 Describe how to control sample preparation conditions 3.11 Describe how to check integrity and identity of samples prepared			
4 Know how to prepare scientific or technical samples for testing activities (continued)	4.1 Explain the types of sample and container used for transport and scientific or technical testing 4.2 Explain the types of equipment used to prepare samples 4.3 Explain why it is important to carry out pre-use check and identify the status of equipment before it is used to prepare samples 4.4 Describe how to load and unload equipment used in sample preparation 4.5 Explain the procedure to be followed when samples do not match up with the accompanying documentation			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	4.6 Explain the procedure to be followed when a broken or leaking sample is identified in the workplace 4.7 Explain the procedure to be followed if a hazardous or high risk sample was received in the workplace 4.8 Explain the methods used for numbering and labelling samples in the workplace 4.9 Explain the procedures for storing prepared samples when archiving is required 4.10 Explain the factors which might adversely affect the integrity of the sample during storage or transport			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 15: Carry out sampling operations for scientific or technical tests

Unit reference number: R/601/9388

Level: 2

Credit value: 5

Guided learning hours: 42

Unit summary

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 requirements

Assessment requirements are set down in Annexe D: Assessment strategy.

Assessment methodology

This unit is assessed in the workplace. Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
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			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	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			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	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)			
2 Carry out sampling operations for scientific or technical tests (continued)	2.1 Label and identify collected samples correctly 2.2 Maintain the condition of the samples and store in the correct location 2.3 Maintain the condition of samples by two of the following methods: – preservation – transportation – aseptic container – other (please specify) 2.4 Communicate the required information about the work done, in accordance with departmental and organisational procedures			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	2.5 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			
3 Know how to carry out sampling operations for scientific or technical tests	3.1 Explain the health and safety requirements of the area in which they are carrying out the scientific or technical activities 3.2 Explain the implications of not taking account of legislation, regulations, standards and guidelines when conducting scientific or technical activities 3.3 Explain the scientific or technical techniques and processes they must use correctly in the workplace. 3.4 Explain the importance of wearing protective clothing, gloves and eye protection for scientific or technical activities 3.5 Explain the importance of correct identification, and any unique workplace coding system 3.6 Explain the lines of communication and responsibilities in their department, and their links with the rest of the organisation			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	3.7 Explain the limits of their own authority and to whom they should report if they have problems that they cannot resolve			
4 Know how to carry out sampling operations for scientific or technical tests (continued)	4.1 Explain the sampling methods and procedures used in the environment where they are taken 4.2 Explain the range of equipment and materials used for sampling in the environment where they are taken 4.3 Explain the documentation and labelling systems that should be used to ensure sample traceability after sampling 4.4 Explain the methods used for keeping records of sampling operations, and why this is important 4.5 Explain the principles and techniques of maintaining the sample integrity following collection 4.6 Describe how to identify defective sampling equipment, and the actions to be taken 4.7 Explain the methods used for the handling, storage and disposal of materials 4.8 Explain the materials and methods used in the sampling process			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 16: Following aseptic procedures in the laboratory environment

Unit reference number: T/601/2031

Level: 2

Credit value: 9

Guided learning hours: 51

Unit summary

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 requirements

Assessment requirements are set down in Annexe D: Assessment strategy.

