SIAS Qualification Specification

SIAS Level 2 Certificate in the Fundamentals of Process Industry Manufacturing

Qualification Number:

Operational Start Date: 15th September 2024

Contents

Version History

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 Qualification Specification is in use.

Version	Date	Comments
1.0	06/09/2024	First published

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).

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

This document has been developed to provide information for learners and centres undertaking, delivering or quality assuring this qualification.

Centre Recognition and Qualification Approval

To deliver this qualification, the centre must be recognised by SIAS.

Recognised centres must apply for approval for each qualification they intend to offer. Qualification approval must be obtained prior to conducting any learner assessments.

For details of our centre recognition and qualification approval process, visit our website or contact us at info@siasuk.com.

About this Qualification

Key Facts

Qualification Title	SIAS Level 2 Certificate in the Fundamentals of Process Industry Manufacturing
Qualification Number	TBC
Credit Value	30
Guided Learning Hours (GLH)	205
Total Qualification Time (TQT)	300
Assessment Methods	Multiple-Choice Question Examinations
Operational Start Date	15 September 2024
Review Date	31 August 2024
Operational End Date	-
Certification End Date	-
Regulation	This qualification is regulated by Ofqual

Qualification Objective

The SIAS Level 2 Certificate in the Fundamentals of Process Industry Manufacturing is designed to develop the learner's knowledge and understanding in the basic principles and practices involved in the process manufacturing industry. The qualification is aimed at individuals entering the process industry manufacturing sector. It covers key areas such as health and safety, teamwork, scientific and mathematical principles, and the fundamentals of process manufacturing operations. Following completion of the qualification, the learner will have a clear understanding of how to carry out the role of an operative within the sector.

Entry Requirements

This qualification is available to learners aged 16+.

There are no formal entry requirements for the SIAS Level 2 Certificate in the Fundamentals of Process Industry Manufacturing. However, learners should have a basic understanding of English and mathematics. Centres should also ensure learners are able to complete this qualification, for example, through completing an initial assessment to ensure they can work at the appropriate level.

Recognition of Prior Learning

Recognition of Prior Learning (RPL) is the process of recognising previous, informal or experiential learning which could contribute to a qualification or unit. SIAS supports the use of RPL, and centres must work to the principles included in the SIAS RPL Policy which is available on the SIAS website. This policy should be reviewed alongside this guide and all other relevant SIAS qualification documentation.

Qualification Structure

To be awarded the SIAS Level 2 Certificate in the Fundamentals of Process Industry Manufacturing learners must achieve the following:

- 30 credits from the 4 mandatory units listed below:

Ofqual Unit Reference	Unit Title	Level	Credit	GLH	TQT
Mandatory Units					
TBC	Principles of Health, Safety and the Environment in Process Industry Manufacturing	2	7	50	70
TBC	Work Effectively both Individually and as Part of a Team	2	3	20	30
TBC	Fundamentals of Scientific and Mathematical Principles in Process Industry Manufacturing	2	9	65	90
TBC	Fundamentals of Process Industry Manufacturing Operations	2	11	70	110
TOTAL			**30**	**205**	**300**

Total Qualification Time (TQT) and Guided Learning Hours (GLH)

Note: Values for Total Qualification Time, including Guided Learning Hours, are calculated by considering the different activities that learners would typically complete to achieve and demonstrate the learning outcomes of a qualification. They do not include activities which are required by a learner's teacher based on the requirements of an individual learner and/or cohort. Individual learners' requirements and individual teaching styles mean there will be variation in the actual time taken to complete a qualification. Values for Total Qualification Time, including Guided Learning, are estimates.

