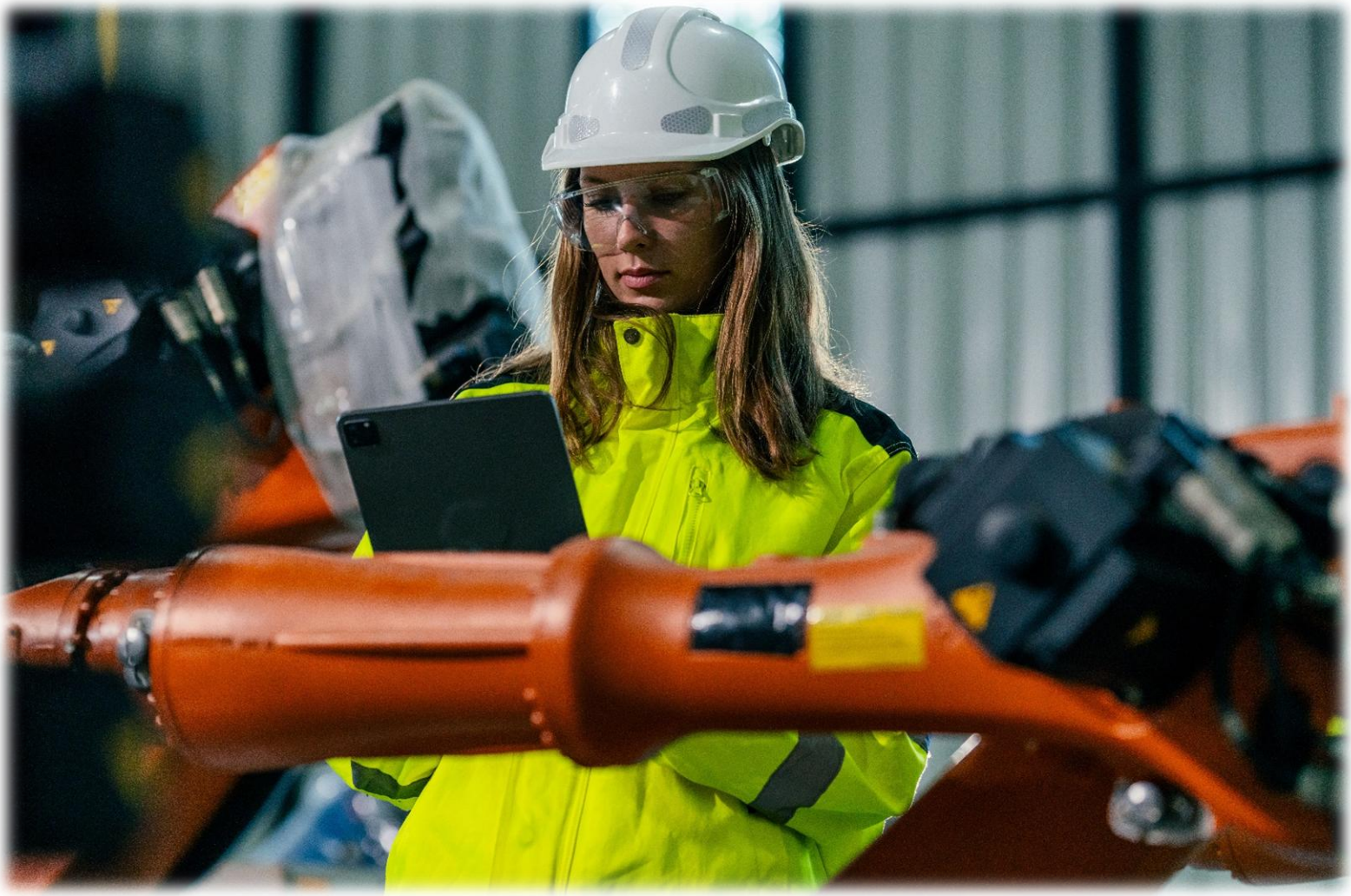
Engineering Manufacturing Technician (AP V1.3)

Level 4 Apprenticeship Standard (ST0841)

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	This document relates to assessment plan version 1.3
1.1	Following a review of the KSBs by Skills England, K8 has been removed from the observation assessment method and added to the problem solving and communication theme in the professional discussion. Skills England acknowledged this change in May 2025; however, the assessment plan has not yet been updated to reflect this change online.

Contents

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.

This occupation is found in large and small engineering and manufacturing organisations providing products and services throughout a wide range of sectors, such as Automotive, Aerospace and Airworthiness, Chemical Processing, Land Systems, Marine, Maritime Defence, Materials Manufacturers and their respective supply chains. Research indicates that the sector needs to recruit approximately 124,000 engineers and technicians every year.

