Specification

Level 2 Apprenticeship Assessment for ST0422 Science Manufacturing Process Operative

AP Version: 2.0

Operational Start Date: 31st October 2026



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This is a live document and as such will be updated when required. It is the responsibility of the approved centre to ensure the most up-to-date version of the SIAS Apprenticeship Assessment Specification is in use.

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

Version History

Version	Date	Updates
1.0	27/10/2026	First published

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Introduction

Welcome to SIAS

SIAS is an Awarding Organisation regulated in England by the Office of Qualifications and Examinations Regulation (Ofqual) and in Northern Ireland by the Council for Curriculum, Examination and Assessment Regulation (CCEA Regulation).

We exist to drive positive change, and across STEM industries globally, we empower learners to achieve their full potential.

As the leading Awarding Organisation for the technical science, manufacturing, engineering and low carbon sectors, we are disrupting through innovative and collaborative approaches.

Our mission is to deliver transformational experiences and solutions that support the skills agenda.

Feedback

Customer experience and feedback is very important to us. We're always open to suggestions when it comes to enhancing and improving our services. If you have any comments or feedback on our services or products, please contact our team at info@siasuk.com or call us on 01925 515211.

About this Specification

The purpose of this specification is to provide apprentices, employers, and centres with information on the practices and processes of implementing the SIAS Apprenticeship Assessment Strategy in line with the Science Manufacturing Process Operative Occupational Standard and the Apprenticeship Assessment Plan. The Science Manufacturing Process Operative (SMPO) Apprenticeship Assessment Plan can be downloaded from the Skills England (SE) website.

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About this Apprenticeship Assessment

Apprenticeship Overview

Science process manufacturing is varied. It includes industries such as biotechnology, chemical, composites, petrochemical, polymer, and pharmaceutical.

Science process industries combine raw materials and apply a science-based process or processes - biological, chemical, or physical - to create products. Products are made continuously or in batches.

Process manufacturing industries are highly regulated. The Health and Safety Executive and other industry regulators inspect employers. The Control of Major Accident Hazards (COMAH) Regulations apply to some process manufacturing companies. Employers must manage risks to the employee, product, environment, and sometimes the wider community.

The broad purpose of the occupation is to complete science-based manufacturing processes to produce materials and products following standard operating procedures. Products are varied and may include battery cells, composite wind turbine parts, drugs, plastic bottles, proteins, and solvents. This involves checking and preparing materials and using specialist science-based manufacturing process plant or equipment. They monitor the process and take action to resolve deviations. Maintaining the work area is part of the role. They contribute to quality control, continuous improvement, and problem-solving activities. They also complete work records, which are important in regulated workplaces.

In their daily work, they interact with other science process manufacturing operatives and technicians, along with colleagues from other business functions. They typically report to a shift manager, team leader, or supervisor.

They are responsible for meeting work schedules. They must work to quality, health and safety, and environment regulations and procedures. This may include wearing personal protective equipment and complying with Control of Substances Hazardous to Health (COSHH).

They may work alone or as part of a team, under supervision.

They work in varied conditions. Some workplaces may be physically demanding. Some may require use of specialist safety equipment. They complete shift work. Sites often run 24 x 7, 365-days a year

Qualification Objective

The objective of this Apprenticeship Assessment is to determine whether the occupational competence required of a Science Manufacturing Process Operative has been demonstrated and that all Assessment Outcomes specified within the Apprenticeship Assessment Plan (AAP) have been met.

The assessment enables apprentices to demonstrate their ability to carry out science-based manufacturing processes safely and effectively, following standard operating procedures and relevant quality, health, safety and environmental requirements. This includes preparing materials, operating and monitoring process plant and equipment, identifying and

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responding to process deviations, maintaining the work area, completing required records, and contributing to quality control, continuous improvement and problem-solving activities.

Successful completion of the Apprenticeship Assessment confirms that the apprentice has demonstrated the required level of occupational competence to perform the role of a Science Manufacturing Process Operative.

Key Facts

Apprenticeship Standard	Level 2 Science Manufacturing Process Operative
Version	2.0
Operational Start Date	31st October 2026
Assessment Methods	1. Observation 2. Interview Underpinned by a Portfolio
Duration of individual assessments Duration overall	• **Observation:** Typically, 120 minutes (2 hours), with a maximum of 240 (4 hours) • **Interview Underpinned by a Portfolio:** Maximum of 90 minutes (1.5 hours) + 10% • **Overall:** Maximum 5.5 hours + 10%
Grading scale	Fail/Pass/Distinction

Occupational Duties

The occupational duties and associated knowledge, skills and behaviours (KSBs) listed in the Level 2 Science Manufacturing Process Operative apprenticeship standard are provided below. These are tasks and activities that the apprentice will be expected to carry out as a Science Manufacturing Process Operative on their on-programme training.

