



Qualification Specification:

OCN NI Level 4 Award in Lean Manufacturing and Engineering Processes and Problem-Solving

- **Qualification No: 610/7858/X**

Version 1.0



1. Specification Updates

Key changes have been listed below:

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3. Introduction to Open College Network Northern Ireland (OCN NI)

The Open College Network Northern Ireland (OCN NI) is a UK recognised awarding organisation based in Northern Ireland. We are regulated by CCEA Regulation to develop and award regulated professional and technical (vocational) qualifications from Entry Level up to and including Level 5 across all sector areas. In addition, OCN NI is also regulated by Ofqual to award qualifications in England.

OCN NI is also an educational charity that advances education by developing nationally recognised qualifications and recognising the achievements of learners. We work with centres such as Further Education Colleges, Private Training Organisations, Voluntary & Community Organisations, Schools, SME's and Public Sector bodies to provide learners with opportunities to progress into further learning and/or employment. OCN NI's Strategic Plan can be found on the OCN NI website www.ocnni.org.uk.

For further information on OCN NI qualifications or to contact us, you can visit our website at www.ocnni.org.uk. The website should provide you with details about our qualifications, courses, contact information, and any other relevant information you may need.

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4. About this Specification

This specification details OCN NI's specific requirements for the delivery and assessment of the **OCN NI Level 4 Award in Lean Manufacturing and Engineering Processes and Problem-Solving**

This specification will provide guidelines for centres to ensure the effective and correct delivery of this qualification. OCN NI qualification specifications are based on research and engagement with the practitioner community to ensure they provide appropriate skills and knowledge for learners.

The qualification specification will detail the following aspects of the OCN NI Level 4 Award in Lean Manufacturing and Engineering Processes and Problem-Solving.

- **Qualification Features:** this includes the key characteristics and features of this qualification, such as its intended audience, purpose, and credit value.
- **Centre Requirements:** this details the prerequisites and obligations that centres must fulfil to be eligible to deliver and assess this qualification. These include guidelines on staff qualifications, resources, and required procedures.
- **Structure and Content:** this details the structure and content of the qualification including units, and any specific content that learners will be required to study.
- **Assessment Requirements:** this details assessment criteria and assessment methods for this qualification, ensuring that summative assessment approaches are clear.
- **Quality Assurance:** the quality and consistency of delivery and assessment of this qualification are of paramount importance to OCN NI. The mandatory quality assurance arrangements including processes for internal and external quality assurance that all centres offering this qualification must adhere to are detailed.
- **Administration:** guidance on the administrative aspects of delivering this qualification, including registration, certification and record-keeping.
- Reference to other handbooks and policies as appropriate to the qualifications.

It is important to note that OCN NI will communicate any significant updates or changes to this specification in writing to our centres. Additionally, we will make these changes available on our official website at www.ocnni.org.uk.

To stay current, please refer to the online version of this specification as it is the most authoritative and up-to-date publication. Be aware that downloaded and printed copies may not reflect the latest revisions.

4.1 Additional Support

OCN NI offers a comprehensive range of support services designed to assist centres in meeting the delivery and quality assurance requirements of OCN NI qualifications. These services include:

- **Learner Assessment Booklets**: These booklets are created to assist learners in demonstrating the fulfilment of assessment criteria and organising the quality assurance prerequisites for each individual unit.
- **Specimen Assessment Materials**: These booklets are created to assist learners in demonstrating the fulfilment of assessment criteria and organising the quality assurance prerequisites for each individual unit.
- **Qualification Support Pack**: A support pack has been developed to support centres in the delivery of this qualification. The pack includes planning and assessment templates, guides to best practice, etc.
- **Professional Development for Educators**: OCN NI provides opportunities for professional development tailored to meet the various needs of practitioners and quality assurance staff. Centres can join our training sessions, available in both face-to-face and online formats, or explore a wealth of training materials by visiting www.ocnni.org.uk
- **OCN NI Subject Advisors**: Our team of subject advisors offers vital information and support to centres. They provide guidance on specification details, non-exam assessment advice, updates on resource developments, and various training opportunities. They actively engage with subject communities through an array of networks to facilitate the exchange of ideas and expertise, to support practitioners to provide quality education programs to learners.

All centres can access information, support and guidance to support the delivery and quality assurance of this qualification by contacting their designated Business Development Advisor or by contacting us on [Contact Us | OCN NI](#)

5. About this Qualification

5.1 Qualification Regulation Information

OCN NI Level 4 Award in Lean Manufacturing and Engineering Processes and Problem-Solving.

Qualification Number: 610/7858/X

Operational start date: 14 August 2026

Review Date: 13 August 2031

The qualification's operational start and end dates define the regulated qualification's lifecycle. The operational end date is the final date for learner registration, while learners have until the certificate end date to complete the qualification and receive their certificates.

It is important to note that all OCN NI regulated qualifications are listed on the Register of Regulated Qualifications (RQF), which can be found at [Ofqual Register](#). This register is maintained by Ofqual in England and CCEA Regulation in Northern Ireland. It contains information about qualifications that are regulated and accredited. It is a key resource for learners, employers, and educational institutions to verify the status and recognition of qualifications.