The broad purpose of the occupation is to provide specialist technical support for engineers, so that organisations can develop, produce or test new and existing products, processes, or procedures to meet a customer specification in terms of quality, cost and delivery, as efficiently and effectively as possible. Engineering Manufacturing Technicians gather information and data from a range of sources and analyse the information and data. They will make decisions, solve problems and produce and where applicable, update technical documentation, reports or specifications covering areas such as quality, reliability, production schedules and targets, costing or other technical documentation that informs others, either internally or externally what needs to be done such as how a product must be designed, manufactured, tested, modified, maintained, stored, transported, commissioned or decommissioned.

In their daily work, an employee in this occupation interacts with their line manager to confirm departmental programmes of work and to agree individual responsibilities. This in turn will align to an overarching organisational resource and delivery plan. Engineering Manufacturing Technicians can be office based, manufacturing or plant based or more commonly combination of both, working with engineering or manufacturing teams at an operational level such as with production team leaders or management level working with specialist quality or design engineers. As well as liaising with internal colleagues, they may also be responsible for working directly with customers and suppliers or with representatives from appropriate regulatory bodies. Typically, this would involve interaction with auditors to demonstrate compliance to specific organisational or regulatory requirements (such as Civil Aviation Authority). Their time will be spent between working in an office environment and working in the manufacturing environment or visiting customers or suppliers as and when required.

An employee in this occupation will be responsible for the quality, safety and delivery of the manufactured product or service, ensuring it is delivered to the customer on time at the agreed cost. They will typically report to an engineering or manufacturing manager as part of a cross functional team, the size of this team and responsibilities will vary depending on the size of the employer. Although working within defined quality processes and procedures, they are responsible for the delivery, quality and accuracy of the work they complete. They have the autonomy to use judgement when undertaking the occupational duties and applying their technical knowledge, skills and behaviours in a wide range of contexts and environments. They use a range of tools and techniques to support decision making and solve problems that

are often complex and non-routine. They also have a responsibility to identify and contribute to making improvements such as business processes, procedures, ways and methods of working.

Prior Learning and Qualifications

There are no statutory/regulatory or other typical entry requirements.

Overview

Full time apprentices will typically spend 42 months on-programme (before the gateway) working towards the occupational standard. All apprentices must spend a minimum of 12 months on-programme. All apprentices must complete the required amount of off-the-job training specified by the apprenticeship funding rules.

The End-Point Assessment period should only start, and the End-Point Assessment be arranged, once the employer is satisfied that the apprentice is deemed to be consistently working at or above the level set out in the occupational standard, all of the pre-requisite gateway requirements for End-Point Assessment have been met and can be evidenced to SIAS. Apprentices must prepare and submit a portfolio of evidence to support the End-Point Assessment professional discussion.

The End-Point Assessment consists of two discrete assessment methods.

The individual assessment methods will have the following grades:

Assessment method 1: Observation with questioning

- fail
- pass

Assessment method 2: Professional discussion supported by a portfolio of evidence

- fail
- pass
- distinction

Performance in the End-Point Assessment will determine the overall apprenticeship standard grade of:

- fail
- pass
- 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 End-Point Assessment. Confirmation from the employer that the apprentice is fully competent is needed before End-Point Assessment 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 End-Point Assessment period should only start once the employer is satisfied that the apprentice is consistently working at or above the level set out in the occupational standard, that is to say they are deemed to have achieved occupational competence. In making this decision, the employer may take advice from the apprentice's training provider(s), but the decision must ultimately be made solely by the employer.

In addition, an apprentice must have completed the following gateway requirements prior to beginning End-Point Assessment.

- Achieved English and maths qualifications in line with the apprenticeship funding rules.
- All apprentices (from the Aerospace and non-Aerospace sectors) must achieve the following approved qualifications as mandated in the occupational standard:
    - L4 HNC in Engineering or Manufacturing disciplines that fully align with the KSBs of the standard.
- For the Aerospace sector only, apprentices must also achieve the following qualifications mandated in the occupational standard:
    - EAL Level 2 Diploma in Aerospace and Aviation Engineering (Foundation Competence)
    - EAL Level 4 Diploma in Engineering and Advanced Manufacturing (Development Competence)
- Apprentices must prepare and submit a portfolio of evidence to support the professional discussion.
- Standard Operating Procedures (SOP's) must be provided, by the employer, to support the observation with questioning.

Assessment Methods

The End-Point Assessment has 2 assessment methods.

1. Observation with questioning
2. Professional discussion supported by a portfolio of evidence

The assessment methods can be delivered in any order. The result of one assessment method does not have to be known before an apprentice starts the next one.