Duty	KSBs
Duty 1 Carry out process manufacturing operations using or operating plant or equipment in line with standard operating procedures.	K1 K2 K3 K4 K5 K6 K7 K8 K9 K10 K11 K12 K13 K18 K20 K22 S1 S2 S4 S7 S12 S19 S21 B1 B2 B3 B5 B6
Duty 2 Arrange and prepare materials for process activity.	K1 K2 K3 K4 K5 K6 K9 K10 K11 K12 K13 K16 K18 K19 K20 K21 K22 K23 S1 S2 S3 S4 S5 S12 S13 S17 S19 S21 B1 B2 B3 B5 B6
Duty 3 Carry out pre-start checks of equipment and process before run or as part of handover responsibilities.	K1 K2 K3 K4 K5 K6 K9 K10 K11 K12 K13 K18 K19 K20 K22 K23 S1 S3 S4 S6 S7 S12 S19 S21 B1 B3 B5 B6
Duty 4 Monitor the process and resolve or escalate issues.	K1 K2 K3 K4 K5 K6 K7 K8 K9 K10 K11 K12 K13 K18 K19 K20 K22 K23

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Duty	KSBs
	S1 S2 S4 S7 S8 S11 S12 S19 S21 B1 B2 B3 B4 B5 B6
Duty 5 Contribute to quality control: conduct quality checks and escalate concerns.	K1 K2 K3 K4 K5 K6 K7 K8 K9 K12 K13 K14 K18 K19 K20 K22 K23 S1 S2 S4 S9 S11 S12 S17 S19 S20 S21 B1 B3 B4 B5 B6
Duty 6 Contribute to first-line maintenance, directly or through escalation. For example, equipment checks cleaning, and lubrication.	K2 K3 K4 K5 K6 K10 K11 K12 K18 K19 K20 K22 K23 S1 S3 S4 S6 S12 S19 S21 B1 B3 B4 B5 B6
Duty 7 Contribute to continuous improvement and problem-solving activities. For example, work as part of an improvement team, identify issues, and put ideas forward.	K1 K2 K3 K4 K5 K6 K7 K8 K10 K11 K13 K15 K18 K19 K20 K22 K23 S1 S2 S3 S11 S12 S16 S17 S18 S19 S20 S21 S22 B1 B2 B3 B4 B5 B6
Duty 8 Complete process work records - digital or paper, including traceability records.	K2 K3 K4 K5 K6 K12 K13 K17 K18 K19 K20 K22 S1 S3 S4 S11 S12 S17 S18 S19 S20 S21 B1 B3 B5 B6
Duty 9 Contribute to maintaining own work area (housekeeping).	K2 K3 K4 K5 K6 K12 K18 K20 K22 S1 S2 S3 S4 S12 S14 S15 S19 S21 B1 B2 B3 B5 B6
Duty 10 Conduct change over or clean down activities.	K2 K3 K4 K5 K6 K10 K12 K13 K18 K20 K22 K23 S1 S2 S3 S4 S12 S19 S21 B1 B2 B3 B5 B6
Duty 11 Carry out end of process activities. For example, finish, pack, discharge or move goods.	K2 K3 K4 K5 K6 K10 K11 K12 K13 K18 K20 K22 S1 S2 S3 S4 S7 S10 S12 S17 S19 S21 B1 B2 B3 B5 B6

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Entry Requirements

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

Assessment Outcomes Mapped to Assessment Methods

The assessment outcomes group and summarise the knowledge and skills that must be demonstrated in assessments. All assessment outcomes must be assessed.

Assessment Outcome	Knowledge /Skill Statement	Assessment Method
AO1: Health, Safety, and Environmental Compliance Follows health, safety, environmental and sustainability regulations and organisational procedures and maintains a safe and compliant working environment.	S1, S2, S14	Observation
	K3, K4, K5, K6, S15	Interview Underpinned by a Portfolio
AO2: Process Manufacturing Operations Follows standard operating procedures to prepare materials, set up and operate plant and equipment and monitor process manufacturing. Follows instructions to carry out end-of-process activities.	S4, S5*, S6, S7, S8*, S11*	Observation
	K1, K2, K7, K8*, K9*, K10, K11, K12, K13, S10, S12*, S17	Interview Underpinned by a Portfolio
AO3: Quality Assurance and Continuous Improvement Supports quality assurance procedures and continuous improvement activities required to maintain product standards and support operational efficiency.	K14, S9	Observation
	K15*, K17*, S16*	Interview Underpinned by a Portfolio
AO4: Work Organisation and Record Keeping Organises work tasks and stock. Records operational information using paper-based or digital systems and ensures compliance with organisational requirements.	K21*, S3	Observation
	K16*, K20, S13*, S20, S22*	Interview Underpinned by a Portfolio

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AO5: Communication and Teamwork Uses verbal and written communication techniques and team working principles. Complies with General Data Protection Requirements (GDPR) and equality, diversity and inclusion (EDI) regulations.	K18*, K19*, S18*, S19*	Observation
	K22, K23, S21	Interview Underpinned by a Portfolio

(*) Knowledge and skills statements which offer opportunities to develop functional English and maths are identified with an asterisk.

