City & Guilds Level 1 NVQ Diploma in Performing Manufacturing Operations (7585-01)

Version 2.4 April 2026

Qualification Handbook

Qualification at a glance

Subject area	Manufacturing technologies
City & Guilds number	7585
Age group approved	16+
Entry requirements	no formal entry requirements
Assessment	Portfolio of Evidence
Grading	Pass/Fail
Approvals	Full approval required
Support materials	Qualification Handbook
Registration and certification	Consult the Walled Garden/Online Catalogue for last dates

Title and level	City & Guilds qualification number	Regulatory reference number	Credit Value	GLH	TQT
City & Guilds Level 1 NVQ Diploma in Performing Manufacturing Operations	7585	501/2239/3	34	140	344

Version and date	Change detail	Section
2.0 September 2015	Updated registration/certification end dates	Introduction
2.1 September 2017	Added TQT details Deleted QCF detail	Introduction Throughout
2.2 March 2022	Amendments to Unit 201 in line with updates in the National Occupational Standards City & Guilds added to qualification titles	Units Throughout
2.3 September 2024	Updated elements to the new template content and format	Throughout
2.4 April 2026	Updated GLH, Credits, TQT	Throughout

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1 Introduction to the qualification

This document contains the information that centres need to offer the qualification.

Aims of the qualification

The City & Guilds NVQ Diploma in Performing Manufacturing Operations is a work-based qualification designed for those employed within the manufacturing sector. The main objective of the qualification is to offer the opportunity to prove competence of industrial performance, knowledge and understanding and to recognise the ability of individuals working in the sector. It has been developed in conjunction with Enginuity (Formally Semta), the Sector Skills Council for Science, Engineering, and Manufacturing Technologies, in line with their specification and assessment strategy.

This Diploma covers multiple occupational areas and is suitable for people involved in the manufacturing sector from trainees to managers. Individuals with this qualification are able to progress into specific areas of manufacturing such as print, furniture, food, or Business Improvement Techniques.

The City & Guilds NVQ Diploma in Performing Manufacturing Operations is available at levels 1 and 2. The qualification consists of mandatory and optional units.

The Diploma has been designed to cover people who are:

- engaged in various sectors of the manufacturing industry who wish to have their competencies assessed for certification purposes
- new employees who have undergone some training and are now acquiring industry experience and wish to demonstrate their competencies for assessment purposes
- other people in the sectors who require a fundamental understanding of industry practices.

Rules of combination

Rules of combination are used to define the structure of qualifications. The rules of combination specify the credits which must be achieved through a particular combination of units to gain a full qualification.

To achieve the minimum credit value of 34 for the City & Guilds Level 1 NVQ Diploma in Performing Manufacturing Operations, learners must complete:

- **two** units from the mandatory unit group
- **two** units from the 'supporting the operations' unit group (option set A)
- **one** unit from the job specific unit group (option set B). NB If a candidate has already chosen unit 103 in option set A, this may **not** be selected again from option set B.

Mandatory units

Unit 201 Complying with statutory regulations and organisational safety requirements

Unit 102 Developing and maintaining working relationships

Option set A

Any **two** of:

Unit 103 Moving materials within manufacturing operations
Unit 104 Getting ready for manufacturing operations
Unit 105* Completing manufacturing operations
Unit 106* Handing over manufacturing operations
Unit 107 Receiving incoming materials

*** NB** Candidates may **not** choose both unit 105 and unit 106 from this option set. Only one of these units may be selected as one of the two units chosen.

Option set B

Any **one** of:

Unit 103** Moving materials within manufacturing operations
Unit 108 Carrying out shaping operations
Unit 109 Carrying out product assembly operations
Unit 110 Carrying out joining operations
Unit 111 Carrying out processing operations
Unit 112 Carrying out forming operations
Unit 113 Carrying out finishing operations
Unit 114 Carrying out moulding operations
Unit 115 Carrying out packaging operations
Unit 116 Servicing the line

****NB** If a candidate has already chosen unit 103 in option set A, this may **not** be selected again from option set B.

Further unit detail, including credit values and guided learning hours are provided in **Section 5 Units.**

Opportunities for progression

On completion of this qualification, candidates may progress into employment or to the following City & Guilds qualifications:

- Levels 2, 3 and 4 Diplomas in Business Improvement Techniques.

Total Qualification Time

Total Qualification Time (TQT) is the number of notional hours which represents an estimate of the total amount of time that could reasonably be expected for a learner to achieve and demonstrate the achievement of the level of attainment necessary for the award of a qualification.

TQT is comprised of the following two elements:

1 The number of hours which an awarding organisation has assigned to a qualification for Guided Learning, and
2 an estimate of the number of hours a Learner will reasonably be likely to spend in preparation, study or any other form of participation in education or training, including assessment, which takes place as directed by - but, unlike Guided Learning, not under the

Immediate Guidance or Supervision of - a lecturer, supervisor, tutor or other, appropriate provider of education or training.

Qualification title	GLH	TQT
City & Guilds Level 1 NVQ Diploma in Performing Manufacturing Operations	140	344

Other essential City & Guilds documents

There are other City & Guilds documents which contain general information on City & Guilds qualifications. These can be found on the Centre Document Library section of the City & Guilds website: **Centre document library | City & Guilds (cityandguilds.com)**.

2 Centre requirements

Approval

Full approval

To offer this qualification, new centres will need to gain both centre and qualification approval. Please refer to the document **Centre Approval Process: Quality Assurance Standards** for further information.

Centre staff should familiarise themselves with the structure, content and assessment requirements of the qualification before designing a course programme.

Resource requirements

Centre staffing

Staff delivering this qualification must be able to demonstrate that they meet the following occupational expertise requirements. They should:

- be technically competent in the area for which they are delivering
- ring training and/or have experience of providing training. This knowledge must be at least to the same level as the training being delivered
- have recent relevant experience in the specific area they will be assessing
- be occupationally knowledgeable in the area for which they are delivering training. This knowledge must be at least to the same level as the training being delivered
- have credible experience of providing training.

Centre staff may undertake more than one role, e.g. tutor and assessor or internal verifier, but must never internally verify their own assessments.

Continuing professional development (CPD)

Centres are expected to support their staff in ensuring that their knowledge remains current of the occupational area and of best practice in delivery, mentoring, training, assessment and quality assurance, and that it takes account of any national or legislative developments.

Quality assurance

Approved centres must have effective quality assurance systems to ensure optimum delivery and assessment of qualifications. Quality assurance includes initial centre approval, qualification approval and the centre's own internal procedures for monitoring quality. Centres are responsible for internal quality assurance and City & Guilds is responsible for external quality assurance. All external quality assurance processes reflect the minimum requirements for verified and moderated assessments, as detailed in the Centre Assessment Standards Scrutiny (CASS), section H2 of Ofqual's General Conditions. For more information on both CASS and City and Guilds Quality Assurance processes visit: the **What is CASS?** and Quality Assurance Standards documents on the City & Guilds website.

Standards and rigorous quality assurance are maintained by the use of:

- Internal quality assurance

- City & Guilds external quality assurance.

In order to carry out the quality assurance role, Internal Quality Assurers must

- have appropriate teaching and vocational knowledge and expertise
- have experience in quality management/internal quality assurance
- hold or be working towards an appropriate teaching/training/assessing qualification
- be familiar with the occupation and technical content covered within the qualification.

External quality assurance for the qualification will be provided by City & Guilds EQA process. EQAs are appointed by City & Guilds to approve centres, and to monitor the assessment and internal quality assurance carried out by centres. External quality assurance is carried out to ensure that assessment is valid and reliable, and that there is good assessment practice in centres.

The role of the EQA is to:

- provide advice and support to centre staff
- ensure the quality and consistency of assessments and marking/grading within and between centres by the use of systematic sampling
- provide feedback to centres and to City & Guilds.

Registration and Certification

Candidates must be registered at the beginning of their course. Centres should submit registrations using the Walled Garden, or Form S (Registration), under qualification and complex number 7585-01.

Candidates achieving the required Rules of Combination will be issued with the full City & Guilds Level 1 NVQ Diploma in Performing Manufacturing Operations (7585-01). For information on the registration and certification periods for the qualification, centre should refer to the City & Guilds Walled Garden.

Full details of City & Guilds' administrative procedures for this qualification are provided in the *Directory of qualifications,* provided online to City & Guilds registered centres. This information includes details on:

- registration procedures
- enrolment numbers
- fees
- claiming certification.

These details are also available on the **www.cityandguilds.com**

Assessors and internal verifiers

The following guidance is taken from the Enginuity (Formally Semta) Performing Manufacturing Operations NVQ Level 1 and 2 Unit Assessment Strategy:

Assessor Requirements to Demonstrate Effective Assessment Practice

Assessment must be carried out by competent Assessors who hold, or are working towards, the nationally recognised Assessor units A1 and/or A2 as appropriate to the assessment being carried out. Assessors that hold units D32 and/or D33 must demonstrate that they are applying the assessment principles and practices set down in A1 and/or A2 as appropriate to the assessment being carried out.

Assessor Technical Requirements

Assessors must be able to demonstrate that they have verifiable, relevant and sufficient technical competence to evaluate and judge performance and knowledge evidence requirements as set out in the relevant unit learning outcomes and associated assessment criteria.

This will be demonstrated either by holding a relevant technical qualification or by proven industrial experience of the technical areas to be assessed. The assessor's competence must, at the very least, be at the same level as that required of the learner(s) in the units being assessed.

Assessors must also be:

Fully conversant with the Awarding Organisation's assessment recording documentation used for the NVQ units against which the assessments and verification are to be carried out, other relevant documentation and system and procedures to support the QA process.

Verifier Requirements

Internal Verifiers must hold, or be working towards, the nationally recognised Internal Verifier unit V1 and would be expected to be familiar with, and preferably hold, the nationally recognised Assessor units. Internal Verifiers that hold unit D34 must demonstrate that they are applying the verification principles and practices set down in V1.

External Verifiers must hold, or be working towards, the nationally recognised External Verifier unit V2 and would be expected to be familiar with, and preferably hold, the nationally recognised Assessor units, and Internal Verifier unit. External Verifiers that hold unit D35 must demonstrate that they are applying the verification principles and practices set down in V2

Verifiers, both Internal and External, will also be expected to be fully conversant with the terminology used in the NVQ units against which the assessments and verification are to be carried out, the appropriate Regulatory Body's systems and procedures and the relevant Awarding Organisation's documentation, systems and procedures within which the assessment and verification is taking place.