Centres must adhere to administrative guidelines diligently, with special attention to the fact that fees, registration, and certification end dates for the qualification may be subject to changes. It is a centre's responsibility to make itself aware of updates on any modifications to ensure compliance with the latest requirements. OCN NI provides centres with timely updates through various channels including website, newsletters and through this specification. Information on qualification fees can be found on the Centre Login section of the OCN NI website www.ocnni.org.uk.

5.2 Sector Subject Area

A subject sector area is a specific category used to classify academic and vocational qualifications. Subject sector areas are part of the educational and qualifications framework to organise and categorise qualifications. The sector subject for this qualification is:

Subject Area: 4.2 Manufacturing Technologies

NOS:

[SEMEM403 Solve engineering or manufacturing problems](#)

[SEMEM415 Monitor and evaluate engineering processes](#)

[SEMEM419 Improve the quality of engineering products or processes](#)

[SEMEM433 Undertaking project management activities](#)

[SEMETS343 Resolving engineering or manufacturing support problems](#)

***Refer to mapping of NOS to unit section 12.7 Appendix 2**

5.3 Grading

Grading for this qualification is pass/fail.

5.4 Qualification's Aim and Objectives

Qualification's Aim

The aim of the OCN NI Level 4 Award in Lean Manufacturing and Engineering Processes and Problem-Solving, is to provide individuals with the knowledge and skills to understand and be able to use lean and problem-solving processes and techniques for complex organisational problems.

Qualification's Objectives

The objectives of the OCN NI Level 4 Award in Lean Manufacturing and Engineering Processes and Problem-Solving are to enable learners to understand:

- the principles of problem solving and lean processes and techniques
- how to minimise waste through the application of the Lean toolbox and effective teamwork.
- how to plan and determine problem measures and collect project data
- how to use data to solve complex organisational problems

5.5 Target Learners

This qualification is targeted at individuals who currently working in or wish to progress into quality improvement roles or roles requiring knowledge and skills in quality improvement.

5.6 Entry Requirements

Should be at least 18 years old and have a minimum of GCSE Maths and English or equivalent.

5.7 Progression

The OCN NI Level 4 Award in Lean Manufacturing and Engineering Processes and Problem-Solving allows for progression to further learning in this area including the OCN NI Level 5 Diploma in Leading Quality Improvement and/or into employment.

5.8 Delivery Language

This qualification is exclusively available in English. If there is a desire to offer this qualification in Welsh or Irish (Gaeilge), we encourage you to get in touch with OCN NI. They will assess the demand for such provisions and, if feasible, provide the qualification in the requested language as appropriate.

6. Centre Requirements for Delivering this Qualification

6.1 Centre Recognition

New and existing OCN NI recognised centres must apply for and be granted approval to deliver this qualification prior to the commencement of delivery.

6.2 Qualification Approval

Once a centre has successfully undergone the Centre Recognition process, it becomes eligible to apply for qualification approval. The centre's capability to meet and sustain the qualification criteria will be assessed. Throughout the qualification approval process, OCN NI will aim to ensure that:

- centres possess suitable physical resources (e.g., equipment, IT, learning materials, teaching rooms) to support qualification delivery and assessment
- centre staff involved in the assessment process have relevant expertise and/or occupational experience
- robust systems are in place for ensuring ongoing professional development for staff delivering the qualification
- centres have appropriate health and safety policies concerning learner equipment use
- qualification delivery by centres complies with current equality and diversity legislation and regulations
- as a part of the assessment process for this qualification, it may be useful for learners to have access to a practical work setting

6.3 Centre Staffing

To offer this qualification centres are mandated to establish the following roles as a minimum, although a single staff member may serve in more than one capacity*:

- Centre contact
- Programme Co-ordinator
- Assessor
- Internal Quality Assurance (IQA)

*Note: An individual cannot serve as an IQA for their own assessments.

6.4 Tutor Requirements

Tutors responsible for delivering this qualification are expected to possess a high degree of occupational competency. They should meet the following criteria:

- **Occupational Competency:** Tutors should demonstrate a clear understanding of the subject matter, including up-to-date knowledge. They should also have a minimum of one year's relevant experience in this area. This competence should enable them to effectively impart knowledge and practical skills to learners.
- **Qualifications:** Tutors should hold qualifications at a level that is at least one level higher than the qualification they are teaching. This ensures that they have the necessary academic foundation to provide in-depth guidance and support to learners.

These requirements collectively ensure that learners receive instruction from highly qualified and experienced instructors, thereby enhancing the quality and effectiveness of their educational experience.

6.5 Assessor Requirements

The assessment of this qualification takes place within the centre and is subjected to OCN NI's rigorous quality assurance procedures. The achievement of individual units is based on the criteria defined in each unit.

Assessors play a pivotal role in ensuring the validity and fairness of assessments. They are required to meet the following criteria:

- **Occupational Competency:** Assessors should possess a high degree of occupational competency in the relevant subject matter. This expertise enables them to accurately evaluate and measure a learner's knowledge and skills. Additionally, they should hold qualifications at a level that is at least one level higher than the qualification they are assessing, ensuring their in-depth understanding of the subject matter.
- **Assessment Expertise:** Assessors should have direct or related experience in the field of assessment. This includes knowledge of best practices in designing, conducting, and grading assessments. Their expertise ensures that assessments are both fair and valid.
- **Assessors Qualification:** Assessors should hold or be currently undertaking a recognised assessor's qualification; or must have attended the OCN NI Assessment Training.
- **Comprehensive Assessment Oversight:** Assessors are responsible for evaluating all assessment tasks and activities comprehensively. They must thoroughly review and assess each element to ensure a fair and accurate representation of a learner's skills and knowledge.

