ST0597 - Level 5 Technician Scientist: End-Point Assessment

Occupational Profile

This occupation is found in a wide range of employers. The employers will typically operate in chemical, pharmaceutical, biotechnology, formulated products or analytical services. Employers can range in size, from large multinational organisations through to smaller businesses. Technician scientists may operate within a science department of a larger organisation or within a smaller science focussed business that provides science services. Technician scientists are typically laboratory-based.

The broad purpose of the occupation is to carry out established laboratory based investigations and scientific experimentation using bench and instrumentation techniques. A technician scientist will apply a range of skills and follow well established principles associated with their organisation's science and technology. They carry out routine lines of enquiry, development or investigation. They collect scientific information and analyse, interpret and evaluate data. They prepare results and provide progress updates of their work.

In their daily work, an employee in this occupation interacts with a wider scientific team, which may include laboratory scientists and laboratory technicians. They communicate information, arguments and analysis in a variety of forms to specialist and non-specialist audiences.

An employee in this occupation will be responsible for the quality of the work they undertake. They operate in settings where there is certainty and limited ambiguity. They take personal responsibility for decision making in predictable contexts. They work safely and ethically often under highly regulated conditions because of the need to control quality and safety of scientific products. They critically evaluate appropriateness of commonly used approaches to solve science problems, using a range of approaches to formulate evidence based responses to defined and routine problems and issues within their area of work. They contribute to solutions to problems within the wider scientific team, using appropriate project management procedures. They perform record keeping and checks and use data capture systems relevant to the technical and scientific procedures that they use. They use their awareness of any research interests and the technical context and processes of the laboratory alongside senior team members to contribute to the proposal of new scientific ideas. They may manage resources within a clearly defined area.

End-Point Assessment

The Technician Scientist is assessed through two End-Point Assessment (EPA) methods as set out in the assessment plan:

- Project and Project Report Presentation and Questioning
- Professional Discussion underpinned by a Portfolio of Evidence

Apprentices typically spend 36 months on-programme (before Gateway) working towards the occupational standard with a minimum 20% off-the-job training. All Apprentices must spend a minimum of 12 months on programme.

Once the Employer is satisfied that the Apprentice is consistently working at or above the level set out in the standard, and that all Gateway requirements have been met, the Apprentice can proceed to their End-Point Assessment (EPA).

Gateway requirements before End-Point Assessment

- Maths & English at Level 2 (GCSE equivalent grade A-C / 4-9) - in line with the apprenticeship funding rules.
- For the project presentation and questions, the project's title and scope must be agreed with the EPAO and a project summary submitted.
- For the professional discussion underpinned by a portfolio of evidence, you must submit a portfolio of evidence.

Marshall Assessment will provide the following documents which must be used and submitted as part of the Gateway process:

- Gateway Declaration – HEI / Training Provider
- Gateway Declaration – Employer
- Gateway Declaration – Apprentice
- 1a Project Title and Scope
- 2a Portfolio Log - to map the Apprentice's specifically compiled Portfolio of Evidence to support the Professional Discussion

The EPA will usually be completed within 3 months of Gateway approval (the EPA period), which can only begin once the Project Title and Scope is agreed by Marshall Assessment.

A summary of the assessment methods and how Marshall Assessment deliver them has been provided below. Further support can be found in the following documents which will be provided as part of our EPA support and customer / Apprentice engagement pack.

- 1 Project, Presentation & Questioning Guidance – detailed guidance to help the Apprentice to plan and prepare their Project Report and Presentation. The document includes guidance on the grading descriptors that must be met for this assessment, which will also support the Apprentice to prepare for the questioning

by the Marshall Independent Assessor (IA). Marshall Assessment have also provided the following documents to support with the preparation for and delivery of this assessment:

- 1b Project & Presentation Declaration. This must be submitted with your completed Project Report and presentation materials.
- 1c Project Report & Presentation – Mapping document. This must be completed to demonstrate to the Marshall IA where the Apprentice feels they have met the required criteria.

