



TECHNICIAN SCIENTIST

Key information

Reference: ST0597

Version: 1.1

Level: 5

Typical duration to gateway: 36 months

Typical EPA period: 3 months

Maximum funding: £21000

Route: Health and science

Date updated: 03/04/2023

Approved for delivery: 7 August 2018

Lars code: 319

EQA provider: Ofqual

Example progression routes:

Laboratory scientist (degree),

Research scientist

Review: This apprenticeship standard will be reviewed after three years

End-point assessment plan

V1.1

Introduction and overview

This document explains the requirements for end-point assessment (EPA) for the technician scientist apprenticeship. End-point assessment organisations (EPAOs) must follow this when designing and delivering the EPA.

Technician scientist apprentices, their employers and training providers should read this document.

An approved EPAO must conduct the EPA for this apprenticeship. Employers must select an approved EPAO from the Education and Skills Funding Agency's Register of end-point assessment organisations (RoEPAO).

A full-time apprentice typically spends 36 months on-programme (this means in training before the gateway) working towards competence as a technician scientist. All apprentices must spend at least 12 months on-programme. All apprentices must complete the required amount of off-the-job training specified by the apprenticeship funding rules.

This EPA has 2 assessment methods.

The grades available for each assessment method are:

Assessment method 1 - project presentation and questions:

- fail

- pass
- distinction

Assessment method 2 - professional discussion underpinned by a portfolio of evidence:

- fail
- pass
- distinction

The result from each assessment method is combined to decide the overall apprenticeship grade. The following grades are available for the apprenticeship:

- fail
- pass
- merit
- distinction

EPA summary table

<p>On-programme (typically 36 months)</p>	<p>The apprentice must complete training to develop the knowledge, skills and behaviours (KSBs) of the occupational standard.</p> <p>The apprentice must complete training towards English and maths qualifications in line with the apprenticeship funding rules.</p> <p>The apprentice must compile a portfolio of evidence.</p>
<p>End-point assessment gateway</p>	<p>The employer must be content that the apprentice is working at or above the occupational standard.</p> <p>The apprentice's employer must confirm that they think the apprentice:</p> <ul style="list-style-type: none"> • is working at or above the occupational standard as a technician scientist • has the evidence required to pass the gateway and is ready to take the EPA <p>The apprentice must have achieved English and maths qualifications in line with the apprenticeship funding rules.</p> <p>For the project presentation and questions, the apprentice must submit the following supporting material: project title and project brief requirements. To ensure the project allows the apprentice to meet the KSBs mapped to this assessment method to the highest available grade, the EPAO should sign-off the project's title and scope at the gateway to confirm it is suitable. A brief project summary must be submitted to the EPAO. It should be no more than 500 words. This needs to show that the project will provide the opportunity for the apprentice to cover the KSBs mapped to this assessment method. It is not assessed.</p> <p>For the professional discussion underpinned by a portfolio of evidence the apprentice must submit a portfolio of evidence.</p> <p>The apprentice must submit any policies and procedures as requested by the EPAO.</p>
<p>End-point assessment (typically 3 months)</p>	<p>Grades available for each method:</p> <p>Project presentation and questions</p>

	<ul style="list-style-type: none"> • fail • pass • distinction <p>Professional discussion underpinned by a portfolio of evidence</p> <ul style="list-style-type: none"> • fail • pass • distinction <p>Overall EPA and apprenticeship can be graded:</p> <ul style="list-style-type: none"> • fail • pass • merit • distinction
Professional recognition	<p>This apprenticeship standard aligns with Science Council for Registered Scientist (partial alignment). The experience gained and responsibility held by the apprentice on completion of the apprenticeship will either wholly or partially satisfy the requirements for registration at this level.</p>
Re-sits and re-takes	<ul style="list-style-type: none"> • Re-take and re-sit grade cap: pass • Re-sit timeframe: typically 2 months • Re-take timeframe: typically 3 months

Duration of end-point assessment period

The EPA will be taken within the EPA period. The EPA period begins when the EPAO confirms the gateway requirements are met and is typically 3 months.

The expectation is that the EPAO will confirm the gateway requirements are met and the EPA begins as quickly as possible.

EPA gateway

The apprentice's employer must confirm that they think their apprentice is working at or above the occupational standard. The apprentice will then enter the gateway. The employer may take advice from the apprentice's training provider(s), but the employer must make the decision.

The apprentice must meet the gateway requirements before starting their EPA.

These are:

- achieved English and maths qualifications in line with the apprenticeship funding rules.
- for the project presentation and questions the apprentice must submit: project title and project brief
- for the professional discussion underpinned by a portfolio of evidence the apprentice must submit: portfolio of evidence

Portfolio of evidence requirements:

The apprentice must compile a portfolio of evidence during the on-programme period of the apprenticeship. It should only contain evidence related to the KSBs that will be assessed by this assessment method. It will typically contain 15 discrete pieces of evidence. Evidence must be mapped against the KSBs. Evidence may be used to demonstrate more than one KSB; a qualitative as opposed to quantitative approach is suggested.

- Evidence sources may include:
- workplace policies/procedures, records
- witness statements
- annotated photographs
- video clips (maximum total duration 10 minutes); the apprentice must be in view and identifiable

This is not a definitive list; other evidence sources can be included.