Some examples of activities which can contribute to Total Qualification Time include:

- Independent and unsupervised research/learning
- Unsupervised compilation of a portfolio of work experience
- Unsupervised e-learning
- Unsupervised e-assessment practice
- Unsupervised coursework
- Watching a pre-recorded podcast or webinar
- Unsupervised work-based learning
- All Guided Learning

Some examples of activities which can contribute to Guided Learning include:

- Classroom-based learning supervised by a teacher

- Work-based learning supervised by a teacher
- Live webinar or telephone tutorial with a teacher in real time
- E-learning supervised by a teacher in real time
- All forms of assessment which take place under the immediate guidance or supervision of a lecturer, supervisor, tutor or other appropriate provider of education or training, including where the assessment is competence-based and may be turned into a learning opportunity

Grading

This qualification is graded as a pass/fail.

Delivery and Assessment

Use of Language

All learners must be assessed in English unless the qualification specification states that another language will be accepted.

Progression Opportunities

Upon successfully completing this qualification, learners may progress to:

- Level 3 qualifications in process industry manufacturing or related fields.
- Employment in entry-level roles within the process manufacturing industry.
- Apprenticeships in the process industry manufacturing sector.

Assessment Guidance

All SIAS assessments will be accessible and produce results that are valid, reliable, transparent and fair.

The SIAS Level 2 Certificate in the Fundamentals of Process Industry Manufacturing contains 4 mandatory knowledge units.

To achieve the qualification, learners must successfully pass all assessments:

Unit Title	Assessment Method	Set by	Marked by
Principles of Health, Safety and the Environment in Process Industry Manufacturing	Externally set and marked multiple-choice question examination	SIAS	SIAS
Work Effectively both Individually and as Part of a Team	Externally set and marked multiple-choice question examination	SIAS	SIAS
Fundamentals of Scientific and Mathematical Principles in Process Industry Manufacturing	Externally set and marked multiple-choice question examination	SIAS	SIAS

Fundamentals of Process Industry Manufacturing Operations	Externally set and marked multiple-choice question examination	SIAS	SIAS

The assessments are available on demand through the SIAS online assessment platform.

The assessments must be undertaken in controlled conditions. This means:

- learners must complete the assessment unaided
- books and other training aids must not be accessed by the learners

If a learner fails an assessment, they can be provided with opportunities to resit. Learners may only seek a resit for any previously failed assessment.

Centres should have systems in place to verify a learner is ready to undertake their assessment.

Centres must ensure that no part of the assessment of a learner, including internal quality assurance and invigilation, is conducted by anyone with a personal interest in the assessment outcome.

Documentation to support the qualification assessment process can be accessed from the SIAS Pinacle system.

Centre Requirements

All SIAS centres must be approved by SIAS to deliver the qualification(s) they wish to offer. This is to ensure centres have the processes and resources in place to deliver the qualification(s). Further information can be found in the SIAS Centre Handbook.

When a centre applies to offer a qualification, they will need to provide evidence that they have sufficient resources and infrastructure in place for delivery of that qualification:

- evidence of staff competence and knowledge
- details of available resources

Information regarding the induction and continuing professional development must be made available to SIAS by centres through the external quality assurance process.

Tutor/Trainer Requirements

For the SIAS Level 2 Certificate in the Fundamentals of Process Industry Manufacturing tutors/trainers are required to demonstrate they:

- have relevant occupational knowledge and competence
- hold a recognised education and training qualification
- have completed recent, relevant CPD activities for the subject area

Evidence includes:

- CV and relevant occupational qualifications and experience
- Level 3 Award in Education and Training or equivalent including Preparing to Teach in the Lifelong Sector (PTLLS), CertEd/PGCE, L4 Certificate in Education and Training, L5 Diploma in Education and Training
- Up-to-date CPD Record including certification from any courses attended

Continuing Professional Development (CPD)

Centres are expected to support their staff, ensuring that their subject knowledge remains current and is up to date with best practice in delivery, assessment and quality assurance.

Quality Assurance Guidance

All SIAS qualifications require centres to have in place a robust mechanism for the quality assurance of training delivery and invigilated assessment arrangements.