Specific technical requirements for internal and external verifiers

Internal and external verifiers of this qualification must be able to demonstrate that have verifiable, sufficient and relevant industrial experience, and must have a working knowledge of the processes, techniques and procedures that are used in the relevant sector/occupation.

The tables on the following page show the recommended levels of technical competence for assessors, internal verifiers, and external verifiers.

Technical Requirements for Assessors and Verifiers

Position	Prime activity requirements	Support activity requirements	Technical requirements (see notes)
Assessor	Assessment Skills	IV Systems	Technical *competence* in the areas covered by the units being assessed
Internal Verifier	Verification Skills	Assessment Knowledge	Technical *understanding* of the areas covered by the qualifications
External Verifier	Verification skills	Assessment Understanding	Technical *awareness* of the areas covered by the qualifications

Notes

1. Technical *competence* is defined here as a combination of practical skills, knowledge, and the ability to apply both of these, in familiar and new situations, within a real working environment.
2. Technical *understanding* is defined here as having a good understanding of the technical activities being assessed, together with knowledge of relevant Health & Safety implications and requirements of the assessments.
3. Technical *awareness* is defined here as a general overview of the subject area, sufficient to ensure that assessment and portfolio evidence are reliable, and that relevant Health and Safety requirements have been complied with.
4. The competence required by the assessor, internal verifier and external verifier, in the occupational area being assessed, is likely to exist at three levels as indicated by the shaded zones in the following table.

Technical Competence	An ability to *discuss* the general principles of the competences being assessed	An ability to *describe* the practical aspects of the competence being assessed	An ability to *demonstrate* the practical competences being assessed
required by:			
Assessor			
Internal Verifier			
External Verifier			

Quality assurance

Internal quality assurance

Approved centres must have effective quality assurance systems to ensure optimum delivery and assessment of qualifications.

Quality assurance includes initial centre approval, qualification approval and the centre's own internal procedures for standardising and monitoring quality. Centres are responsible for internal quality assurance, ensuring that there are appropriate opportunities for open communication between the course team, scheme co-ordinator and external verifier. City & Guilds is responsible for external quality assurance.

Full details and guidance on the internal and external quality assurance requirements and procedures, are provided in *Providing City & Guilds Qualifications* and in the centre toolkit. This document also explains the tasks, activities and responsibilities of quality assurance staff.

All candidates' evidence must be available for external verification; Centres are also required to retain copies of candidates' assessment and internal verification records for three years after certification.

National standards and rigorous quality assurance are maintained by use of:

- City & Guilds assignment, marked by the centres according to externally set marking criteria
- Portfolio evidence assessed against set criteria
- Internal (centre) quality assurance
- City & Guilds external verification.

To meet the quality assurance criteria for this qualification, the centre must ensure that the following internal roles are undertaken:

- quality assurance co-ordinator
- primary assessor
- independent assessor
- internal verifier.

External quality assurance

Approved centres must have effective quality assurance systems to ensure optimum delivery and assessment of qualifications. Quality assurance includes initial centre approval, qualification approval and the centre's own internal procedures for monitoring quality. Centres are responsible for internal quality assurance and City & Guilds is responsible for external quality assurance. All external quality assurance processes reflect the minimum requirements for verified and moderated assessments, as detailed in the Centre Assessment Standards Scrutiny (CASS), section H2 of Ofqual's General Conditions. For more information on both CASS and City and Guilds Quality Assurance processes visit: the **What is CASS?** and Quality Assurance Standards documents on the City & Guilds website.

Standards and rigorous quality assurance are maintained by the use of:

- Internal quality assurance
- City & Guilds external quality assurance.

In order to carry out the quality assurance role, Internal Quality Assurers must

- have appropriate teaching and vocational knowledge and expertise
- have experience in quality management/internal quality assurance
- hold or be working towards an appropriate teaching/training/assessing qualification
- be familiar with the occupation and technical content covered within the qualification.

External quality assurance for the qualification will be provided by City & Guilds EQA process. EQAs are appointed by City & Guilds to approve centres, and to monitor the assessment and internal quality assurance carried out by centres. External quality assurance is carried out to ensure that assessment is valid and reliable, and that there is good assessment practice in centres.

The role of the EQA is to:

- provide advice and support to centre staff
- ensure the quality and consistency of assessments and marking/grading within and between centres by the use of systematic sampling
- provide feedback to centres and to City & Guilds.

Learner entry requirements

Candidates should not be entered for a qualification of the same type, content and level as that of a qualification they already hold.

There are no formal entry requirements for candidates undertaking this qualification. However, centres must ensure that candidates have the potential and opportunity to gain the qualification successfully.

Age restrictions

This qualification is approved for learners aged 16 or above.

Access arrangements and reasonable adjustments

City & Guilds has considered the design of this qualification and its assessments in order to best support accessibility and inclusion for all learners. We understand however that individuals have diverse learning needs and may require reasonable adjustments to fully participate. Reasonable adjustments, such as additional time or alternative formats, may be provided to accommodate learners with disabilities and support fair access to assessment.

Access arrangements are adjustments that allow candidates with disabilities, special educational needs, and temporary injuries to access the assessment and demonstrate their skills and knowledge without changing the demands of the assessment. These arrangements must be made before assessment takes place.

Equality legislation requires City & Guilds to make reasonable adjustments where a disabled person would be at a substantial disadvantage in undertaking an assessment.

It is the responsibility of the centre to ensure at the start of a programme of learning that candidates will be able to access the requirements of the qualification.

Please refer to the Joint Council for Qualifications (JCQ) access arrangements and reasonable adjustments and access arrangements - when and how applications need to be made to City & Guilds. For more information documents are available on the City & Guilds website.

3 Course design and delivery

Initial assessment and induction

Centres will need to make an initial assessment of each candidate prior to the start of their programme to ensure they are entered for an appropriate type and level of qualification.

The initial assessment should identify:

- any specific training needs the candidate has, and the support and guidance they may require when working towards their qualification. This is sometimes referred to as diagnostic testing.
- any units the candidate has already completed, or credit they have accumulated which is relevant to the qualification they are about to begin.

City & Guilds recommends that centres provide an induction programme to ensure the candidate fully understands the requirements of the qualification they will work towards, their responsibilities as a candidate, and the responsibilities of the centre. It may be helpful to record the information on a learning contract.

Inclusion and diversity

City & Guilds is committed to improving inclusion and diversity within the way we work and how we deliver our purpose which is to help people and organisations develop the skills they need for growth.

More information and guidance to support centres in supporting inclusion and diversity through the delivery of City & Guilds qualifications can be found here:

Inclusion and diversity | City & Guilds (cityandguilds.com)

Sustainability

City & Guilds are committed to net zero. Our ambition is to reduce our carbon emissions by at least 50% before 2030 and develop environmentally responsible operations to achieve net zero by 2040 or sooner if we can. City & Guilds is committed to supporting qualifications that support our customers to consider sustainability and their environmental footprint.

More information and guidance to support centres in developing sustainable practices through the delivery of City & Guilds qualifications can be found here:

Our Pathway to Net Zero | City & Guilds (cityandguilds.com)

Centres should consider their own carbon footprint when delivering this qualification and consider reasonable and practical ways of delivering this qualification with sustainability in mind. This could include:

- reviewing purchasing and procurement processes (such as buying in bulk to reduce the amount of travel time and energy, considering and investing in the use of components that can be reused, instead of the use of disposable or single use consumables)
- reusing components wherever possible

- waste procedures (ensuring that waste is minimised, recycling of components is in place wherever possible)
- minimising water use and considering options for reuse/salvage as part of plumbing activities wherever possible.

Recommended delivery strategies

Centre staff should familiarise themselves with the structure, content and assessment requirements of the qualification before designing a course programme.

Centres may design course programmes of study in any way which:

- best meets the needs and capabilities of their candidates
- satisfies the requirements of the qualification.

When designing and delivering the course programme, centres might wish to incorporate other teaching and learning that is not assessed as part of the qualification. This might include the following:

- literacy, language and/or numeracy
- personal learning and thinking
- personal and social development
- employability.

Where applicable, this could involve enabling the candidate to access relevant qualifications covering these skills.

Health and safety

The requirement to follow safe working practices is an integral part of all City & Guilds qualifications and assessments, and it is the responsibility of centres to ensure that all relevant health and safety requirements are in place before candidates commence the programme.

Should a candidate fail to follow health and safety practice and procedures during an assessment, the assessment must be stopped. The candidate should be informed that they have not reached the standard required to successfully pass the assessment and told the reason why. Candidates may retake the assessment at a later date, at the discretion of the centre. In case of any doubt, guidance should be sought from the external verifier.

4. Assessment

Summary of assessment methods

For this qualification, candidates will be required to complete a portfolio of evidence for each unit. The minimum level of evidence required is determined by Enginuity (Formally Semta). Further guidance is available in this section, and for specific units and assessment criteria in Section 5, Units.

The following guidance is taken from the Enginuity (Formally Semta) Performing Manufacturing Operations NVQ Level 1.

Assessment environment

The evidence put forward for the units within the qualification can only be regarded valid, reliable, sufficient and authentic if achieved and obtained in the working environment and be clearly attributable to the learner. However, in certain circumstances, simulation/replication of work activities may be acceptable.

The use of high quality, realistic simulations/replication, which impose pressures which are consistent with workplace expectations, should only be used in relation to the assessment of the following:

- rare or dangerous occurrences, such as those associated with health, safety and the environment issues, emergency scenarios and rare operations at work;
- the response to faults and problems for which no opportunity has presented for the use of naturally occurring workplace evidence of learners competence;
- aspects of working relationships and communications for which no opportunity has presented for the use of naturally occurring workplace evidence of learners competence.

Simulations/replications will require prior approval from the specific Awarding Organisation and should be designed in relation to the following parameters:

- the environment in which simulations take place must be designed to match the characteristics of the working environment;
- competencies achieved via simulation/replication must be transferable to the working environment
- simulations which are designed to assess competence in dealing with emergencies, accidents and incidents must be verified as complying with relevant health, safety and environmental legislation by a competent health and safety/environmental control officer before being used;
- simulated activities should place learners under the same pressures of time, access to resources and access to information as would be expected if the activity was real;
- simulated activities should require learners to demonstrate their competence using plant and/or equipment used in the working environment;
- simulated activities which require interaction with colleagues and contacts should require the learner to use the communication media that would be expected at the workplace;
- for health and safety reason simulations need not involve the use of genuine substances/materials. Any simulations which require the learner to handle or otherwise

deal with materials substances/should ensure that the substitute take the same form as in the workplace

Carrying out assessment

The NVQ units were specifically developed to cover a wide range of activities. The evidence produced for the units will, therefore, depend on the learners choice of "bulleted items" listed in the unit assessment criteria.