Assessment Method 1: Observation with questioning

Apprentices must be observed by an end-point assessor completing work tasks in their normal workplace, in which they will demonstrate the KSBs assigned to this assessment method.

The observation and questioning must assess the apprentice against the KSBs assigned to this assessment method.

SIAS must arrange for the observation to take place, in consultation with the apprentice's employer. An end-point assessor may observe up to a maximum of one apprentice at any one time, to allow for quality and rigour. Questioning must take place on a one-to-one basis.

The observation and questioning must take three hours. The observation and questioning may be split into discrete sections held over a maximum of one working day. The length of a working day is typically considered to be 7.5 hours. There may be breaks during the observation with questioning to allow the apprentice to move from one location to another as required and to take meal or comfort breaks. Such breaks will not contribute to the observation assessment time. The end-point assessor has the discretion to increase the time of the observation and questioning by up to 10% to allow the apprentice to complete a task or answer a question at the end of the assessment period.

Immediately in advance of the observation and questioning, apprentices must be provided with verbal and written information on the format of the assessment, including timescales. This briefing time is exclusive of assessment period.

The following activities MUST be observed during the observation:

- Complying with Health and Safety requirement in their immediate working environment.
- Demonstrating work task(s) being received, agreed and relevant information being extracted in order to complete the required activity.
- Carrying out the required task(s) in line with organisation's standard operating procedures (SOPs).
- Completing, saving and storing task(s) outcomes in the appropriate format and location, for example using a PDF format on the organisation's secure computer system.

Typically, the observation will be covered within one task but can be covered in two tasks if required to allow coverage of the KSBs. Examples could include raising quality notifications

(QN's), producing production process changes, drawing modifications, carrying out quality investigations.

Observations should take place in an accessible area that does not require special clearance. The end-point assessor must be unobtrusive and must not interrupt the candidate whilst conducting the observation.

In exceptional circumstances, where national security clearance is required to access the employer's site to administer the observation with questions, the end-point assessor must take advice from SIAS on access arrangements and how to record assessment evidence in line with the employer's requirements. In these circumstances, any assessment materials relating to national security must not be submitted to SIAS.

Apprentices are expected to understand and use relevant occupational language that would be typical of an apprentice working at this level.

Questions must be asked after the observation is complete. The maximum time allowed for questioning is 30 minutes. All questioning must be completed within the three-hour total time period allowed for the observation with questioning.

The end-point assessor must ask a minimum of six open questions. They may ask follow up questions where clarification is required. The purpose of the questioning is to assess underpinning knowledge, skills and behaviours. SIAS must provide end-point assessors with sample questions; however, they can be adapted based on what they have observed.

KSBs observed, and answers to questions, must be documented by the end-point assessor using SIAS's documentation and procedures.

The end-point assessor must make all grading decisions.

The observation can take place in:

- employer's premises.
- workplace other than the employer's own premises, for example premises of a client

The questioning must take place in a quiet area, free from distraction and influence.

Observation with Questioning Grading Descriptors

KSBs grouped by theme	Pass Apprentice must demonstrate all of the following
Health and safety compliance K11	**P1** Complies with statutory and organisational health and safety regulations and policies and follows procedures including risk assessments.
Work tasks received, agreed and relevant information extracted K5, K7, K14, K15, K16 S1, S4	**P2** Adheres to the organisations quality management system, outlines its purpose, internal governance arrangements to ensure compliance and identifies where the documentation is located. **P3** Prioritises what task related documentation is received, understands where it has come from and how work plans are confirmed. **P4** Reads, extracts and analyses relevant engineering and manufacturing related data and information in order to draw accurate conclusions and make informed decisions on the task(s) to be completed, completing any necessary documentation as required.
Carrying out required task(s) K10, K22 S6, S10 B2	**P5** Identifies how departmental and/or cross function teams work collaboratively to meet organisational targets and objectives, and how any conflicts would be managed in line with relevant policies and procedures. **P6** Uses and follows the organisation's approved Standard Operating Procedures (SOP's) and documentation recording systems and explains the potential implications to quality and delivery if they are not adhered to. **P7** Uses relevant computer based software system/packages and explains the application and any limitations for each. **P8** Uses the approved process and quality compliance procedure to create or amend engineering and/or manufacturing documentation in a systematic, proactive and transparent way. Examples include creation/ amendments to drawings, bill of materials, quality reports.
Document control and communication S5, S8 B7	**P9** Communicates effectively to stakeholders relating to the completion of the task being observed. Examples include electronic (email, video conferencing and messaging platforms) verbal, presentation. **P10** Applies documentation control processes and procedures in line with organisational requirements. **P11** Acts professionally with a positive and respectful attitude. Examples include how they communicate with colleagues such as by

KSBs grouped by theme	Pass Apprentice must demonstrate all of the following
	using the correct technical language either by email or face to face, their approach when dealing with problems and their understanding of the escalation process within their organisation.