These rigorous requirements uphold the quality and integrity of the qualification's assessment process, ensuring that learners receive a fair and reliable evaluation of their competencies.

6.6 Internal Quality Assurer Requirements

The Internal Quality Assurer plays a crucial role in the centre's internal quality assurance processes. The centre must designate a skilled and trained IQA who assumes the role of an internal quality monitor responsible for verifying the delivery and assessment of the qualification.

The Internal Quality Assurer for this qualification must meet the following criteria:

- **IQA Expertise:** IQA should have direct or related experience in the field of internal assurance and have at least one year's occupational experience in the areas they are internally quality assuring. This includes knowledge of best practices in designing, conducting, and grading assessments. Their expertise ensures that assessments are both fair and valid.
- **IQA Qualification:** IQA should hold or be currently undertaking a recognised IQA qualification or must have attended the OCN NI IQA Training.
- **Thorough Evaluation of Assessment Tasks and Activities:** IQAs are tasked with conducting in-depth reviews and assessments of all assessment tasks and activities. Their responsibility is to ensure a comprehensive and meticulous oversight of each element to guarantee a just and precise reflection of a learner's abilities and knowledge and to ensure that all assessment and quality assurance requirements are fulfilled.

7. Qualification Structure

7.1 Qualification Purpose

The OCN NI Level 4 Award in Lean Manufacturing and Engineering Processes and Problem-Solving is designed to equip learners with advanced knowledge and practical skills in applying structured problem-solving techniques including root cause analysis to complex, real-world organisational challenges. The learner will also develop an understanding of the importance of embedding lean thinking across teams.

7.2 Qualification Level

In the context of the OCN NI Level 4 Award in Lean Manufacturing and Engineering Processes and Problem-Solving it is essential to understand the significance of qualification levels, as they play a pivotal role in assessing the depth and complexity of knowledge and skills required for successful attainment. This qualification aligns with Level 4, which signifies a complex level of difficulty and intricacy. It's important to note that qualification levels in the educational framework range from Level 1 to Level 8, complemented by three 'entry' levels, namely Entry 1 to Entry 3.

7.3 Qualification Size

Total Qualification Time (TQT)

This represents the total amount of time a learner is expected to spend to complete the qualification successfully. It includes both guided learning hours (GLH) and independent study or additional learning time.

Guided Learning Hours (GLH)

These are the hours of guided instruction and teaching provided to learners. This may include classroom instruction, tutorials, or other forms of structured learning.

OCN NI Level 4 Award in Lean Manufacturing and Engineering Processes and Problem-Solving	
Total Qualification Time (TQT):	100 hours
Total Credits Required:	10 credits
Guided Learning Hours (GLH):	60 hours

7.4 How to Achieve the Qualification

To achieve the **OCN NI Level 4 Award in Lean Manufacturing and Engineering Processes and Problem-Solving** learners must complete the one unit.

8. Assessment Structure

This qualification is assessed through internal assessment and each unit is accompanied by specific assessment criteria that define the requirements for achievement.

8.1 Assessment Guidance: Portfolio

The portfolio for this qualification is designed to provide a comprehensive view of a learner's skills and knowledge. It is a holistic collection of evidence that may include a single piece of evidence that satisfies multiple assessment criteria. There is no requirement for learners to maintain separate evidence for each assessment criterion.

When learners are creating their portfolio, they should refer to the assessment criteria to understand the evidence required. Explanations of command words/verbs used in the assessment criteria can be found in [Appendix 1](#) of this document.

It is essential that the evidence in the portfolio reflects the application of skills in real-world situations. Learners should ensure that they provide multiple examples or references whenever the assessment criteria require it.

8.2 Understanding the Units

The units outlined in this specification establish clear assessment expectations. They serve as a valuable guide for conducting assessments and ensuring quality assurance efficiently. Each unit within this specification follows a consistent structure. This section explains the operational framework of these units. It is imperative that all educators, assessors, Internal Quality Assurers, and other personnel overseeing the qualification review and familiarise themselves with this section to ensure a comprehensive understanding of how these units function.

- **Title:** The title will reflect the content of the unit and should be clear and concise.
- **Level:** A unit can have one of six RQF levels: Entry, One, Two, Three, Four or Five. All units within this qualification are Level 4.
- **Credit Value:** This describes the number of credits ascribed to a unit. It identifies the number of credits a learner is awarded upon successful achievement of the unit. One credit is awarded for the learning outcomes which a learner, on average, might reasonably be expected to achieve in a notional 10 hours of learning.
- **Learning Outcome:** A coherent set of measurable achievements.
- **Assessment Criteria:** These enable a judgement to be made about whether or not, and how well, the students have achieved the learning outcomes.
- **Assessment Guidance and Methods:** These detail the different assessment methods within the unit that may be used.
- **Unit Content:** This provides indicative content to assist in teaching and learning.
- **Scope:** This provides possible teaching content.