- 2 Professional Discussion Guidance – detailed guidance to help the Apprentice to prepare for their Professional Discussion underpinned by a Portfolio of Evidence. Marshall Assessment have also provided the following document to support this assessment:
  - 2a Portfolio Log - to ensure the Apprentice compiles relevant evidence in their portfolio to support the grading descriptors being assessed in this discussion – this must be submitted at Gateway with the Portfolio of Evidence for review by the Marshall IA ahead of the agreed date of assessment.

Project, Presentation & Questioning.

Timescale: 75 minutes total.
Min. 20 – max. 40 minutes for the Presentation (to allow time for questions).

Min. 35 – max. 55 minutes for the follow up Questioning.

Takes place in a quiet location, free from distractions and influence.

Apprentice will need access to a PC/laptop with a webcam as delivery will be over Microsoft Teams, unless otherwise requested.

Assessments will be recorded for quality and training purposes in line with GDPR and Marshall Assessment Data Protection Policy.

Grading outcomes: Fail, Pass or Distinction.

- The Apprentice must carry out a Project and write a Project Report with a supporting Presentation during the **post-Gateway**, EPA period.
- The Project title and scope must be agreed with the employer. It must be a defined piece of work, which meets the needs of the employer's business, be relevant to the Apprentice's occupation, and this apprenticeship.
- The Project should be carried out in the Employer's workplace in the **post Gateway, EPA period.**
- The Apprentice will need to produce a Project Report, which will form the basis of a presentation which will be delivered to a Marshall Independent Assessor (IA) at EPA.
- The proposed Project title and scope must be submitted by the Apprentice at Gateway for review by Marshall Assessment (a template has been provided in the resource pack, *1a Project Title and Scope*).
- The Project scope will need to show that the chosen Project will provide the opportunity for the Apprentice to cover the required Knowledge, Skills and Behaviours (KSBs) and associated grading descriptors for this part of the assessment.
- Work must not begin on the Project until the title and scope has been agreed and confirmed in writing by Marshall Assessment.
- Once confirmed, this will indicate acceptance into Gateway and the start of the EPA period.
- Apprentices will then have **8 weeks** to carry out the work for their project and write up their Project Report and Presentation. The deadline date for submission of the Project Report and Presentation will be confirmed in writing at the point of acceptance into Gateway.
- The Project must be attributable to the Apprentice, and the Report and Presentation must be their own work.
- The Project Report must be between 2,700 – 3,300 words, **excluding** diagrams, appendices and references. There must also be an appendix which evidences how the relevant KSBs and their associated grading descriptors are mapped to this part of the assessment - document *1c Project Report & Presentation mapping* should be used.
- The presentation should support the Apprentice in demonstrating clearly how their Project and Project Report have allowed them to meet the required KSBs and associated grading descriptors as outlined in document *1 Project, Project Report, Presentation & Questioning guidance* provided in the resource pack.
- The completed Project Report and Presentation (including any supporting materials) must be submitted to Marshall Assessment by the deadline date provided, along with document *1b Project Report & Presentation Declaration form* (in resource pack).
- On the agreed assessment day (minimum 2 weeks after submission of the Project Report and Presentation) the Apprentice will deliver their presentation to a Marshall Independent Assessor (IA).
- The IA will then ask questions to allow the opportunity for the Apprentice to clarify their understanding of the pass grading criteria, or to demonstrate that they can meet the higher-level distinction criteria.
- Grading outcomes; FAIL: not all pass criteria met, PASS: all pass criteria met, or DISTINCTION: all pass criteria met, and all distinction criteria met.

Professional Discussion (underpinned by a Portfolio of Evidence)

Timescale:
Max. 1 hour and 45 minutes (plus 10% to complete final response)

Takes place in a quiet location, free from distractions or influence.

Apprentice will need access to a PC/laptop with a webcam as delivery will be over Microsoft Teams, unless otherwise requested.

