

**Metrology Technician (AP V1.1 and AP V1.2)
Level 3 Apprenticeship Standard (ST0282)
Specification**



This guide describes the different types of End-Point Assessment tests, the test rules and who should be involved. Preparing for End-Point Assessment and working with SIAS are also covered.

SIAS is the science industry assessment service. It is part of the Cogent Skills Group. For further information about apprenticeship standards and Trailblazers please contact info@siasuk.com.

Version History

Version	Updates
1.0	First published. This document relates to assessment plan versions 1.1 and 1.2.

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Objective

The aim of this End-Point Assessment (EPA) is to ensure that the apprentice is occupationally competent against the knowledge, skills and behaviours outlined in the assessment plan for this standard.

Metrology is the science of measurement and its application; it includes all theoretical and practical aspects of measurement.

This occupation is found in different industries such as advanced manufacturing, aerospace, automotive, construction, energy, environment, pharmaceuticals, healthcare and within all sizes of organisation. Measurement activities can range from measuring galaxies to graphene, molecules, chemical pollutants, hip joints, aircraft and industrial emissions.

The broad purpose of the occupation is to identify measurement requirements, and then to plan and perform measurement tasks using tools, equipment, instrumentation, materials and software programs. Metrology Technicians access and interpret information and documents to support the measurement process and apply measurement principles whilst carrying out measurement activities. They perform tests and checks on measurements tools, equipment, instrumentation, materials, processes or software programmes to determine their suitability for use. They analyse, interpret and validate measurement results and data. They will also produce and store measurement records and documentation following specified procedures and methodologies.

In their daily work, an employee in this occupation may interact with and report to a senior metrology technician, a metrologist or a quality manager. They may also liaise with internal and external stakeholders, for example customers, team colleagues, colleagues from different functions and departments within the organisation and suppliers.

An employee in this occupation will be responsible for adhering to relevant statutory regulations, national and international standards and organisational procedures and requirements, including policies and procedures relating to the preparation, storage, handling and disposal of resources.

Employees also need to adhere to legislation, regulations, standards and organisational requirements relating to health and safety. They will carry out work with minimal supervision, take responsibility for the quality and accuracy of the work they undertake, and will have a high level of attention to detail. They will manage their own time to meet deadlines and customer requirements.

Prior Learning and Qualifications

Individual employers will set the selection criteria for their apprentices. Typically, employers might expect individuals to have achieved grade 4 (C) or above at GCSE level in English and maths and a relevant science subject, or equivalent prior to the commencement of the apprenticeship. Other relevant or prior experience may also be considered as an alternative.

Overview

A full-time metrology technician apprentice typically spends 36 months on-programme. The apprentice must spend at least 12 months on-programme and complete the required amount of off-the-job training in line with the apprenticeship funding rules.

The EPA should be completed within an EPA period lasting typically 3 months.

The apprentice must complete their training and meet the gateway requirements before starting their EPA. The EPA will assess occupational competence.

This EPA has 2 assessment methods.

The grades available for each assessment method are below.

Assessment method 1 - workplace observation 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

Competence Evaluation

During the apprenticeship, regular evaluation of the competence of the apprentice against the apprenticeship standard will help to ensure that they achieve full occupational competence by the end of their training, and they are ready for EPA. Confirmation from the employer that the apprentice is fully competent is needed before EPA can take place.

As competence evaluation is an in-programme activity, the process that is used for this has not been mandated. It is for the employer supported by their training provider to decide how they wish to do this. To help with this SIAS has produced the SIAS Competence Tracker.

Gateway Requirements

The apprentice's employer must be content that the apprentice is occupationally competent.

The apprentice must:

- confirm they are ready to take the EPA
- have achieved English and mathematics qualifications in line with the apprenticeship funding rules

For the professional discussion underpinned by a portfolio of evidence, the apprentice must submit a portfolio of evidence.