9. Qualification Summary by Unit

OCN NI Level 4 Award in Lean Manufacturing and Engineering Processes and Problem-Solving

In order to achieve the OCN NI Level 4 Award in Lean Manufacturing and Engineering Processes and Problem-Solving the learner must successfully complete the one unit – 10 credits.

Total Qualification Time (TQT) for this qualification:	100 hours
Guided Learning Hours (GLH) for this qualification:	60 hours

Unit Reference Number	OCN NI Unit Code	Unit Title	Credit Value	GLH	Level
F/652/3110	CBH016	Applying Lean and Problem-Solving Processes and Techniques to Complex Organisational Problems	10	60	Four

10. Unit Content

10.1 Applying Lean and Problem-Solving Processes and Techniques to Complex Organisational Problems

Title	Applying Lean and Problem-Solving Processes and Techniques to Complex Organisational Problems
Level	Four
Credit Value	10
Guided Learning Hours (GLH)	60
OCN NI Unit Code	CBH016
Unit Reference No	F/652/3110
Learn Direct Code	WA2
<i>Unit purpose and aim(s):</i> This unit will enable the learner to understand the application of lean and problem solving processes and techniques to address complex organisational problems.	
Learning Outcomes	Assessment Criteria
1. Understand the principles of problem solving and lean processes and techniques.	1.1. Explain what is meant by the term lean. 1.2. Explain the eight waste classifications and how they may be reduced using Lean methodologies. 1.3. Compare and contrast value added and non-value-added processes. 1.4. Explain the importance of using structured problem solving. 1.5. Summarise the key steps of the problem-solving process.
2. Understand how to remove one or more of the eight wastes through the application of the Lean toolbox and effective teamwork.	2.1. Demonstrate the application of the following elements of the Lean toolbox to remove one or more of the eight wastes TIMWOODS (Transport, Inventory, Motion, Waiting, Over-processing, Over-production, Defects, Skills underutilised) including: a) 5S principles: Sort, Set in Order, Shine, Standardise, and Sustain b) visual management c) factors affecting standard work d) workplace management e) one piece flow versus batch production including takt time vs cycle times f) changeover Improvement g) Kanban h) Total Productive Maintenance (TPM) i) applying problem solving principles 2.2. Explain how to develop an effective team to address the removal of waste from organisational processes.
3. Be able to develop a project charter to address a complex organisational problem.	3.1. Develop a project charter to define and address complex organisational problems to include: a) problem statement b) project goal c) benefit to organisation

	d) team definition e) baseline measures f) primary and secondary metrics g) project plan, timeline /Gantt charts
4. Be able to plan and determine problem measures and collect project data.	4.1. Determine if data to be used is variable and / or attribute data. 4.2. Plan and carry out the determination of problem measures and collection of useful project data in line with project charter developed in AC 3.1.
5. Be able to analyse a complex problem.	5.1. Explain the importance of root cause analysis. 5.2. Select and use appropriate methods from the following to determine the root cause of the complex problem identified in the project charter developed in AC 3.1: a) process flow b) go see c) cause and effect d) five whys e) control, noise, or experimentation (CNX)
6. Be able to control a complex problem.	6.1. Explain and demonstrate the use of the following to control the complex problem identified in project charter developed in AC 3.1: a) standard operating procedures (SOPs) b) error proofing c) control plans

Assessment Guidance

NOS:

SEMEM403 Solve engineering or manufacturing problems

SEMEM415 Monitor and evaluate engineering processes

SEMEM419 Improve the quality of engineering products or processes

SEMEM433 Undertaking project management activities

SEMETS343 Resolving engineering or manufacturing support problems

***Refer to mapping of NOS to unit section 12.7 Appendix 2**

The following assessment method/s may be used to ensure all learning outcomes and assessment criteria are fully covered.

Assessment Method	Definition	Possible Content
Portfolio of evidence	A collection of documents containing work undertaken to be assessed as evidence to meet required skills outcomes OR A collection of documents containing work that shows the learner's progression through the course	Learner notes/written work Learner log/diary Peer notes Record of observation Record of discussion
Practical demonstration/assignment	A practical demonstration of a skill/situation selected by the tutor or by learners, to enable learners to practise and apply skills and knowledge	Record of observation Learner notes/written work Learner log

Coursework	Research or projects that count towards a learner's final outcome and demonstrate the skills and/or knowledge gained throughout the course	Record of observation Learner notes/written work Tutor notes/record Learner log/diary
E-assessment	The use of information technology to assess learners' work	Electronic portfolio E-tests

Learning Outcome	Unit title: Applying Lean and Problem-Solving Processes and Techniques to Complex Organisational Problems
1. Understand the principles of problem solving and lean processes and techniques.	Scope Teaching will cover: - the origins and evolution of Lean (e.g., Toyota Production System). - core principles of Lean: value, value stream, flow, pull, perfection. - the concept of 'Muda' (waste) and its impact on organisational performance. - detailed exploration of the 8 Wastes (TIMWOODS): Transport, Inventory, Motion, Waiting, Over-processing, Over-production, Defects, Skills. - practical examples of each waste in various industries (manufacturing, service, healthcare). - introduction to Lean methodologies for waste reduction (e.g., Just-In-Time, Kaizen, Jidoka). - definition and identification of Value-Added (VA), Non-Value-Added (NVA), and Essential Non-Value-Added (ENVA) activities. - the rationale for structured problem-solving approaches over ad-hoc methods. - Overview of established problem-solving models (e.g., PDCA, DMAIC, 8D). - the key steps within a typical problem-solving cycle: defining the problem, measuring the current state, analysing the root cause, implementing countermeasures, and sustaining the results.
2. Understand how to remove one or more of the eight wastes through the application of the Lean toolbox and effective teamwork.	Scope Teaching will cover: in-depth training on key Lean tools:

