ST0626: Level 6 Laboratory Scientist End-Point Assessment

Occupational profile

A Laboratory Scientist applies specialist knowledge and broad scientific understanding to carry out a range of technical and scientific activities in their specialist discipline: Chemical Science, Life Sciences, Research & Development, and Analytical.

They analyse, interpret and evaluate relevant scientific information, concepts and ideas and use these to develop subsequent experiments or investigations and to propose solutions to problems. They identify areas of business improvement and propose innovative scientific ideas. They perform practical, established and novel laboratory procedures using standard and specialist laboratory equipment and instrumentation. Ensuring uniformity, consistency, reliability, reproducibility, quality, and integrity of scientific tests underpins their work and the working environment. In all contexts working safely and ethically is paramount.

Laboratory scientists work in a wide range of organisations, including chemical, pharmaceutical, biotechnology, formulated products, consumer products, nuclear and analytical services. They work autonomously on defined projects under the supervision of a senior scientist and as part of a wider scientific team, which may include laboratory technologist and laboratory technicians. They deliver scientific value to their organisation, whilst contributing to the development of others.

Typical job titles include: Analytical Chemist, Research & Development Scientist, Molecular Biologist, Formulation Scientist, Medicinal Chemist, Process Scientist.

End-Point Assessment

The Laboratory Scientist standard is assessed through two End-Point Assessment Methods as set out in the Assessment Plan:

- Workplace Synoptic Project Primary Journal Article and Presentation with Questioning.
- Vocational Competence Discussion.

Apprentices typically spend a minimum of 55 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 the Gateway requirements have been met, the Apprentice can proceed to their End-Point Assessment (EPA).

Gateway requirements before End-Point Assessment

- Bachelor's (Honours) Degree (BSc Hons) in a scientific discipline relevant to the job role; Chemistry, Life Sciences, Pharmaceutical Sciences, Microbiology, Genetics
- Maths & English at Level 2 (GCSE equivalent grade A-C / 4-9)
- Vocational Competence Evidence/ Evaluation log
- Project Plan

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

- Gateway Declaration – HEI / Training Provider
- Gateway Declaration – Employer
- Gateway Declaration – Apprentice

The EPA must be completed within a 6-month period following successful 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.

- Full Standard Vocational Competence Evaluation Log – to track progress on-programme which must be complete and submitted at Gateway.
- Synoptic Project Guidance – detailed guidance to help you plan and deliver your project and prepare for the Primary Journal Article and Presentation with questioning, including the grading descriptors that must be met and amplifications around the evidence expected.
- A Project Plan template to be completed and submitted at **Gateway.**
- Vocational Competence Discussion Guidance – detailed guidance to help you prepare for your discussion including the grading descriptors and amplifications detailing the evidence expected.
- A VCD Detailed Competence Log that can be compiled to support the VCD.

Workplace Synoptic Project - Primary Journal Article & Presentation with Questioning

Timescale – maximum 30 minutes for the Presentation and 60 minutes for the Discussion.

Maximum 50 hours post Gateway to write the Primary Journal Article.

Takes place in a quiet location, free from distractions.

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

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 Synoptic Project is agreed with the Employer and the Training Provider/ HEI and completed towards the end of the consolidation phase on- programme.
- The project must represent at least 100 hours work and is completed on-programme before Gateway.
- A summary report of the project, in the format of a Primary Journal Article is competed in the first 8 weeks of the EPA period following Gateway sign off by Marshall Assessment.
- A maximum of 50 hours is allowed to write the Primary Journal Article following Gateway sign off. This should be max. 3000 words inclusive of abstract, main text, figures, tables and boxes, but excluding references and should be submitted as a PDF.
- The Journal Article is submitted to the Independent Assessor (IA) a minimum of 2 weeks before the Presentation with Questioning for review by a Technical Expert and will be graded by the IA.
- The Technical Expert will attend an induction session with Marshall Assessment to prepare for the panel and familiarise themselves with the evidence recording paperwork.
- Primary Journal Articles that do not meet the requirements set out in the Synoptic Project Guidance will be marked as a Fail and a resit will be needed.
- The panel (consisting of the IA and the Technical Expert) will convene at the agreed time, either face to face or remotely over a recorded Microsoft Teams link. The IA will make the introductions and put the Apprentice at ease.
- The Apprentice will confirm their name, show Photo ID and confirm they understand the assessment they are about to undertake.
- The start and end time of the Presentation and subsequent questioning will be recorded on the supplied evidence recording paperwork by the panel.
- The Apprentice will have 20 - 30 minutes to present their Project Report based on their workplace Synoptic Project.
- The panel will then have between 45 mins to 1 hour to ask questions from a standardised bank covering the following themes: Scientific approach, Project management, Stakeholder management, Change management and the Apprentice's use of personal and professional skills to support delivery of the project.
- The Technical Expert will provide guidance to the IA on workplace policy and confirm the authenticity of the Apprentice's work but will not contribute to the grading decision.
- The panel will take notes and the assessment must be recorded to ensure fair marking and for Internal Quality Assurance (IQA).
- The Primary Journal Article, Presentation and subsequent questioning/discussion will be jointly assessed against the Knowledge, Skills and Behaviours (KSBs) as detailed in the Synoptic Project Guidance. Apprentices must meet all Pass criteria to Pass the assessment. To get a Distinction they must meet all Pass and all Distinction criteria.

Vocational Competence Discussion (VCD)

Timescale:
Maximum 2 hours 15 mins (min 1 hour)

Takes place in a quiet location, free from distractions.