Gateway evidence must be submitted to SIAS, along with any organisation specific policies and procedures requested by SIAS.

Assessment Methods

This End-Point Assessment has two assessment methods:

1. Workplace observation and questions
2. Professional discussion underpinned by a portfolio of evidence

Workplace Observation and Questions

In the workplace observation and questions, an end-point assessor observes the apprentice in their workplace and asks questions. The apprentice completes their day-to-day duties under normal working conditions. Simulation is **not** allowed. It gives the apprentice the opportunity to demonstrate the KSBs mapped to this assessment method.

The workplace observation and questions must be structured to give the apprentice the opportunity to demonstrate the KSBs mapped to this assessment method to the highest available grade.

An end-point assessor must conduct and assess the workplace observation and questions.

The end-point assessor must only observe one apprentice at a time to ensure quality and rigour. They must be as unobtrusive as possible.

SIAS must give the apprentice 14 days' notice of the observation with questions.

The observation will take 2 hours. The end-point assessor can increase the time by up to 10%. This time is to allow the apprentice to respond to a question if necessary or finish a task.

The observation may be split into discrete sections held on the same working day.

SIAS must manage invigilation of the apprentice during the assessment, to maintain security of the EPA, in line with their malpractice policy. This includes breaks and moving between locations.

The end-point assessor must explain to the apprentice the format and timescales of the observation with questions before it starts. This does not count towards the assessment time.

The end-point assessor should observe the following during the observation:

- measurement requirements and preparation
- performing measurement tasks
- data interpretation
- communication
- health and safety

These activities provide the apprentice with the opportunity to demonstrate the KSBs mapped to this assessment method.

The end-point assessor must ask questions. Questioning can occur both during and after the observation.

The purpose of the questions is:

- to seek clarification where required
- to assess the level of competence against the grading descriptors

The time for questioning is included in the overall assessment time. The end-point assessor must ask at least 4 questions. To remain as unobtrusive as possible, the end-point assessor should ask questions during natural stops between tasks and after completion of work rather than disrupting the apprentice's flow. The end-point assessor must use the questions from the SIAS's question bank or create their own questions in line with the SIAS's training. Follow-up questions are allowed where clarification is required.

The end-point assessor must ask questions about KSBs that were not observed to gather assessment evidence. These questions are in addition to the above set number of questions for the observation with questions and should be kept to a minimum.

The apprentice may choose to end the assessment method early. The apprentice must be confident they have demonstrated competence against the assessment requirements for the assessment method. The end-point assessor or SIAS must ensure the apprentice is fully aware of all assessment requirements. The end-point assessor or SIAS cannot suggest or choose to end the assessment methods early, unless in an emergency. The SIAS is responsible for ensuring the apprentice understands the implications of ending an assessment early if they choose to do so. The end-point assessor may suggest the assessment continues. The end-point assessor must document the apprentice's request to end the assessment early.

The end-point assessor must make the grading decision. The end-point assessor must assess the observation and responses to questions holistically when deciding the grade.

The end-point assessor must keep accurate records of the assessment. They must record:

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

The workplace observation and questions must take place in the apprentice’s normal place of work for example, their employer’s premises or a customer’s premises. Equipment and resources needed for the observation must be confirmed to be available by the SIAS, who can liaise with the employer to provide these. They must be in good and safe working condition.

Questioning that occurs after the observation should take place within the allocated 2 hours and be in a suitable environment, for example a quiet room, free from distractions and influence.