The portfolio of evidence should not include reflective accounts or any methods of self-assessment. Any employer contributions should focus on direct observation of performance (for example, witness statements) rather than opinions. The evidence provided should be valid and attributable to the apprentice; the portfolio of evidence should contain a statement from the employer and apprentice confirming this.

The EPAO should not assess the portfolio of evidence directly as it underpins the discussion . The independent assessor should review the portfolio of evidence to prepare questions for the discussion. They are not required to provide feedback after this review.

The apprentice must submit any policies and procedures as requested by the EPAO.

Order of assessment methods

The assessment methods can be delivered in any order.

The result of one assessment method does not need to be known before starting the next.

Project presentation and questions

Overview

A project involves the apprentice completing a significant and defined piece of work that has a real business application and benefit. The project must start after the apprentice has gone

through the gateway.

The project presentation and questions must be structured to give the apprentice the opportunity to demonstrate the KSBs mapped to this EPA method to the highest available grade.

The project must meet the needs of the employer's business and be relevant to the apprentice's occupation and apprenticeship. The EPAO must confirm that it provides the apprentice with the opportunity to demonstrate the KSBs mapped to this EPA method to the highest available grade. The EPAO must refer to the grading descriptors to ensure that projects are pitched appropriately.

This EPA method includes 2 components:

- a project with a project report
- presentation with questions and answers.

The project and any components must be assessed holistically by the independent assessor when they are deciding the grade for this EPA method.

Rationale

This EPA method is being used because it enables a defined piece of work to be undertaken after the gateway to demonstrate particular aspects of the occupation. The project reflects the approach taken to record scientific laboratory work. It would not be possible to observe the apprentice complete these activities as it would take too long and not be practical to schedule alongside existing work. Technician scientists are required to present the results of scientific work and so the presentation reflects the requirements of the role. The questioning enables underpinning knowledge and understanding to be assessed. This method enables synoptic assessment of knowledge, skills, and behaviours.

Component 1: Project in the form of a project report

Delivery

Apprentices must complete a project which may be based on:

- a scientific experiment and investigation.

To ensure the project allows the apprentice to meet the KSBs mapped to this EPA method to the highest available grade, the EPAO should sign-off the project's title and scope at the gateway to confirm it is suitable.

The project must be in the form of a report.

The apprentice must start the project after the gateway. They must complete and submit the report to the EPAO after a maximum of 8 weeks. The employer should ensure the apprentice has the time and resources within this period, to plan and complete their project. The apprentice must complete their project and the production of all its components unaided.

The apprentice may work as part of a team which could include technical internal or external support. However, the project report must be the apprentice's own work and will be reflective of their own role and contribution. The apprentice and their employer must confirm that the project report is the apprentice's own work when it is submitted.

The report must include at least:

- an evaluation report of a laboratory-based investigation and scientific experiment that the apprentice has carried out post gateway

As a minimum, all projects must include:

- planning the investigation and scientific experiment, prioritising tasks, and the selection and review of scientific techniques and laboratory equipment to be used
- collaboration with stakeholders and how the impact of work on others was considered
- how scientific techniques were selected to meet the objectives
- the systematic recording and storage of information
- how data analysis and interpretation informed actions or recommendations
- summary of findings

The project report has a maximum word count of 3000 words. A tolerance of 10% above or below the word count is allowed at the apprentice's discretion. Appendices, references and diagrams are not included in this total. The project report must map, in an appendix, how it evidences the relevant KSBs mapped to this EPA method.

Component 2: Presentation with questioning

Delivery

This is a formal presentation where an apprentice will present to an independent assessor on a set subject. The independent assessor must ask questions. Apprentices must prepare, submit and deliver a presentation. The presentation is restricted to the KSBs allocated to this EPA method as shown in the mapping section of this document.

The presentation and questioning must last 75 minutes This will typically include a presentation of 30 minutes and questioning lasting 45 minutes.

The independent assessor must ask at least 8 questions. They must use the questions from the EPAO's question bank or create their own questions in-line with the EPAO's training. Follow up questions are allowed where clarification is required.

The purpose of the independent assessor's questions will be to check the underpinning knowledge and understanding of the apprentice and to ensure coverage of the KSBs mapped to the method.

The presentation will provide an overview of the apprentice's project.. Independent assessors will ask questions after the presentation. The presentation should build on the report and the apprentice should:

- present results of the scientific work including mathematical concepts that were used
- justify how they considered the most appropriate scientific techniques to apply and how they ensured that any analysis was reliable and accurate
- reference the evidence used to inform the results
- describe the lessons learned

The apprentice must prepare and submit their presentation to the EPAO at the same time as the report which is a maximum of 8 weeks after the gateway.

The apprentice must notify the EPAO, at the submission of the presentation, of any technical requirements for the presentation. For the presentation, the apprentice will have access to:

- audio-visual presentation equipment
- flip chart and writing and drawing materials
- computer
- any other requirements as previously notified to the EPAO

The independent assessor must have at least 2 weeks to review the project report and presentation before the presentation is delivered by the apprentice, to allow them to prepare appropriate questions.

Apprentices must be given at least 2 weeks notice of the date and time of the presentation and question and answer session.