External Quality Assurance

External quality assurance will be undertaken by SIAS. Centres will be required to provide documentation and other evidence to support this process upon request. Please refer to our Centre Handbook for further details.

Equality and Diversity

Delivery of SIAS qualifications must comply with equality and diversity legislation. Learners should not experience any barriers to achievement in respect of:

- Age
- Disability
- Gender
- Gender reassignment
- Marriage and civil partnerships
- Pregnancy and maternity
- Race
- Religion and belief
- Sexual orientation

Reasonable Adjustments

All learners must be treated fairly and equally and be provided with every opportunity to achieve our qualification(s). For more information or guidance, please refer to the SIAS Reasonable Adjustments Policy available on our website.

Health and Safety

SIAS are committed to ensuring the safety and wellbeing of learners. Due to the nature of some of the sectors SIAS work in, there can be a high level of risk which we expect centres to manage effectively. Centres must take appropriate measures to assess and manage these risks and implement procedures so that qualifications are delivered safely, minimising risks to learners and those involved in the assessment process as much as possible. Working environments must comply with all required health and safety standards.

Qualification Content

Unit 1: Principles of Health, Safety and the Environment in Process Industry Manufacturing

Unit Reference	TBC	
Level	2	
Credit Value	7	
GLH	50	
Aim	To provide the learner with a fundamental knowledge of the health, safety and environmental requirements relevant to the process industry manufacturing sector.	
Assessment Methodology	Multiple-choice question examination	
Learning Outcomes *The learner will:*	**Assessment Criteria** *The learner can:*	
1. Know health and safety regulations, standards, approved codes of practice (ACOPs) and guidance relevant to process industry manufacturing.	1.1	Recognise key aspects of health and safety regulations in relation to process industry manufacturing
	1.2	Identify health and safety warning signs and symbols commonly used in process industry manufacturing
2. Understand common workplace policies, procedures and practices in relation to the application of health and safety law, regulations, Approved Codes of Practice (ACOPs), standards and guidance relevant to process industry manufacturing.	2.1	Identify organisational policies and procedures in relation to health and safety
	2.2	Identify how health and safety issues are managed in the workplace
	2.3	Identify Personal Protective Equipment (PPE) used during process industry manufacturing
	2.4	Recognise the main aims of emergency procedures
	2.5	Define the meaning of ‘hazard’ and ‘risk’ within the workplace
3. Understand own responsibilities in	3.1	Identify personal responsibilities to ensure compliance with health and safety regulations and requirements

relation to health and safety regulations, standards and guidance within the workplace.	3.2	Recognise the essential steps for conducting an effective risk assessment in the workplace
	3.3	Identify typical safety hazards and risks found within process industry manufacturing
	3.4	Specify how to report health and safety concerns in the workplace
	3.5	Recognise own actions to be undertaken in the event of an incident or emergency
	3.6	Recognise the correct techniques relating to manual handling
4. Understand environmental regulations, environmental hazards and hierarchy of control that can arise from within process industry manufacturing.	4.1	Identify the key requirements of the Environmental Protection Act in relation to process industry manufacturing
	4.2	Define 'hazardous waste'
	4.3	Recognise environmental hazards that can arise from process manufacturing
	4.4	Identify workplace policies and procedures relating to environmental regulations and guidance
	4.5	Recognise environmental signs and notices
	4.6	Identify own responsibilities in relation to complying with environmental policies and procedures