Assessment methodology

This unit is assessed in the workplace. Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
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)			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	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			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	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			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
2 Follow aseptic procedures in the laboratory environment (continued)	2.1 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) 2.2 Follow aseptic techniques in the laboratory 2.3 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 2.4 Remove personal protection equipment on completion of clean room or clean work area activities, and dispose/store in line with the correct procedure 2.5 Communicate the required information about the work done, to authorised people, in accordance with departmental and organisational procedures			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	2.6 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			
3 Know how to follow aseptic procedures in the laboratory environment	3.1 Describe the health and safety requirements of the area in which they are carrying out the laboratory activities 3.2 Describe the implications of not taking account of legislation, regulations, standards and guidelines when conducting laboratory activities 3.3 Describe the principles of Good Laboratory Practice (GLP) and/or Good Clinical Practice (GCP)/Good Manufacturing Practice (GMP) applied in the workplace 3.4 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			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	3.5 Describe the manufactured materials and batch process tracking and records system 3.6 Describe the types of handling and sorting system, and the procedures used for materials undergoing processing in the laboratory facilities 3.7 Describe the importance of correct identification, and any unique organisational or laboratory numbers 3.8 Describe the organisational requirements for maintaining the security of the workplace 3.9 Describe the lines of communication and responsibilities in their department, and their links with the rest of the organisation 3.10 Describe the limits of their own authority and to whom they should report if they have problems that they cannot resolve 3.11 Describe the specific safety precautions to be taken when working in a clean room or clean work area environment 3.12 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)			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
4 Know how to follow aseptic procedures in the laboratory environment (continued)	4.1 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) 4.2 Explain how to put on clean room clothing and footwear correctly 4.3 Describe the procedures for entering and exiting the clean room or clean work area, and the authority needed to do so 4.4 Describe the classification of the relevant clean room or clean work area, and how this impacts upon them 4.5 Describe the industry standards/classifications for clean rooms and clean work areas 4.6 Describe the company requirements for clothing and personal protective equipment, and the reasons why such clothing and equipment must be used 4.7 Describe the procedures and methods for maintaining issued clothing and personal protective equipment 4.8 Explain how to apply procedures for dealing with damaged or dirty clothing and personal protective equipment			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	4.9 Explain how to store clothing and personal protective equipment correctly 4.10 Describe the laundering/cleaning/maintenance procedures relating to the issued clothing and personal protective equipment 4.11 Describe the aseptic techniques that are applied and used in the laboratory 4.12 Explain how to dispose correctly of single-use personal protective equipment 4.13 Describe the policy and procedures relating to personal items (such as body lotions, makeup, jewellery, contact lenses, footwear, own clothing)			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)

Further information

Our customer service numbers are:

BTEC and NVQ	0844 576 0026
GCSE	0844 576 0027
GCE	0844 576 0025
The Diploma	0844 576 0028
DiDA and other qualifications	0844 576 0031

Calls may be recorded for training purposes.

Useful publications

Related information and publications include:

- *Centre Handbook for Edexcel NVQs and Competence-based Qualifications* published annually
- functional skills publications – specifications, tutor support materials and question papers
- *Regulatory Arrangements for the Qualification and Credit Framework* (published by Ofqual, August 2008)
- the current Edexcel publications catalogue and update catalogue.

Edexcel publications concerning the Quality Assurance System and the internal and standards verification of vocationally related programmes can be found on the Pearson website.

NB: Some of our publications are priced. There is also a charge for postage and packing. Please check the cost when you order.

How to obtain National Occupational Standards

To obtain the National Occupational Standards for Laboratory and Associated Technical Activities please go to:

SEMTA
www.semta.org.uk

Professional development and training

Edexcel supports UK and international customers with training related to NVQ and BTEC qualifications. This support is available through a choice of training options offered in our published training directory or through customised training at your centre.

The support we offer focuses on a range of issues including:

- planning for the delivery of a new programme
- planning for assessment and grading
- developing effective assignments
- building your team and teamwork skills
- developing student-centred learning and teaching approaches
- building functional skills into your programme
- building effective and efficient quality assurance systems.

The national programme of training we offer can be viewed on our website (www.pearson.com/training). You can request customised training through the website or by contacting one of our advisers in the Training from Edexcel team via Customer Services to discuss your training needs.

The training we provide:

- is active
- is designed to be supportive and thought provoking
- builds on best practice
- may be suitable for those seeking evidence for their continuing professional development.

Annexe A: Progression pathways

The Edexcel qualification framework for the Science sector

Level	General qualifications	Diplomas	BTEC vocationally-related qualifications	BTEC specialist qualification/ professional	NVQ/competence
8					
7					
6					
5			BTEC Higher Nationals in Applied Sciences		
4					NVQ Laboratory and Associated Technical Activities
3	GCE Sciences: Chemistry; Physics; Biology; Psychology		Edexcel BTEC Level 3 Certificate, Subsidiary Diploma, Diploma and Extended Diploma in Applied Science (including Forensic Science and Medical Science pathways)		NVQ Laboratory and Associated Technical Activities NVQ Laboratory Science
2	GCSE Science; Additional Science; Astronomy; Chemistry; Physics; Biology; Psychology		Edexcel BTEC Level 2 Certificate, Extended Certificate and Diploma in Applied Science		NVQ Laboratory and Associated Technical Activities NVQ Laboratory Science

Level	General qualifications	Diplomas	BTEC vocationally-related qualifications	BTEC specialist qualification/ professional	NVQ/competence
1					
Entry			Foundation Learning Tier (Applied Science)		