Session will be recorded for quality and training purposes in line with GDPR and Marshall Assessment Data Protection Policy.

Grading outcomes: Fail, Pass or Distinction.

- The Professional Discussion will enable the Apprentice's underpinning knowledge to be tested. It reflects the requirement for Technician Scientists to communicate their approach to work when carrying out their everyday duties.
- The Professional Discussion element covers the Knowledge, Skills & Behaviours (KSBs) that are not likely to naturally occur in every workplace.
- The Apprentice must submit a specifically compiled Portfolio of Evidence at Gateway and can refer to it during the discussion to illustrate their responses to questions with supporting evidence.
- A Portfolio Log document is provided (see *2a Portfolio log* in resource pack) and should be completed and submitted **at Gateway**, alongside the Portfolio of Evidence, to clearly map the evidence selected for submission to the required grading descriptors and related KSBs for this part of the assessment.
- The Apprentice should be prepared for questions, where appropriate, to be based on this evidence.
- The purpose of the Professional Discussion is to:
    - draw out contextualised examples,
    - further clarify skills demonstrated in the review of the portfolio evidence,
    - ask questions tailored to the Apprentice's role and environment.
- The IA will ask an opening question on each of the following themes:
    - Perform Lab Tasks
    - Calibrate and use equipment
    - Record keeping and communication
    - Continuous improvement
- The Apprentice must draw on examples from their own workplace using evidence from their submitted portfolio to support the discussion.
- The Apprentice can have access to their Portfolio of Evidence and their Portfolio Log (document *2a in resource pack*) during the discussion.
- Grading outcomes; FAIL: not all pass criteria met, PASS: all pass criteria met, or DISTINCTION: all pass criteria met and all distinction criteria met.

Remote Assessments - any breaks in connectivity will be dealt with in the following way:

- A short break of up to 10 minutes will be acceptable, this must be recorded by the IA and they will confirm the test can continue once connectivity has resumed.
- If there is a break in connectivity once a question has been asked, once resumed, the IA will ask a different question.
- If the break is during a response – the Apprentice will be allowed to continue as long as the break is less than 5 minutes. More than this, a new question will be asked.

Grading outcomes

Any Project Reports or Presentation materials submitted past the stated deadline date will result in the assessment being classed as a resit and the final grade outcome being capped at a PASS. A mitigating circumstances application form is available if required and must be submitted to MA if a deadline will be missed due to circumstances beyond the Apprentice's control.

The Apprentice must, as a minimum, pass each assessment element of the EPA to achieve their apprenticeship certificate. If any 1 element is graded a fail, the overall grade result will be a FAIL.

To achieve a distinction, the Apprentice must be awarded a DISTINCTION in both assessment elements.

To achieve a merit, the Apprentice must be awarded a PASS in one, and a DISTINCTION in one of the available assessment elements.

If the Apprentice fails one or both assessment elements, a resit/ retake can be arranged for the failed element(s), however the final grade outcome will be capped at a PASS. 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. Apprentices cannot resit an element to improve their EPA grade.

If the Project Report, Presentation and Questioning needs a resit / retake, the same project may be used. The Apprentice and Employer should decide whether to resubmit the Project Report or to resit the Presentation with Questioning based on the initial Project Report.

Any assessment method re-sit or re-take should be taken typically within 2 months for a resit, or within 3 months for a retake. Timescales will be agreed for each Apprentice as appropriate.

All evidence from the assessments is submitted for Internal Quality Assurance (IQA) before confirmation of the final grade outcome, which will usually be released to the HEI /Training Provider by Marshall Assessment within 15 working days.

Following confirmation of results from Marshall Assessment, the Apprentice or Training Provider have 15 working days to request a review of the grade awarded. Appeals policy also available at https://www.marshall-assessment.com/our-policies If no request is made, the certificate claim will

then be submitted to the Apprenticeship Service (this may take up to 4 weeks to arrive following a claim being made) and will be sent directly to the Employer unless otherwise specified.