Where the assessment criteria gives a choice of bulleted items (for example 'any three from five'), assessors should note that learners do not need to provide evidence of the other items to complete the unit (in this example, two) items, particularly where these additional items may relate to other activities or methods that are not part of the learners normal workplace activity or area of expertise.

Minimum performance evidence requirements

Performance evidence must be the main form of evidence gathered. In order to demonstrate consistent, competent performance for a unit, a minimum of three different examples of performance must be provided and must be sufficient to show that the assessment criteria have been achieved to the prescribed standards. It is possible that some of the bulleted items in the assessment criteria may be covered more than once. The assessor and learner need to devise an assessment plan to ensure that performance evidence is sufficient to cover all the specified assessment criteria and which maximises the opportunities to gather evidence. Where applicable, performance evidence maybe used for more than one unit.

The most effective way of assessing competence, is through direct observation of the learner. Assessors must make sure that the evidence provided reflects the learner's competence and not just the achievement of a training programme.

Evidence that has been produced from team activities, for example, maintenance or installation activities is only valid when it clearly relates to the learners specific and individual contribution to the activity, and not to the general outcome(s).

Each example of performance evidence will often contain features that apply to more than one unit and can be used as evidence in any unit where appropriate.

Performance evidence must be a combination of:

- outputs of the learner's work, such as items that have been manufactured, installed, maintained, designed, planned or quality assured, and documents produced as part of a work activity

together with:

- evidence of the way the learner carried out the activities such as witness testimonies, assessor observations or authenticated learner reports, records or photographs of the work/activity carried out, etc.

Competent performance is more than just carrying out a series of individual set tasks. Many of the units contain statements that require the learner to provide evidence that proves they are capable of combining the various features and techniques. Where this is the case, separate fragments of evidence would not provide this combination of features and techniques and will not, therefore, be acceptable as demonstrating competent performance.

If there is any doubt as to what constitutes valid, authentic and reliable evidence, the internal and/or external verifier should be consulted.

Assessing knowledge and understanding

Knowledge and understanding are key components of competent performance, but it is unlikely that performance evidence alone will provide enough evidence in this area. Where the learners knowledge and understanding (and the handling of contingency situations) is not apparent from performance evidence, it must be assessed by other means and be supported by suitable evidence.

Knowledge and understanding can be demonstrated in a number of different ways. Enginuity (Formally Semta) expects oral questioning and practical demonstrations to be used, as these are considered the most appropriate for these units. Assessors should ask enough questions to make sure that the learner has an appropriate level of knowledge and understanding, as required by the unit.

Evidence of knowledge and understanding will **not** be required for those bulleted items in the assessment criteria that have not been selected by the learner.

The achievement of the specific knowledge and understanding requirements of the units cannot simply be inferred by the results of tests or assignments from other units, qualifications or training programmes. Where evidence is submitted from these sources, the assessor must, as with any assessment, make sure the evidence is valid, reliable, authentic, directly attributable to the learner, and meets the full knowledge and understanding requirements of the unit.

Where oral questioning is used the assessor must retain a record of the questions asked, together with the learner's answers.

Witness testimony

Where observation is used to obtain performance evidence, this must be carried out against the unit assessment criteria. Best practice would require that such observation is carried out by a qualified Assessor. If this is not practicable, then alternative sources of evidence may be used.

For example, the observation may be carried out against the assessment criteria by someone else that is in close contact with the learner. This could be a team leader, supervisor, mentor or line manager who may be regarded as a suitable witness to the learners competency. However, the witness must be technically competent in the process or skills that they are providing testimony for, to at least the same level of expertise as that required of the learner. It will be the responsibility of the assessor to make sure that any witness testimonies accepted as evidence of the learner's competency are reliable, auditable and technically valid.

Portfolio of evidence

Candidate and centres may decide to use a paper-based or electronic method of recording evidence.

City & Guilds endorses several ePortfolio systems, including our own, **Learning Assistant**, an easy-to-use and secure online tool to support and evidence candidates' progress towards achieving qualifications. Further details are available at **www.cityandguilds.com/eportfolios**.

City & Guilds has developed a set of **recording forms** including examples of completed forms for new and existing centres to use as appropriate. Recording forms are available on the City & Guilds website.

Although new centres are expected to use these forms, centres may devise or customise alternative forms, which must be approved for use by the external quality assurers, before they are used by candidates and assessors at the centre. Amendable (MS Word) versions of the forms are available on the City & Guilds website.

Evidence sources

A portfolio of evidence will typically include several pieces of evidence – it must contain sufficient evidence to demonstrate the knowledge and skills required for each appropriate unit.

Evidence sources may include:

- training logbooks
- centre-produced worksheets and activities
- annotated photographs
- video clips (maximum duration in total = 10 minutes)
- workplace documentation/records, for example job cards/job sheets, equipment check/maintenance/service records, parts order records.

This is not a definitive list; other evidence sources are permitted.

The evidence provided must be valid and attributable to the candidate; the portfolio of evidence must contain a statement from the centre confirming this.

Evidence **must not** include:

- any methods of self-assessment
- any employer contributions should focus on direct observation of evidence (for example witness statements) of competence rather than opinions.

5 Units

Structure of units

The units in this qualification are written in a standard format and comprise the following:

- City & Guilds reference number
- title
- level
- credit value
- guided learning hours (GLH)
- relationship to NOS, other qualifications and frameworks
- endorsement by a sector or other appropriate body
- information on assessment
- unit aim
- learning outcomes which are comprised of a number of assessment criteria

Summary of units

City & Guilds unit number	Title	Unit reference number	Credit Value	GLH	Level
201	Complying with statutory regulations and organisational safety requirements	n/a	5	27	2
102	Developing and maintaining working relationships	F/602/2240	5	23	1
103	Moving materials within manufacturing operations	K/602/2104	11	30	1
104	Getting ready for manufacturing operations	M/602/2105	7	30	1
105	Completing manufacturing operations	A/602/2110	8	30	1
106	Handing over manufacturing operations	F/602/2111	7	30	1
107	Receiving incoming materials	R/602/2114	7	30	1
108	Carrying out shaping operations	Y/602/2114	15	33	1
109	Carrying out product assembly operations	D/602/2116	15	33	1
110	Carrying out joining operations	K/602/2118	14	33	1

111	Carrying out processing operations	M/602/2122	14	33	1
112	Carrying out forming operations	A/602/2124	15	33	1
113	Carrying out finishing operations	L/602/2127	14	33	1
114	Carrying out moulding operations	L/602/2130	15	33	1
115	Carrying out packaging operations	D/602/2133	13	33	1
116	Servicing the line	H/602/2134	10	35	1

Unit 201 Complying with statutory regulations and organisational safety requirements

Level: 2
Credit value: 5
Guided learning hours: It is recommended that **27** hours should be allocated for this unit. This may be on a full-time or part-time basis.
Details of the relationship between the unit and relevant national occupational standards: This unit has been derived from national occupational standard SEMMAN12301.
Endorsement of the unit by a sector or other appropriate body: This unit is endorsed by Enginuity (Formally Semta).

Assessment and grading: This unit must be assessed in a work environment.

Unit aim
This unit covers the skills and knowledge needed to prove the competences required to work safely in an engineering environment. It will prepare the learner for entry into the engineering or manufacturing sectors, creating a progression between education and employment, or it will act as the basis for the development of additional skills and occupational competences in the working environment. It covers carrying out the learner's work activities in accordance with instructions and by the use of safe working practices and procedures.

The learner will be required to comply with all relevant regulations that apply to their area of work, as well as their general responsibilities as defined in relevant legislation, guidelines, policies, procedures and protocols.

The learner must be able to identify the relevant qualified first aiders or appointed person and know the location of the first aid facilities. The learner will have an understanding of the procedures to be adopted in the case of accidents involving injury, and in situations where there are dangerous occurrences or hazardous malfunctions of equipment, processes or machinery. The learner will also need to be fully conversant with their organisation's procedures for fire alerts and the evacuation of premises.

The learner will be required to identify the hazards and risks that are associated with their job. Typically, these will focus on their working environment, the tools and equipment that they use, the materials and substances that they use, any working practices that do not follow laid-down procedures, and manual lifting and carrying techniques.

The learner will be expected to dress, behave and maintain the workplace in a manner that is acceptable to the organisation in which they work and the type of activities being carried out. This will require the learner to observe all relevant statutory and organisation regulations, and to comply with codes of good practice and safe working procedures at all times.

The learner's responsibilities will require them to comply with organisational policy and procedures for the statutory regulations and organisational safety activities undertaken. The learner will need to take account of any potential difficulties or problems that may arise with the activities, and to seek appropriate help and advice in determining and implementing a suitable solution. The learner will work under a high level of supervision, whilst taking

responsibility for their own actions and for the quality and accuracy of the work that they carry out. The learner will be expected to report any problems with health and safety issues, that they cannot personally resolve, or are outside of their permitted authority, to the relevant people.

The learner's knowledge will provide a good understanding of their work and will provide an informed approach to working safely in an engineering environment. The learner will need to understand the safety requirements and their application, to the required depth to provide a sound basis for carrying out their activities safely and correctly.