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

Observation with Questioning Knowledge, Skills and Behaviours

Ref	KSB Statement
Knowledge	
K5	Quality management systems used such as ISO9001, AS9100, ISO 14001 and TS16949, its purpose and internal governance arrangements to ensure compliance.
K7	Principles of quality control and quality assurance in a manufacturing and engineering environment.
K10	Importance for individuals to use and follow the organisations approved Standard Operating Procedures (SOP's) and documentation recording systems and the potential implications on safety, quality and delivery if they are not adhered to.
K11	Statutory and organisation health and safety policies, procedures and regulations that must be adhered to in a manufacturing and engineering environment including the risk assessment process, procedures and documentation used within the work area.
K14	Engineering and manufacturing related documentation used such as job cards / build records, 2D & 3D drawing/models, Bill of Materials (BOM), Cost Analysis Reports, Compliance Report, Standard Operating Instructions (SOI's), Standard Process Instructions (POI's), Engineering Query Notifications (EQN's) and Drawing Query Notifications (DQN's).
K15	Prioritisation of workload/time management techniques to ensure that personal and team objectives are achieved effectively.
K16	Engineering and manufacturing data collection systems used, their format and content
K22	The different applications and limitations of computer based software system/packages used such as Computer Aided Design (CAD), Data Analytics and Databases.
Skills	
S1	Read and extract relevant engineering and manufacturing related data and information (such as work plans/project plans, schedules, drawings, specifications, production data, quality reports, costing data, statistical information) drawing accurate conclusions and making informed decisions.
S4	Analyse and interpret data and information in order to generate manufacturing engineering documentation such as Parts Per Million (PPM) quality adherence, cost analysis and test data.
S5	Communicate using the appropriate method for the audience such as, formal and informal presentations, written reports, verbal, electronic, social media and incorporating relevant and appropriate data and/or metrics.

S6	Use the approved process and quality compliance procedure to create or amend engineering and/or manufacturing documentation.
S8	Apply documentation control processes and procedures such as format, location, access, authorisation.
S10	Use computer based software system/packages such as Computer Aided Design (CAD), Data Analytics and Databases.
Behaviours	
B2	Operates in a systematic, proactive and transparent way.
B7	Acts professionally with a positive and respectful attitude.

Assessment Method 2: Professional Discussion supported by a portfolio of evidence

This assessment will take the form of a professional discussion which must be appropriately structured to draw out the best of the apprentice's competence and excellence and cover the KSBs assigned to this assessment method.

The supporting portfolio of evidence allows the apprentice to refer to real work examples and doesn't rely on memory. The portfolio of evidence is not assessed.

An end-point assessor must conduct and assess the professional discussion on a one-to-one basis.

It will involve the questions that will focus on coverage of prior learning or activity.

The professional discussion must last for 60 minutes. The end-point assessor has the discretion to increase the time of the professional discussion by up to 10% to allow the apprentice to complete their last answer.

The end-point assessor must ask a minimum of ten open competence-based questions. Additional follow up questions are allowed, to seek clarification.

SIAS must produce a bank of sample questions to help the end-point assessor, but these are for illustration only and the end-point assessor may use their professional judgement to adapt their questions following a review of their portfolio of evidence, in-line with the assessor's training and the SIAS's standardisation process.

Apprentices can refer to and illustrate their answers with evidence from their portfolio of evidence, however the portfolio evidence is not directly assessed.

Apprentices are expected to understand and use relevant occupational language that would be typical of an apprentice working at the level of this occupation.

The professional discussion must cover the following themes in line with specified Knowledge Skills and Behaviours (KSB's):

- Problem Solving & Communication (K1 K2 K3 K8 S3 S7)
- Project, Time Management & Quality Standards (K12 K20 K23 S2)
- Manufacturing Principles, Methods & Applications (K6 K9 K18 K19)
- Commercial Considerations (K4 K17 K21 S9)
- Behavioural Expectations (B1 B3 B4 B5 B6 K13)

The end-point assessor must use the assessment tools and procedures that are set by SIAS to record the professional discussion.

The end-point assessor will make all grading decisions.

SIAS must ensure that apprentices have a different set of questions in the case of re-sits and re-takes.

The professional discussion should take place in a quiet room, free from distractions and influence.

Video conferencing can be used to conduct the professional discussion, but SIAS must have processes in place to verify the identity of the apprentice and ensure the apprentice is not being aided in some way.