Workplace Observation and Questions Grading Descriptors

Theme KSBs	PASS Apprentices must demonstrate all of the pass descriptors	DISTINCTION Apprentices must demonstrate all of the pass descriptors and all of the distinction descriptors
Measurement requirements and preparation K3 K8 K16 S1 S2 S3 S4 S5 S6 B2	<p>P1 Makes informed decisions about the measurement method, process and timescales, including traceability, calibration, measurement uncertainty and documentation, confidently questioning, speaking up and challenging when appropriate (K3, S1, B2).</p> <p>P2 Selects, checks and tests tools, equipment, instrumentation and software programs determining their suitability for use, and the importance of meeting quality requirements, by calibration, assurance, qualification, testing, verification, validation, inspection, accreditation, audit systems and metrology processes,</p>	<p>D1 Considers the decisions they made on the measurement method, process and timescales used and identifies any opportunities for continuous improvement (S1).</p> <p>D2 Demonstrates the methods used to ensure quality requirements and suitability for use are established (K8, S6).</p>

Theme KSBs	PASS Apprentices must demonstrate all of the pass descriptors	DISTINCTION Apprentices must demonstrate all of the pass descriptors and all of the distinction descriptors
	<p>accesses and interprets information and documentation (K8, S2, S4, S6).</p> <p>P3 Plans and prepares the work environment and measurement tasks following metrology codes of conduct, national and international regulations and standards, specified procedures and methodologies and ethical practice (K16, S3, S5).</p>	
<p>Performing measurement tasks K6 K7 K21 S8 S9 S10 S19 B1 B3 B7</p>	<p>P4 Complies with statutory regulations, national and international standards relevant to the industry and organisational procedures and codes of conduct acting professionally, ethically and conscientiously when carrying out measurement tasks in line with process requirements and demonstrates an awareness of the measurement strategy and its application to the metrology technician role (K6, S19, B3).</p> <p>P5 Performs measurement tasks concentrating on quality and to a high level of attention to detail and accuracy with traceable and reproducible results, considering potential sources of variability in the measurement system and the impact of uncertainty,</p>	<p>D3 Suggests ways to reduce potential variability in the measurement system (K7, S8).</p>

Theme KSBs	PASS Apprentices must demonstrate all of the pass descriptors	DISTINCTION Apprentices must demonstrate all of the pass descriptors and all of the distinction descriptors
	<p>data collection, analysis, interpretation and results using measurement tools, equipment, instrumentation, materials and software programs (K7, S8, B1).</p> <p>P6 Maintains the work area in line with organisational, environmental and sustainability regulations, guidance, working practice and policies on preparation, storage, control, handling and disposal of resources taking personal responsibility for own sustainable working practices (K21, S9, S10, B7).</p>	
<p>Data interpretation K17 S11 S12</p>	<p>P7 Produces, manages and stores records, retrieving, analysing, interpreting and validating data and measurement documentation in line with data management, data protection, cyber security regulations, ethical practices and organisational specifications (K17, S11, S12).</p>	<p>N/A</p>
<p>Communication K4 K5 S15 B4</p>	<p>P8 Communicates relevant, specific and accurate information using metrology language, terminology, standard presentation and conventions through different channels, maintaining impartiality and confidentiality to meet the</p>	<p>D4 Adapts methods of communication they use to meet the needs of the audience (S15).</p>

Theme KSBs	PASS Apprentices must demonstrate all of the pass descriptors	DISTINCTION Apprentices must demonstrate all of the pass descriptors and all of the distinction descriptors
	needs of the audience (K4, K5, S15, B4).	
Health and safety K18 K19 S20	P9 Demonstrates safe working practice and their personal responsibilities in line with health and safety legislation, regulations, industry standards and organisational policies and procedures (K18, K19, S20).	N/A

Fail – An apprentice will fail where they do not demonstrate all the pass descriptors.