Learning outcomes

There are **two** learning outcomes to this unit. The learner will be able to:

1. Comply with statutory regulations and organisational safety requirements
2. Know how to comply with statutory regulations and organisational safety requirements

Unit 201 Complying with statutory regulations and organisational safety requirements

Learning Outcomes

Outcome 1 Comply with statutory regulations and organisational safety requirements

Assessment Criteria - Practical Skills

The learner can:

1. comply with their duties to health and safety in accordance with all relevant legislation, guidelines, policies, procedures and protocols
2. demonstrate their understanding of their duties and obligations by:
    a. undertaking their duties and responsibilities as an individual under the current health and safety legislation
    b. identifying, within their working environment, appropriate sources of information and guidance on health and safety issues
    c. identifying the warning signs and labels of the main groups of hazardous or dangerous substances
    d. complying with the appropriate statutory regulations, and specified regulations to their work, at all times
    e. accessing and accurately interpreting all relevant work instructions and information
    f. complying with environmental legislation
3. apply safe working practices and procedures at all times, in accordance with organisational requirements, to include all of:
    a. presenting themselves in the workplace suitably dressed/prepared for the activities to be undertaken
    b. observing personal protection and hygiene procedures at all times
    c. acting in a responsible and safe manner at all times within the work environment
    d. maintaining a tidy workplace, with exits and gangways free from obstructions
    e. using tools and equipment safely and only for the purpose intended
    f. carrying out their work activities in accordance with legal requirements and the organisation's safety policies
    g. taking measures to protect others from any harm resulting from any work that they are carrying out
    h. observing organisational safety rules, signs and hazard warnings
    i. observing work activity environmental concerns
4. comply with organisational accident and emergency procedures to include:
    a. identifying the appropriate qualified first aiders or appointed person and the location of first aid facilities
    b. identifying the procedures to be followed in the event of injury to themselves or others
    c. following organisational procedures in the event of fire/fire drills and the evacuation of premises/work area
    d. identifying the procedures to be followed in the event of dangerous occurrences or hazardous malfunctions of equipment, processes or machinery
    e. deal promptly and effectively with any problems within their control and report those which cannot be solved
5. identify the hazards and risks that are associated with all of the following:
    a. their working environment (such as working at heights, confined spaces, environmental conditions)

b. the tools and equipment that they use (such as machine tools, power tools, cutting tools)
c. the materials and substances that they use (such as fluids, oils, fluxes)
d. using working practices that do not follow laid-down procedures

6. use correct manual lifting and carrying techniques
7. demonstrate the following methods of manual lifting and carrying techniques:
   a. lifting alone

   plus one more of the following:
   b. with assistance from others
   c. with mechanical assistance.
8. complete and store all relevant documentation in accordance with organisational requirements

Outcome 2 Know how to comply with statutory regulations and organisational safety requirements

Assessment Criteria - Underpinning Knowledge

The learner can:

1. describe the current health and safety legislation, guidelines, policies, procedures and protocols which are relevant to their own work practice
2. describe the range of work activities for which they are responsible
3. explain how to act responsibly within the working environment
4. describe the warning signs and symbols for the main groups of hazardous materials
5. describe the sources of information for safety (such as local work procedures, codes of practice or guidance)
6. explain how to locate relevant health and safety information and work instructions and the sources of expert assistance when help is needed
7. describe the risks associated with their own working environment
8. describe the processes and procedures that are used to identify and rate the level of risk
9. explain what constitutes a hazard in the workplace
10. describe their responsibilities for dealing with hazards and reducing risks in the workplace
11. describe the control measures that can be used to eliminate hazards and reduce risks
12. describe the first aid facilities that exist within their work area and within the organisation in general and the procedures to be followed in the case of accidents involving injury
13. explain what constitutes dangerous occurrences and hazardous malfunctions, and why these must be reported even if no-one is injured
14. describe the procedures for sounding the emergency alarms, evacuation procedures and escape routes to be used, and the need to report their presence at the appropriate assembly point
15. describe the organisational policy with regard to firefighting procedures, the common causes of fire and what they can do to help prevent them
16. describe the protective clothing and equipment that is available for their areas of activity to protect the health and safety of themselves and their colleagues
17. explain how to prepare and maintain a safe working environment and the standards and procedures to ensure good housekeeping
18. describe the importance of safe storage of tools, equipment, materials and products
19. describe the importance of personal hygiene in the workplace including regular handwashing and using hand sanitiser, not sharing PPE, cleaning PPE after use
20. describe the methods of manually handling and moving loads

21. explain how to lift and carry loads safely and correctly and the manual and mechanical aids available
22. explain when to act on their own initiative and when to seek help and advice from others
23. explain to whom they should report reporting issues which are beyond their competence, responsibilities and accountability
24. explain where to safely store all relevant documentation in accordance with organisational requirements

Unit 102 Developing and Maintaining Working Relationships

Level: 1

Credit value: 5

Guided learning hours: It is recommended that **23** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards: This unit has been derived from national occupational standard Performing Manufacturing Operations Unit 2: Developing and Maintaining Working Relationships (suite 1).

Endorsement of the unit by a sector or other appropriate body: This unit is endorsed by Enginuity (Formally Semta).

Assessment and grading: This unit must be assessed in a work environment and must be assessed in accordance with the 'Common Requirements for National Vocational Qualifications (NVQ) in the QCF' which can be downloaded from Enginuity (Formally Semta)'s website: **http://www.Enginuity (Formally Semta).org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx**

Additional assessment requirements have been published by Enginuity (Formally Semta). These additional assessment requirements are set down in Enginuity (Formally Semta)'s Performing Manufacturing Operations Level 1 unit assessment strategy which can be downloaded from Enginuity (Formally Semta)'s website: **http://www.Enginuity (Formally Semta).org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx**

Unit specific additional assessment requirements:

Learning outcomes where assessor **observation** and/or examination of naturally occurring workplace products is mandatory: 1.1, 1.2, 1.3, 1.4, 1.8. 1.2 should be observed and recorded over a period of time.

Learning outcomes where the use of **simulation** within a realistic working environment is acceptable, if the learning outcome cannot be covered by workplace evidence through the learner's job role: 1.5, 1.6, 1.7, 1.9, 1.10.

Unit aim

This unit covers the skills and knowledge needed to prove the competences required to develop and maintain internal and external working relationships.

The learner will be required to establish and maintain working relationships with a range of people such as colleagues in their own group, people in other work groups, supervisors and managers and external contacts. The learner will be expected to deal with any disagreements in an amicable and constructive way. The learner will also be expected to contribute to work activities by providing ideas and solutions and to find ways of resolving issues that cause concern and/or disagreement.

The learner's responsibilities will require them to comply with organisational policy and procedures at all times. The learner will be expected to report any problems that may affect working relationships to the relevant people.

The learner's knowledge will be sufficient to provide a good understanding of the sort of things that can affect good working relationships. The learner will be able to give an informed approach to the techniques that can be used to help maintain and develop good working relationships. The learner will understand how their actions will affect both internal and external working relationships.

Learning outcomes

There are **two** learning outcomes to this unit. The learner will be able to:

1. Develop and maintain working relationships
2. Know how to develop and maintain working relationships

Unit 102 Developing and Maintaining Working Relationships

Learning Outcomes

Outcome 1 Develop and maintain working relationships

Assessment Criteria - Practical Skills

The learner can:

1. present themselves in the workplace on time and in a way that does not cause concern to others
2. develop and maintain working relationships with two of the following:
   - immediate supervision/line management
   - colleagues in same work group
   - colleagues in other work groups
   - those for whom you have responsibility
   - personnel in other departments
   - external contacts
3. ask for information, advice and/or help politely, without causing disruption to their own or other's work
4. offer help and information to others promptly and willingly
5. deal with disagreements and problems in working relationships in ways which minimise offence and maintain mutual respect
6. discuss problems which may affect working relationships with the appropriate person to include one of the following:
   - work colleagues
   - supervisor/immediate line manager
   - team leader
   - personnel or welfare officer
7. make sure that any actions that they take are within the limits of their own responsibility and authority
8. refer requests for information and/or assistance that are outside their authority/responsibility to the appropriate person
9. communicate in a manner which promotes understanding, goodwill and trust
10. maintain effective communication using one of the following methods:
    - in writing
    - electronically
    - orally

Outcome 2 Know how to develop and maintain working relationships

Assessment Criteria - Underpinning Knowledge

The learner can:

1. describe the relevant statutory regulations that can affect working relationships (eg,
2. disability, Equal Opportunities, Discrimination, Harassment)

3. explain why it is important to present themselves in the workplace on time and ready for work
4. describe the methods in their organisation that can be used to gain information, advice and help
5. describe the methods that can be used to establish and maintain good working relationships
6. describe the things that might affect good working relationships
7. describe the methods of handling and resolving difficulties in working relationships
8. explain why it is important to resolve difficulties or misunderstandings quickly and not let them develop into more serious problems
9. explain how to identify and use different methods and styles of communication
10. explain why it is important to avoid disruption in the workplace, and describe methods of avoiding it
11. explain why it is important to request help from others in a polite and timely manner and to offer assistance to others when help is needed
12. explain why it is important to show respect for the views, rights and property of others
13. describe whom to refer to with requests that are not within the limits of their responsibility
14. describe whom to refer to if they have problems with working relationships that they cannot resolve
15. describe their responsibilities with regard to the reporting lines and procedures in their working area
16. describe the responsibilities of the people identified in knowledge statements 12 and 13 above

Unit 103 Moving Materials within Manufacturing

Operations

Level: 1
Credit value: 11
Guided learning hours
It is recommended that **30** hours should be allocated for this unit. This may be on a full-time or part-time basis.
Details of the relationship between the unit and relevant national occupational standards
This unit has been derived from national occupational standard Performing Manufacturing Operations Unit 3: Moving Materials within Manufacturing Operations (suite 1).
Endorsement of the unit by a sector or other appropriate body
This unit is endorsed by Enginuity (Formally Semta).

Assessment and grading
This unit must be assessed in a work environment and must be assessed in accordance with the 'Common Requirements for National Vocational Qualifications (NVQ) in the QCF' which can be downloaded from Enginuity (Formally Semta)'s website: **http://www.Enginuity (Formally Semta).org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx**

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Unit specific additional assessment requirements:
Learning outcomes where assessor observation and/or examination of naturally occurring workplace products is mandatory: 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 1.10, 1.12. 1.1 should be observed and recorded over a period of time.

Learning outcomes where the use of simulation within a realistic working environment is acceptable, if the learning outcome cannot be covered by workplace evidence through the learner's job role: 1.11, 1.13.

Unit aim
This unit covers the skills and knowledge needed to prove the competences required to move and transport materials, which could be expected to include raw materials, components or finished products, to their correct location within a manufacturing operations environment. This will include the use of manual lifting and handling techniques and the use of mechanical equipment such as sack barrows and hand operated mechanical or hydraulic lifting and moving equipment.

This will involve choosing the right equipment to use to move the materials, loading the materials correctly and following instructions when moving the materials to their intended destination. The learner will be expected to return the equipment to its correct position on completion of the activities and leave it in a safe condition in accordance with operating procedures and taking account of all health and safety requirements. Meeting production requirements will be an important issue and the learner's records must show consistent and satisfactory performance.

The learner's responsibilities will require them to comply with organisational policy and procedures for moving the materials, and to report any problems to the appropriate people. The learner will be expected to work to instructions, taking personal responsibility for their actions and the work that they carry out. The learner will also be expected to complete any necessary documentation.