Assessment location

The presentation with questioning must take place in a suitable venue selected by the EPAO for example the EPAO's or employer's premises. The presentation with questioning should take place in a quiet room, free from distractions and influence.

The presentation with questioning can be conducted by video conferencing. The EPAO must have processes in place to verify the identity of the apprentice and ensure the apprentice is not being aided.

Question and resource development

EPAOs must write an assessment specification and question bank. The specification must be relevant to the occupation and demonstrate how to assess the KSBs shown in the mapping. It is recommended this is done in consultation with employers of this occupation. EPAOs should maintain the security and confidentiality of EPA materials when consulting employers. The questions must be unpredictable. A question bank of sufficient size will support this. The assessment specification and questions must be reviewed at least once a year to ensure they remain fit-for-purpose.

EPAOs will develop purpose-built question banks and ensure that appropriate quality assurance procedures are in place. For example, considering standardisation, training and moderation. EPAOs will ensure that questions are refined and developed to a high standard.

EPAOs must ensure that apprentices have a different set of questions in the case of re-sits or re-takes.

- independent assessor EPA materials which include:
 - training materials
 - administration materials
 - moderation and standardisation materials

- guidance materials
- grading guidance
- question bank
- EPA guidance for the apprentice and employer

Professional discussion underpinned by a portfolio of evidence

Overview

In the discussion, an independent assessor and apprentice have a formal two-way conversation.

The apprentice can refer to and illustrate their answers with evidence from their portfolio of evidence. It gives the apprentice the opportunity to demonstrate their competency across the KSBs mapped to this EPA method.

Rationale

This EPA method is being used because it will allow KSBs which may not naturally occur in every workplace or may take too long to observe to be assessed. It also enables the assessment of a disparate set of KSBs. The professional discussion will enable underpinning knowledge to be tested. It reflects the requirement for Technician Scientists to communicate their approach to work when carrying out their everyday duties.

Delivery

The professional discussion must be structured to give the apprentice the opportunity to demonstrate the KSBs mapped to this assessment method to the highest available grade.

An independent assessor must conduct and assess the professional discussion.

The purpose of the independent assessor's questions will be to draw out contextualised examples, further clarify skills demonstrated in the portfolio and be used to ask open questions tailored to the role and environment.

A minimum of 1 question will be asked for each of the following themes:

- perform lab tasks
- calibrate and use equipment
- record keeping and communication
- continuous improvement

The EPAO must give an apprentice 2 weeks notice of the professional discussion.

The independent assessor must have at least 2 week(s) to review the supporting documentation. The apprentice must have access to their portfolio of evidence during the professional discussion.

The apprentice can refer to and illustrate their answers with evidence from their portfolio of evidence is however the portfolio of evidence is not directly assessed.

The professional discussion must last for 105 minutes. The independent assessor can increase the time of the professional discussion by up to 10%. This time is to allow the apprentice to

respond to a question if necessary.

The independent assessor must ask at least 4 questions. Follow-up questions are allowed where clarification is required. The independent assessor must use the questions from their EPAO's question bank or create their own questions in-line with the EPAO's training.

The independent assessor must make the grading decision. The independent assessor must keep accurate records of the assessment. They must record:

- the apprentice's answers to questions
- the KSBs demonstrated in answers to questions
- the grade achieved

Assessment location

The professional discussion must take place in a suitable venue selected by the EPAO (for example the EPAO's or employer's premises).

The professional discussion can be conducted by video conferencing. The EPAO must have processes in place to verify the identity of the apprentice and ensure the apprentice is not being aided.

The professional discussion should take place in a quiet room, free from distractions and influence.

Question and resource development

The EPAO must develop a purpose-built assessment specification and question bank. It is recommended this is done in consultation with employers of this occupation. The EPAO should maintain the security and confidentiality of EPA materials when consulting employers. The assessment specification and question bank must be reviewed at least once a year to ensure they remain fit-for-purpose.

The assessment specification must be relevant to the occupation and demonstrate how to assess the KSBs mapped to this assessment method. The EPAO must ensure that questions are refined and developed to a high standard. The questions must be unpredictable. A question bank of sufficient size will support this.

The EPAO must ensure that apprentice has a different set of questions in the case of re-sits or re-takes.

The EPAO must produce the following materials to support the professional discussion underpinned by a portfolio of evidence:

- independent assessor assessment materials which include:
- training materials
- administration materials
- moderation and standardisation materials
- guidance materials

- grading guidance
- question bank
- EPA guidance for the apprentice and the employer

The EPAO must ensure that the EPA materials are subject to quality assurance procedures including standardisation, training, and moderation.