Unit 2: Work Effectively both Individually and as Part of a Team

Unit Reference	TBC	
Level	2	
Credit Value	3	
GLH	20	
Aim	To develop a fundamental understanding of the communication and teamwork skills essential for working in a process manufacturing environment.	
Assessment Methodology	Multiple-choice question examination	
Learning Outcomes *The learner will:*	**Assessment Criteria** *The learner can:*	
1. Understand the use of different communication methods within the workplace.	1.1	Identify different types of written communication methods used in the workplace
	1.2	Recognise the terminology used within process industry communications
	1.3	Recognise situations where verbal communication is used within the workplace
2. Understand the principles of effective teamwork.	2.1	Identify the characteristics of an effective team
	2.2	List own responsibilities when working as part of a team
	2.3	Identify scenarios that require collaborative working
	2.4	Identify scenarios that could cause conflict within a team
3. Know how to adapt to changing work requests and priorities.	3.1	Recognise the importance of adapting to changing work requests
	3.2	Identify how to respond when faced with conflicting priorities
4. Understand the importance of self-development.	4.1	Recognise benefits of ongoing self-improvement
	4.2	Identify how to set effective personal goals
5. Understand the principles of equality, diversity, and inclusion in the workplace.	5.1	Define equality, diversity, and inclusion in the workplace
	5.2	Identify different forms of discrimination and harassment
	5.3	Recognise workplace responsibilities in respect of equality, diversity and inclusion
	5.4	Identify protected characteristics in relation to equality, diversity and inclusion

	5.5	Confirm how to report instances of bullying or harassment in relation to self or others

Unit 3: Fundamentals of Scientific and Mathematical Principles in Process Industry Manufacturing

Unit Reference	TBC	
Level	2	
Credit Value	9	
GLH	65	
Aim	This unit introduces fundamental scientific and mathematical knowledge for process industry manufacturing, including basic mathematical operations, thermal and flow properties, atoms/molecules/bonding as well as interpreting graphical information such as technical drawings and process diagrams.	
Assessment Methodology	Multiple-choice question examination	
Learning Outcomes *The learner will:*	**Assessment Criteria** *The learner can:*	
1. Know how to undertake a range of basic calculations used and required in process industry manufacturing, and their applications.	1.1	Calculate basic operations (addition, subtraction, multiplication and division), including using simple fractions
	1.2	Calculate sum totals and differences, including using decimals
	1.3	Calculate areas and volumes
	1.4	Calculate flow rates
	1.5	Review a simple set of data to find specific information
2. Understand different thermal and flow properties of solids, liquids and gasses.	2.1	Identify basic thermal properties of solids, liquids and gasses
	2.2	Identify basic flow properties of solids, liquids and gasses
	2.3	Identify how viscosity varies among solids, liquids and gasses
	2.4	Recognise where thermal and flow properties impact on the manufacturing process
	2.5	Identify the differences in compressibility between gasses, solids and liquids
	2.6	Identify how temperature affects the state and properties of solids, liquids and gasses

3. Understand the structure and representation of atoms, elements and compounds used in process industry manufacturing.	3.1	Identify the basic structure of an atom
	3.2	Recognise common chemical symbols for elements and compounds used in process industry manufacturing
	3.3	Identify basic compounds and their chemical formulas
	3.4	Recognise the difference between elements, compounds and mixtures
	3.5	Identify basic factors and requirements for chemical bonding
4. Understand how different solutions used in process industry manufacturing behave under different conditions.	4.1	Define the terms solute, solvent and solution
	4.2	Identify factors which affect solubility
	4.3	Identify effects of temperature on the solubility of solids, liquids and gasses
	4.4	Recognise how pressure affects solubility
	4.5	Identify examples of solutions used in process industry manufacturing and their applications
	4.6	Identify saturation and supersaturation in solutions
5. Understand the structure and properties of different carbon compounds and polymers used in process industry manufacturing.	5.1	Identify the basic structure of carbon atoms, including their bonding properties
	5.2	Identify the basic process of polymerisation and the formation of polymers
6. Understand standard conventions for technical drawings, including graphical information and process diagrams.	6.1	Recognise standard symbols and notation used in technical drawings
	6.2	Review a technical drawing to find specific information
	6.3	Interpret process flow diagrams used in process industry manufacturing