The learner's knowledge will be sufficient to provide a sound basis for their work and mean that they can adopt an informed approach to applying the required work instructions and lifting and moving procedures. The learner will have an understanding of the lifting and moving techniques used, and their application. The learner will know about the lifting and moving equipment, and materials to be moved, in adequate depth to provide a sound background for carrying out the activities to the required standard.

The learner will understand the safety precautions required when working with the lifting and moving equipment. The learner will be required to demonstrate safe working practices throughout and will understand the responsibility they owe to themselves and others in the workplace.

Learning outcomes

There are **two** learning outcomes to this unit. The learner will be able to:

1. Move materials within manufacturing operations
2. Know how to move materials within manufacturing operations

Unit 103 Moving Materials within Manufacturing Operations

Learning Outcomes

Outcome 1 Moving Materials within Manufacturing Operations

Assessment Criteria - Practical Skills

The learner can:

1 work safely at all times, complying with health and safety, environmental and other relevant regulations and guidelines

2 follow the relevant lifting and moving procedures and safety requirements, to include all of the following:
- health and safety regulations
- safe working practices
- job instructions
- lifting and moving equipment operating instructions
- company standards and procedures

3 choose the right equipment and techniques to move the materials

4 move materials using one or more of the following types of equipment:
- hand operated
- power operated

5 check that the materials to be moved are in a suitable condition

6 carry out all of the following checks when moving materials:
- the materials are as specified on the documentation
- the materials are stacked safely
- the load is secure
- there are no restrictions or obstacles preventing movement of the materials

7 move the materials to their correct location in accordance with instructions

8 move materials, to include one of the following:
- production materials
- consumable materials
- finished products or components
- waste or scrap

9 carry out lifting and carrying techniques, to include two of the following:
- lifting alone
- lifting with assistance from others
- lifting with mechanical assistance

10 carry out safe and correct manual lifting techniques, to include two of the following
- lifting from ground level
- lifting from an angle
- lifting from waist high
- lifting from below ground level
- lifting from overhead

11 report problems to the appropriate person, to include one of the following:
- supervisor
- team leader
- quality control

12 return any equipment they have used to its correct location on completion of the activities and leave it in a safe and reusable condition

13 complete documentation when necessary

Outcome 2 Know how to move materials within manufacturing operations

Assessment Criteria - Underpinning Knowledge

The learner can:

1 describe the relevant health and safety requirements of the work area in which they are carrying out the material moving operations

2 describe the specific safe working practices, lifting and moving procedures and regulations that must be observed

3 describe the hazards associated with carrying out the material moving operations

4 explain what personal protective equipment must be used during the material movement activities and where can it be obtained

5 explain how to make sure that they have the necessary job instructions, lifting and moving equipment operating procedures

6 describe what tools and equipment are used for the material movement operations undertaken and how to check that they are in a safe and usable condition

7 explain how to apply manual lifting techniques when lifting alone and with the assistance of others

8 describe the specific moving operations being performed

9 explain why it is important to move the materials to their correct location

10 describe the problems that may occur in the moving of materials

11 explain how to identify problems and to whom to report those problems

12 explain why it is important to return the equipment to its correct location on completion of the activities, store it correctly, and leave it in a safe and reusable condition

13 describe the documentation that may have to be completed

14 describe their responsibilities with regard to the reporting lines and procedures in their working area

15 describe the appropriate people and their responsibilities within the learner's working area

Unit 104 Getting Ready for Manufacturing Operations

Level: 1

Credit value: 7

Guided learning hours: It is recommended that **30** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards: This unit has been derived from national occupational standard Performing Manufacturing Operations Unit 4: Getting Ready for Manufacturing Operations (suite 1).

Endorsement of the unit by a sector or other appropriate body: This unit is endorsed by Enginuity (Formally Semta).

Assessment and grading

This unit must be assessed in a work environment and must be assessed in accordance with the 'Common Requirements for National Vocational Qualifications (NVQ) in the QCF' which can be downloaded from Enginuity (Formally Semta)'s website: **http://www.Enginuity (Formally Semta).org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx**

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Unit specific additional assessment requirements:

Learning outcomes where assessor observation and/or examination of naturally occurring workplace products is mandatory: 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.10, 1.11. 1.1 and 1.10 should be observed and recorded over a period of time.

Learning outcomes where the use of simulation within a realistic working environment is acceptable, if the learning outcome cannot be covered by workplace evidence through the learner's job role: 1.9

Unit aim

This unit covers the skills and knowledge needed to prove the competences required to get ready for the manufacturing operations.

This will involve preparing for the manufacturing operations according to defined company procedures, whilst taking account of all health and safety requirements. The learner will be expected to prepare their work area in readiness for the manufacturing operations and this will include ensuring correct layout of tools and materials, maintaining accessibility for receipt and removal of materials and ensuring that the area is free from obstructions or potential hazards. The learner will need to check that all tools and equipment are in a safe condition and are operating correctly, and enough materials are available for the operation. Any incorrect documentation, equipment tools and/or materials should be promptly reported to the appropriate person.

The learner's responsibilities will require them to comply with organisational policy and procedures for the preparation activities undertaken, and to report any problems with the preparation activities to the appropriate people. The learner will be expected to work to instructions, taking personal responsibility for their actions and the quality of the work that they carry out. The learner will also be expected to complete any necessary documentation.

The learner's knowledge will provide a good understanding of their work and will provide an informed approach to applying the required work instructions and preparation procedures. The learner will have an understanding of the work area, equipment and material preparations required, in adequate depth to provide a sound background for carrying out the activities safely and correctly. The learner will understand why their actions are important in the manufacturing operation.

The learner will understand the safety precautions required when carrying out the preparations, especially those that may involve machinery. The learner will be required to demonstrate safe working practices throughout and will understand the responsibility they owe to themselves and others in the workplace.

Learning outcomes

There are **two** learning outcomes to this unit. The learner will be able to:

1. Get ready for manufacturing operations
2. Know how to get ready for manufacturing operations

Unit 104 Getting Ready for Manufacturing Operations

Learning Outcomes

Outcome 1 Get ready for manufacturing operations

Assessment Criteria - Practical Skills

The learner can:

1 work safely at all times, complying with health and safety, environmental and other relevant regulations and guidelines
2 ensure that they have the correct job instructions and any relevant preparation procedure specifications, and that they understand them
3 follow relevant preparation procedures and safety requirements, to include all of the following:
- health and safety regulations
- safe working practices
- company procedures
- job instructions

4 carry out work area preparations according to procedure specification
5 prepare and maintain the work area, to include all of the following:
- accessibility for receipt and removal of materials
- freedom from obstructions and hazards
- equipment and material correctly in place

6 check that equipment is in a safe and usable condition
7 check equipment for manufacturing operations, to include one of the following:
- machinery
- process plant
- tools (handheld and portable)
- material handling arrangements
- equipment specific to the operation

8 make materials available for manufacturing operations, to include one of the following:
- production materials
- consumable materials

9 report problems to the appropriate person, to include one of the following:
- supervisor
- team leader
- quality control

10 maintain a safe and organised work area at all times
11 confirm that preparations are correct and complete

Outcome 2 Know how to get ready for manufacturing operations

Assessment Criteria - Underpinning Knowledge

The learner can:

1. describe the relevant health and safety requirements of the work area in which they are carrying out the preparation activities

2. describe the specific safe working practices to be observed whilst carrying out the preparations
3. describe the hazards associated with carrying out the preparation activities and how can they be minimised
4. describe the personal protective equipment to be used during the preparation activities and where can it be obtained
5. explain how to obtain the necessary job instructions and tool and equipment preparation procedures
6. explain how the work area must be laid out
7. describe the material preparations that may be required
8. describe the preparation checks to be made on the tools and/or equipment that they will use
9. explain how to identify problems with the preparations, and to whom to report them
10. explain why it is important to report problems immediately
11. describe the arrangements for the receiving and removal of materials and products
12. describe their responsibilities with regard to the reporting lines and procedures in their working area
13. describe the appropriate people and their responsibilities within the learner's working area

Unit 105 Completing Manufacturing Operations

Level: 1

Credit value: 8

Guided learning hours: It is recommended that **30** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards: This unit has been derived from national occupational standard Performing Manufacturing Operations Unit 5: Completing Manufacturing Operations (suite 1).

Endorsement of the unit by a sector or other appropriate body:

This unit is endorsed by Enginuity (Formally Semta).

Assessment and grading

This unit must be assessed in a work environment and must be assessed in accordance with the 'Common Requirements for National Vocational Qualifications (NVQ) in the QCF' which can be downloaded from Enginuity (Formally Semta)'s website: **http://www.Enginuity (Formally Semta).org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx**

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Unit specific additional assessment requirements:

Learning outcomes where assessor observation and/or examination of naturally occurring workplace products is mandatory: 1.1, 1.2, 1.3, 1.6, 1.7, 1.8, 1.10, 1.11, 1.12. 1.1 and 1.10 should be observed and recorded over a period of time.

Learning outcomes where the use of simulation within a realistic working environment is acceptable, if the learning outcome cannot be covered by workplace evidence through the learner's job role: 1.4, 1.5, 1.9

Unit aim

This unit covers the skills and knowledge needed to prove the competences required to complete the manufacturing operations. This involves stopping the manufacturing operations according to defined company procedures, whilst taking account of all health and safety requirements.

The learner will be expected to shut down all operating systems, and equipment in accordance with specified shutdown procedures. The equipment should be cleaned where necessary, and materials should be removed and stored correctly. The work area must also be left clean and tidy. Any incorrect documentation, equipment, tools and/or materials that may affect the completion of the operation should be promptly reported to the appropriate person.

The learner's responsibilities will require them to comply with organisational policy and procedures for the activities undertaken, and to report any problems with the activities to the appropriate people. The learner will be expected to work to instructions, taking personal responsibility for their actions and for the quality of the work that they carry out. The learner will be expected to complete any necessary documentation.

The learner's knowledge will provide a good understanding of their work and will provide an informed approach to applying the appropriate shutdown procedures/methods of completing the manufacturing operations. The learner will need to understand why their actions are important in the manufacturing operation.

The learner will understand the safety precautions required when carrying out the shutdown activities, especially those for isolating power supplies and leaving mechanised equipment in a safe condition. The learner will be required to demonstrate safe working practices throughout and will understand the responsibility they owe to themselves and others in the workplace.