Grading

Project presentation and questions

Fail - does not meet pass criteria

THEME KSBS	PASS APPRENTICES MUST DEMONSTRATE ALL THE PASS DESCRIPTORS	DISTINCTION APPRENTICES MUST DEMONSTRATE ALL THE PASS DESCRIPTORS AND ALL OF THE DISTINCTION DESCRIPTORS
Plan workload K8 S11 B6	Applies the principles and procedures of project management, individually or in a team situation, completing work to schedule in compliance with internal and external requirements' whilst remaining resilient under pressure. (K8, S11, B6)	Identifies potential opportunities for the work they have carried out to add value to the project or business beyond the project scope. (K8, S11)
Prepare for and perform lab tasks K1 K2 K16 S1 S2	<p>Describes the principles of laboratory techniques and how they can be applied to the development of technical projects and the design, development, and implementation of solutions to technical problems and new processes. (K1, K2, K16)</p> <p>Identifies potential scientific techniques available to meet experiment objectives. Describes the selection of techniques taking into account risk management, safe working practices, equipment availability, quality standards, the environment, and sustainability. (S1, S2)</p>	Evaluates the wider business impact of sharing their solutions to technical problems. (K2, S2)
Analyse, interpret and evaluate data K7 S5 S6 S8 S9	<p>Evaluates the project results data using appropriate mathematical concepts and techniques, tools and/or software packages, recording and storing the data in line with regulatory requirements. (K7, S6, S8)</p> <p>Analyses systematically obtained information from scientific/project</p>	NA

	experiments, interpreting the data to inform actions or recommendations and/or escalate if required' (S5, S9)	
Communication K17 S10 B2	Complies with company policies and/or guidance/procedures when managing stakeholder relationships or expectations, presenting work suitable for scientific and non-scientific audiences and where their own work impacts on others'. (K17, S10, B2)	Critically analyses the value to stakeholder relationships of selecting different methods of presenting their project results to scientific and non-scientific audiences. (S10, B2)

Professional discussion underpinned by a portfolio of evidence

Fail - does not meet pass criteria

THEME KSBS	PASS APPRENTICES MUST DEMONSTRATE ALL THE PASS DESCRIPTORS	DISTINCTION APPRENTICES MUST DEMONSTRATE ALL THE PASS DESCRIPTORS AND ALL OF THE DISTINCTION DESCRIPTORS
Perform lab tasks K4 K5 K10 K11 K12 K14 S4 B4 B5	<p>Illustrates and identifies how they have effectively planned and performed laboratory-based investigations and scientific experimentation using named and recognised scientific theory, techniques, procedures, and methods. Articulates key principles of scientific investigation relevant to the role (e.g. root cause analysis or out of specification results). Describes how the role impacts the wider business and the environment in which it operates and how it can inform innovation, enterprise, and idea creation. (K4, K5, K12, S4)</p> <p>Explains the regulatory environment in which they operate, including the health and safety and environmental regulations, procedures, documentation, and risk management systems applicable to the role. Describes how they have demonstrated commitment to the adoption of ethical, safe, and environmentally sustainable working practices and the impact of this on wider business operations, the sector, society, and the environment. (K10, K11, K14, B4, B5)</p>	<p>Evaluates how their role impacts the wider business and the environment in which it operates and how it can inform innovation, enterprise, and idea creation. Describes the risk to individuals and business if regulations are not followed. (K10, K12, B5)</p> <p>Evaluates how they have planned and performed laboratory based investigations and how this will inform their approach to future work. Justifies their selection of scientific techniques and explains the pros and cons of applying alternative techniques. (S4)</p>
Calibrate and use equipment K3 S3	Justifies their choice of instrumentation and /or laboratory equipment, maintenance and calibration techniques relevant to their role'. (K3, S3)	Evaluates the impact that maintenance and calibration of laboratory equipment has on the validity of experimental results' (K3, S3)

<p>Record keeping and communication K6 K9 K15 K18 S14 B1</p>	<p>Describes the importance of people and interpersonal skills when dealing with stakeholders. Explains how they have collaborated professionally with others when identifying results requiring further investigation or escalation. States the requirements and significance of considering accuracy, precision, and recognising trends when reporting results. Explains business requirements pertaining to record-keeping and evaluates its importance and impact on traceability, confidentiality, and quality systems. (K6, K9, K15, K18, S14, B1)</p>	<p>Evaluates the effectiveness of their collaboration and how this will inform their approach in the future. (K15, S14)</p>
<p>Continuous improvement K13 K19 S7 S12 S13 S15 B3</p>	<p>Evaluates how they have responded positively to change by keeping up to date with advances in working practices and technologies. Explains how they have identified, developed, or contributed to providing and implementing solutions to technical problems and improved processes across the wider business. Explains how digital technology enables the functionality of the working environment to be adaptable to change. Justifies how the improvements met the requirements of internal and external customers. Summarises how they have demonstrated commitment to their professional development and the importance of referring to reliable information sources when keeping up to date. Evaluates ways that advances in working practices and technologies can be effectively communicated to other team members. (K13, K19, S7, S12, S13, S15, B3)</p>	<p>Analyses the impact of their CPD and how their career and professional development aligns with the business strategy and will positively impact the business. (S15, B3)</p>

Overall EPA grading

The EPA methods contribute equally to the overall EPA grade.

Performance in the EPA will determine the apprenticeship grade of:

- fail
- pass
- merit
- distinction

Independent assessors must individually grade the: project presentation and questions and professional discussion underpinned by a portfolio of evidence according to the requirements set out in this EPA plan.

EPAOs must combine the individual assessment method grades to determine the overall EPA grade.

Apprentices who fail one or more assessment method will be awarded an overall EPA fail.

Apprentices must achieve at least a pass in all the EPA methods to get an overall pass. In order to achieve an overall EPA 'merit', apprentices must achieve a pass in one assessment method and a distinction in the other assessment method. To achieve an overall EPA 'distinction,' the apprentice must achieve a distinction in both assessment methods.