The professional discussion can take place in any of the following:

- employer's premises
- a suitable venue selected by SIAS for example a training provider's premises

Portfolio of evidence requirements:

- it must contain evidence of competence for the KSBs mapped to the professional discussion.
- each piece of evidence may map to more than one KSB.
- it will typically contain 10 pieces of evidence.
- the employer must sign off the portfolio of evidence, thereby authenticating the work it contains.
- apprentices must compile a portfolio of evidence during the on-programme period of the apprenticeship.
- employers and training providers are free to devise their own version of the portfolio of evidence, but the portfolio of evidence would typically contain the following information:
    - the name of the apprentice
    - details of the apprentice's workplace
- evidence can be provided through a range of sources; for example:
    - performance review documentation
    - witness statements
    - training records or certificates
    - work products such as risk assessments, reports, meeting records, plans etc.
- evidence cannot include self-assessment narrative.
- feedback from line managers, customers, stakeholders etc. can be provided; any employer contributions should focus on direct observation of evidence (for example, witness statements) of competence rather than opinions.

Professional Discussion Grading Descriptors

KSBs grouped by theme	Pass Apprentice must demonstrate all the following:	Distinction Apprentice must demonstrate all the Pass criteria and all of the Distinction criteria (each statement is a separate grading descriptor and there may be more than one statement contained in the separate boxes in the table below)
Problem solving and communication K1, K2, K3, K8 S3, S7	**P1** Explains when they have used effective communication techniques, including: listening, questioning and support of others. Identifies when they have used team integration techniques, including: conflict resolution and managing difficult conversations (team working). **P2** Demonstrates how they have supported problem solving activities utilising tools, such as: Root Cause Analysis (RCA) Process Failure Modes Effects Analysis (PFMEA), Fishbone, Practical Problem Solving (PPS) and Advanced Product Quality Planning (APQP). **P3** Demonstrates how they have used lean tools and techniques, such as: Six Sigma, 8 Wastes, 5S's, Kaizen and Poka-Yoke (Error proofing) and explain the benefits of using them.	**D1** Critically evaluates why the specific continuous improvement tools and techniques were used, describes the limitations of those tools and justifies this by the impact achieved. **D2** Critically evaluates the effective team integration techniques used, outlines the limitations of those tools and justifies the positive impact on the team.
Project management and quality standards K12, K20, K23 S2	**P4** Demonstrates how they have used project management techniques, such as Strengths, Weaknesses, Opportunities, Threats (SWOT), stakeholder matrices, risk mapping, radar chart and summary risk profiles. **P5** Demonstrated how they have utilised management tools/techniques to ensure that	**D3** Outlines the different quality processes and project management techniques that could be justifiably used for the relevant manufacturing activities including their relevant strengths and weaknesses. **D4** Critically evaluates the quality processes used with a justified impact on the business strategy or

KSBs grouped by theme	Pass Apprentice must demonstrate all the following:	Distinction Apprentice must demonstrate all the Pass criteria and all of the Distinction criteria (each statement is a separate grading descriptor and there may be more than one statement contained in the separate boxes in the table below)
	personal team and organisational objectives are achieved (such as Gannt charts, task management software/applications, project management software/applications). **P6** Explains how they have used an array of methods, tools to check quality in manufacturing and engineering including measurements (such as: dimensions, weight, signal, temperature, time) and testing (such as: non-destructive and destructive). **P7** Demonstrates when they have taken into account the impact of sustainability and environmental efficiency, outlining how such factors have influenced their decisions.	project, outlining the limitations and suggesting possible improvement to these processes. **D5** Critically evaluates the project management techniques currently used with a justified impact on the business strategy or project and outlines the limitations of the management techniques.
Manufacturing principles, methods and applications K6, K9, K18, K19	**P8** Explains where manufacturing methods such as machining, joining, forming, assembling, shaping, processing, printing, moulding, extruding and casting are used in the manufacturing sector and their own organisation. **P9** Explains where production methods such as single, batch, flow and mass are used in the manufacturing and engineering sectors and their own organisation.	N/A