	○ 5S Principles: Sort, Set in Order, Shine, Standardise, Sustain, and its role in creating an organised and efficient workplace. ○ visual management: Use of visual controls (e.g., Andon lights, shadow boards, performance dashboards) to make the status of operations clear and transparent. ○ standard Work: The importance of documenting the best-known method to perform a task to ensure consistency and quality. ○ workplace Management: Principles of ergonomic design and efficient layout. ○ flow vs. batch: Analysis of one-piece flow, the impact of batching, and calculation/application of Takt time vs. Cycle time. ○ changeover Improvement (SMED): Techniques to reduce setup times. ○ kanban: The use of pull systems to manage inventory and workflow. ○ Total Productive Maintenance (TPM): Proactive maintenance strategies to maximise equipment effectiveness. ○ the synergy between Lean tools and problem-solving principles. ○ team dynamics in a Lean environment: stages of team development (forming, storming, norming, performing) with an emphasis on reducing waste. ○ roles and responsibilities within a problem-solving team (e.g., team leader, facilitator, members). ○ communication, collaboration, and conflict resolution strategies for effective teamwork.
3. Be able to develop a project charter to address a complex organisational problem.	Scope Teaching will cover: • the purpose and importance of a project charter in defining and launching a project. • how to write a clear and concise Problem Statement (what, where, when, extent). • defining SMART Project Goals (Specific, Measurable, Achievable, Relevant, Time-bound).

	- quantifying the Benefit to the Organisation (e.g., cost savings, quality improvement, lead time reduction). - team Definition: Identifying key stakeholders, project sponsors, and team members. - establishing Baseline Measures to quantify the current state of the problem. - differentiating between and defining Primary and Secondary Metrics to track project success. - developing a high-level Project Plan with key phases, milestones, and deliverables. - introduction to project planning tools like Gantt charts for timeline visualisation.
4. Be able to plan and determine problem measures and collect project data.	Scope Teaching will cover: - introduction to basic statistics and data types. - differentiating between Variable (Continuous) Data (e.g., time, length, temperature) and Attribute (Discrete) Data (e.g., pass/fail, counts of defects). - the importance of operational definitions in data collection to ensure consistency. - developing a data collection plan: what to measure, how to measure it, who will measure it, and how frequently. - methods for data collection (e.g., check sheets, surveys, automated data capture). - the concept of sampling and its relevance. - ensuring data integrity and accuracy.
5. Be able to analyse a complex problem.	Scope Teaching will cover - the critical importance of Root Cause Analysis (RCA) versus symptom-based solutions. - practical application of RCA tools: - process Flow Mapping: Visualising the steps in a process to identify bottlenecks and inefficiencies. - go See (Gemba): The practice of observing the work where it happens to gain firsthand understanding.

	• Cause and Effect (Ishikawa/Fishbone) Diagram: Brainstorming potential causes under categories (e.g., Method, Machine, Material, Measurement, people or environment). • five Whys: A simple, iterative technique to drill down to the root cause of a problem. • Control, Noise, or Experimentation (CNX): A structured approach to identify factors that influence an outcome, particularly in manufacturing. This covers understanding the difference between controllable variables, uncontrollable 'noise' variables, and experimental variables used in improvement activities.
6. Be able to control a complex problem.	Scope Teaching will cover: • the purpose of the 'Control' phase in a problem-solving cycle: to sustain the gains and prevent recurrence. • developing and implementing Standard Operating Procedures (SOPs) to lock in process improvements. • error Proofing (Poka-Yoke): Designing processes and devices to prevent mistakes from occurring or to make them immediately obvious. • creating control plans: A document that summarises how to monitor and control a process to ensure it remains stable and capable. This includes defining what will be monitored, the specification limits, the measurement method, and the response plan for out-of-control situations. • the role of training and communication in sustaining improvements.

11. Quality Assurance of Centre Performance

11.1 Internal Quality Assurance

When delivering and assessing this qualification, centres must align with stakeholders' expectations and address learners' needs by implementing a practical and applied programme. Centres have the flexibility to customise programmes to meet local requirements and establish connections with local employers and the broader vocational sector.

The Assessor should work with the Internal Quality Assurer to ensure that the assessment is planned in line with OCN NI requirements. Assessment Plans must be developed and approved by the Internal Quality Assurer prior to the delivery of the qualification.

All units within this qualification must undergo internal assessment. Learners must provide evidence that they have appropriately met all assessment criteria required for that grade.

The assessment format for all units involves a task conducted after the delivery of the unit's content, or part of it, if multiple tasks are used. Tasks may exhibit in various forms, encompassing practical and written types. Please refer to 'OCN NI's Assessment Definitions Guide' for additional details.

