Institute for Apprenticeships & Technical Education

LABORATORY TECHNICIAN

Details of standard

Occupation summary

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.

Learning guides have been produced by the professional bodies to support the delivery of this apprenticeship.

Typical job titles include:

Laboratory assistant (prefixed by sector) | **Laboratory technician**

Occupation duties

DUTY	KSBS
Duty 1 Work safely in a laboratory, maintaining excellent housekeeping whilst following appropriate safety, environment and risk management systems.	K6 K7 K8 K9 K10 K11 K22 S1 S2
Duty 2 Follow quality procedures to meet the requirements of quality standards relevant to the workplace.	K1 K5 K14 K15 S6 S9
Duty 3 Prepare for laboratory tasks using the appropriate scientific techniques, procedures and methods	K12 K13 K21 S3 S4 S5 S7
Duty 4 Perform laboratory tasks following specified methodologies, such as Standard Operating Procedures.	K1 K14 S7 S8 B2 B3 B4 B5
Duty 5 Use of specified instrumentation and laboratory equipment, including calibration where required.	K21 K22 S8 S9 S17
Duty 6 Produce reliable, accurate data and keep accurate records of laboratory work undertaken and results.	K2 K22 S10 S11 S12
Duty 7 Analyse, interpret and evaluate data and identify results requiring further investigation seeking advice of senior colleagues as appropriate.	K16 K17 K21 S17 S18 S19 B2 B3
Duty 8 Communicate scientific information appropriately, including the use of Laboratory Information Management systems, either digital or paper based.	K18 S10 S11 S15 S16 B1 B8
Duty 9 Apply scientific techniques for data presentation. e.g. statistics	K3 S12 S13 S15
Duty 10 Recognise problems and apply appropriate scientific methods to identify causes and achieve solutions.	K4 K17 K19 S14 S17 S18

Duty 11 Participate in continuous business performance improvement.	K5 K20 S18 B6 B7

KSBs

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) rand 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 proficiently

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

Qualifications

English and Maths

Apprentices without level 2 English and maths will need to achieve this level prior to taking the End-Point Assessment. For those with an education, health and care plan or a legacy statement, the apprenticeship's English and maths minimum requirement is Entry Level 3. A British Sign Language (BSL) qualification is an alternative to the English qualification for those whose primary language is BSL.

Professional recognition

This standard aligns with the following professional recognition:

- The Royal Society of Biology, Royal Society of Chemistry and Institute of Physics have worked together with the Science Council to publish learning guides intended to further enhance career prospects and support the professional standards they have a duty to uphold within their Royal Charters. It is their belief that by following the learning guides, or a qualification that covers the learning outcomes they contain, an apprentice will have an enriched experience. While professional recognition by these organisations and professional body membership is not a formal requirement for practising as a Laboratory Technician, training providers, employers and apprentices may wish to have regard to this

information and the opportunities that professional registration can confer when considering the design of individual apprenticeship programmes and occupational development. The contact details for these professional bodies and the knowledge information can be found here: membership@rsb.org.uk membership@iop.org registers@rsc.org for Registered Science Technician

Additional details

Occupational Level:

3

Duration (months):

24

Review

This apprenticeship standard will be reviewed after three years

Version log

VERSION	CHANGE DETAIL	EARLIEST START DATE	LATEST START DATE	LATEST END DATE
1.2	End-point assessment plan revised	05/08/2020	Not set	Not set
1.1	Standard revised	06/05/2020	04/08/2020	Not set
1.0	Retired	09/12/2014	05/05/2020	Not set