ST0248: Level 3 Laboratory Technician – End Point Assessment

Occupational Profile

This occupation is found in a wide range of organisations, including but not exclusively, chemical, primary and secondary pharmaceutical, biotechnology, formulated products, nuclear companies; and analytical science services, dental laboratories and educational establishments.

The broad purpose of the occupation is working at the forefront of technology to carry out both routine and one-off laboratory testing (and manufacturing where relevant) and perform a variety of technical support functions across the organisation.

In their daily work, an employee in this occupation interacts with the laboratory manager and colleagues, internal departments such as manufacturing, procurement and quality, internal customers such as medical staff, teaching staff and students, external suppliers and customers such as service engineers, delivery drivers, regulatory bodies and inspection teams e.g. HSE.

An employee in this occupation will be responsible for proactively finding solutions to problems and identifying areas for improving the business. Laboratory technicians are expected to work both individually and as part of a laboratory team. They are able to work with minimum supervision, taking responsibility for the quality and accuracy of their own work. In any context working safely and ethically is paramount and many companies operate under highly regulated conditions. Laboratory technicians therefore follow quality procedures to meet the requirements of quality standards relevant to their work. It is not a requirement, either to practise in this occupation or as part of this apprenticeship, for apprentices to achieve additional qualifications (other than the usual English and maths requirements for an apprenticeship at this level) or professional recognition. However, this apprenticeship standard has been carefully designed with some of the requirements of certain relevant professional bodies in mind. Apprentices and employers should speak to the professional bodies relevant to the industry or sector within which they are working to ascertain the additional requirements that must be met for professional recognition by these organisations. Recognition by those organisations will be dependent on the acquisition of learning as defined by them.

End-Point Assessment

The Laboratory Technician standard is assessed through three End-Point Assessment methods as set out in the assessment plan:

- Knowledge Test
- Observation with Questioning
- Structured Interview underpinned by a portfolio of evidence

Apprentices must spend a minimum of 12 months, with most typically spending 24 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 of the Gateway requirements have been met, the Apprentice can proceed to their End-Point Assessment (EPA).

Gateway requirements before End-Point Assessment:

- English and Mathematics Level 2 (GCSE equivalent grade A-C / 4-9)
- Apprentices must complete a portfolio of evidence to support the criteria being assessed in the structured interview.

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

- Gateway Declaration – Training Provider
- Gateway Declaration – Employer
- Gateway Declaration – Apprentice
- Evidence Log for Structured Interview portfolio

The EPA must be completed within an EPA period lasting typically 4 months, after the EPA gateway approval.

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.

- Competence Tracker –to help track progress on-programme.
- Observation Guidance – detailed guidance to help the Apprentice prepare for the observation including the grading descriptors that must be met and an Observation Planning form which must be completed and submitted at Gateway.
- Structured Interview Guidance – detailed guidance to help the Apprentice prepare for the interview including the grading descriptors that must be met and an **evidence log** (listed above) that must be submitted with the portfolio of evidence.
- Glossary of Terms – to support preparation for the Knowledge Test.

Knowledge Test

Laptop / PC (with webcam with audio and video capabilities for remote delivery) will be required.

Teams link and set up will be tested prior to the assessment date if remote.

Can be taken at any point – before or after the other EPA elements.

This is a controlled conditions test – no other resources are permitted.

A quiet room is required, free from distraction and influence.

Test time: 75 minutes.

Grading outcomes: Pass or Fail

- The Marshall Independent Assessor (IA) will contact the apprentice at the agreed time of the test - this may be over a Microsoft Teams link if remote delivery. The Marshall IA will introduce themselves to the apprentice and put the apprentice at ease. It will be confirmed the apprentice understands how the assessment will be carried out and what is required of them.
- The Apprentice will confirm their name and show Photo ID (which will be captured as part of the recording if remote delivery).
- The test will cover 9 specific Knowledge criteria, as listed in the Assessment Plan and the Glossary of Terms.
- The Glossary of Terms expands on the 9 specified Knowledge Criteria and must be used support preparation for this element. The Glossary will be provided by Marshall Assessment.
- The Apprentice will take the test using our online assessment platform (which is linked to ACE360) called Rogo.
- In the months prior to EPA, the Apprentice will be sent a link to set up an account on Rogo where they will be able to access a mock test and EPA support resources.
- The Mock test will allow the apprentice to familiarise themselves with the assessment platform software, the format of the multiple-choice questions (4 possible answers, only 1 correct answer), and that some questions may ask for a negative (which of the following is **not**…) highlighting the need for careful reading of the questions and possible answers.
- The live test will consist of 40 multiple choice questions, 5 of which will be based on a provided scenario/ case study.
- There will be 4 possible answers for each question – only 1 of which will be the correct response. Any missing responses will score 0.
- On the day of the test, the Apprentice will have a maximum of 75 minutes to complete the online test with the Marshall Assessor invigilating either in person or over Teams.
- An invigilator from the Employer site will be required to be in the room to ensure test conditions are adhered to if remote delivery.
- The test is marked out of 40 with the following outcomes: Fail - 0-27, Pass – 28 - 40