A task constitutes a distinct activity completed independently by learners, separated from teaching, practice, exploration, and other activities guided by tutors. Tasks are assigned to learners with a specified start date, completion date, and explicit requirements for the evidence to be produced. Some tasks may include observed practical components and require diverse forms of evidence.

A valid assignment will enable a clear and formal assessment outcome which meets the requirements of the assessment criteria. Assessment decisions are based on the specific assessment criteria given in each unit and set at each grade level. The way in which individual units are written provides a balance of assessment of understanding, practical skills and vocational attributes appropriate to the purpose of qualification.

It is the Assessor's role to ensure that learners are appropriately prepared for assessment, this begins from induction onwards. Assessors should ensure that learners understand how assessment tasks are used to determine the award of credit, the importance of meeting assessment timelines, and that all learners work must be independently created, where source documents are used this should be appropriately referenced, learners should be aware of what would constitute plagiarism and the possible consequences.

When conducting the assessment, Assessors must ensure they do not provide direct input, instructions or specific feedback which may compromise the authenticity of the work submitted.

Once the Assessor has authenticated the learners work, they must transparently demonstrate the rationale behind their assessment decisions. Once a learner completes all assigned tasks for a unit, the Assessor will allocate a grade for the unit. Refer to the 'Unit Grading Matrix' for additional information on the grading process.

Once the Assessor has completed the assessment process for the task, the assessment decision is recorded formally, and feedback is provided to the learner. The feedback should show the learner the outcome of the assessment decision, how it was determined or where the criteria has been met, it may indicate to the learner why achievement of the assessment criteria has not been met. It must be clear to the learner that this Assessment outcome is subject to verification.

For further information on assessment practice, please see the 'OCN NI Centre Handbook'. Assessment Training is also available and can be booked through the OCN NI Website.

11.2 Internal Quality Assurance

The role of the Internal Quality Assurer is to ensure appropriate internal quality assurance processes are carried out. The Internal Quality Assurer must oversee that assessments are conducted in accordance with relevant OCN NI policies, regulations, and this specification.

The Internal Quality Assurer must ensure assessments are fair, reliable, and uniform, thereby providing a consistent standard for all learners.

Internal Quality Assurers are required to provide constructive feedback to Assessors, identifying areas of strength and those that may require improvement. This feedback contributes to the ongoing professional development of Assessors.

Contributing to the standardisation of assessment practices within the centre is an important function of this role. This entails aligning assessment methods, grading criteria, and decision-making processes to maintain fairness and equity.

Internal Quality Assurers will actively engage in the sampling and monitoring of assessments to ensure the consistency and accuracy of assessment decisions. This process helps identify trends, areas for improvement, and ensures the robustness of the overall assessment system.

For further information on Internal Quality Assurance practice, please see the 'OCN NI Centre Handbook'. Internal Quality Assurance Training is also available and can be booked through the OCN NI Website.

11.3 Documentation

For internal quality assurance processes to be effective, the internal assessment and Internal Quality Assurance team needs to keep effective records.

- The programme must have an assessment and Internal Quality Assurance plan. When producing a plan, they should consider:
 - the time required for training and standardisation activities
 - the time available to undertake teaching and carry out assessment,
 - consider when learners may complete assessments and when quality assurance will take place
 - the completion dates for different assessment tasks
 - the date by which the assignment needs to be internally verified
 - sampling strategies
 - how to manage the assessment and verification of learners' work so that they can be given formal decisions promptly
 - how resubmission opportunities can be scheduled.

The following documents are available from OCN NI and document templates can be found in the Centre Login section of the OCN NI website www.ocnni.org.uk:

- A1 – Learner Assessment Record per Learner
- Learner Authentication Declarations
- Records of any reasonable adjustments applied for and the outcome – please see 'OCN NI's Reasonable Adjustments and Special Consideration Policy' for further information
- M1 Internal Quality Assurance Sample Record
- M2 Feedback to Assessor
- Records of any complaints or appeals

11.4 External Quality Assurance

All OCN NI recognised centres are subject to External Quality Assurance. External quality assurance activities will be conducted to confirm continued compliance with the CCEA Regulation General Conditions of Recognition, OCN NI terms and conditions and the requirements outlined within this qualification specification.

The External Quality Assurer is assigned by OCN NI. The External Quality Assurer will review the delivery and assessment of this qualification. This will include, but is not limited to, the review of a sample of assessment evidence and evidence of the internal quality assurance of assessment and assessment decisions. This will form the basis of the External Quality Assurance report and will help OCN NI determine the centre's risk.

The role of the External Quality Assurer serves as an external overseer of assessment quality, working to uphold consistency, compliance, and continuous improvement within the assessment process. Their role is crucial in ensuring that assessments are valid, reliable, fair, and aligned with the required standards and regulations.

For further information on OCN NI Centre Assessments Standards Scrutiny (CASS) Strategy, please see the OCN NI Centre Handbook.

11.5 Standardisation

As a process, standardisation is designed to ensure consistency and promote good practice in understanding and the application of standards. Standardisation events:

- make qualified statements about the level of consistency in assessment across centres delivering a qualification
- make statements on the standard of evidence that is required to meet the assessment criteria for units in a qualification
- make recommendations on assessment practice
- produce advice and guidance for the assessment of units
- identify good practice in assessment and Internal Quality Assurance

Centres offering this qualification must carry out internal standardisation activities prior to the claim for certification.