Workplace Observation and Questions Knowledge, Skills and Behaviours

Ref	KSB Statement
Knowledge	
K3	Requirements for metrological traceability, including calibration, measurement uncertainty and documentation.
K4	Metrology language, terminology, standard presentation and conventions, for example units of measurement and the guidance documents available including the International Vocabulary of Metrology.
K5	Importance of using appropriate metrology language, terminology, standard presentation and conventions.
K6	Importance and application of a measurement strategy and how it applies to the role of a Metrology Technician.
K7	Potential sources of variability in a measurement system and the impact of variability on measurement uncertainty, data collection, analysis, interpretation and results.
K8	The role of quality requirements, calibration requirements, assurance, qualification, testing, verification, validation, inspection, accreditation, audit systems and processes in metrology and why these are important.
K16	Metrology codes of conduct including relevant national and international regulations and standards, industry and organisational processes, procedures, ethical practices and requirements and the importance of their application.
K17	Data management, data protection and data and cyber security national and international regulations and standards, industry and organisational processes, procedures, ethical practices and requirements and the importance of their application.
K18	Health and safety legislation, regulations, industry and organisational policies, procedures and requirements relating to safe working practices.
K19	Personal responsibilities relating to health and safety.
K21	Environmental and sustainability regulations, guidance, working practices and organisational policies, procedures and requirements.

Skills	
S1	Identify measurement requirements and make informed decisions about the measurement method, process and timescales required.
S2	Identify and select tools, equipment, instrumentation and software programs to meet measurement requirements.
S3	Plan and prepare for measurement tasks following specified procedures and methodologies appropriate to the organisation.
S4	Access and interpret information and documentation to support the measurement process, for example data, manuals, specifications, catalogues, calibration certificates.
S5	Prepare the work environment.
S6	Select and perform tests and checks on measurement tools, equipment, instrumentation, materials, process or software programs, determine suitability for use and metrological confirmation.
S8	Perform measurement tasks to ensure verifiable, traceable and reproducible results, using measurement tools, equipment, instrumentation, materials and software programs, following specified procedures and methodologies appropriate to the organisation.
S9	Maintain the work area following specified procedures and methodologies appropriate to the organisation.
S10	Follow organisational policies and procedures relating to the preparation, storage, control, handling and disposal of resources, for example standards, samples, materials, tools, equipment, instrumentation and software.
S11	Retrieve, analyse, interpret, validate, format, record and store measurement results and data in line with organisational specifications and data management regulations and procedures.
S12	Produce, manage and store records, reports and other measurement documentation in line with data management regulations and organisational procedures.
S15	Communicate relevant, specific and accurate information through various channels to meet customer requirements and the needs of the audience.
S19	Comply with statutory regulations, national and international standards relevant to the organisation, industry and organisational procedures and requirements relating to codes of conduct when carrying out measurement tasks.
S20	Comply with health and safety legislation, regulations, industry standards and organisational policies and procedures for safe working practices, raising any concerns via the relevant channels.
Behaviours	
B1	Focussed on quality and maintains concentration with a high level of attention to detail and accuracy.
B2	Inquisitive, asks questions to gain knowledge and understanding and is confident to speak up and challenge when appropriate.
B3	Act professionally, ethically and conscientiously by adhering to relevant legislation, regulations, standards and organisational procedures.
B4	Maintain impartiality and confidentiality.

B7	Committed to environmental sustainability when using resources and carrying out processes and takes personal responsibility for own sustainable working practices.
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Professional Discussion Underpinned by a Portfolio of Evidence

In the professional discussion, an end-point assessor and apprentice have a formal two-way conversation. It gives the apprentice the opportunity to demonstrate the KSBs mapped to this assessment method.

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 end-point assessor must conduct and assess the professional discussion.

The purpose of the end-point assessor's questions will be to assess the apprentice's competence against the following themes:

- metrology principles and mathematical techniques
- problem solving and continuous improvement
- assessing risk
- contribute to business standards

SIAS must give an apprentice 2 weeks' notice of the professional discussion.

The end-point assessor must have at least 2 weeks 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 however, the portfolio of evidence is not directly assessed.

There must be 60 minutes allocated for the professional discussion. The end-point 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 end-point assessor must ask at least 6 questions. The end-point assessor must use the questions from the SIAS's question bank or create their own questions in line with the SIAS's training. Follow-up questions are allowed where clarification is required.