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

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 Independent Assessor (IA) will lead a Professional Discussion on a 1:1 basis with the Apprentice either face to face or over a recorded Microsoft Teams link.
- 8 questions will be asked, 1 from each of the following categories:
    - Compliance with internal and external regulations
    - Ethical practice and codes of conduct
    - Meeting internal or external customers' requirements
    - Record keeping and data integrity
    - Applying quality standards
    - Creative thinking and problem solving
    - Meeting targets
    - Continuous performance improvement
- The questions will be competency-based questions taken from Marshall Assessment's standardised question bank (see sample questions in VCD guidance document) based on the Knowledge, Skills and Behaviours (KSBs) assigned to this element.
- The Apprentice must answer each question with examples from their own workplace.
- A written copy of the question will be provided for the Apprentice at the start of the assessment to read, but not retain.
- The Apprentice can have access to their Competence Evaluation Log, they should compile a VCD Detailed Competence Log and can use any evidence contained in this, or their full Competence Log to support their responses.
- The IA will take notes during the discussion to record their assessment decisions and marking and the assessment will also be recorded. Assessment records will be subject to internal quality assurance sampling .
- Apprentices must meet all Pass criteria to Pass the assessment. To get a Distinction they must meet all Pass and all Distinction criteria.

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

- A 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.

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.

To achieve a Distinction the Apprentice must be awarded a Distinction in both assessment methods.

If the Apprentice fails one or both elements of the EPA, a resit/ retake can be arranged for the failed element(s), however the final grade outcome will be capped at a PASS. Any EPA component re-sit/re-take must be taken during the maximum 6-month EPA period; otherwise, the entire EPA must be retaken. Apprentices cannot resit an element to improve their grade.

All evidence is submitted for IQA before confirmation of results, which will be released to the HEI /Training Provider by Marshall Assessment. Following confirmation of results from Marshall Assessment, the learner 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/laboratory-scientist-degree-v1-0

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	
Knowledge, in relation to one of the following specialist disciplines where indicated - Chemical Science, Life Sciences, Research & Development or Analytical:	
K1	The underlying scientific principles, principal theories, concepts, and terminology of laboratory-based experimentation, including laboratory techniques relevant to the specialist discipline.
K2	The ways in which advanced science and technology is developed, established techniques of scientific enquiry and research methodologies.
K3	The theoretical basis for application of the science relevant to one specialist discipline including how to apply this during experimental design and implementation of research programmes.
K4	The requirements for the development and validation of analytical methods and instrumentation, including suitable sampling methods as appropriate to the specialist discipline.
K5	How to use statistical techniques, probability distributions, significance testing & confidence limits, regression & correlation, and hypothesis testing to evaluate results, design experiments and draw evidence-based conclusions.
K6	How to independently implement new processes according to the literature, data mining results and input from colleagues.
K7	How to initiate, plan, execute and close a project and incorporate the organisation's project management procedures into the scientific work environment working with team members.
K8	The internal and external regulatory environment pertinent to the science sector and area of specialisation, for example Medicines & Healthcare Products Regulatory Authority (MHRA), Control of Major Accident Hazards (COMAH), Good Laboratory Practice (GLP).
K9	The business environment in which the company operates including personal role within the organisation, ethical practice, and codes of conduct.
K10	The requirements of internal or external customers and how to recommend the appropriate workflows, improvements, or scientific solutions.
Skills, in relation to one of the following specialist disciplines where indicated - Chemical Science, Life Sciences, Research & Development or Analytical:	
S11	Identify and use the scientific approaches appropriate to one specialist discipline required to solve problems, support new investigations and follow-up experiments in the laboratory.
S12	Appraise scientific experimentation, independently design, and implement new processes according to relevant literature and other data sources interrogated using data mining techniques and input from colleagues.
S13	Support appraisal of scientific experimentation with numerical and statistical analysis.
S14	Work autonomously to analyse, interpret and evaluate scientific data and present the results of laboratory work and problem solving clearly and concisely in written and oral form.
S15	Comply with regulations including compliance with business rules pertaining to record keeping, data integrity, traceability & confidentiality.
S16	Promote and ensure the application of quality standards, safe working practices and compliance with risk management systems relevant to the workplace in own work and the work of others.

S17	Use creative thinking and problem-solving techniques such as root cause analysis, to challenge assumptions, innovate, make new proposals, and build on existing ideas.
S18	Autonomously plan and prioritise tasks, review and evaluate progress against objectives and investigate alternative scenarios.
S19	Contribute to the development of specific technical projects across multi-disciplinary teams.
S20	Ensure that targets are met and maintained, within own area of responsibility, whilst complying with defined company procedures and legislative requirements.
S21	Lead continuous performance improvement within the scientific and technical environment using process mapping & analysis and root cause analysis that is informed by other appropriate principles, such as lean, six sigma, project, and change management principles.
Behaviours	
B22	Communicates effectively to a scientific and non-scientific audience using oral presentation, scientific debate & technical writing skills.
B23	Demonstrates reliability, integrity, and respect for confidentiality on work related and personal matters, including appropriate use of social media and information systems.
B24	Works autonomously and interact effectively including challenging assumptions within a wide, multi-disciplinary project team.
B25	Takes account of the impact of work on others, especially where related to diversity and equality.
B26	Manages time effectively, being able to plan and complete work to schedule.
B27	Responds positively to change management processes and promotes change within work group.
B28	Takes responsibility for continuing personal and professional development, demonstrating commitment to learning and self-improvement and supports the development of others as appropriate.