Learning outcomes

There are **two** learning outcomes to this unit. The learner will be able to:

1. Complete manufacturing operations
2. Know how to complete manufacturing operations

Unit 105 Completing Manufacturing Operations

Learning Outcomes

Outcome 1 Complete manufacturing operations

Assessment Criteria - Practical Skills

The learner can:

1 work safely at all times, complying with health and safety, environmental and other relevant regulations and guidelines

2 ensure that they have the correct job instructions and any relevant completion/shutdown procedure instructions

3 follow relevant shutdown procedures and safety requirements, to include all of the following:
- health and safety regulations
- safe working practices
- company procedures
- job instructions
- equipment shutdown instructions

4 stop the operations in accordance with job instructions and specified completion/shutdown procedures

5 make sure that any related equipment is shut down to a safe condition in accordance with specified completion/shutdown procedures

6 ensure that equipment is clean for further use

7 deal appropriately with materials at completion of the manufacturing operations, to include the following:
- finished products/components

and one other type of material from the following:
- production materials
- surplus consumable materials
- waste or scrap materials

8 remove materials in a correct and safe manner

9 report any problems with the completion activities to the appropriate person, to include one of the following:
- supervisor
- team leader
- quality control

10 maintain a safe and organised work area at all times

11 close down equipment used in the manufacturing operations, to include one of the following:
- machinery
- process plant
- tools (handheld and portable)
- material handling arrangements
- equipment specific to the operation

12 confirm that completion/shutdown of manufacturing operations is correct and complete

Outcome 2 Know how to complete manufacturing operations

Assessment Criteria - Underpinning Knowledge

The learner can:

1 describe the relevant health and safety requirements of the work area in which they are carrying out the activities
2 describe the specific safe working practices to be observed whilst carrying out the closing down activities
3 describe the hazards associated with carrying out the closing down activities
4 describe the personal protective equipment to be used during the closing down and cleaning activities and where can it be obtained
5 explain how to obtain the necessary job instructions and equipment shutdown procedures
6 explain when in the manufacturing operation it is safe to shut down the equipment
7 explain how to shut down the equipment safely
8 describe the completion checks to be made
9 describe the procedures for cleaning the equipment and removing materials
10 explain how to identify problems during the completion activities, and to whom to report them
11 explain why it is important to report problems immediately
12 describe their responsibilities with regard to the reporting lines and procedures in their working area
13 describe the appropriate people and their responsibilities within the learner's working area

Unit 106 Handing Over Manufacturing Operations

Level: 1

Credit value: 7

Guided learning hours: It is recommended that **30** hours should be allocated for this unit. This may be on a full-time or part-time basis

Details of the relationship between the unit and relevant national occupational standards: This unit has been derived from national occupational standard Performing Manufacturing Operations Unit 6: Handing Over Manufacturing Operations (suite 1).

Endorsement of the unit by a sector or other appropriate body: This unit is endorsed by Enginuity (Formally Semta).

Assessment and grading

This unit must be assessed in a work environment and must be assessed in accordance with the 'Common Requirements for National Vocational Qualifications (NVQ) in the QCF' which can be downloaded from Enginuity (Formally Semta)'s website: **http://www.Enginuity (Formally Semta).org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx**

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Unit specific additional assessment requirements:

Learning outcomes where assessor observation and/or examination of naturally occurring workplace products is mandatory: 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 1.10. 1.1 should be observed and recorded over a period of time.

Learning outcomes where the use of simulation within a realistic working environment is acceptable, if the learning outcome cannot be covered by workplace evidence through the learner's job role: 1.11

Unit aim

This unit covers the skills and knowledge needed to prove the competences required to hand over continuous manufacturing operations to other people.

This involves preparing for the handover according to defined company procedures and taking account of all health and safety requirements. The learner will be expected to check that all operating systems and equipment conform to the relevant handover instructions. The equipment should be cleaned, where necessary, and materials and equipment stored correctly. The work area must also be left clean and tidy.

Any incorrect documentation, equipment, tools and/or materials should be promptly reported to the appropriate person.

The learner's responsibilities will require them to comply with organisational policy and procedures for the handover activities undertaken, and to report any problems with the activities to the appropriate people. The learner will be expected to work to instructions, taking personal responsibility for their actions and for the quality of the work that they carry out. The learner will be expected to complete any necessary documentation.

The learner's knowledge will provide a good understanding of their work and will provide an informed approach to applying the appropriate handover procedures. The learner will need to understand why their actions are important in the manufacturing operation.

The learner will understand the safety precautions required when carrying out the handover activities, especially those involving mechanised equipment or continuous process operations. The learner will be required to demonstrate safe working practices throughout and will understand the responsibility they owe to themselves and others in the workplace.

Learning outcomes

There are **two** learning outcomes to this unit. The learner will be able to:

1. Hand over manufacturing operations
2. Know how to hand over manufacturing operations

Unit 106 Handing Over Manufacturing Operations

Learning Outcomes

Outcome 1 Hand over manufacturing operations

Assessment Criteria - Practical Skills

The learner can:

1 work safely at all times, complying with health and safety, environmental and other relevant regulations and guidelines
2 ensure that they have the correct job instructions and any relevant handover instructions
3 follow relevant handover procedures and safety requirements, to include all of the following:
- health and safety and environmental regulations
- safe working practices
- company procedures
- job instructions
- equipment handover instructions

4 carry out pre-handover checks, and prepare the manufacturing operation for handover
5 maintain the work area in readiness for handover of the manufacturing operations, to include all of the following:
- cleanliness of equipment and tooling
- accessibility for receipt and removal of materials
- freedom from obstructions and hazards
- equipment and material correctly in place

6 make sure that they take account of any specific safety requirements involved in the handover
7 carry out the handover operation
8 prepare and hand over equipment used in the manufacturing operations, to include one of the following:
- machinery
- process plant
- tools (handheld and portable)
- material handling arrangements
- equipment specific to the operation

9 confirm the handover as correct and complete
10 report any problems with the handover activities to the appropriate person, to include one of the following:
- supervisor
- team leader
- quality control

11 complete any documentation accurately

Outcome 2 Know how to hand over manufacturing operations

Assessment Criteria - Underpinning Knowledge

The learner can:

1 describe the relevant health and safety requirements of the work area in which they are carrying out the handover activities
2 describe the specific safe working practices to be observed whilst carrying out the handover activities
3 describe the hazards associated with carrying out the handover activities
4 describe the personal protective equipment to be used during the preparation activities for handover and where can it be obtained
5 describe the actions to be taken in case of emergencies when handing over machines or fully automated manufacturing processes/operations
6 explain how to obtain the necessary job instructions and handover procedures
7 describe when in the manufacturing operation it is safe to carry out the handover procedure
8 describe what handover checks must be made
9 describe the required layout of the work area
10 describe the procedures for cleaning the equipment, and for storing and removing materials and waste
11 explain how to carry out the handover operation safely and correctly
12 explain how to identify problems with the handover operation, and to whom to report them
13 explain why it is important to report problems quickly
14 describe the documentation that may have to be completed on handover
15 describe their responsibilities with regard to the reporting lines and procedures in their working area
16 describe the other appropriate people and their responsibilities within the learner's working area

Unit 107 Receiving Incoming Materials

Level: 1

Credit value: 7

Guided learning hours

It is recommended that **30** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

This unit has been derived from national occupational standard Performing Manufacturing Operations Unit 7: Receiving Incoming Materials (suite 1).

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Enginuity (Formally Semta).

Assessment and grading

This unit must be assessed in a work environment and must be assessed in accordance with the 'Common Requirements for National Vocational Qualifications (NVQ) in the QCF' which can be downloaded from Enginuity (Formally Semta)'s website: **http://www.Enginuity (Formally Semta).org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx**

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Unit specific additional assessment requirements:

Learning outcomes where assessor observation and/or examination of naturally occurring workplace products is mandatory: 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 1.11, 1.12. 1.1 and 1.11 should be observed and recorded over a period of time.

Learning outcomes where the use of simulation within a realistic working environment is acceptable, if the learning outcome cannot be covered by workplace evidence through the learner's job role: 1.10

Unit aim

This unit covers the skills and knowledge needed to prove the competences required to receive incoming materials into the workplace.

This involves preparing for and receiving the materials according to defined company procedures and taking account of all health and safety requirements. The learner will be expected to prepare their work area in readiness for the receipt of the materials, and this will include ensuring accessibility for receipt and removal of the materials and ensuring that the area is free from obstructions or potential hazards. The learner will need to check that the materials conform to the relevant specification/s, and that sufficient materials are available for

the manufacturing operations being performed. Any incorrect documentation or materials should be promptly reported to the appropriate person.

The learner's responsibilities will require them to comply with organisational policy and procedures for the receipt of the materials, and to report any problems with the materials to the relevant people. The learner will be expected to work to instructions, taking personal responsibility for their actions and for the quality of the work that they carry out. The learner will also be expected to complete any necessary documentation.

The learner's knowledge will provide a good understanding of their work and will provide an informed approach to applying the required work instructions and preparation procedures. The learner will have an understanding of the work area, and material preparations required, in adequate depth to provide a sound background for carrying out the activities safely and correctly. The learner will understand why their actions are important in the manufacturing operation.

The learner will understand the safety precautions required when carrying out the preparations and receipt of the incoming materials, especially those involving the use of lifting or moving equipment. The learner will be required to demonstrate safe working practices throughout and will understand the responsibility they owe to themselves and others in the workplace.

Learning outcomes

There are **two** learning outcomes to this unit. The learner will be able to:

1. Receive incoming materials
2. Know how to receive incoming materials

Unit 107 Receiving Incoming Materials

Learning Outcomes

Outcome 1 Receive incoming materials

Assessment Criteria - Practical Skills

The learner can:

1 work safely at all times, complying with health and safety, environmental and other relevant regulations and guidelines
2 ensure that they have the correct job instructions and any relevant material specifications
3 follow relevant procedures and safety requirements for the receipt of the materials, to include all of the following:
- health and safety and environmental regulations
- safe working practices
- company procedures
- job instructions

4 carry out work area preparations for the receipt of the incoming materials, according to specified procedures
5 prepare and maintain the work area, to include all of the following:
- accessibility for receipt and removal of materials
- freedom from obstructions and hazards
- correct material layout

6 make sure that they take account of any additional safety requirements specific to incoming materials
7 carry out receipt of the incoming materials, according to specified operating procedures
8 receive materials for manufacturing operations, to include one of the following:
- production materials
- consumable materials

9 confirm that the materials meet the specification for type, quantity, and quality
10 report problems to the appropriate person, to include one of the following:
- supervisor
- team leader
- quality control

11 maintain a safe and organised work area at all times
12 confirm that materials are correct and complete

Outcome 2 Know how to receive incoming materials

Assessment Criteria - Underpinning Knowledge

The learner can:

1 describe the relevant health and safety requirements of the work area in which they are carrying out the receipt of the materials

2 describe the specific safe working practices to be observed whilst carrying out the receipt of materials
3 describe the hazards associated with carrying out the receipt of the materials
4 describe the personal protective equipment to be used and where can it be obtained
5 explain how to obtain the necessary job instructions, material specifications and preparation procedures
6 explain how the work area should be laid out in readiness for the receipt of the materials
7 describe the arrangements for receiving the materials
8 describe the checks needed to make sure that materials meet the required specification
9 describe the problems that can occur, how to identify them and to whom to report them
10 describe their responsibilities with regard to the reporting lines and procedures in their working area
11 describe the appropriate people and their responsibilities within the learner's working area

Unit 108 Carrying Out Shaping Operations

Level: 1
Credit value: 15
Guided learning hours
It is recommended that **33** hours should be allocated for this unit. This may be on a full-time or part-time basis.
Details of the relationship between the unit and relevant national occupational standards
This unit has been derived from national occupational standard Performing Manufacturing Operations Unit 8: Carrying Out Shaping Operations (suite 1).
Endorsement of the unit by a sector or other appropriate body
This unit is endorsed by Enginuity (Formally Semta).