Annexe B: Quality assurance

Key principles of quality assurance

- A centre delivering Edexcel qualifications must be an Edexcel recognised centre and must have approval for qualifications that it is offering.
- The centre agrees, as part of gaining recognition, to abide by specific terms and conditions relating to the effective delivery and quality assurance of assessment. The centre must abide by these conditions throughout the period of delivery.
- Edexcel makes available to approved centres a range of materials and opportunities to exemplify the processes required for effective assessment and provide examples of effective standards. Approved centres must use the guidance on assessment to ensure that staff who are delivering Edexcel qualifications are applying consistent standards.
- An approved centre must follow agreed protocols for: standardisation of assessors; planning, monitoring and recording of assessment processes; internal verification and recording of internal verification processes and dealing with special circumstances, appeals and malpractice.

Quality assurance processes

The approach to quality assured assessment is made through a partnership between a recognised centre and Edexcel. Edexcel is committed to ensuring that it follows best practice and employs appropriate technology to support quality assurance processes where practicable. The specific arrangements for working with centres will vary. Edexcel seeks to ensure that the quality-assurance processes it uses do not inflict undue bureaucratic processes on centres, and works to support them in providing robust quality-assurance processes.

The learning outcomes and assessment criteria in each unit within this specification set out the standard to be achieved by each learner in order to gain each qualification. Edexcel operates a quality-assurance process, designed to ensure that these standards are maintained by all assessors and verifiers.

For the purposes of quality assurance, all individual qualifications and units are considered as a whole. Centres offering these qualifications must be committed to ensuring the quality of the units and qualifications they offer, through effective standardisation of assessors and internal verification of assessor decisions. Centre quality assurance and assessment processes are monitored by Edexcel.

The Edexcel quality-assurance processes will involve:

- gaining centre recognition and qualification approval if a centre is not currently approved to offer Edexcel qualifications
- annual visits to centres by Edexcel for quality review and development of overarching processes and quality standards. Quality review and development visits will be conducted by an Edexcel quality development reviewer
- annual visits by occupationally competent and qualified Edexcel Standards Verifiers for sampling of internal verification and assessor decisions for the occupational sector
- the provision of support, advice and guidance towards the achievement of National Occupational Standards.

Centres are required to declare their commitment to ensuring quality and appropriate opportunities for learners that lead to valid and accurate assessment outcomes. In addition, centres will commit to undertaking defined training and online standardisation activities.

Annexe C: Centre certification and registration

Edexcel Standards Verifiers will provide support, advice and guidance to centres to achieve Direct Claims Status (DCS). Edexcel will maintain the integrity of Edexcel NVQs through ensuring that the awarding of these qualifications is secure. Where there are quality issues identified in the delivery of programmes, Edexcel will exercise the right to:

- direct centres to take action
- limit or suspend certification
- suspend registration.

The approach of Edexcel in such circumstances is to work with the centre to overcome the problems identified. If additional training is required, Edexcel will aim to secure the appropriate expertise to provide this.

What are the access arrangements and special considerations for the qualifications in this specification?

Centres are required to recruit learners to Edexcel qualifications with integrity.

Appropriate steps should be taken to assess each applicant's potential and a professional judgement should be made about their ability to successfully complete the programme of study and achieve the qualification. This assessment will need to take account of the support available to the learner within the centre during their programme of study and any specific support that might be necessary to allow the learner to access the assessment for the qualification. Centres should consult Edexcel's policy on learners with particular requirements.

Edexcel's policy on access arrangements and special considerations for Edexcel qualifications aims to enhance access to the qualifications for learners with disabilities and other difficulties (as defined by the 1995 Disability Discrimination Act and the amendments to the Act) without compromising the assessment of skills, knowledge, understanding or competence. Please refer to *Access Arrangements and Special Considerations for BTEC and Edexcel NVQ Qualifications* for further details. www.pearson.com.

Annexe D: Assessment requirements/strategy

Introduction

Semta, the Sector Skills Council for the Science Engineering Manufacturing Technologies

Sector, has produced this Unit Assessment Strategy to:

- assist Assessors, Internal Verifiers and External Verifiers
- encourage and promote consistent assessment of NVQ units
- promote cost effective assessment plans

This document also provides definitions for:

- the qualifications and experience required for Assessors and Verifiers
- the assessment environment and notes on simulation/replication.
- access to units

and requirements relating to:

- carrying out assessments
- performance evidence
- assessing knowledge and understanding

The importance and value in which employers and learners place on undertaking NVQ units will provide a key measure of [Semta's] success with this unit assessment strategy. Another key success factor will be [Semta's] partnership with the relevant Awarding Organisations.