Observation with Questioning

Timescale - 3 hours (discretionary 10% additional time allowed for the Apprentice to complete a task) plus 20 mins questioning.

Takes place in the Apprentices normal working environment.

Marshall IA will be an unobtrusive observer – questions will be asked at the end of the session.

Breaks can be taken; the clock will be stopped.

Grading outcomes: Pass or Fail.

- The observation must be of the preparation and performance of a laboratory experiment, test or task following specified methodologies to provide reliable, accurate data.
- The following MUST be observed: Working Safely; Following Procedure / work instructions; Complying with regulations; Following Quality Systems.
- An Observation Plan (proforma provided by Marshall) which details an outline plan of the Apprentice's normal daily work tasks, including timescales – must be shared with the Apprentice and Marshall IA before the day of the assessment to ensure there is sufficient and suitable scope in the planned activities to meet the assessment criteria.
- Marshall IA will attend the employer site at 9am (or agreed time).
- Introductions will be made, and the identity of the Apprentice confirmed by photo ID.
- The Apprentice will be put at ease, it will be confirmed they understand what is required of them, how the assessment will be carried out and what is being assessed.
- The Apprentice will be informed the test has started and the start time recorded on the paperwork.
- The observation **must last 3 hours** (+10% discretionary extra time to allow the Apprentice to complete a task).
- The Marshall IA will take notes during the observation which will be mapped to the grading descriptors for this element. There will be no questioning during the observation.
- At the end of the observation, the Marshall IA and Apprentice will need a quiet room for the questioning to take place.
- The Apprentice will be asked a minimum of 5 questions to cover any gaps in the competencies observed during the practical session and provide further evidence to support the grading decisions.
- All evidence notes will be reviewed by the Marshall IA and Apprentice, and signed off by both parties as a true reflection of what was observed.
- Evidence notes will be returned to Marshall Assessment for review and IQA before the final grade is confirmed.

Structured Interview underpinned by a Portfolio of Evidence

Timescale: 75 mins (10% extra time for Apprentice to complete their final response).

Takes place in a quiet place, free from distractions.

Apprentice will need access to a laptop with a webcam if remote delivery.

GDPR policy available as session will be recorded for QA & training.

Grading outcomes: Fail, Pass or Distinction.

- The Marshall IA will lead a structured interview with the Apprentice.
- The assessment is delivered on a on a 1:1 basis with a Marshall IA and the Apprentice either face to face, or remotely over Teams.
- Questioning will assess the KSBs and associated grading descriptors assigned to this element of the assessment.
- The Apprentice must submit a portfolio of evidence prior to EPA (usually at Gateway), mapped to the grading descriptors for review by their assigned IA.
- A supporting document, ***Evidence Log for Structured Interview*** is available from Marshall to aid evidence gathering and mapping and should be used to support this part of the assessment.
- The Marshall IA will use the evidence in this portfolio to guide their questions, and the Apprentice will refer to their portfolio to support their responses.
- Questions will be based on the specified KSBs and associated grading descriptors for this part of the assessment – the Apprentice should familiarise themselves with the Pass criteria for each of the KSBs and Distinction criteria where this applies as outlined in the guidance document ***Structured Interview guidance.***
- A minimum of 20 questions will be asked.
- The Marshall IA will take notes and the interview will be recorded (audio recording - or video if remote) to support fair marking and IQA of the responses given.
- A Technical Expert from outside the employer can be consulted prior to this element if specific technical expertise is required to support the Marshall IA in preparing for the assessment delivery.