Assessment and grading
This unit must be assessed in a work environment and must be assessed in accordance with the 'Common Requirements for National Vocational Qualifications (NVQ) in the QCF' which can be downloaded from Enginuity (Formally Semta)'s website: **http://www.Enginuity (Formally Semta).org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx**

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Unit specific additional assessment requirements:

Learning outcomes where assessor observation and/or examination of naturally occurring workplace products is mandatory: 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.10, 1.11. 1.1 should be observed and recorded over a period of time.

Learning outcomes where the use of simulation within a realistic working environment is acceptable, if the learning outcome cannot be covered by workplace evidence through the learner's job role: 1.9, 1.12

Unit aim
This unit covers the skills and knowledge needed to prove the competences required to produce shaped products by material removal to modify the shape of a component or generate a component from stock material.

This will involve carrying out the shaping operation according to defined operating procedures. The learner will be expected to monitor the shaping operation, ensuring that the completed components are to the required specification. Meeting production targets will be an important issue and the learner's production records must show consistent and satisfactory performance.

The learner's responsibilities will require them to comply with organisational policy and procedures for the shaping activities undertaken, and to report any problems with the shaping activities to the relevant people.

The learner will be expected to work to instructions, taking personal responsibility for their actions and for the quality and accuracy of the work that they produce. The learner will also be expected to complete any necessary documentation accurately.

The learner's knowledge will provide a good understanding of their work and will provide an informed approach to applying the required work instructions and shaping procedures. The learner will have an understanding of the shaping process used, and its application, and will know about the equipment, materials and consumables, in adequate depth to provide a sound background for carrying out the activities to the required specification.

The learner will understand the safety precautions required when working with the shaping tools, equipment and materials. The learner will be required to demonstrate safe working practices throughout and will understand the responsibility they owe to themselves and others in the workplace.

Learning outcomes

There are **two** learning outcomes to this unit. The learner will be able to:

1. Carry out shaping operations
2. Know how to carry out shaping operations

Unit 108 Carrying Out Shaping Operations

Learning Outcome

Outcome 1 Carry out shaping operations

Assessment Criteria - Practical Skills

The learner can:

1 work safely at all times, complying with health and safety, environmental and other relevant regulations and guidelines

2 ensure that they have the correct job instructions and any relevant shaping procedure and quality specifications

3 follow the relevant shaping procedures and safety requirements, to include all of the following:
- health and safety regulations
- safe working practices
- job instructions
- shaping equipment / tool operating instructions
- company standards and procedures

4 use the correct shaping tools, equipment, materials and work-holding methods for the shaping operations being performed

5 carry out the shaping operation according to instructions and safe operating procedures

6 carry out shaping operations using one of the following methods:
- hand shaping operations
- manually operated machine shaping
- fully automated machine shaping
- combined shaping operations

7 monitor the shaping operation and identify any problems that occur

8 carry out checks of the shaped products, to include the following:
- completeness of shaping operations

and one other check from the following:
- dimensional accuracy of components
- quality of finish
- freedom from damage or false tool cuts

9 report problems to the appropriate person, to include one of the following:
- supervisor
- team leader
- quality control

10 produce shaped products which comply with the shaping specification and quality requirements

11 work to achieve production targets for both of the following:
- output
- quality

12 deal appropriately with finished components and complete any necessary documentation accurately

Outcome 2 Know how to carry out shaping operations

Assessment Criteria - Underpinning Knowledge

The learner can:

1 describe the relevant health and safety requirements of the work area in which they are carrying out the shaping operations
2 describe the specific safe working practices, shaping procedures and environmental regulations that must be observed
3 describe the hazards associated with carrying out the shaping operations and how can they be minimised
4 describe the actions to be taken in case of emergencies
5 describe the personal protective equipment to be used during the shaping activities and where can it be obtained
6 explain how to make sure that they have the necessary job instructions, operating procedures and shaping specifications
7 describe the tools and equipment used for the shaping operations undertaken, and how to check that they are in a safe and usable condition
8 explain how to hold the materials securely without causing damage or distortion
9 explain how to operate and control the shaping equipment to achieve the required specification
10 describe the specific shaping operations to be performed
11 explain why it is important to follow the specified shaping sequence and procedure at all times
12 describe the problems that can occur in the shaping operation, how to identify them and to whom to report them
13 explain why it is important to report problems immediately
14 explain how to check the quality of the shaped components against the required quality standards
15 describe the documentation that may have to be completed
16 describe their responsibilities with regard to the reporting lines and procedures in their working area
17 describe the appropriate people and their responsibilities within the learner's working area

Unit 109 Carrying Out Product Assembly Operations

Level: 1

Credit value: 15

Guided learning hours: It is recommended that **33** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards: This unit has been derived from national occupational standard Performing Manufacturing Operations Unit 9: Carrying Out Product Assembly Operations (suite 1).

Endorsement of the unit by a sector or other appropriate body: This unit is endorsed by Enginuity (Formally Semta).

Assessment and grading:

This unit must be assessed in a work environment and must be assessed in accordance with the 'Common Requirements for National Vocational Qualifications (NVQ) in the QCF' which can be downloaded from Enginuity (Formally Semta)'s website: **http://www.Enginuity (Formally Semta).org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx**

Additional assessment requirements have been published by Enginuity (Formally Semta). These additional assessment requirements are set down in Enginuity (Formally Semta)'s Performing Manufacturing Operations Level 1 unit assessment strategy which can be downloaded from Enginuity (Formally Semta)'s website: **http://www.Enginuity (Formally Semta).org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx**

Unit specific additional assessment requirements:

Learning outcomes where assessor observation and/or examination of naturally occurring workplace products is mandatory: 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 1.11, 1.12. 1.1 and 1.2 should be observed and recorded over a period of time.

Learning outcomes where the use of simulation within a realistic working environment is acceptable, if the learning outcome cannot be covered by workplace evidence through the learner's job role: 1.10, 1.13

Unit aim

This unit covers the skills and knowledge needed to prove the competences required to carry out product assembly operations that bring together a number of components in a logical sequence to construct an assembly or sub-assembly.

This will involve carrying out the assembly operation according to defined operating procedures. The learner will be expected to monitor the assembly operation, ensuring that the completed assemblies are to the required specification. Meeting production targets will be an important issue and the learner's production records must show consistent and satisfactory performance.

The learner's responsibilities will require them to comply with organisational policy and procedures for the assembly activities undertaken, and to report any problems with the

assembly activities to the appropriate people. The learner will be expected to work to instructions, taking personal responsibility for their actions and for the quality and accuracy of the work that they produce. The learner will also be expected to complete any necessary documentation.

The learner's knowledge will provide a good understanding of their work and will provide an informed approach to applying the required work instructions and assembly procedures. The learner will have an understanding of the assembly techniques used, and their application, and will know about the equipment, components and consumables in adequate depth to provide a sound background for carrying out the activities to the required specification.

The learner will understand the safety precautions required when working with the assembly tools and equipment. The learner will be required to demonstrate safe working practices throughout and will understand the responsibility they owe to themselves and others in the workplace.

Learning outcomes

There are **two** learning outcomes to this unit. The learner will be able to:

1. Carry out product assembly operations
2. Know how to carry out product assembly operations

Unit 109 Carrying Out Product Assembly Operations

Learning Outcomes

Outcome 1 Carry out product assembly operations

Assessment Criteria - Practical Skills

The learner can:

1 work safely at all times, complying with health and safety, environmental and other relevant regulations and guidelines

2 follow the relevant assembly procedures and safety requirements, according to all of the following:
- health and safety regulations
- safe working practices
- assembly instructions
- assembly equipment / tool operating instructions
- company standards and procedures

3 ensure that they have the correct job instructions and any relevant assembly procedure and quality specifications

4 check that they have all the necessary components, and position and align the components correctly

5 secure the components in position, using the specified fastening device/method

6 carry out assembly operations, using one of the following methods:
- hand assembly operations
- machine assembly operations
- fully automated assembly operations
- combined assembly operations

7 use appropriate tools and equipment during the assembly operations

8 monitor the assembly operation and identify any problems that occur

9 carry out checks of the assembly, to include the following:
- completeness of the assembly

and one other check from the following:
- positional accuracy of components
- correct orientation of components
- component alignment
- component security
- freedom from damage or foreign objects

10 report problems to the appropriate person, to include one of the following:
- supervisor
- team leader
- quality control

11 produce assembled product/s which comply with the specification and quality requirements

12 work to achieve production targets for both of the following:
- output
- quality

13 deal appropriately with finished assemblies and complete any necessary documentation

Outcome 2 Know how to carry out product assembly operations

Assessment Criteria - Underpinning Knowledge

The learner can:

1 describe the relevant health and safety requirements of the work area in which they are carrying out the assembly operations
2 describe the specific safe working practices, assembly procedures and environmental regulations that must be observed
3 describe the hazards associated with carrying out the assembly operations
4 describe the actions to be taken in case of emergencies
5 describe the personal protective equipment to be used during the assembly activities and where can it be obtained
6 explain how to make sure that they have the necessary job instructions, operating procedures and assembly specifications
7 describe the tools and equipment used for the assembly operation and how to check that they are in a safe and usable condition
8 describe the specific assembly operations to be performed
9 explain why it is important to follow the specified assembly sequence and procedure at all times
10 describe the methods used to align and position the components prior to fixing them into position
11 describe the methods used to fix the components securely in position
12 describe the problems that can occur in the assembly operation, how to identify them and to whom to report them
13 explain why it is important to report problems quickly
14 explain how to check the quality of the assembled component/product against the required quality standards
15 describe the documentation that may have to be completed
16 describe their responsibilities with regard to the reporting lines and procedures in their working area
17 describe the appropriate people and their responsibilities within the learner's working area

Unit 110 Carrying Out Joining Operations

Level: 1

Credit value: 14

Guided learning hours

It is recommended that **33** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

This unit has been derived from national occupational standard Performing Manufacturing Operations Unit 10: Carrying Out Joining Operations (suite 1).