The apprentice may choose to end the assessment method early. The apprentice must be confident they have demonstrated competence against the assessment requirements for the assessment method. The end-point assessor or SIAS must ensure the apprentice is fully aware of all assessment requirements. The end-point assessor or SIAS cannot suggest or choose to end the assessment methods early, unless in an emergency. SIAS is responsible for ensuring the apprentice understands the implications of ending an assessment early if they choose to do so. The end-point assessor may suggest the assessment continues. The end-point assessor must document the apprentice's request to end the assessment early.

The end-point assessor must make the grading decision.

The end-point 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

The professional discussion must take place in a suitable venue selected by SIAS for example, SIAS’s or the employer’s premises.

The professional discussion can be conducted by video conferencing. SIAS 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.

Professional Discussion Grading Descriptors

Theme KSB	PASS Apprentices must demonstrate all of the pass descriptors	DISTINCTION Apprentices must demonstrate all of the pass descriptors and all of the distinction descriptors
Measurement requirements and preparation K3 K8 K16 S1 S2 S3 S4 S5 S6 B2	<p>P1 Makes informed decisions about the measurement method, process and timescales, including traceability, calibration, measurement uncertainty and documentation, confidently questioning, speaking up and challenging when appropriate (K3, S1, B2).</p> <p>P2 Selects, checks and tests tools, equipment, instrumentation and software programs determining their suitability for use, and the importance of meeting quality requirements, by calibration, assurance, qualification, testing, verification, validation, inspection, accreditation, audit systems and metrology processes,</p>	<p>D1 Considers the decisions they made on the measurement method, process and timescales used and identifies any opportunities for continuous improvement (S1).</p> <p>D2 Demonstrates the methods used to ensure quality requirements and suitability for use are established (K8, S6).</p>

Theme KSB	PASS Apprentices must demonstrate all of the pass descriptors	DISTINCTION Apprentices must demonstrate all of the pass descriptors and all of the distinction descriptors
	<p>accesses and interprets information and documentation (K8, S2, S4, S6).</p> <p>P3 Plans and prepares the work environment and measurement tasks following metrology codes of conduct, national and international regulations and standards, specified procedures and methodologies and ethical practice (K16, S3, S5).</p>	
<p>Performing measurement tasks K6 K7 K21 S8 S9 S10 S19 B1 B3 B7</p>	<p>P4 Complies with statutory regulations, national and international standards relevant to the industry and organisational procedures and codes of conduct acting professionally, ethically and conscientiously when carrying out measurement tasks in line with process requirements and demonstrates an awareness of the measurement strategy and its application to the metrology technician role (K6, S19, B3).</p> <p>P5 Performs measurement tasks concentrating on quality and to a high level of attention to detail and accuracy with traceable and reproducible results, considering potential sources of variability in the measurement system and</p>	<p>D3 Suggests ways to reduce potential variability in the measurement system (K7, S8).</p>

Theme KSB	PASS Apprentices must demonstrate all of the pass descriptors	DISTINCTION Apprentices must demonstrate all of the pass descriptors and all of the distinction descriptors
	<p>the impact of uncertainty, data collection, analysis, interpretation and results using measurement tools, equipment, instrumentation, materials and software programs (K7, S8, B1).</p> <p>P6 Maintains the work area in line with organisational, environmental and sustainability regulations, guidance, working practice and policies on preparation, storage, control, handling and disposal of resources taking personal responsibility for own sustainable working practices (K21, S9, S10, B7).</p>	
<p>Data interpretation K17 S11 S12</p>	<p>P7 Produces, manages and stores records, retrieving, analysing, interpreting and validating data and measurement documentation in line with data management, data protection, cyber security regulations, ethical practices and organisational specifications (K17, S11, S12).</p>	<p>N/A</p>
<p>Communication K4 K5 S15 B4</p>	<p>P8 Communicates relevant, specific and accurate information using metrology language, terminology, standard presentation and conventions through different channels, maintaining impartiality and</p>	<p>D4 Adapts methods of communication they use to meet the needs of the audience (S15).</p>