Unit 4: Fundamentals of Process Industry Manufacturing Operations

Unit Reference	TBC	
Level	2	
Credit Value	11	
GLH	70	
Aim	This unit introduces fundamental knowledge for process industry manufacturing operations, including different products and stakeholders in the process industry manufacturing sector, operating procedures and conditions, common equipment and manufacturing principles, process control and quality assurance.	
Assessment Methodology	Multiple-choice question examination	
Learning Outcomes *The learner will:*	**Assessment Criteria** *The learner can:*	
1. Know about different products, environments and types of customers in the process industry manufacturing sector.	1.1	Identify products manufactured in the process industry manufacturing sector
	1.2	Recognise different types of customers served by the process industry manufacturing sector
	1.3	Identify different manufacturing environments and their primary uses or functions
2. Understand their own role within the process industry manufacturing environment including problem solving and appropriate escalation procedures.	2.1	Identify the main responsibilities of an operator or technician within a process industry manufacturing environment
	2.2	Identify common faults and causes in process manufacturing
	2.3	Recognise appropriate troubleshooting, fault-finding or problem-solving techniques
	2.4	Identify scenarios that require escalation
	2.5	Identify escalation procedures for a scenario or incident
3. Know effective planning, prioritising and time management techniques.	3.1	Identify benefits of planning, prioritising and good time management
	3.2	Identify a suitable approach for the effective prioritisation of tasks
	3.3	Choose appropriate tools or methods for managing time effectively

4. Understand the use of Standard Operating Procedures (SOP) and Safe Working Practices (SWPs) and how to adhere to them.	4.1	Identify the purpose of Standard Operating Procedures (SOPs)
	4.2	Identify the purpose of Safe Working Practices (SWPs)
	4.3	Recognise why SOPs and SWPs are used in the manufacturing process
	4.4	Identify how to follow a SOP and SWP
5. Understand the importance of Standard Operating Conditions (SOCs) for ensuring quality in manufacturing processes.	5.1	Identify the purpose of Standard Operating Conditions (SOCs)
	5.2	Identify the role of SOCs in maintaining product quality
	5.3	Recognise how SOCs are monitored and enforced
6. Understand the importance of adhering to quality standards during process manufacturing	6.1	Recognise quality standards used in process manufacturing industries
	6.2	Identify main factors which influence quality in process industries
	6.3	Identify the purpose of audits
7. Understand the purpose and basic operation of common equipment in process industry manufacturing.	7.1	Identify common equipment used in process manufacturing industry
	7.2	Recognise the basic purpose of key manufacturing equipment
	7.3	Recognise the basic operation of key manufacturing equipment
8. Understand different types of water and water uses in and around a process industry manufacturing plant.	8.1	Identify different types of water used in process industry manufacturing
	8.2	Recognise the differences in composition between raw, treated and demineralised water
	8.3	Identify the different uses of water within process industry manufacturing
9. Understand the principles and processes used within process industry manufacturing	9.1	Identify principles of distillation in process industry manufacturing
	9.2	Recognise the process of phase separation in process industry manufacturing
	9.3	Identify the principles of crystallisation in process industry manufacturing

	9.4	Recognise the drying process and its role in process industry manufacturing

Resources

SIAS provides the following additional resources for this qualification:

- Centre Qualification Guide
- Qualification Learner Logbook
- Sample Assessment Material
- Externally Set Assessments

Please see below examples of sample assessment questions:

Sample Question 1
What do the letters in COSHH stand for?
A. Control of Substances Hazardous to Health
B. Control of Substances Harmful to Health
C. Containment of Substances Hazardous to Health
D. Containment of Substances Harmful to Health

Sample Question 2
What does the following pictogram mean? 
A. Oxidising
B. Flammable
C. Corrosive
D. Explosive

Further Information

For information about SIAS and general enquiries please see our website: www.siasuk.com or contact:

Telephone: 01925 515211

Email: info@siasuk.com

Floor 1, 720 Mandarin Court
Centre Park, WARRINGTON
WA1 1GG

T: 01925 515211
E: info@siasuk.com
W: www.siasuk.com