Readiness for Assessment

Before each assessment method is undertaken, the employer and centre must confirm that the apprentice has completed the relevant training and has demonstrated that they are occupationally ready to undertake that assessment method. Readiness must be confirmed in accordance with the requirements of the relevant SIAS Apprenticeship Assessment Strategy and assessment arrangements.

Assessment methods may be undertaken at different points, provided the apprentice has met the readiness requirements for the relevant method and any specified assessment ordering requirements.

A Readiness for Assessment form must be submitted to SIAS confirming this in order to book their assessment for both SIAS Core and Flex delivery.

Assessment Structure

This Apprenticeship Assessment comprises of two assessment methods which together, provide a full coverage of the assessment outcomes.

Method	Marked by	Assessment Method	Marking Method and Pass Requirement	Grading
Method 1	SIAS / Centre	**Observation** Duration: Typically, 120 minutes (2 hours), with a maximum of 240 minutes (4 hours). Number of tasks: 1 assessed observation (may be split into discrete sections held on the same working day).	Marked by assessor using assessment criteria. The apprentice must achieve all pass criteria to receive a pass. The apprentice must achieve all pass and all distinction criteria	Distinction/Pass/ Fail

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			to receive a distinction.	
Method 2	SIAS	**Interview Underpinned by a Portfolio** Duration: maximum 90 minutes + 10%. Number of questions: Minimum of 12 questions.	Marked by assessor using assessment criteria. The apprentice must achieve all pass criteria to receive a pass. The apprentice must achieve all pass and all distinction criteria to receive a distinction.	Distinction/Pass/ Fail
Overall Award				**Distinction/Pass /Fail**

Assessment Delivery Model

The SIAS Level 2 Science Manufacturing Process Operative Apprenticeship Assessment Strategy is available through both the SIAS Core and SIAS Flex delivery models. Under the SIAS Core model, assessment is conducted by SIAS-appointed assessors. Under the SIAS Flex model, approved centres may conduct the observation using approved centre assessors and internal quality assurers, subject to SIAS external quality assurance requirements. The assessment delivery arrangements for each assessment method are outlined below.

Centre Approval Requirements (SIAS Flex Model)

To deliver this Apprenticeship Assessment under the SIAS Flex model, an organisation must hold SIAS Approved Centre status. Approved centres must also obtain approval for each apprenticeship assessment they intend to offer. Approval must be obtained prior to conducting any learner induction, delivery or assessment activities. This ensures centres have the appropriate resources, personnel, systems and quality assurance arrangements in place to deliver assessments in line with SIAS requirements.

As part of the approval process, centres must provide evidence that they have sufficient resources and infrastructure to deliver and quality assure the apprenticeship assessment, including, but not limited to:

- evidence of assessor and internal quality assurer competence, occupational expertise and ongoing continuing professional development (CPD);
- details of available facilities, equipment and learning resources;
- details of assessment delivery and internal quality assurance arrangements;

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- evidence of policies, procedures and quality controls relevant to the delivery of apprenticeship assessments.

For further information about SIAS centre approval and apprenticeship assessment approval requirements, please visit our website or contact us at **partnerships@siasuk.com**.

Staff Requirements

Trainer Requirements:
The trainer must hold a recognised teaching or training qualification, such as the Level 3 Award in Education and Training (AET), or an equivalent teaching or training qualification. Where a trainer does not currently hold a relevant qualification, they may be working towards an appropriate qualification, subject to appropriate support and monitoring.

Assessor Requirements:
The assessor must hold a recognised assessing qualification, such as the Level 3 Certificate in Assessing Vocational Achievement, or an equivalent assessor qualification. Where an assessor does not currently hold a relevant qualification, they may be working towards an appropriate qualification, subject to appropriate support, monitoring and countersigning by a suitably qualified assessor or IQA.

Internal Quality Assurer Requirements:
The IQA must hold a recognised internal quality assurance qualification, such as the Level 4 Award in the Internal Quality Assurance of Assessment Processes and Practice, or an equivalent IQA qualification. Where an IQA does not currently hold a relevant qualification, they may be working towards an appropriate qualification, subject to appropriate support, monitoring and countersigning by a suitably qualified IQA.

Assessment Method 1: Observation

Assessment method	Observation
Duration of the assessment	Typically, 120 minutes (2 hours), with a maximum of 240 (4 hours)
Assessment delivery mode (paper based, online etc)	Face to face
Assessment arrangements	Externally set Internally or Externally marked
Assessment grading scale	Fail / Pass / Distinction

SIAS requires that the Observation is not conducted until an apprentice has completed a minimum of 12 months on programme. This requirement is intended to provide apprentices with adequate time to gain the experience, competence and confidence necessary to demonstrate their abilities successfully during assessment.