KSBs grouped by theme	Pass Apprentice must demonstrate all the following:	Distinction Apprentice must demonstrate all the Pass criteria and all of the Distinction criteria (each statement is a separate grading descriptor and there may be more than one statement contained in the separate boxes in the table below)
	P10 Explains where core engineering principles such as mathematical, science, mechanical, electric/electronic applications are used in the manufacturing and engineering sectors and in their own organisation. **P11** Explains the use of common metallic and non-metallic material in manufacturing and engineering sectors and their own organisation.	
Commercial considerations K4, K17, K21 S9	**P12** Explains how Industry 4.0 could impact organisations, including the integration of automation, digital systems and manufacturing engineering systems. **P13** Explains how their business manages and monitors internal and or supplier performance to ensure that cost, quality, delivery and sustainability objectives are being delivered and their responsibility towards that. **P14** Explains how their department applies financial planning, recording and review processes, such as departmental budgets, estimating, cost control, cost forecasting, and investment appraisal and how they contribute.	**D6** Critically evaluates how Industry 4.0 will impact the business, innovation, people and company culture with the integration of digital, automation, manufacturing and engineering systems to promote and maximise continuous improvements within an organisation. **D7** Evaluates how organisations react to internal and external processes which can influence business objectives such as: cost, delivery, quality and sustainability. Examples include:- changes in customer demand, quality escapes, supplier shortages, regulation changes.
Behavioural expectations	**P15** Demonstrates how they assume responsibility for the	**D8** Demonstrates how they have offered advice and guidance to

KSBs grouped by theme	Pass Apprentice must demonstrate all the following:	Distinction Apprentice must demonstrate all the Pass criteria and all of the Distinction criteria (each statement is a separate grading descriptor and there may be more than one statement contained in the separate boxes in the table below)
K13 B1, B3, B4, B5, B6	importance of adherence to the organisations Environmental, Health and Safety management systems - actively displays and promotes a safety first culture within the organisation and the impact of that. **P16** Demonstrates how they actively promote innovation for emerging and advanced engineering and manufacturing technologies to optimise performance. **P17** Demonstrates how they assume full responsibility for their own professional development, seeking opportunities to enhance knowledge, skills and experience. **P18** Demonstrates how they keep abreast of developments in engineering processes manufacturing and emerging technologies. **P19** Demonstrates how they create and maintain positive, professional, trusting and ethical working relationships with their team and the wider range of internal, external and connected stakeholders. **P20** Demonstrates when they have accepted responsibility for their workload with a responsible	others to overcome problems, implement improvements or assist them with their personal development.

KSBs grouped by theme	Pass Apprentice must demonstrate all the following:	Distinction Apprentice must demonstrate all the Pass criteria and all of the Distinction criteria (each statement is a separate grading descriptor and there may be more than one statement contained in the separate boxes in the table below)
	approach to risk, demonstrating a high level of motivation and resilience when facing a challenge. **P21** Explains how human factors (organisational, environment and job factors) can influence and impact individual characteristics, performance and behaviours in the workplace.	

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	Problem solving tools/techniques. Such as practical problem solving (PPS), root cause analysis (RCA) and process failure mode effects analysis (PFMEA).
K2	Effective communication techniques including listening, questioning and support of others.
K3	Use, benefits and applications of lean methods and tools used in manufacturing and engineering (such as Kaizen, Six Sigma and 8 wastes).
K4	How Industry 4.0 will impact organisations including the integration of automation, digital systems and manufacturing engineering systems.
K6	Different manufacturing methods used, their applications, such as machining, joining, forming, assembling, shaping, processing, printing, moulding, extruding and casting).
K8	Team integration techniques, including conflict resolution and managing difficult conversations (team working).
K9	Core engineering principles such as mathematics, science, mechanical and electrical/electronic applications relevant to manufacturing and engineering activity undertaken.
K12	Project management techniques, such as Strengths, Weaknesses, Opportunities, Threats (SWOT), stakeholder matrices, risk mapping, radar chart and summary risk profiles.
K13	How human factors (organisational, environment and job factors) can influence and impact individual characteristics, performance and behaviours in the workplace.