Grades from individual assessment methods should be combined in the following way to determine the grade of the EPA as a whole.

PROJECT PRESENTATION AND QUESTIONS	PROFESSIONAL DISCUSSION UNDERPINNED BY A PORTFOLIO OF EVIDENCE	OVERALL GRADING
Any grade	Fail	Fail
Fail	Any grade	Fail
Pass	Pass	Pass
Pass	Distinction	Merit
Distinction	Pass	Merit
Distinction	Distinction	Distinction

Re-sits and re-takes

Apprentices who fail one or more EPA method(s) can take a re-sit or a re-take at the employer's discretion. The apprentice's employer needs to agree that a re-sit or re-take is appropriate. A re-sit does not need further learning, whereas a re-take does.

Apprentices should have a supportive action plan to prepare for a re-sit or a re-take.

The employer and EPAO agree the timescale for a re-sit or re-take. A re-sit is typically taken within 2 months of the EPA outcome notification. The timescale for a re-take is dependent on how much re-training is required and is typically taken within 3 months of the EPA outcome notification.

If the apprentice fails the project assessment method, they will be required to amend the project report in line with the independent assessor's feedback. The apprentice will be given 3 weeks to rework and submit the amended report.

Failed EPA methods must be re-sat or re-taken within a 6-month period from the EPA outcome notification, otherwise, the entire EPA will need to be re-sat or re-taken in full.

Re-sits and re-takes are not offered to apprentices wishing to move from pass to a higher grade.

An apprentice will get a maximum EPA grade of pass for a re-sit or re-take, unless the EPAO determines there are exceptional circumstances.

Roles and responsibilities

ROLES	RESPONSIBILITIES
Apprentice	<p>As a minimum, the apprentice should:</p> <ul style="list-style-type: none"> • participate in and complete on-programme training to meet the KSBs as outlined in the occupational standard for a minimum of 12 months • complete the required amount of off-the-job training specified by the apprenticeship funding rules and as arranged by the employer and training provider • understand the purpose and importance of EPA • meet the gateway requirements • undertake the EPA
Employer	<p>As a minimum, the apprentice's employer must:</p> <ul style="list-style-type: none"> • select the EPAO and training provider • work with the training provider (where applicable) to support the apprentice in the workplace and to provide the opportunities for the apprentice to develop the KSBs • arrange and support off-the-job training to be undertaken by the apprentice • decide when the apprentice is working at or above the occupational standard and is ready for EPA • ensure that supporting evidence required at the gateway is submitted in line with this EPA plan • liaise with the training provider and EPAO to ensure the EPA is booked in a timely manner <p>Post-gateway, the employer must:</p> <ul style="list-style-type: none"> • confirm arrangements with the EPAO for the EPA (who, when, where) in a timely manner (including providing access to any employer-specific documentation as required, for example company policies) • ensure that the EPA is scheduled with the EPAO for a date and time which allows the opportunity for the apprentice to be assessed against the KSBs • remain independent from the delivery of the EPA • ensure the apprentice is given sufficient time away from regular duties to prepare for, and complete all post-gateway elements of the EPA, and that any required supervision during this time (as stated within this EPA plan) is in place

	<ul style="list-style-type: none"> • where the apprentice is assessed in the workplace, ensure that the apprentice has access to the resources used on a regular basis • pass the certificate to the apprentice upon receipt from the EPAO
EPAO	<p>As a minimum, the EPAO must:</p> <ul style="list-style-type: none"> • conform to the requirements of this EPA plan and deliver its requirements in a timely manner • conform to the requirements of the register of end-point assessment organisations (RoEPAO) • conform to the requirements of the external quality assurance provider (EQAP) for this apprenticeship • understand the occupational standard • make the EPA contractual arrangements, including agreeing the price of the EPA • develop and produce assessment materials as detailed for each assessment method in this EPA plan • appoint qualified and competent independent assessors in line with the requirements of this EPA plan to conduct assessments and oversee their working • appoint administrators (and invigilators where required) to administer the EPA • provide training for independent assessors in terms of good assessment practice, operating the assessment tools and grading • provide information, advice, guidance and documentation to enable apprentices, employers and training providers to prepare for the EPA • confirm all gateway requirements have been met as quickly as possible • arrange for the EPA to take place, in consultation with the employer • ensure that the apprentice has access to the required resources and liaise with the employer to agree this if necessary, where the apprentice is not assessed in the workplace • develop and provide assessment recording documentation to ensure a clear and auditable process is in place for providing assessment decisions and feedback to stakeholders