The Observation is conducted in the apprentice's workplace and requires apprentices to demonstrate the integrated application of knowledge and skills whilst carrying out authentic science manufacturing activities and normal occupational duties. Simulation is not

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permitted. Assessment decisions are based on direct observation of performance against the relevant pass and distinction criteria.

The assessment criteria for the Observation have been developed based on the Ofqual performance descriptors, the assessment outcomes, and the knowledge and skills statements allocated to this assessment method. Further details can be found in the SIAS Level 2 Science Manufacturing Process Operative Apprenticeship Assessment Employer/Centre Guide.

The Observation must include an opportunity for apprentices to demonstrate:

- Health, safety, environmental and sustainability compliance.
- Preparation and operation of process manufacturing activities.
- Process monitoring and operational decision making.
- Quality assurance and quality control activities.
- Workplace organisation and task management.
- Communication and collaborative working.
- Recording operational information and data.

The Observation will typically take 120 minutes (2 hours) to complete. However, a maximum duration of 240 minutes (4 hours) is permitted to provide apprentices with sufficient opportunity to undertake the range of workplace activities necessary to demonstrate the requirements of the assessment. The Observation may be conducted in discrete sections to allow for natural breaks in workplace activity; however, all observed activities must be completed within the same day. Apprentices should be invigilated by the assessor during breaks and whilst moving between locations.

The assessor must only observe one apprentice at any one time to ensure quality and rigour. They must be as unobtrusive as possible. Apprentices may access workplace resources and documentation normally available when carrying out the activities being assessed, where appropriate. Apprentices may ask the assessor for clarification of assessment instructions; however, the assessor must not provide guidance or support that would assist the apprentice in meeting the assessment criteria.

The assessor may choose to end an Observation early where they are confident that the apprentice has demonstrated competence against the assessment requirements for the Observation. If an assessor chooses to end the assessment early, this must be documented, along with a clear rationale within the Assessment Record.

Observation Knowledge and Skills

The Observation assesses the following knowledge and skills statements:

Ref	Knowledge and Skills statement
Knowledge	
K14	**Quality assurance requirements and monitoring processes.**
K18	**Verbal communication techniques.**

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K19	**Written communication techniques.**
K21	**Work organisation and time management techniques.**
Skills	
S1	**Follow procedures in line with process industry health and safety regulations, standards, and guidance.**
S2	**Follow procedures in line with process industry environmental and sustainability regulations, standards, and guidance.**
S3	**Follow work instructions.**
S4	**Follow process manufacturing standard operating procedures.**
S5	**Conduct material preparation for example, measure, weigh, mix and load materials.**
S6	**Check and set up science process industry tools, plant, or equipment.**
S7	**Use science process industry tools, plant, or equipment required for task.**
S8	**Monitor process manufacturing and take corrective actions to meet specification.**
S9	**Apply product quality assurance procedures for example, take product samples, inspect products.**
S11	**Collect and interpret information.**
S18	**Record information (text and data) - paper based or electronic for example, quality control documentation, cleaning logs, handover notes, stock inventory systems.**
S19	**Communicate with colleagues verbally.**

The statements highlighted in bold will be assessed in every assessment. Further information are detailed within the SIAS Level 2 Science Manufacturing Process Operative Apprenticeship Assessment Employer/Centre Guide.

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Assessment Marking

Assessments are marked in accordance with the assessment record and assessment criteria. The assessment record sets out the grading scale and relevant criteria, including, how these align with performance descriptors for each grade (see Annex 2). This includes the characteristics that differentiate learners at different levels of attainment. Apprentices must achieve all pass criteria to achieve a Pass grade and all pass and distinction criteria to achieve a Distinction grade.

Assessment of the Observation can be delivered internally by approved centres or externally by SIAS.

Grading and Performance Criteria

This assessment is graded as Fail / Pass / Distinction.

Assessment Method 2: Interview Underpinned by a Portfolio

Assessment method	Interview Underpinned by a Portfolio
Duration of the assessment	Maximum 90 minutes (1.5 hours) + 10%
Assessment delivery mode (paper based, online etc)	Online Face to face may be offered where approved and appropriate, and will be to be confirmed when the Readiness for Assessment form is submitted
Assessment arrangements	Externally set Externally marked
Assessment grading scale	Fail / Pass / Distinction

The Interview Underpinned by a Portfolio must be conducted after the Observation has been attempted. This sequencing allows sufficient time for the apprentice to compile a comprehensive Portfolio of Evidence that supports the demonstration of the knowledge and skills allocated to the Interview.

Assessment decisions are based on the relevant pass and distinction criteria. The assessment criteria for the Interview Underpinned by a Portfolio have been developed based on the Ofqual performance descriptors, the assessment outcomes, and the Knowledge and Skills statements allocated to this assessment method. Further details can be found in the SIAS Level 2 Science Manufacturing Process Operative Apprenticeship Assessment Employer/Centre Guide.