K17	How organisations manage and monitor internal and or supplier performance to ensure that cost, quality, delivery and sustainability objectives are being delivered.
K18	Use and applications of common metallic and non – metallic materials used in manufacturing and engineering.
K19	Different production methods used and their applications such as single, batch, flow and mass.
K20	Different methods, tools and frequency used to check quality in manufacturing and engineering including measurements such as (dimensions, weight, signal, temperature, time,) and testing (such as non-destructive and destructive).
K21	Departmental process used to create, record and review financial data and information.
K23	The impact of sustainability and environmental efficiency and how such matters influence manufacturing decisions.
Skills	
S2	Use project management tools, such as Strengths, Weaknesses, Opportunities, Threats (SWOT), stakeholder matrices, risk mapping, radar chart and summary risk profiles.
S3	Use problem solving tools such as Root Cause Analysis (RCA) Process Failure Modes Effects Analysis (PFMEA), Fishbone, Practical Problem Solving (PPS) and Advanced Product Quality Planning (APQP).
S7	Use lean tools and techniques, such as Six Sigma, 8 Wastes, Workplace organisation such as 5S's (sort, set in order, shine, standardise and sustain), Kaizen and Poka-Yoke (Error proofing).
S9	Use financial planning, recording and review processes and documentation such as departmental budgets, estimating, cost control, cost forecasting, and investment appraisal.
Behaviours	
B1	Champions the importance of adherence to the organisations Environmental, Health and Safety management systems:- actively displays and promotes a safety first culture within the organisation.
B3	Actively promotes the case for the adoption of emerging and advanced engineering and manufacturing technologies to optimise performance.
B4	Takes full responsibility for own professional development, seeking opportunities to enhance knowledge, skills and experience. Keeping abreast of developments in engineering processes manufacturing and emerging technologies.
B5	Complies with statutory and organisational health & safety regulations and policies at all times. Accepts responsibility for their workload with a responsible approach to risk. Demonstrates a high level of motivation and resilience when facing challenge.
B6	Creates and maintains positive, professional, trusting and ethical working relationships with their team and the wider range of internal, external and connected stakeholders.

Final Grade

Performance in the End-Point Assessment will determine the apprenticeship grade of fail, pass or distinction.

End-point assessors must individually grade each assessment method, according to the requirements set out in this plan.

SIAS must combine the individual assessment method grades to determine the overall End-Point Assessment grade.

Apprentices who fail one or more assessment method will be awarded an End-Point Assessment 'fail.'

In order to achieve an overall 'pass' apprentices must achieve a pass in both assessment methods.

In order to achieve an overall 'distinction' apprentices must achieve a distinction in the professional discussion and a 'pass' in the observation with questioning.

There are restrictions on grading where apprentices re-sit or re-take an assessment method – see the re-sits and re-takes section.

Grades from individual assessment methods should be combined in the following way to determine the grade of the End-Point Assessment as a whole:

Assessment Method 1: Observation with questioning	Assessment Method 2: Professional discussion supported by a portfolio of evidence	Overall Grading
Fail	Any Grade	**Fail**
Any Grade	Fail	**Fail**
Pass	Pass	**Pass**
Pass	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

Apprentices who fail one or more assessment method will be offered the opportunity to take a re-sit or a re-take. A re-sit does not require further learning, whereas a re-take does.

Apprentices should have a supportive action plan to prepare for the re-sit or a re-take. The apprentice's employer will need to agree that either a re-sit or re-take is an appropriate course of action.

An apprentice who fails an assessment method, and therefore the End-Point Assessment in the first instance, will be required to re-sit or re-take any failed assessment methods only.

The timescales for a resit/retake is agreed between the employer and SIAS. A resit is typically taken within 3 months of the End-Point Assessment outcome notification. The timescale for a retake is dependent on how much re-training is required and is typically taken within 3 months of the End-Point Assessment outcome notification. All assessment methods must be taken within a 6 month period, otherwise the entire End-Point Assessment will need to be resat/retaken. (Exceptions could be made due to circumstances deemed by SIAS as being beyond the control of the apprentice or their employer).

Re-sits and re-takes are not offered to apprentices wishing to move from pass to distinction.

Where any assessment method has to be re-sat or re-taken, the apprentice will be awarded a maximum End-Point Assessment grade of pass, unless SIAS determines there are exceptional circumstances requiring a re-sit or re-take.

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:	
Observation with questioning	Obs
Professional discussion supported by a portfolio of evidence	PD

Ref	KSB to be assessed	Assessment Method
Knowledge		
K1	Problem solving tools and techniques. Such as practical problem solving (PPS), root cause analysis (RCA) and process failure mode effects analysis (PFMEA).	PD
K2	Effective communication techniques including listening, questioning and support of others.	PD
K3	Use, benefits and applications of lean methods and tools used in manufacturing and engineering (such as Kaizen, Six Sigma and 8 wastes).	PD
K4	How Industry 4.0 will impact organisations, including the integration of automation, digital systems and manufacturing engineering systems.	PD
K5	Quality management systems used such as ISO9001, AS9100, ISO 14001 and TS16949, its purpose and internal governance arrangements to ensure compliance.	Obs
K6	Different manufacturing methods used, their applications, such as machining, joining, forming, assembling, shaping, processing, printing, moulding, extruding and casting.	PD
K7	Principles of quality control and quality assurance in a manufacturing and engineering environment.	Obs
K8	Team integration techniques, including conflict resolution and managing difficult conversations (team working).	PD
K9	Core engineering principles such as mathematics, science, mechanical and electrical and electronic applications relevant to manufacturing and engineering activity undertaken.	PD
K10	Importance for individuals to use and follow the organisations approved Standard Operating Procedures (SOP's) and documentation recording systems and the potential implications on safety, quality and delivery if they are not adhered to.	Obs
K11	Statutory and organisation health and safety policies, procedures and regulations that must be adhered to in a manufacturing and engineering environment including the risk assessment process, procedures and documentation used within the work area.	Obs