Centres offering units of an OCN NI qualification must attend and contribute assessment materials and learner evidence for standardisation events if requested.

OCN NI will notify centres of the nature of sample evidence required for standardisation events (this will include assessment materials, learner evidence and relevant Assessor and Internal Quality Assurer documentation). OCN NI will make standardisation summary reports available and correspond directly with centres regarding event outcomes.

12. Administration

12.1 Registration

A centre must register learners for this qualification within 20 days of commencement of the delivery of the programme.

For further information on learner registration please see the OCN NI Centre Handbook and the QuartzWeb Manual, available through the Centre Login section of the OCN NI website. Administration training is also available and can be booked through www.ocnni.org.uk.

12.2 Certification

Once all internal quality assurance activities have been successfully completed, the centre can claim certification for the learner(s).

Certificates will be issued to centres within 20 working days from completion of a satisfactory external quality assurance activity, if appropriate, alternatively from the submission of an accurate and complete marksheet.

It is the responsibility of the centre to ensure that certificates received from OCN NI are held securely and distributed to learners promptly and securely.

For further information on the uploading of results please see the QuartzWeb Manual for guidance, administration training is also available and can be booked through [OCN NI](#)

12.3 Charges

OCN NI publishes all up-to-date qualification fees in its Fees and Invoicing Policy document. Further information can be found on the centre login area of the OCN NI website.

12.4 Equality, Fairness and Inclusion

OCN NI's are committed to ensuring all learners have an equal opportunity to access our qualifications and assessment, and that our qualifications are awarded in a way that is fair to every learner.

OCN NI is committed to making sure that:

- learners with a protected characteristic are not, when they are undertaking one of our qualifications, disadvantaged in comparison to learners who do not share that characteristic
- all learners achieve the recognition they deserve for undertaking a qualification and that this achievement can be compared fairly to the achievement of their peers

For information on reasonable adjustments and special considerations please see the OCN NI Centre Handbook and Reasonable Adjustments and Special Considerations Policy held in the back office of the OCN NI website.

12.5 Retention of Evidence

OCN NI has published guidance for centres on the retention of evidence. Details are provided in the OCN NI Centre Handbook and can be accessed via the OCN NI website.

OCN NI Level 4 Award in Lean Manufacturing and Engineering Processes and Problem-Solving

Qualification Number: **610/7858/X**

Operational start date: 14 August 2026

Review Date: 13 August 2031

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12.6 Appendix 1 - Definition of OCN NI's Assessment Verbs

The following verbs are working definitions of those used in OCN NI assessments with examples of how they can be applied and used in different but equally valid contexts.

Verb	Definition	Example
Compare	To examine and evaluate the similarities and differences between information, items, or equipment in order to enhance understanding and make informed decisions.	The learner will be expected to identify the specific information, items, or equipment to be compared. This involves selecting relevant subjects for comparison based on the task or objective. The learner analyses the characteristics, features, and attributes of each subject. This involves examining details, properties, functions, and other pertinent aspects. The learner evaluates and highlights the similarities and differences between the subjects being compared. This involves identifying commonalities and distinctions that are significant to the context. The learner places the similarities and differences within the appropriate context. This involves understanding how the comparison informs the task or objective and the implications of the findings. The learner draws conclusions based on the comparison. This involves synthesising the findings to enhance understanding, make decisions, or solve problems.
Demonstrate	To show autonomous mastery of challenging tasks, demonstrating analytical thinking, and providing comprehensive evidence of advanced capabilities rather than simply following basic instructions.	The learner will be expected to independently select appropriate methodologies, execute complex multi-stage processes while adapting to unexpected challenges, critically evaluate their decisions and outcomes, synthesize theoretical knowledge with practical application, and produce detailed documentation that evidences their strategic thinking, problem-solving approach, and professional competency standards throughout the entire activity.
Determine	To systematically investigate complex problems using advanced analytical methods, critically evaluate multiple solutions, and reach well-reasoned conclusions supported by	The learner will be expected to research comprehensive data sources, apply sophisticated analytical frameworks, compare competing methodologies against established criteria, synthesize findings from multiple perspectives, justify their reasoning through evidence-based

	comprehensive evidence and professional judgment.	arguments, and formulate definitive conclusions while acknowledging limitations and potential alternatives in their decision-making process.
Develop	To create, refine, and advance an item, process, or algorithm from initial concept to a functional and optimised solution.	The learner will be expected to generate an initial concept or idea for the item, process, or algorithm. This involves identifying a problem or need and proposing an innovative solution. The learner conducts thorough research and analysis to inform the development process. This includes gathering relevant information, studying existing solutions, and understanding the requirements and constraints. The learner creates detailed designs and plans for the development. This includes outlining the structure, components, and steps required to bring the concept to fruition. The learner implements the design by constructing the item, executing the process, or coding the algorithm. This involves practical application of skills and knowledge to develop a functional solution. The learner tests and evaluates the developed solution to ensure it meets the desired objectives and performs as expected. This involves identifying and addressing any issues or deficiencies. The learner refines and optimises the developed solution based on feedback and test results. This involves making improvements to enhance performance, efficiency, and effectiveness. The learner documents the development process, including the initial concept, research, design, implementation, testing, and refinements. This ensures clarity and traceability.
Explain	Make clear a given subject matter and / or give reasons for the procedure in a given situation or regarding a given subject matter. Set out purposes or reasons to rationalise a response or action.	The learner will be expected to make the subject clear by presenting information in a logical, structured way that others can easily understand. Give reasons for why something happens, exists, or is done in a particular way, using evidence to support explanations. Set out purposes by identifying the aims, objectives, or goals behind actions, decisions, or processes. Show cause and effect relationships to demonstrate how one factor leads to or influences another. Use appropriate terminology accurately to ensure explanation is precise and