The assessment covers knowledge and supporting skills that are most appropriately evidenced through questioning and explanation. The purpose of the questions will be to cover the following themes:

- Science Process Manufacturing Principles and Operations.
- Process Manufacturing Operations.
- Health, Safety, Environmental and Sustainability Requirements.
- Quality Assurance and Continuous Improvement.
- Work Organisation, Stock Management and Information Systems.
- Communication, Teamworking and Inclusion.

The Interview Underpinned by a Portfolio must have a maximum duration of 90 minutes (1.5 hours) and must take place in controlled conditions. The assessor can increase the time by up to 10%. This time is to allow the apprentice to respond to a question if necessary. The apprentice should refer to relevant evidence from their Portfolio to support their responses and demonstrate how they have applied their knowledge and skills in the workplace.

The Interview may be concluded before the maximum duration where the assessor is satisfied that the apprentice has provided sufficient evidence to meet all available pass and distinction criteria. If an assessor chooses to end the assessment early, this must be documented, along with a clear rationale within the Assessment Record. The duration has been set to provide apprentices with sufficient opportunity to fully respond to questions, draw on evidence from their Portfolio, and demonstrate the breadth of knowledge and skills required for the assessment.

The assessor must ask at a minimum of 12 questions to cover the breadth and depth of the knowledge and skills allocated in this assessment method. Questions must be drawn from the SIAS Level 2 Science Manufacturing Process Operative Question Bank and contextualised using evidence contained within the apprentice's Portfolio of Evidence. Follow-up questions are allowed where clarification or exploration of the apprentice's response is required.

The Interview will be conducted online. Face to face may be offered where approved and appropriate and will be to be confirmed when the Readiness for Assessment is submitted. The Interview should take place in a quiet room, free from distractions and influence.

Portfolio of Evidence

The apprentice must compile a Portfolio of Evidence during the on-programme period of the apprenticeship to support the Interview. SIAS recommends that the apprentice should have sufficient evidence to cover the breadth and depth of the knowledge and skills statements associated with the Interview Underpinned by a Portfolio. Evidence must be mapped against the relevant knowledge and skills statements; SIAS provides a Portfolio Referencing Matrix within the Readiness for Assessment Form to support this process. Evidence may be used to demonstrate more than one knowledge and/or skills statements; a qualitative as opposed to quantitative approach is suggested.

Evidence sources may include:

- workplace records
- workplace policies and procedures
- witness statements
- annotated photographs
- video clips (maximum total duration 10 minutes); the apprentice must be in view and identifiable
- learning records and development plans.

This is not a definitive list; other evidence sources can be included.

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The Portfolio of Evidence should not include reflective accounts or any methods of self-assessment. Any employer contributions should focus on direct observation of performance (for example, witness statements) rather than opinions. The evidence provided should be valid and attributable to the apprentice.

The apprentice and their employer must sign and submit an authenticity declaration confirming that the portfolio evidence submitted is their own work and has been completed in accordance with the assessment requirements within the Interview Underpinned by a Portfolio of Evidence Readiness for Assessment Form.

The Portfolio of Evidence is not assessed and is to provide supporting evidence of workplace practice to facilitate the Interview.

Interview Underpinned by a Portfolio Method Knowledge and Skills

The Interview Underpinned by a Portfolio assesses the following knowledge and skills statements:

Ref	Knowledge and Skills statement
Knowledge	
K1	Process manufacturing definition. Types of process products across process industries. Types of employers. Types of customers.
K2	**Science manufacturing process operative role. Limits of responsibility.**
K3	**Process industry safety: high-hazard sites and their potential impact, and The Control of Major Accident Hazards Regulations (COMAH).**
K4	**Awareness of health and safety regulations and requirements and impact on role. Health and Safety at Work Act. Control of Substances Hazardous to Health (COSHH). Manual handling. Slips, trips, and falls. Situational awareness. Safety equipment: guards, signage, fire extinguishers.**
K5	**Risk assessments and safe systems of work within process industries. Personal Protective Equipment (PPE). Isolation and emergency stop procedures.**
K6	**Environment and sustainability regulations and role of the Environmental Agency. Types of pollution and control measures: noise, smells, spills, and waste. Efficient use of resources. Recycling. Waste reduction and waste streams.**
K7	**Fundamentals of process chemistry: liquids, gases, and solids.**
K8	**The effects of temperature, pressure, and flow on liquids, gases, and solids.**
K9	**Awareness of process industry methods: measuring of raw ingredients and materials, blending, mixing, combining, melt processing, moulding, extrusion, and formulations.**
K10	**Common science manufacturing industry plant, equipment, and tools: pumps, valves, temperature gauges, filtration equipment, tanks, vessels and production and processing machinery, and control systems; what they are and what they do. The importance of operational checks.**
K11	Automation and digitalisation of manufacturing processes and its benefits.
K12	Standard operating procedures (SOP). What they are and why they are important.