If remote delivery - any breaks in connectivity will be dealt with in the following way:

Short break of up to 10 mins 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.
If the connection is weak and breaks more than once, the discussion may be suspended until a better connection can be established.

Grading outcomes

The Apprentice must, as a minimum, PASS each element to achieve their Apprenticeship certificate. If any 1 element is graded a FAIL, the overall grade result will be a FAIL. If the Apprentice is awarded a PASS in the Knowledge Test and the Observation with questioning, and a DISTINCTION in the Structured Interview, they will be awarded an overall DISTINCTION grade. For any failed elements, a resit or retake of the failed element only can be arranged. Re-sits are typically completed within 2 months of the fail notification and retakes are typically completed within 4 months of the fail notification.

All evidence is submitted for IQA before confirmation of results, which will be released to the Training Provider by Marshall Assessment. Following confirmation of results from Marshall Assessment, the Apprentice or Training Provider have 15 working days to request a review of the grade. Appeals policy also available at 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 https://www.marshall-assessment.com/our-policies

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.

Link to IfATE Assessment Plan - https://www.instituteforapprenticeships.org/apprenticeship-standards/laboratory-technician-v1-2

Knowledge, Skills & Behaviours
Knowledge
K1 The quality procedures to meet the requirements of quality standards relevant to the workplace.
K2 How to safely store and handle data in line with national and international data protection and cyber security regulations that apply to the role and employer processes.
K3 How to apply statistical techniques for data processing and presentation. e.g calculation of median, standard deviation, produce graphs
K4 How to recognise problems and apply appropriate scientific methods to identify causes and achieve solutions.
K5 The business environment in which the company operates including personal role within the organisation, ethical practice and codes of conduct.
K6 The foundations of health and safety including responsibility for health and safety under Health & Safety at Work Act(HASWA)
K7 Risk assessment & control including Control of Substances Hazardous to Health assessments (COSHH) and Safety Data Sheets
K8 Safe manual handling procedures including Display Screen Equipment (DSE)
K9 Hazardous area classification & Dangerous Substances and Explosive Atmosphere Regulations (DSEAR) and how they apply within area of responsibility
K10 Site and local safety (including fire and electrical), first aid and emergency management systems and procedures.
K11 Laboratory health and safety and compliance with legal, regulatory, ethical requirements including the management and control of laboratory waste and the handling and disposal of chemical substances
K12 How to order and control stocks of laboratory materials where required
K13 How to apply the concepts of resource efficiency to energy, water and waste in the workplace
K14 Internal regulations pertinent to the sponsoring company & relative specialism in which they operate (eg. Good Laboratory Practice(GLP), Good Manufacturing Practice (GMP), Good Documentation Practice (GDP))
K15 The external regulatory requirements pertinent to the sponsoring company & relative specialism in which they operate e.g. Medicines & Healthcare Regulation Authority (MHRA), Food and Drug Administration (FDA), Office for Nuclear Regulation (ONR)
K16 The reason for laboratory investigations including out of specification results
K17 Error reporting and correction techniques e.g. for traceability
K18 The principles of Laboratory Information Management systems (digital or paper based)
K19 The principles of root cause analysis

K20 The key principles of continuous improvement and how workplace organisation techniques can be applied to improve workflow
K21 Theoretical knowledge of named / recognised scientific subject appropriate to the workplace and sector e.g. such as found in the dental, pharmacology sectors.
K22 Scientific equipment management including maintenance e.g. cleaning, calibration, recognising equipment faults and when to escalate.
Skills
S1 Comply with health and safety policies and procedures including HASWA, COSHH, risk assessments, use of personal protective equipment (PPE), manual handling, emergency procedures.
S2 Maintain excellent housekeeping, in accordance with organisation Standard Procedures
S3 Order and control stocks of laboratory materials where required
S4 Identify, organise and use resources effectively to complete tasks applying the concepts of resource efficiency e.g energy, water and waste
S5 Adhere to internal and external regulatory requirements e.g. GLP, GMP, GDP
S6 Prepare for, and perform, laboratory experiments, tests or tasks following any specified methodologies to provide reliable, accurate data e.g. weighing, pipetting, filtering, spectroscopic techniques, chromatography techniques
S7 Demonstrate technical competence in the use of specified instruments and equipment
S8 Report faults and seek diagnostic advice to maintain equipment in good working order, including calibration where required
S9 Complete documentation accurately.
S10 Keep accurate records of laboratory work undertaken and results
S11 Contribute to the preparation of reports.
S12 Use simple statistical techniques for data presentation and evaluation e. g calculation of median and standard deviation, production of graphs
S13 Demonstrate problem solving techniques including identification of sources of error and how they can be reduced e.g. human error
S14 Use standard software packages and applications e.g Microsoft office suite
S15 Use Laboratory Information Management systems to support their work.
S16 Address non-routine problems with samples and instrumentation, within defined areas