Theme KSB	PASS Apprentices must demonstrate all of the pass descriptors	DISTINCTION Apprentices must demonstrate all of the pass descriptors and all of the distinction descriptors
	confidentiality to meet the needs of the audience (K4, K5, S15, B4).	
Health and safety K18 K19 S20	P9 Demonstrates safe working practice and their personal responsibilities in line with health and safety legislation, regulations, industry standards and organisational policies and procedures (K18, K19, S20).	N/A

Fail – An apprentice will fail where they do not demonstrate all the pass descriptors.

Professional Discussion Knowledge, Skills and Behaviours

Ref	KSB Statement
Knowledge	
K1	Importance of metrology and its impact on industry, science and society, for example safety and security, quality assurance, risk management, confidence in data, business integrity, business reputation, consumer confidence and protection.
K2	Principles of metrology and their application within industry, law, business, science and society, including measurement units, capability, metrological traceability and measurement uncertainty.
K9	Underpinning mathematical techniques relevant to metrology including statistics, data analysis, trend analysis, algebraic expressions, formulae and calculations.
K10	Types of statistical tools and techniques and associated analytics relevant in metrology including process control methodologies and measurement system analysis.
K11	Problem solving techniques relevant to measurement, for example 5 whys, root cause analysis.
K12	Continuous improvement techniques relevant to measurement and the organisation, for example lean tools and techniques.
K13	Commercial awareness, commercial implications and the commercial environment in which the organisation and its customers and suppliers operate.
K14	Methods to manage time, resources and workload.
K15	Benefits of digital tools, for example business efficiency, cost saving, time saving, customer satisfaction, competitive advantage, security.
K20	How to identify, analyse, assess, manage, record and review risks.
K22	Principles of equity, diversity and inclusion in the workplace and their impact on organisations and its customers and stakeholders.
Skills	

S7	Take appropriate action when non-conforming tools, equipment, instrumentation, materials, process or software programs have been identified, for example reporting any non-conformance via the appropriate channels.
S13	Solve problems, take an analytical approach, corrective and preventative action within level of own authority, following organisational policies and procedures.
S14	Contribute to continuous improvement activities individually or as part of a team, recognising the relevance of efficiency and the need for change to processes and procedures to meet commercial and customer requirements.
S16	Work with others and maintain effective professional relationships by working flexibly and collaboratively.
S17	Plan and manage own time effectively and prioritise resources and own workload to meet deadlines and customer requirements.
S18	Use digital tools, software and techniques for work, collaboration or continuous professional development.
S21	Contribute to risk assessments following organisational policies and procedures.
Behaviours	
B5	Supportive of an inclusive culture, valuing diversity and treats colleagues and external stakeholders fairly and with respect.
B6	Committed to learning and continuous professional development keeping up to date with metrology trends and advances in technology.

Final Grade

Performance in the EPA determines the overall grade of:

- fail
- pass
- merit
- distinction

An end-point assessor must individually grade the workplace observation and questions and professional discussion underpinned by a portfolio of evidence in line with this EPA plan.

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

If the apprentice fails one assessment method or more, they will be awarded an overall fail.

To achieve an overall pass, the apprentice must achieve at least a pass in all the assessment methods. To achieve an overall merit, the apprentice must achieve a pass in one assessment method and a distinction in the other assessment method. To achieve an overall distinction, the apprentice must achieve a distinction in both of the assessment methods.

Grades from individual assessment methods must be combined in the following way to determine the grade of the EPA overall.

Workplace Observation and Questions	Professional Discussion Underpinned by a Portfolio of Evidence	Overall Grading
Fail	Any grade	Fail
Any grade	Fail	Fail
Pass	Pass	Pass
Pass	Distinction	Merit
Distinction	Pass	Merit
Distinction	Distinction	Distinction

Moderation

Assessment organisations will undertake moderation of end-point assessor decisions through observations and examination of documentation on a risk sampling basis. Results cannot be confirmed until moderation has been completed.