Ref	KSB to be assessed	Assessment Method
K12	Project management techniques, such as Strengths, Weaknesses, Opportunities, Threats (SWOT), stakeholder matrices, risk mapping, radar chart and summary risk profiles.	PD
K13	How human factors (organisational, environment and job factors) can influence and impact individual characteristics, performance and behaviours in the workplace.	PD
K14	Engineering and manufacturing related documentation used such as job cards or build records, 2D and 3D drawings or models, Bill of Materials (BOM), Cost Analysis Reports, Compliance Report, Standard Operating Instructions (SOI's), Standard Process Instructions (POI's), Engineering Query Notifications (EQN's) and Drawing Query Notifications (DQN's).	Obs
K15	Prioritisation of workload and time management techniques to ensure that personal and team objectives are achieved effectively.	Obs
K16	Engineering and manufacturing data collection systems used, their format and content.	Obs
K17	How organisations manage and monitor internal and or supplier performance to ensure that cost, quality, delivery and sustainability objectives are being delivered.	PD
K18	Use and applications of common metallic and non – metallic materials used in manufacturing and engineering.	PD
K19	Different production methods used and their applications such as single, batch, flow and mass.	PD
K20	Different methods, tools and frequency used to check quality in manufacturing and engineering including measurements such as (dimensions, weight, signal, temperature, time) and testing (such as non-destructive and destructive).	PD
K21	Departmental process used to create, record and review financial data and information.	PD
K22	The different applications and limitations of computer based software systems or packages used such as Computer Aided Design (CAD), Data Analytics and Databases.	Obs
K23	The impact of sustainability and environmental efficiency and how such matters influence manufacturing decisions.	PD
Skills		
S1	Read and extract relevant engineering and manufacturing related data and information (such as workplans or project plans, schedules, drawings, specifications, production data, quality reports,	Obs

Ref	KSB to be assessed	Assessment Method
	costing data, statistical information) drawing accurate conclusions and making informed decisions.	
S2	Use project management tools, such as Strengths, Weaknesses, Opportunities, Threats (SWOT), stakeholder matrices, risk mapping, radar chart and summary risk profiles.	PD
S3	Use problem solving tools such as Root Cause Analysis (RCA) Process Failure Modes Effects Analysis (PFMEA), Fishbone, Practical Problem Solving (PPS) and Advanced Product Quality Planning (APQP).	PD
S4	Analyse and interpret data and information in order to generate manufacturing engineering documentation such as Parts Per Million (PPM) quality adherence, cost analysis and test data.	Obs
S5	Communicate using the appropriate method for the audience such as, formal and informal presentations, written reports, verbal, electronic, social media and incorporating relevant and appropriate data or metrics.	Obs
S6	Use the approved process and quality compliance procedure to create or amend engineering or manufacturing documentation.	Obs
S7	Use lean tools and techniques, such as Six Sigma, 8 Wastes, Workplace organisation such as 5S's (sort, set in order, shine, standardise and sustain), Kaizen and Poka-Yoke (Error proofing).	PD
S8	Apply documentation control processes and procedures such as format, location, access, authorisation.	Obs
S9	Use financial planning, recording and review processes and documentation such as departmental budgets, estimating, cost control, cost forecasting, and investment appraisal.	PD
S10	Use computer based software systems or packages such as Computer Aided Design (CAD), Data Analytics and Databases.	Obs
Behaviours		
B1	Champions the importance of adherence to the organisation's Environmental, Health and Safety management systems:- actively displays and promotes a safety first culture within the organisation.	PD
B2	Operates in a systematic, proactive and transparent way.	Obs
B3	Actively promotes the case for the adoption of emerging and advanced engineering and manufacturing technologies to optimise performance.	PD
B4	Takes full responsibility for own professional development, seeking opportunities to enhance knowledge, skills and experience. Keeping abreast of developments in engineering processes manufacturing and emerging technologies.	PD

Ref	KSB to be assessed	Assessment Method
B5	Complies with statutory and organisational health and safety regulations and policies at all times. Accepts responsibility for their workload with a responsible approach to risk. Demonstrates a high level of motivation and resilience when facing challenge.	PD
B6	Creates and maintains positive, professional, trusting and ethical working relationships with their team and the wider range of internal, external and connected stakeholders.	PD
B7	Acts professionally with a positive and respectful attitude.	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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