Assessor Requirements to Demonstrate Effective Assessment Practice

Assessment must be carried out by competent Assessors that as a minimum must hold the Level 3 Award in Assessing Competence in the Work Environment. Current and operational Assessors that hold units D32 and/or D33 or A1 and/or A2 as appropriate to the assessment being carried out, will not be required to achieve the Level 3 Award as they are still appropriate for the assessment requirements set out in this Unit Assessment Strategy. However, they will be expected to regularly review their skills, knowledge and understanding and where applicable undertake continuing professional development to ensure that they are carrying out workplace assessment to the most up to date National Occupational Standards (NOS)

Assessor Technical Requirements

Assessors must be able to demonstrate that they have verifiable, relevant and sufficient technical competence to evaluate and judge performance and knowledge evidence requirements as set out in the relevant unit learning outcomes and associated assessment criteria.

This will be demonstrated either by holding a relevant technical qualification or by proven industrial experience of the technical areas to be assessed. The assessor's competence must, at the very least, be at the same level as that required of the learner(s) in the units being assessed.

Assessors must also be:

Fully conversant with the Awarding Organisation's assessment recording documentation used for the NVQ units against which the assessments and verification are to be carried out, other relevant documentation and system and procedures to support the QA process.

Verifier Requirements (internal and external)

Internal quality assurance (Internal Verification) must be carried out by competent Verifiers that as a minimum must hold the Level 4 Award in the Internal Quality Assurance of Assessment Processes and Practices. Current and operational Internal Verifiers that hold internal verification units V1 or D34 will not be required to achieve the Level 4 Award as they are still appropriate for the verification requirements set out in this Unit Assessment Strategy. Verifiers must be familiar with, and preferably hold, either the nationally recognised Assessor units D32 and/or D33 or A1 and/or A2 or the Level 3 Award in Assessing Competence in the Work Environment.

External quality assurance (External Verification) must be carried out by competent External Verifiers that as a minimum must hold the Level 4 Award in the External Quality Assurance of Assessment Processes and Practices**.** Current and operational External Verifiers that hold external verification units V2 or D35 will not be required to achieve the Level 4 Award as they are still appropriate for the verification requirements set out in this Unit Assessment Strategy. Verifiers must be familiar with, and preferably hold, either the nationally recognised Assessor units D32 and/or D33 or A1 and/or A2 or the Level 3 Award in Assessing Competence in the Work Environment.

External and Internal Verifiers will be expected to regularly review their skills, knowledge and understanding and where applicable undertake continuing professional development to ensure that they are carrying out workplace Quality Assurance (verification) of Assessment Processes and Practices to the most up to date National Occupational Standards (NOS).

Verifiers, both Internal and External, will also be expected to be fully conversant with the terminology used in the NVQ units against which the assessments and verification are to be carried out, the appropriate Regulatory Body's systems and procedures and the relevant Awarding Organisation's documentation, systems and procedures within which the assessment and verification is taking place.

Specific technical requirements for internal and external verifiers

Internal and external verifiers of this qualification must be able to demonstrate that have verifiable, sufficient and relevant industrial experience, and must have a working knowledge of the processes, techniques and procedures that are used in the relevant sector/occupation.

The tables on the following page show the recommended levels of technical competence for assessors, internal verifiers, and external verifiers.

Technical Requirements for Assessors and Verifiers

Position	Prime activity requirements	Support activity requirements	Technical requirements (see notes)
Assessor	Assessment Skills	IV Systems	Technical competence in the areas covered by the units being assessed
Internal Verifier	Verification Skills	Assessment Knowledge	Technical understanding of the areas covered by the qualifications
External Verifier	Verification skills	Assessment Understanding	Technical awareness of the areas covered by the qualifications

Notes

1 Technical competence is defined here as a combination of practical skills, knowledge, and the ability to apply both of these, in familiar and new situations, within a real working environment.

2 Technical understanding is defined here as having a good understanding of the technical activities being assessed, together with knowledge of relevant Health & Safety implications and requirements of the assessments.

3 Technical awareness is defined here as a general overview of the subject area, sufficient to ensure that assessment and portfolio evidence are reliable, and that relevant Health and Safety requirements have been complied with.