S17 Identify relevant information from scientific sources e.g. supervisors, literature etc. in order to contribute to solutions
S18 Participate in continuous performance improvement of systems and processes relevant to the work environment e.g. workplace organisation techniques, accreditation (e.g. ISO, UKAS) and proficiency testing.
S19 Evaluate data, recognise and call attention to anomalous or unusual results
Behaviours
B1 Effective communication using a range of skills
B2 Effective teamwork
B3 Ability to work independently and take responsibility for initiating and completing tasks in compliance with quality and safety standards, challenging unsafe working practices where appropriate.
B4 An understanding of impact of their work on others, especially where related to diversity and equality
B5 Time management and ability to complete work to agreed schedule
B6 Ability to adapt to change
B7 Continuing Professional Development (CPD): Accountability of own development needs, undertaking CPD.
B8 Demonstrate reliability, integrity & respect for confidentiality on work related & personal matters

Grading – Assessment criteria (for amplifications / clarification – please see Marshall Assessment's guidance documents)

Knowledge Test

KSBs	Fail	Pass
K6, K7, K8, K9, K11, K16, K18, K19, K20	0 – 27 out of 40 marks	28-40 out of 40 marks

Observation with Questioning

KSBs	Fail	Pass
K1, K2 K13, K22 S1, S2, S4, S5, S6, S7, S9, S15 B3, B5	Does not meet the pass criteria	Applies regulatory health and safety procedures in performing and preparing laboratory experiments (K1, S1, S5) Demonstrates use of a Laboratory Information Management System and explains the requirements for storage and handling of data in the context of their role and the regulatory guidance and (K2, S15) Applies resource efficiency to energy, water and waste in the workplace. (K13, S4)

		Manages scientific equipment e.g. cleaning, calibration and equipment faults according to organizational policies and procedures. (K22, S2) Prepares for and performs a laboratory experiment, test or task following specified methodologies to provide reliable, accurate data (S6, S7) Assumes responsibility for initiating and completing tasks in compliance with quality and safety standards, challenging unsafe working practices where appropriate. (B3) Demonstrates document completion(S9) Demonstrates time management in the completion of work. (B5)

Structured Interview underpinned by portfolio of evidence

KSBs	Fail	Pass	Distinction
K3, K4, K5, K10, K12, K14, K15, K17, K21 S3, S8, S10, S11, S12, S13, S14, S16, S17, S18, S19 B1, B2, B4, B6, B7, B8	Does not meet the pass criteria	Outlines and applies simple statistical techniques for data presentation. (K3, S12, S14) Identifies and selects methods of communication appropriate to the context (B1) Describes and explains problem solving techniques and applies solutions. Explains how to recognise and call attention to anomalous or unusual results (K4, S13, S19) Identifies and describes ethical practice and codes of conduct operating within the business environment the organisation operates in. (K5) Describes and explains safety systems and procedures. (K10) Gives an example of when they have ordered stocks of laboratory materials (K12, S3) Describes the internal and external regulations pertinent to the sponsoring company & relative specialism in which they operate (K14, K15) Describes internal and external regulatory requirements (K14, K15) Describes how to report faults and seek diagnostic advice and demonstrates the maintenance of equipment (K17, S8) Identifies theoretical knowledge of named / recognised scientific subject relevant to their sector	Evaluates and interprets the results of statistical techniques. (K3, S12) Explains the benefits of sharing results to support organisational continuous improvement Analyses and evaluates problem solving technique solutions (K4, S13, S19) Critically evaluates non-compliance with organisational codes of conduct and ethical practice (K5) Explains the impact of stock control processes on the organisation.(K12,S3) Analyses and evaluates noncompliance with internal and external regulations (K14, K15) Analyses the effect of poorly calibrated equipment on their work (K17) Critically analyses schemes which improve workplace systems and processes (S18)

		and demonstrates the use of information from scientific sources. (K21, S17).	