	<ul style="list-style-type: none"> • have no direct connection with the apprentice, their employer or training provider in all instances; there must be no conflict of interest • have policies and procedures for internal quality assurance (IQA), and maintain records of IQA activity and moderation for external quality assurance (EQA) purposes • deliver induction training for independent assessors, and for invigilators and markers (where used) • undertake standardisation activity on this apprenticeship for an independent assessor before they conduct an EPA for the first time, if the EPA is updated and periodically (a minimum of annually) • manage invigilation of the apprentice to maintain security of the assessment in line with the EPAO's malpractice policy • verify the identity of the apprentice • use language in the development and delivery of the EPA that is appropriate to the level of the occupational standard
Independent assessor	<p>As a minimum, an independent assessor must:</p> <ul style="list-style-type: none"> • have the competence to assess the apprentice at the level of this apprenticeship and hold any required qualifications and experience in line with the requirements of the independent assessor as detailed in the IQA section of this EPA plan • understand the occupational standard and the requirements of this EPA • have, maintain and be able to evidence, up-to-date knowledge and expertise of the occupation • deliver the end-point assessment in-line with this EPA plan • comply with the IQA requirements of the EPAO • have no direct connection or conflict of interest with the apprentice, their employer or training provider; in all instances; there must be no conflict of interest • attend induction training • attend standardisation events when they start working for the EPAO, before they conduct an EPA for the first time and a minimum of annually for this apprenticeship • assess each assessment method, as determined by the EPA plan • assess the KSBs assigned to each assessment method, as shown in the mapping of KSBs to assessment methods in this EPA plan

	<ul style="list-style-type: none"> • make the grading decisions • record and report assessment outcome decisions, for each apprentice, following instructions and using assessment recording documentation provided by the EPAO, in a timely manner • use language in the development and delivery of the EPA that is appropriate to the level of the occupational standard • mark open (constructed) test answers accurately according to the EPAO's mark scheme and procedures
Training provider	<p>As a minimum, the training provider must:</p> <ul style="list-style-type: none"> • work with the employer and support the apprentice during the off-the-job training to provide the opportunities to develop the KSBs as listed in the occupational standard • conduct training covering the KSBs agreed as part of the Commitment Statement or the Individual Learning Plan • monitor the apprentice's progress during any training provider led on-programme learning • advise the employer, upon request, on the apprentice's readiness for EPA • remain independent from the delivery of the EPA

Reasonable adjustments

The EPAO must have reasonable adjustments arrangements for the EPA.

This should include:

- how an apprentice qualifies for reasonable adjustment
- what reasonable adjustments may be made

Adjustments must maintain the validity, reliability and integrity of the EPA as outlined in this EPA plan.

Internal quality assurance

Internal quality assurance refers to how EPAOs ensure valid, consistent and reliable EPA decisions. EPAOs must adhere to the requirements within the roles and responsibilities section and:

- have effective and rigorous quality assurance systems and procedures that ensure fair, reliable and consistent EPA regardless of employer, place, time or independent assessor
- appoint independent assessors who are competent to deliver the EPA and who:
 - have recent relevant experience of the occupation or sector to at least occupational level 5 gained in the last 2 years or significant experience of the occupation or sector

- meet the following minimum requirements:
experience in a scientific laboratory in academia or industry within a relevant scientific subject area, including experience in data analysis and evaluation, data management, ethics, regulation and registration, and laboratory techniques as well as the scientific subject-specific knowledge outlined in k5 on the knowledge section.

independent assessors must be competent in the occupation they are assessing. this is shown through the individual having achieved a qualification at a level equivalent to or higher than the level of the apprenticeship standard being assessed; or by holding professional recognition at a level equivalent to or higher than the registration level of the apprenticeship standard being assessed. or have been assessed by the epa as being competent to assess at this level.

- operate induction training for anyone involved in the delivery and/or assessment of the EPA
- provide training for independent assessors in good assessment practice, operating the assessment tools and making grading decisions
- provide ongoing training for markers and invigilators
- provide standardisation activity for this apprenticeship standard for all independent assessors:
 - before they conduct an EPA for the first time
 - if the EPA is updated
 - periodically as appropriate (a minimum of annually)
- conduct effective moderation of EPA decisions and grades
- conduct appeals where required, according to the EPAO's appeals procedure, reviewing and making final decisions on EPA decisions and grades
- have no direct connection with the apprentice, their employer or training provider. In all instances, including when the EPAO is the training provider (for example a higher education institution)

Value for money

Affordability of the EPA will be aided by using at least some of the following:

- completing applicable assessment methods online (for example computer-based assessment)
- utilising digital remote platforms to conduct applicable assessment methods
- using the employer's premises
- conducting assessment methods on the same day

Professional recognition

This apprenticeship standard is designed to prepare successful apprentices to meet the requirements for registration as a:

Science Council for Registered Scientist (partial alignment)

Mapping of KSBs to assessment methods

KNOWLEDGE	ASSESSMENT METHODS
<p>K1 Principles of laboratory techniques and scientific experimentation.</p>	Project presentation and questions
<p>K2 How to apply the principles of laboratory techniques and scientific experimentation to contribute to the development of technical projects and the implementation of new processes.</p>	Project presentation and questions
<p>K3 Laboratory equipment relevant to the role and the associated maintenance and calibration requirements.</p>	Professional discussion underpinned by a portfolio of evidence
<p>K4 The key principles of scientific investigation relevant to the role (e.g. root cause analysis or out of specification results).</p>	Professional discussion underpinned by a portfolio of evidence
<p>K5 Named and recognised scientific theory appropriate to the workplace and role (e.g. Chemistry, Physics or Life Sciences).</p>	Professional discussion underpinned by a portfolio of evidence
<p>K6 The requirements and significance of reporting results, considering the importance of accuracy, precision, and recognising trends.</p>	Professional discussion underpinned by a portfolio of evidence
<p>K7 Mathematical concepts and techniques relevant to the work role (e.g. basic statistical analysis, relating to sampling and data to evaluate results).</p>	Project presentation and questions
<p>K8 The basic principles and procedures of project management and how to contribute to project plans with other team members (e.g. project timeline & milestones).</p>	Project presentation and questions
<p>K9 Business requirements pertaining to record-keeping, traceability & confidentiality, and quality control systems.</p>	Professional discussion underpinned by a portfolio of evidence
<p>K10 The internal and external regulatory environment pertinent to the work role and how to comply with regulations.</p>	Professional discussion underpinned by a portfolio of evidence