All relevant policies relating to End-Point Assessment are available to download from Marshall-assessment.com

Link to IfATE Assessment Plan: https://www.instituteforapprenticeships.org/apprenticeship-standards/technician-scientist-v1-1

The Knowledge, Skills and Behaviours required to be met for this Standard are listed in the assessment plan and also below. A detailed guidance pack with assessment criteria, amplifications, exemplifications, mock material where appropriate and support to prepare for EPA will be provided on registration with Marshall Assessment as the EPAO.

Knowledge, Skills & Behaviours – Assessed in the Project, Presentation & Questioning element:

Plan Workload
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). **S11** Plan and prioritise own tasks and complete work to schedule whilst maintaining compliance with internal and external requirements. **B6** Resilient under pressure.

Prepare for & Perform Lab Tasks
K1 Principles of laboratory techniques and scientific experimentation. **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. **K16** Different approaches and methods, for use in the identification, design, development, and implementation of solutions to technical problems. **S1** Identify potential scientific techniques to meet defined objectives. **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).

Analyse, interpret & evaluate data
K7 Mathematical concepts and techniques relevant to the work role (e.g. basic statistical analysis, relating to sampling and data to evaluate results). **S5** Systematically obtain information when conducting scientific experiments. **S6** Record and store data in accordance with regulatory requirements.

S8 Use data analysis tools and software packages to process or produce reliable, accurate data or information.

S9 Interpret scientific data to inform actions or recommendations and escalate where required.

Communication

K17 Techniques used to identify and manage stakeholder expectations including compliance with codes of conduct.

S10 Present the results of scientific work to scientific and non-scientific audiences in written and oral form.

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).

Knowledge, Skills & Behaviours – Assessed in the Professional Discussion underpinned by a portfolio of evidence:

Discussion Area: Perform Lab Tasks

K4 The key principles of scientific investigation relevant to the role (e.g. route cause analysis or out of specification results).

K5 Named and recognised scientific theory appropriate to the workplace and role (e.g. Chemistry, Physics or Life Sciences).

K10 The internal and external regulatory environment pertinent to the work role and how to comply with regulations.

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.

K12 How the role impacts on the business and the environment in which it operates (e.g idea creation, innovation, and enterprise).

K14 Health and safety and environmental regulations, procedures, documentation, and risk management systems applicable to the role.

S4 Plan and perform laboratory-based investigations and scientific experimentation using scientific techniques, procedures, and methods relevant to the role.

B4 Committed to adopting safe working practices.

B5 Committed to the adoption of environmentally sustainable working practices.

Discussion Area: Calibrate and use equipment

K3 Laboratory equipment relevant to the role and the associated maintenance and calibration requirements.

S3 Source and calibrate specified instrumentation and laboratory equipment.

Discussion Area: Record keeping and communication
K6 The requirements and significance of reporting results, considering the importance of accuracy, precision, and recognising trends. **K9** Business requirements pertaining to record-keeping, traceability & confidentiality, and quality control systems. **K15** Importance of developing soft skills (people and interpersonal) relevant to the role. **K18** The importance and impact of good record keeping. **S14** Collaborate with stakeholders and identify results requiring further investigation or escalation. **B1** Acts in a professional and ethical manner (demonstrates reliability, integrity, and respect for confidentiality).

Discussion Area: Continuous improvement
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. **K19** How digital technology enables the functionality of the working environment to be adaptable to change. **S7** Contribute to the development or improvement of processes and methodologies and support their implementation into the business as part of a wider team. **S12** Contribute to recommendations, improvements, or scientific solutions to meet the requirements of internal or external customers. **S13** Identify, develop or contribute to solutions to technical problems. **S15** Keeps up to date with advances in scientific and sector working practices and technologies. Shares best practice across the team. **B3** Committed to continuous professional development (handles and responds positively to change, adjusting to different conditions, technologies, situations, and environments).