Re-takes and re-sits

If the apprentice fails one assessment method or more, they can take a re-sit or a re-take at their 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. The apprentice should have a supportive action plan to prepare for a re-sit or a re-take.

The employer and SIAS should 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.

Failed assessment 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 an apprentice wishing to move from pass to a higher grade.

The apprentice will get a maximum EPA grade of merit if they need to re-sit or re-take one or more assessment methods, unless SIAS determines there are exceptional circumstances.

Certification

The outcomes from the End-Point Assessment will be reviewed and a grade conferred by SIAS in accordance with SIAS QA procedures, which are available from SIAS. SIAS will notify the employer of the outcome of each of the assessments.

SIAS will apply for the apprentice's certificate, which will be sent by ESFA. The certificate confirms that the apprentice has passed the End-Point Assessment, has demonstrated full competency across the standard and is job-ready.

Assessment Specification

The assessment specification can be found in the published assessment plan for the standard. Details of which elements of the apprenticeship standard will be tested by each test are given in the Mapping Knowledge, Skills, and Behaviours section of this guide.

Mapping of Knowledge, Skills, and Behaviours

Key:	
Workplace Observation and Questions	Obs
Professional Discussion underpinned by a portfolio of evidence	PD

Ref	KSB to be assessed	Assessment Method
Knowledge		
K1	Importance of metrology and its impact on industry, science and society, for example safety and security, quality assurance, risk management, confidence in data, business integrity, business reputation, consumer confidence and protection.	PD
K2	Principles of metrology and their application within industry, law, business, science and society, including measurement units, capability, metrological traceability and measurement uncertainty.	PD
K3	Requirements for metrological traceability, including calibration, measurement uncertainty and documentation.	Obs
K4	Metrology language, terminology, standard presentation and conventions, for example units of measurement and the guidance documents available including the International Vocabulary of Metrology.	Obs
K5	Importance of using appropriate metrology language, terminology, standard presentation and conventions.	Obs
K6	Importance and application of a measurement strategy and how it applies to the role of a Metrology Technician.	Obs
K7	Potential sources of variability in a measurement system and the impact of variability on measurement uncertainty, data collection, analysis, interpretation and results.	Obs
K8	The role of quality requirements, calibration requirements, assurance, qualification, testing, verification, validation, inspection, accreditation, audit systems and processes in metrology and why these are important.	Obs
K9	Underpinning mathematical techniques relevant to metrology including statistics, data analysis, trend analysis, algebraic expressions, formulae and calculations.	PD
K10	Types of statistical tools and techniques and associated analytics relevant in metrology including process control methodologies and measurement system analysis.	PD
K11	Problem solving techniques relevant to measurement, for example 5 whys, root cause analysis.	PD

Ref	KSB to be assessed	Assessment Method
K12	Continuous improvement techniques relevant to measurement and the organisation, for example lean tools and techniques.	PD
K13	Commercial awareness, commercial implications and the commercial environment in which the organisation and its customers and suppliers operate.	PD
K14	Methods to manage time, resources and workload.	PD
K15	Benefits of digital tools, for example business efficiency, cost saving, time saving, customer satisfaction, competitive advantage, security.	PD
K16	Metrology codes of conduct including relevant national and international regulations and standards, industry and organisational processes, procedures, ethical practices and requirements and the importance of their application.	Obs
K17	Data management, data protection and data and cyber security national and international regulations and standards, industry and organisational processes, procedures, ethical practices and requirements and the importance of their application.	Obs
K18	Health and safety legislation, regulations, industry and organisational policies, procedures and requirements relating to safe working practices.	Obs
K19	Personal responsibilities relating to health and safety.	Obs
K20	How to identify, analyse, assess, manage, record and review risks.	PD
K21	Environmental and sustainability regulations, guidance, working practices and organisational policies, procedures and requirements.	Obs
K22	Principles of equity, diversity and inclusion in the workplace and their impact on organisations and its customers and stakeholders.	PD
Skills		
S1	Identify measurement requirements and make informed decisions about the measurement method, process and timescales required.	Obs
S2	Identify and select tools, equipment, instrumentation and software programs to meet measurement requirements.	Obs
S3	Plan and prepare for measurement tasks following specified procedures and methodologies appropriate to the organisation.	Obs
S4	Access and interpret information and documentation to support the measurement process, for example data, manuals, specifications, catalogues, calibration certificates.	Obs
S5	Prepare the work environment.	Obs
S6	Select and perform tests and checks on measurement tools, equipment, instrumentation, materials, process or software	Obs