<p>K11 The importance of operating ethically and sustainably, complying with codes of conduct, and the impact of this on business operations, the wider sector, society, and the environment.</p>	Professional discussion underpinned by a portfolio of evidence
<p>K12 How the role impacts on the business and the environment in which it operates (e.g idea creation, innovation, and enterprise).</p>	Professional discussion underpinned by a portfolio of evidence
<p>K13 The importance of consulting reliable sources of information to keep up to date with scientific, role, or sector knowledge and ways to communicate this to team members.</p>	Professional discussion underpinned by a portfolio of evidence
<p>K14 Health and safety and environmental regulations, procedures, documentation, and risk management systems applicable to the role.</p>	Professional discussion underpinned by a portfolio of evidence
<p>K15 Importance of developing soft skills (people and interpersonal) relevant to the role.</p>	Professional discussion underpinned by a portfolio of evidence
<p>K16 Different approaches and methods, for use in the identification, design, development, and implementation of solutions to technical problems.</p>	Project presentation and questions
<p>K17 Techniques used to identify and manage stakeholder expectations including compliance with codes of conduct.</p>	Project presentation and questions
<p>K18 The importance and impact of good record keeping.</p>	Professional discussion underpinned by a portfolio of evidence
<p>K19 How digital technology enables the functionality of the working environment to be adaptable to change.</p>	Professional discussion underpinned by a portfolio of evidence

SKILL	ASSESSMENT METHODS
<p>S1 Identify potential scientific techniques to meet defined objectives.</p>	Project presentation and questions
<p>S2 Review and select appropriate scientific techniques to undertake required tasks (consider risk management, safe working practices, equipment availability, quality standards, the environment, and sustainability).</p>	Project presentation and questions
<p>S3 Source and calibrate specified instrumentation and laboratory equipment.</p>	Professional discussion underpinned by a portfolio of evidence
<p>S4 Plan and perform laboratory-based investigations and scientific experimentation using scientific techniques, procedures, and methods relevant to the role.</p>	Professional discussion underpinned by a portfolio of evidence
<p>S5 Systematically obtain information when conducting scientific experiments.</p>	Project presentation and questions
<p>S6 Record and store data in accordance with regulatory requirements.</p>	Project presentation and questions
<p>S7 Contribute to the development or improvement of processes and methodologies and support their implementation into the business as part of a wider team.</p>	Professional discussion underpinned by a portfolio of evidence
<p>S8 Use data analysis tools and software packages to process or produce reliable, accurate data or information.</p>	Project presentation and questions
<p>S9 Interpret scientific data to inform actions or recommendations and escalate where required.</p>	Project presentation and questions
<p>S10 Present the results of scientific work to scientific and non-scientific audiences in written and oral form.</p>	Project presentation and questions

<p>S11 Plan and prioritise own tasks and complete work to schedule whilst maintaining compliance with internal and external requirements.</p>	<p>Project presentation and questions</p>
<p>S12 Contribute to recommendations, improvements, or scientific solutions to meet the requirements of internal or external customers.</p>	<p>Professional discussion underpinned by a portfolio of evidence</p>
<p>S13 Identify, develop or contribute to solutions to technical problems.</p>	<p>Professional discussion underpinned by a portfolio of evidence</p>
<p>S14 Collaborate with stakeholders and identify results requiring further investigation or escalation.</p>	<p>Professional discussion underpinned by a portfolio of evidence</p>
<p>S15 Keeps up to date with advances in scientific and sector working practices and technologies. Shares best practice across the team.</p>	<p>Professional discussion underpinned by a portfolio of evidence</p>

BEHAVIOUR	ASSESSMENT METHODS
<p>B1 Acts in a professional and ethical manner (demonstrates reliability, integrity, and respect for confidentiality).</p>	Professional discussion underpinned by a portfolio of evidence
<p>B2 Acts in a way that builds and maintains positive relationships with stakeholders (takes account of the impact of own work on others, internally and externally).</p>	Project presentation and questions
<p>B3 Committed to continuous professional development (handles and responds positively to change, adjusting to different conditions, technologies, situations, and environments).</p>	Professional discussion underpinned by a portfolio of evidence
<p>B4 Committed to adopting safe working practices.</p>	Professional discussion underpinned by a portfolio of evidence
<p>B5 Committed to the adoption of environmentally sustainable working practices.</p>	Professional discussion underpinned by a portfolio of evidence
<p>B6 Resilient under pressure.</p>	Project presentation and questions