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K13	Process and product specifications. Continuous and batch manufacturing. Manufacturing environments.
K15	**Basic continuous improvement techniques: 5 Why's, 5S, KAIZEN.**
K16	**Stock requirements: control systems, and stock rotation.**
K17	Work record requirements and importance of records for traceability and audits. Management information systems.
K20	**Information technology: digital manufacturing management systems, virtual learning platforms, word processing, and email. General data protection regulation (GDPR). Cyber security.**
K22	**Principles of team working.**
K23	**Equality, diversity, and inclusion.**
Skills	
S10	**Conduct end of process procedures for example, finish, pack, label, discharge, move, and store batches.**
S12	**Identify and resolve or report issues.**
S13	**Store materials, monitor, and rotate stock.**
S15	**Identify and segregate resources for reuse, recycling, and disposal.**
S16	**Apply basic continuous improvement techniques for example, 5Why's, S5, and KAIZEN.**
S17	Perform simple calculations for example, raw material quantity and production calculations.
S20	**Use information technology for example, digital manufacturing management systems, virtual learning platforms, word processing, and email. Comply with GDPR and cyber security procedures.**
S21	**Apply team building principles.**
S22	Carry out and record learning and development.

The statements highlighted in bold will be assessed in every assessment. Further information are detailed within the SIAS Level 2 Science Manufacturing Process Operative Apprenticeship Assessment Employer/Centre Guide.

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Assessment Marking
Assessments are marked in accordance with the assessment record and assessment criteria. The assessment record sets out the grading scale and relevant criteria, including, how these align with performance descriptors for each grade (see Annex 2). This includes the characteristics that differentiate learners at different levels of attainment. Apprentices must achieve all pass criteria to achieve a Pass grade and all pass and distinction criteria to achieve a Distinction grade.

Assessment of the Interview Underpinned by a Portfolio must be delivered externally via SIAS.

Grading and Performance Criteria
This assessment is graded as Fail / Pass / Distinction

Order of Assessments

The Observation must be attempted before the Interview Underpinned by a Portfolio takes place.

Reasonable Adjustments

Reasonable adjustments are available for apprentices' undertaking assessment through both the SIAS Flex and SIAS Core assessment models. SIAS is committed to ensuring that apprentices are not disadvantaged during assessment and that arrangements are made in line with the principles of the Equality Act 2010.

All requests for reasonable adjustments must be submitted to SIAS and approved prior to the assessment taking place. This applies whether the assessment is delivered by the centre (SIAS Flex) or by SIAS (SIAS Core). Requests will be considered in accordance with SIAS' Reasonable Adjustments Policy and must be supported by appropriate evidence where required.

For SIAS Flex, approved reasonable adjustments must be implemented by the centre in accordance with the approval provided by SIAS. For SIAS Core, approved reasonable adjustments will be implemented by SIAS as part of the assessment delivery process. No reasonable adjustment may be applied without prior approval from SIAS.

Central approval of all reasonable adjustment requests ensures compliance with the Equality Act 2010 and supports the consistent, fair and comparable application of adjustments across both assessment models, whilst maintaining the validity and integrity of the assessment.

Overall grade

An apprentice must achieve at least a pass in all assessment methods to achieve an overall Pass grade for this Apprenticeship Assessment.

An apprentice must achieve a distinction in all assessment methods to achieve an overall Distinction grade for this Apprenticeship Assessment.

Assessment Method 1	Assessment Method 2	Overall grading
Fail	Any grade	Fail
Any grade	Fail	Fail
Pass	Pass	Pass
Pass	Distinction	Pass
Distinction	Pass	Pass
Distinction	Distinction	Distinction

Resits and retakes

An apprentice who does not achieve a pass grade will be permitted a maximum of two further assessment attempts per assessment method. These attempts may be undertaken as determined in accordance with SIAS' Resits and Retakes Policy.

A **resit** may be undertaken where there is evidence that the apprentice has met the requirements of the occupational standard but did not demonstrate this successfully during the assessment. No additional learning is required prior to the resit.

A **retake** will be required where the apprentice has not yet demonstrated competence at the level required by the occupational standard and further learning and development is necessary before reassessment.

Resits and retakes following a failed assessment must be completed within **12 weeks** of the apprentice being notified of the assessment outcome, unless exceptional circumstances have been approved by SIAS.

Apprentices who have achieved a pass grade and wish to improve their grade may undertake **one further assessment attempt**. Requests for grade improvement must be made within **10 working days** of the apprentice receiving their assessment outcome.

There is **no cap on the grade** that may be achieved through a resit or retake. The highest grade achieved will be awarded.

Apprentices will only be required to resit or retake the assessment method in which they were unsuccessful or for which they are seeking to improve their grade, unless otherwise specified within the assessment requirements.

Assessment fees for resits and retakes will be applied in accordance with SIAS' published fee arrangements and will be consistent across both the SIAS Core and SIAS Flex assessment models.