Ref	KSB to be assessed	Assessment Method
	programs, determine suitability for use and metrological confirmation.	
S7	Take appropriate action when non-conforming tools, equipment, instrumentation, materials, process or software programs have been identified, for example reporting any non-conformance via the appropriate channels.	PD
S8	Perform measurement tasks to ensure verifiable, traceable and reproducible results, using measurement tools, equipment, instrumentation, materials and software programs, following specified procedures and methodologies appropriate to the organisation.	Obs
S9	Maintain the work area following specified procedures and methodologies appropriate to the organisation.	Obs
S10	Follow organisational policies and procedures relating to the preparation, storage, control, handling and disposal of resources, for example standards, samples, materials, tools, equipment, instrumentation and software.	Obs
S11	Retrieve, analyse, interpret, validate, format, record and store measurement results and data in line with organisational specifications and data management regulations and procedures.	Obs
S12	Produce, manage and store records, reports and other measurement documentation in line with data management regulations and organisational procedures.	Obs
S13	Solve problems, take an analytical approach, corrective and preventative action within level of own authority, following organisational policies and procedures.	PD
S14	Contribute to continuous improvement activities individually or as part of a team, recognising the relevance of efficiency and the need for change to processes and procedures to meet commercial and customer requirements.	PD
S15	Communicate relevant, specific and accurate information through various channels to meet customer requirements and the needs of the audience.	Obs
S16	Work with others and maintain effective professional relationships by working flexibly and collaboratively.	PD
S17	Plan and manage own time effectively and prioritise resources and own workload to meet deadlines and customer requirements.	PD
S18	Use digital tools, software and techniques for work, collaboration or continuous professional development.	PD
S19	Comply with statutory regulations, national and international standards relevant to the organisation, industry and organisational	Obs

Ref	KSB to be assessed	Assessment Method
	procedures and requirements relating to codes of conduct when carrying out measurement tasks.	
S20	Comply with health and safety legislation, regulations, industry standards and organisational policies and procedures for safe working practices, raising any concerns via the relevant channels.	Obs
S21	Contribute to risk assessments following organisational policies and procedures.	PD
Behaviours		
B1	Focused on quality and maintains concentration with a high level of attention to detail and accuracy.	Obs
B2	Inquisitive, asks questions to gain knowledge and understanding and is confident to speak up and challenge when appropriate.	Obs
B3	Act professionally, ethically and conscientiously by adhering to relevant legislation, regulations, standards and organisational procedures.	Obs
B4	Maintain impartiality and confidentiality.	Obs
B5	Supportive of an inclusive culture, valuing diversity and treats colleagues and external stakeholders fairly and with respect.	PD
B6	Committed to learning and continuous professional development keeping up to date with metrology trends and advances in technology.	PD
B7	Committed to environmental sustainability when using resources and carrying out processes and takes personal responsibility for own sustainable working practices.	Obs

Further Information

For information about SIAS policies, quality assurance, re-sits, appeals, complaints and general enquiries please see our website: www.siasuk.com

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