Mapping of KSBs to grade themes

Project presentation and questions - Project

KSBS GROUPED BY THEME	KNOWLEDGE	SKILLS	BEHAVIOUR
Plan workload K8 S11 B6	The basic principles and procedures of project management and how to contribute to project plans with other team members (e.g. project timeline & milestones). (K8)	Plan and prioritise own tasks and complete work to schedule whilst maintaining compliance with internal and external requirements. (S11)	Resilient under pressure. (B6)
Prepare for and perform lab tasks K1 K2 K16 S1 S2	<p>Principles of laboratory techniques and scientific experimentation. (K1)</p> <p>How to apply the principles of laboratory techniques and scientific experimentation to contribute to the development of technical projects and the implementation of new processes. (K2)</p> <p>Different approaches and methods, for use in the identification, design, development, and implementation of solutions to technical problems. (K16)</p>	<p>Identify potential scientific techniques to meet defined objectives. (S1)</p> <p>Review and select appropriate scientific techniques to undertake required tasks (consider risk management, safe working practices, equipment availability, quality standards, the environment, and sustainability). (S2)</p>	N/A
Analyse, interpret and evaluate data K7 S5 S6 S8 S9	Mathematical concepts and techniques relevant to the work role (e.g. basic statistical analysis, relating to	Systematically obtain information when conducting scientific experiments. (S5)	N/A

	<p>sampling and data to evaluate results). (K7)</p>	<p>Record and store data in accordance with regulatory requirements. (S6)</p> <p>Use data analysis tools and software packages to process or produce reliable, accurate data or information. (S8)</p> <p>Interpret scientific data to inform actions or recommendations and escalate where required. (S9)</p>	
<p>Communication K17 S10 B2</p>	<p>Techniques used to identify and manage stakeholder expectations including compliance with codes of conduct. (K17)</p>	<p>Present the results of scientific work to scientific and non-scientific audiences in written and oral form. (S10)</p>	<p>Acts in a way that builds and maintains positive relationships with stakeholders (takes account of the impact of own work on others, internally and externally). (B2)</p>

Professional discussion underpinned by a portfolio of evidence - Discussion

KSBS GROUPED BY THEME	KNOWLEDGE	SKILLS	BEHAVIOUR
Perform lab tasks K4 K5 K10 K11 K12 K14 S4 B4 B5	<p>The key principles of scientific investigation relevant to the role (e.g. route cause analysis or out of specification results). (K4)</p> <p>Named and recognised scientific theory appropriate to the workplace and role (e.g. Chemistry, Physics or Life Sciences). (K5)</p> <p>The internal and external regulatory environment pertinent to the work role and how to comply with regulations. (K10)</p> <p>The importance of operating ethically and sustainably, complying with codes of conduct, and the impact of this on business operations, the wider sector, society, and the environment. (K11)</p> <p>How the role impacts on the business and the environment in which it operates (e.g idea creation, innovation, and enterprise). (K12)</p> <p>Health and safety and environmental</p>	<p>Plan and perform laboratory-based investigations and scientific experimentation using scientific techniques, procedures, and methods relevant to the role. (S4)</p>	<p>Committed to adopting safe working practices. (B4)</p> <p>Committed to the adoption of environmentally sustainable working practices. (B5)</p>

	regulations, procedures, documentation, and risk management systems applicable to the role. (K14)		
Calibrate and use equipment K3 S3	Laboratory equipment relevant to the role and the associated maintenance and calibration requirements. (K3)	Source and calibrate specified instrumentation and laboratory equipment. (S3)	N/A
Record keeping and communication K6 K9 K15 K18 S14 B1	<p>The requirements and significance of reporting results, considering the importance of accuracy, precision, and recognising trends. (K6)</p> <p>Business requirements pertaining to record-keeping, traceability & confidentiality, and quality control systems. (K9)</p> <p>Importance of developing soft skills (people and interpersonal) relevant to the role. (K15)</p> <p>The importance and impact of good record keeping. (K18)</p>	Collaborate with stakeholders and identify results requiring further investigation or escalation. (S14)	Acts in a professional and ethical manner (demonstrates reliability, integrity, and respect for confidentiality). (B1)
Continuous improvement K13 K19 S7 S12 S13 S15 B3	The importance of consulting reliable sources of information to keep up to date with scientific, role, or	Contribute to the development or improvement of processes and methodologies and support their	Committed to continuous professional development (handles and responds positively

	<p>sector knowledge and ways to communicate this to team members. (K13)</p> <p>How digital technology enables the functionality of the working environment to be adaptable to change. (K19)</p>	<p>implementation into the business as part of a wider team. (S7)</p> <p>Contribute to recommendations, improvements, or scientific solutions to meet the requirements of internal or external customers. (S12)</p> <p>Identify, develop or contribute to solutions to technical problems. (S13)</p> <p>Keeps up to date with advances in scientific and sector working practices and technologies. Shares best practice across the team. (S15)</p>	<p>to change, adjusting to different conditions, technologies, situations, and environments). (B3)</p>
--	---	---	--

Version log

Version	Change detail	Earliest start date	Latest start date	Latest end date
1.1	End-point assessment plan, standard and funding revised	01/04/2023	Not set	Not set
1.0	Approved for delivery	07/08/2018	31/03/2023	Not set

Crown copyright 2023 You may re-use this information (not including logos) free of charge in any format or medium, under the terms of the Open Government Licence. Visit www.nationalarchives.gov.uk/doc/open-government-licence.