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Moderation

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

Verification of Behaviours

It is the responsibility of the employer to review behaviours throughout the apprentice's programme and confirm sufficient demonstration of these behaviours before a certificate can be requested.

Behaviours do not contribute to the grading of the apprenticeship. This means that while they must be sufficiently demonstrated in order for the apprenticeship certificate to be issued, they do not affect whether the apprentice is awarded a pass or a distinction grade.

Behaviours must be verified by someone (or a combination of people) who has worked closely with the apprentice and who has sufficient oversight of the apprentice and their work and has an understanding of the behaviours set out in the occupational standard. This would usually be the apprentice's line manager or equivalent.

It is the responsibility of the employer to report their verification of the behaviours to SIAS when requesting the apprenticeship certificate. SIAS do not assess behaviours or quality assure employer judgements. SIAS will provide the Gateway to Completion Form to support this activity.

Gateway to Completion

Gateway to Completion will be used as a checkpoint at the end of an apprenticeship programme to ensure that the apprentice has completed all necessary requirements and is ready to receive their certificate.

Requirements include:

- the completion of English and maths qualifications in line with the funding rules
- satisfactory evidence (as determined by the employer, in consultation with the centre) that the apprentice has achieved the necessary knowledge, skills and demonstrated the behaviours (as verified by employers) set out in the occupational standard.

Throughout the learning period, employers and centres should hold regular discussions to monitor the apprentice's progress, assessment readiness, achievement of any mandatory qualifications, and development of occupational competence. The apprentice should be actively involved in these reviews to support effective planning and progression towards assessment.

Gateway to Completion should be viewed as the final opportunity to confirm that the apprentice has met all requirements for programme completion, rather than as a single or standalone review point. Employers and centres should have already monitored progress and assessment readiness throughout the learning period. To support a consistent and

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robust completion process, SIAS will provide a Gateway to Completion form to assist employers and centres in confirming that all requirements have been met. Certification

The outcomes from the Apprenticeship Assessment will be reviewed and a grade conferred by SIAS in accordance with SIAS Quality Assurance procedures, which are available from SIAS.

SIAS will apply for the apprentice's certificate through the Apprenticeship Assessment Service. The certificate confirms that the apprentice has passed the Apprenticeship Assessment, has demonstrated full competency across the standard and is job-ready.

Annex 1: Mapping of Knowledge, Skills, and Behaviours

Key:	
Observation	Obs
Interview Underpinned by a Portfolio	Int
On programme	OP

Ref	KSB to be achieved	Assessment
Knowledge		
K1	Process manufacturing definition. Types of process products across process industries. Types of employers. Types of customers.	Int
K2	Science manufacturing process operative role. Limits of responsibility.	Int
K3	Process industry safety: high-hazard sites and their potential impact, and The Control of Major Accident Hazards Regulations (COMAH).	Int
K4	Awareness of health and safety regulations and requirements and impact on role. Health and Safety at Work Act. Control of Substances Hazardous to Health (COSHH). Manual handling. Slips, trips, and falls. Situational awareness. Safety equipment: guards, signage, fire extinguishers.	Int
K5	Risk assessments and safe systems of work within process industries. Personal Protective Equipment (PPE). Isolation and emergency stop procedures.	Int
K6	Environment and sustainability regulations and role of the Environmental Agency. Types of pollution and control measures: noise, smells, spills, and waste. Efficient use of resources. Recycling. Waste reduction and waste streams.	Int
K7	Fundamentals of process chemistry: liquids, gases, and solids.	Int
K8	The effects of temperature, pressure, and flow on liquids, gases, and solids.	Int
K9	Awareness of process industry methods: measuring of raw ingredients and materials, blending, mixing, combining, melt processing, moulding, extrusion, and formulations.	Int

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Ref	KSB to be achieved	Assessment
K10	Common science manufacturing industry plant, equipment, and tools: pumps, valves, temperature gauges, filtration equipment, tanks, vessels and production and processing machinery, and control systems; what they are and what they do. The importance of operational checks.	Int
K11	Automation and digitalisation of manufacturing processes and its benefits.	Int
K12	Standard operating procedures (SOP). What they are and why they are important.	Int
K13	Process and product specifications. Continuous and batch manufacturing. Manufacturing environments.	Int
K14	Quality assurance requirements and monitoring processes.	Obs
K15	Basic continuous improvement techniques: 5 Why's, 5S, KAIZEN.	Int
K16	Stock requirements: control systems, and stock rotation.	Int
K17	Work record requirements and importance of records for traceability and audits. Management information systems.	Int
K18	Verbal communication techniques.	Obs
K19	Written communication techniques.	Obs
K20	Information technology: digital manufacturing management systems, virtual learning platforms, word processing, and email. General data protection regulation (GDPR). Cyber security.	Int
K21	Work organisation and time management techniques.	Obs
K22	Principles of team working.	Int
K23	Equality, diversity, and inclusion.	Int
Skills		
S1	Follow procedures in line with process industry health and safety regulations, standards, and guidance.	Obs
S2	Follow procedures in line with process industry environmental and sustainability regulations, standards, and guidance.	Obs
S3	Follow work instructions.	Obs
S4	Follow process manufacturing standard operating procedures.	Obs
S5	Conduct material preparation for example, measure, weigh, mix and load materials.	Obs
S6	Check and set up science process industry tools, plant, or equipment.	Obs
S7	Use science process industry tools, plant, or equipment required for task.	Obs
S8	Monitor process manufacturing and take corrective actions to meet specification.	Obs
S9	Apply product quality assurance procedures for example, take product samples, inspect products.	Obs