4 The competence required by the assessor, internal verifier and external verifier, in the occupational area being assessed, is likely to exist at three levels as indicated by the shaded zones in the following table.

Technical Competence / Required by:	An ability to discuss the general principles of the competences being assessed	An ability to describe the practical aspects of the competence being assessed	An ability to demonstrate the practical competences being assessed
Assessor			
Internal Verifier			
External Verifier			

Assessment Environment

The evidence put forward for this unit can only be regarded valid, reliable, sufficient and authentic if achieved and obtained in the working environment and be clearly attributable to the learner. However, in certain circumstances, simulation/replication of work activities may be acceptable.

- The use of high quality, realistic simulations, which impose pressures which are consistent with workplace expectations, should only be used in relation to the assessment of the following:
    - rare or dangerous occurrences, such as those associated with health, safety and the environment issues, emergency scenarios and rare operations at work;
    - the response to faults and problems for which no opportunity has presented for the use of naturally occurring workplace evidence of learners competence;
    - aspects of working relationships and communications for which no opportunity has presented for the use of naturally occurring workplace evidence of learner's competence.
- Simulations will require prior approval from the specific Awarding Organisation and should be designed in relation to the following parameters:
    - the environment in which simulations take place must be designed to match the characteristics of the working environment;
    - simulations which are designed to assess competence in dealing with emergencies, accidents and incidents must be verified as complying with relevant health, safety and environmental legislation by a competent health and safety/environmental control officer before being used;
    - simulated activities should place learners under the same pressures of time, access to resources and access to information as would be expected if the activity was real;
    - simulated activities should require learners to demonstrate their competence using real plant and equipment;
    - simulated activities which require interaction with colleagues and contacts should require the learner to use the communication media that would be expected at the workplace;

- for health and safety reason simulations need not involve the use of genuine substances/materials. Any simulations which require the learner to handle or otherwise deal with materials substances/should ensure that the substitute take the same form as in the workplace

Simulations/replications should be designed in relation to a realistic work environment, having an acceptable level of appropriate equipment and operating to Good Laboratory Practice (GLP)/Good Control Laboratory Practice (GCLP) and/or Good Manufacturing Practice (GMP)/Current Good Manufacturing Practice (CGMP) standards. It may involve the use of inert substitutes for dangerous compounds or microbiological materials.

Access to Assessment

There are no entry qualifications or age limits required by learners to undertake the NVQ units unless this is a legal requirement of the process or the environment. Assessment is open to any learner who has the potential to achieve the assessment criteria set out in the units.

Aids or appliances, which are designed to alleviate disability, may be used during assessment, providing they do not compromise the standard required.

Carrying Out Assessment

The NVQ units were specifically developed to cover a wide range of activities. The evidence produced for the units will, therefore, depend on the learners choice of "bulleted items" listed in the unit assessment criteria.

Where the assessment criteria gives a choice of bulleted items (for example 'any three from five'), assessors should note that learners do not need to provide evidence of the other items to complete the unit (in this example, two) items, particularly where these additional items may relate to other activities or methods that are not part of the learners normal workplace activity or area of expertise.

Minimum Performance Evidence Requirements

Performance evidence must be the main form of evidence gathered. In order to demonstrate consistent, competent performance for a unit, performance evidence must be provided, and must be sufficient to show that the performance requirements of the unit have been carried out to the prescribed standards. It is possible that some of the scope items may be covered more than once. The assessor and learner need to devise an assessment plan to ensure that performance evidence is sufficient to cover all the specified scope items and which maximises the opportunities to gather evidence. Where applicable, performance evidence maybe used for more than one unit.

The most effective way of assessing competence, especially for the performance statements in relation to scope items, is through direct observation of the learner. Assessors must make sure that the evidence provided reflects the learner's competence and not just the achievement of a training programme.

Evidence that has been produced from team activities, for example, cleaning equipment, is only valid when it clearly relates to the learners specific and individual contribution to the activity, and not to the general outcome(s).

Each example of performance evidence will often contain features that apply to more than one unit, and can be used as evidence in any unit where appropriate.

Performance evidence must be a combination of:

- outputs of the learner's work, such as items that have been processed or worked on, and documents produced as part of a work activity

together with:

- evidence of the way the learner carried out the activities such as witness testimonies, assessor observations or authenticated learner reports, records or photographs of the work/activity carried out, etc.