		professional. Provide step-by-step processes when describing how something works or should be carried out. Justify reasoning by offering logical arguments and evidence to support points. Connect theory to practice by showing how underlying principles apply in real situations. Anticipate questions an audience might have and address potential areas of confusion or misunderstanding.
Plan	To create a detailed strategy or roadmap for an activity or process, outlining the necessary steps, resources, and timeline to achieve specific objectives.	The learner will be expected to identify clear and specific objectives for the activity or process. This involves understanding the desired outcomes and defining measurable goals. The learner conducts thorough research and analysis to inform the planning process. This includes gathering relevant information, studying existing solutions, and understanding constraints and opportunities. The learner identifies and allocates the necessary resources, such as materials, tools, personnel, and budget. This involves ensuring that all required resources are available and appropriately distributed. The learner creates a detailed step-by-step plan outlining the tasks and activities needed to achieve the objectives. This includes specifying the sequence of actions, assigning responsibilities, and setting deadlines.
Select	To choose and identify the most appropriate items or information from a range of options based on specific criteria, relevance, and requirements.	The learner will be expected to comprehend the criteria and requirements for selection. This involves understanding the specific attributes, qualities, or characteristics that are important for the task. The learner conducts research and gathers a range of potential items or information. This involves identifying sources, collecting data, and compiling a list of options to choose from. The learner evaluates the available options against the selection criteria. This involves comparing and contrasting different items or pieces of information to determine their suitability. The learner makes informed decisions based on their evaluation. This involves using critical thinking and judgment to choose the most appropriate items or information. The learner justifies their selection by explaining the rationale behind their

		choices. This involves articulating the reasons why the selected items or information meet the criteria and requirements. The learner ensures that the selected items or information are accurate and relevant to the task. This involves verifying the validity and reliability of the chosen options.
Summarise	To provide a brief account giving the main points of a topic or range of topics.	The learner will be expected to examine a topic or set of information and condense it into a concise summary that captures the essential points, themes, or arguments, without including unnecessary details. The learner should be able to demonstrate the ability to distil complex or extensive information into its core components and present it in a clear and coherent manner focusing on the most significant aspects and omitting extraneous details.

12.7 Appendix 2 Mapping of National Occupational Standards to Unit

The following map shows how relevant national occupational standards relate to the unit Applying Lean and Problem-Solving Processes and Techniques to Complex Organisational Problems

NOS Code	NOS Title	Rationale for Inclusion	ACs	LOs
SEM403	Solve engineering or manufacturing problems	Underpins structured problem solving across the unit. Overlap with LO1 (structured problem solving, key steps), LO4 (planning measures and collecting data), LO5 (root cause analysis), and LO6 (control of problems).	Structured problem solving (AC1.4, AC1.5), data planning and measurement (AC4.1–4.2), root cause analysis (AC5.1–5.2), control methods (AC6.1).	LO1, LO4, LO5, LO6
SEM415	Monitor and evaluate engineering processes	Supports ACs concerned with measurement, data collection, analysis, and control. Overlap with AC 4.1–4.2 (determining measures and collecting data) and AC 6.1 (control methods).	Problem measures & data collection (AC 4.1–4.2), control of processes (AC 6.1).	LO4, LO6
SEM419	Improve the quality of engineering products or processes	Alignment with ACs involving structured problem solving, measurement, analysis, and control. Overlap with AC 1.4–1.5 (structured problem solving), AC 4.1–4.2 (determining measures and collecting data), Partial alignment with AC 2.1 only where problem-solving tools support quality improvement.	Structured problem solving (AC 1.4–1.5), problem measures & data collection (AC 4.1–4.2),	LO1, LO2, LO4

SEMEM433	Undertake project management activities	Supports AC 3.1 (project charter development), as SEMEM433 requires defining project scope, objectives, resources, timelines, and responsibilities. Partial overlap with AC 4.2 (planning data collection) where project plans include measurement strategies.	Project charter development (AC 3.1). Partial overlap with planning data collection (AC 4.2).	LO3, LO4
SEMETS343	Resolving engineering or manufacturing support problems	Aligns with ACs involving structured problem solving, data collection, analysis, and corrective action. Overlap with AC 1.4–1.5 (structured problem solving), AC 4.1–4.2 (determining measures and collecting data), AC 5.1–5.2 (root cause analysis), and AC 6.1 (control methods).	Structured problem solving (AC 1.4–1.5), problem measures & data collection (AC 4.1–4.2), root cause analysis (AC 5.1–5.2), control methods (AC 6.1).	LO1, LO4, LO5, LO6