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Ref	KSB to be achieved	Assessment
S10	Conduct end of process procedures for example, finish, pack, label, discharge, move, and store batches.	Int
S11	Collect and interpret information.	Obs
S12	Identify and resolve or report issues.	Int
S13	Store materials, monitor, and rotate stock.	Int
S14	Comply with housekeeping procedures for example, clean equipment and machinery, tidy work area.	Int
S15	Identify and segregate resources for reuse, recycling, and disposal.	Int
S16	Apply basic continuous improvement techniques for example, 5Why's, S5, and KAIZEN.	Int
S17	Perform simple calculations for example, raw material quantity and production calculations.	Int
S18	Record information (text and data) - paper based or electronic for example, quality control documentation, cleaning logs, handover notes, stock inventory systems.	Obs
S19	Communicate with colleagues verbally.	Obs
S20	Use information technology for example, digital manufacturing management systems, virtual learning platforms, word processing, and email. Comply with GDPR and cyber security procedures.	Int
S21	Apply team building principles.	Int
S22	Carry out and record learning and development.	Int
Behaviours		
B1	Put health and safety first.	OP
B2	Consider the environment.	OP
B3	Take ownership for quality of given work.	OP
B4	Adapt to changing work requests.	OP
B5	Team focus to meet work goals for example, work collaboratively.	OP
B6	Seek learning and development opportunities.	OP

Annex 2: Performance Descriptors

Performance descriptors describe the level of performance required to achieve a pass or distinction grade. The descriptors have been taken directly from the Apprenticeship Assessment Plan for this standard.

Performance Category	Pass	Distinction
Applied Knowledge	Demonstrates appropriate application of science manufacturing knowledge, facts, procedures, and ideas to complete well-defined tasks and solve	Demonstrates highly accurate, insightful, and efficient application of science manufacturing knowledge, facts, procedures, and ideas to

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	straightforward problems across routine and some varied work activities, showing competent understanding across familiar situations.	solve straightforward problems and adapt effectively to well-defined tasks across routine and some varied work activities.
Applied Skills	Selects and uses cognitive and practical science manufacturing skills to carry out mostly routine tasks with consistency and purpose, maintaining steady performance across familiar situations and supporting reliable task completion.	Integrates cognitive and practical science manufacturing skills to execute mostly routine tasks with precision, even when faced with subtle complexities or shifting requirements, consistently maintaining control and accuracy in familiar situations.
Regulatory and Procedural Awareness	Applies health, safety, environmental, sustainability, organisational, and data protection regulations and procedures relevant to science manufacturing without error, although depth of insight or adaptability may be limited.	Demonstrates proactive and confident interpretation of health, safety, environmental, sustainability, organisational, and data protection regulations and procedures relevant to science manufacturing, applying them with assurance across familiar situations.
Communication and Collaboration	Communicates and collaborates effectively within a team setting, using verbal and written techniques appropriately and contributing to consistent service delivery and teamwork across routine and some varied work activities.	Consistently communicates with clarity and sensitivity, showing strong awareness of others and responding resourcefully in a range of team scenarios, supporting effective service delivery across routine and some varied work activities.
Information Use and Decision Making	Gathers and interprets relevant information to inform decisions and actions that are fit for purpose within science manufacturing work contexts, supporting	Gathers and interprets relevant information and feedback to shape actions that are purposeful and show clear added value in efficiency or outcomes within science

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	reliable completion of well-defined tasks and straightforward problems.	manufacturing work contexts, enhancing the effectiveness of well-defined tasks.
Responsibility and Autonomy	Takes responsibility for completing science manufacturing tasks, demonstrating autonomy within familiar situations and contributing reliably to routine and some varied work activities.	Exercises informed judgement and self-direction in science manufacturing tasks, often anticipating the needs of the task or team within familiar situations while remaining within the scope of well-defined activities.

Annex 3: SIAS Resources

SIAS provide the following resources to support the delivery of the SIAS Level 2 Science Manufacturing Process Operative Assessment Strategy:

- Specification
- Factsheet
- Centre/Employer Guide
- Learner Guide to Apprenticeship Assessment
- Skills Scan
- Tracker
- Mock Assessment Materials
- Readiness for Assessment forms
- Gateway to Completion Form

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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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