Competent performance is more than just carrying out a series of individual set tasks. Many of the units contain statements that require the learner to provide evidence that proves they are capable of combining the various features and techniques. Where this is the case, separate fragments of evidence would not provide this combination of features and techniques and will not, therefore, be acceptable as demonstrating competent performance.

If there is any doubt as to what constitutes valid, authentic and reliable evidence, the internal and/or external verifier should be consulted.

Assessing knowledge and understanding

Knowledge and understanding are key components of competent performance, but it is unlikely that performance evidence alone will provide enough evidence in this area. Where the learner's knowledge and understanding (and the handling of contingency situations) is not apparent from performance evidence, it must be assessed by other means and be supported by suitable evidence.

Knowledge and understanding can be demonstrated in a number of different ways. Semta expects oral questioning and practical demonstrations to be used, as these are considered the most appropriate for these units. Assessors should ask enough questions to make sure that the learner has an appropriate level of knowledge and understanding, as required by the unit.

Awarding Organisations may choose other methods, which must be supported by a suitable rationale

Evidence of knowledge and understanding will **not** be required for those bulleted items in the assessment criteria that have not been selected by the learner.

The achievement of the specific knowledge and understanding requirements of the units cannot simply be inferred by the results of tests or assignments from other units, qualifications or training programmes. Where evidence is submitted from these sources, the assessor must, as with any assessment, make sure the evidence is valid, reliable, authentic, directly attributable to the learner, and meets the full knowledge and understanding requirements of the unit.

Where oral questioning is used the assessor must retain a record of the questions asked, together with the learner's answers.

Awarding Organisations may choose other methods, which must be supported by a suitable rationale.

Witness testimony

Where observation is used to obtain performance evidence, this must be carried out against the unit assessment criteria. Best practice would require that such observation is carried out by a qualified Assessor. If this is not practicable, then alternative sources of evidence may be used.

For example, the observation may be carried out against the assessment criteria by someone else that is in close contact with the learner. This could be a team leader, supervisor, mentor or line manager who may be regarded as a suitable witness to the learner's competency. However, the witness must be technically competent in the process or skills that they are providing testimony for, to at least the same level of expertise as that required of the learner. It will be the responsibility of the assessor to make sure that any witness testimonies accepted as evidence of the learner's competency are reliable, auditable and technically valid.

Quality Control of Assessment

General

There are two major points where an Awarding Organisation interacts with the Centre in relation to the External Quality Control of Assessment and these are:

- Approval - when a Centre take on new qualifications/units, the Awarding Organisation, normally through an External Verifier (EV) ensures that the Centre is suitably equipped and prepared to deliver the new units/qualification
- Monitoring - throughout the ongoing delivery of the qualification/units the Awarding Organisation, through EV monitoring and other mechanisms must maintain the quality and consistency of assessment of the units/qualification

Approval

In granting Approval, the Awarding Organisation, normally through its External Verifiers (EV) must ensure that the prospective Centre:

- Meets the requirements of the Qualification Regulator
- Has sufficient and appropriate physical and staff resources
- Meets relevant health and safety and/or equality and access requirements
- Has a robust plan for the delivery of the qualification/units

The Awarding Organisation may visit the Centre to view evidence or may undertake this via other means.

The Awarding Organisation must have a clear rationale for the method(s) deployed

Monitoring

The Awarding Organisation, through EV monitoring and other mechanisms must ensure:

- that a strategy is developed and deployed for the ongoing Awarding Organisation monitoring of the Centre. This strategy must be based on an active risk assessment of the Centre. In particular the strategy must identify the learner's, assessors and Internal Verifier sampling strategy to be deployed and the rationale behind this

- that the Centre's internal quality assurance processes are effective in learner's assessment
- that sanctions are applied to a Centre where necessary and that corrective actions are taken by the Centre and monitored by the Awarding Organisation/EV
- that reviews of Awarding Organisation's external auditing arrangements are undertaken

Awarding Organisations are required to provide to SEMTA, on request, details of the strategies, rationales and reviews detailed above.

Notes:

a) It is recognised that some Awarding Bodies provide supplementary guidance and documentation to centres to support the quality of assessment and verification practice of N/SVQs.

Annexe E: Additional requirement for qualifications that use the term 'NVQ' in a qualification title

For information please go to www.ofqual.gov.uk to access the document *'Operating rules for using the term 'NVQ' in a qualification title'*.

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For information about Edexcel, BTEC or LCCI qualifications visit qualifications.pearson.com