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Enginuity (Formally Semta).

Assessment and grading

This unit must be assessed in a work environment and must be assessed in accordance with the 'Common Requirements for National Vocational Qualifications (NVQ) in the QCF' which can be downloaded from Enginuity (Formally Semta)'s website: **http://www.Enginuity (Formally Semta).org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx**

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Unit specific additional assessment requirements:

Learning outcomes where assessor observation and/or examination of naturally occurring workplace products is mandatory: 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.9, 1.10, 1.11. 1.1 should be observed and recorded over a period of time.

Learning outcomes where the use of simulation within a realistic working environment is acceptable, if the learning outcome cannot be covered by workplace evidence through the learner's job role: 1.8, 1.12.

Unit aim

This unit covers the skills and knowledge needed to prove the competences required to carry out joining operations by bringing together two or more materials which leads to a permanent physical change in the properties of the materials. This may be by the use of one of the following 'joining' mediums', such as soldering, bonding, gluing, welding or brazing.

This will involve carrying out the joining operation according to defined operating procedures. The learner will be expected to monitor the joining operation, ensuring that the joined components are to the required specification. Meeting production targets will be an important issue and the learner's production records must show consistent and satisfactory performance.

The learner's responsibilities will require them to comply with organisational policy and procedures for the joining activities undertaken, and to report any problems with the joining activities to the relevant people. The learner will be expected to work to instructions, taking personal responsibility for their actions and for the quality and accuracy of the work that they produce. The learner will also be expected to complete any necessary documentation.

The learner's knowledge will provide a good understanding of their work and will provide an informed approach to applying the required work instructions and joining procedures. The learner will have an understanding of the joining process used, and its application, and will know about the equipment, materials and consumables in adequate depth to provide a sound background for carrying out the activities to the required specification.

The learner will understand the safety precautions required when working with the joining tools and equipment. The learner will be required to demonstrate safe working practices throughout and will understand the responsibility they owe to themselves and others in the workplace.

Learning outcomes

There are **two** learning outcomes to this unit. The learner will be able to:

1. Carry out joining operations
2. Know how to carry out joining operations

Unit 110 Carrying Out Joining Operations

Learning Outcomes

Outcome 1 Carry out joining operations

Assessment Criteria - Practical Skills

The learner can:

1 work safely at all times, complying with health and safety, environmental and other relevant regulations and guidelines

2 ensure that they have the correct job instructions and any relevant joining procedure and quality specifications

3 follow the relevant joining procedures and safety requirements, to include all of the following:
- health and safety regulations
- safe working practices
- job instructions
- joining equipment / tool operating instructions
- company standards and procedures

4 use the appropriate tools and techniques to correctly position and align the components to be joined

5 carry out the joining operations according to instructions and safe operating procedures

6 carry out joining operations, using one of the following methods:
- hand joining operations
- manually operated machine joining operations
- fully automated machine joining operations
- combined joining operations

7 monitor the joining operation and identify any problems that occur

8 report variations and/or problems to the appropriate person, to include one of the following:
- supervisor
- team leader
- quality control

9 produce joined products which comply with the specification and quality requirements

10 carry out checks of the joined products, to include the following:
- completeness of joining operations

and one other check from the following:
- positional accuracy of components
- security of joint
- joint quality and appearance
- freedom from excessive joining medium

11 work to achieve production targets for both of the following:
- output
- quality

12 deal appropriately with finished products and complete any necessary documentation accurately

Outcome 2 Know how to carry out joining operations

Assessment Criteria - Underpinning Knowledge

The learner can:

1 describe the relevant health and safety requirements of the work area in which they are carrying out the joining operations
2 describe the specific safe working practices, joining procedures and environmental regulations that must be observed
3 describe the hazards associated with carrying out the joining operations
4 describe the actions to be taken in case of emergencies
5 describe the personal protective equipment to be used during the joining activities and where can it be obtained
6 explain how to make sure that they have the necessary job instructions, joining procedures and quality specifications
7 describe the specific joining operations to be performed
8 describe the tools and equipment used for the joining operations being carried out, and how to check that they are in a safe and usable condition
9 explain how to correctly position and align the components to be joined
10 explain how to carry out the joining process to achieve the required specification
11 explain why it is important to follow the specified joining sequence and procedure at all times
12 describe the problems that can occur with the joining operation, how to identify them and to whom to report them
13 explain why it is important to report problems immediately
14 explain how to monitor and check the quality of the joined products against the quality standards required
15 describe the documentation that may need to be completed
16 describe their responsibilities with regard to the reporting lines and procedures in their working area
17 describe the appropriate people and their responsibilities within the learner's working area

Unit 111 Carrying Out Processing Operations

Level: 1

Credit value: 14

Guided learning hours

It is recommended that **33** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

This unit has been derived from national occupational standard Performing Manufacturing Operations Unit 11: Carrying Out Processing Operations (suite 1).

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Enginuity (Formally Semta).

Assessment and grading

This unit must be assessed in a work environment and must be assessed in accordance with the 'Common Requirements for National Vocational Qualifications (NVQ) in the QCF' which can be downloaded from Enginuity (Formally Semta)'s website: **http://www.Enginuity (Formally Semta).org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx**

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Unit specific additional assessment requirements:

Learning outcomes where assessor observation and/or examination of naturally occurring workplace products is mandatory: 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.10, 1.11. 1.1 and 1.4 should be observed and recorded over a period of time.

Learning outcomes where the use of simulation within a realistic working environment is acceptable, if the learning outcome cannot be covered by workplace evidence through the learner's job role: 1.9, 1.12

Unit aim

This unit covers the skills and knowledge needed to prove the competences required to carry out processing operations on materials or products which involve using a pre-defined sequence of events that either furthers the process and/or changes the physical appearance or properties of the material or product. Examples of this could be heat treatment, photo process operations, distillation, mixing of materials, etc.

This will involve carrying out the processing operations according to defined operating procedures. The learner will be expected to monitor the processing operation, ensuring that the processed materials or products are to the required specification. Meeting production

targets will be an important issue and the learner's production records must show consistent and satisfactory performance.

The learner's responsibilities will require them to comply with organisational policy and procedures for the processing activities undertaken, and to report any problems with the processing activities to the appropriate people. The learner will be expected to work to instructions, taking personal responsibility for their actions and for the quality and accuracy of the work that they produce. The learner will also be expected to complete any necessary documentation.

The learner's knowledge will provide a good understanding of their work and will provide an informed approach to applying the required work instructions and processing procedures. The learner will have an understanding of the process used, and its application, and will know about the equipment, materials and consumables in adequate depth to provide a sound background for carrying out the activities to the required specification.

The learner will understand the safety precautions required when working with the processing equipment. The learner will be required to demonstrate safe working practices throughout and will understand the responsibility they owe to themselves and others in the workplace.

Learning outcomes

There are **two** learning outcomes to this unit. The learner will be able to:

1. Carry out processing operations
2. Know how to carry out processing operations

Unit 111 Carrying Out Processing Operations

Learning Outcomes

Outcome 1 Carry out processing operations

Assessment Criteria - Practical Skills

The learner can:

1 work safely at all times, complying with health and safety, environmental and other relevant regulations and guidelines

2 make sure that they have the correct job instructions and any relevant processing procedure and quality specifications

3 follow the relevant processing procedures and safety requirements, to include all of the following:
- health and safety regulations
- safe working practices
- job instructions
- processing equipment / tool operating instructions
- company standards and procedures

4 follow the pre-defined sequence of operations at all times

5 carry out the processing operation according to instructions and safe operating procedures

6 carry out processing operations, using one of the following methods:
- hand operated processing operations
- manually controlled machine processing operations
- fully automated processing operations
- combined processing operations

7 monitor the processing operation and identify any problems that occur

8 carry out checks of the processed products, to include the following:
- completeness of processing operations

and one other check from the following:
- appearance of finished product (such as colour, mix, consistency)
- taking samples for analysis
- freedom from contamination
- correct quantity
- correct volume

9 report any problems to the appropriate person, to include one of the following:
- supervisor
- team leader
- quality control

10 produce processed products which comply with the process specification and quality requirements

11 work to achieve production targets for both of the following:
- output
- quality

12 deal appropriately with finished products and complete any necessary documentation

Outcome 2 Know how to carry out processing operations

Assessment Criteria - Underpinning Knowledge

The learner can:

1 describe the relevant health and safety requirements of the work area in which they are carrying out the processing operations
2 describe the specific safe working practices, processing procedures and environmental regulations that must be observed
3 describe the hazards associated with carrying out the processing operations
4 describe the actions to be taken in case of emergencies
5 describe the personal protective equipment to be used during the processing activities and where can it be obtained
6 explain how to make sure that they have the necessary job instructions, equipment operating procedures and processing specifications that are used
7 describe the tools and equipment used for the processing operations undertaken and how to check that they are in a safe and usable condition
8 describe the specific processing operations to be performed
9 explain why they must follow the pre-determined sequence of operations at all times
10 describe the consequences of not following the correct sequence of operations
11 explain how to operate the processing equipment to achieve the required specification
12 describe the problems that can occur in the processing operation, how to identify them and to whom to report them
13 explain why it is important to report problems immediately
14 explain how to check the quality of the processing operations against the required quality standards
15 describe the documentation that may have to be completed
16 describe their responsibilities with regard to the reporting lines and procedures in their working area
17 describe the appropriate people and their responsibilities within the learner's working area

Unit 112 Carrying Out Forming Operations

Level: 1

Credit value: 15

Guided learning hours

It is recommended that **33** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

This unit has been derived from national occupational standard Performing Manufacturing Operations Unit 12: Carrying Out Forming Operations (suite 1).

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Enginuity (Formally Semta).

Assessment and grading

This unit must be assessed in a work environment and must be assessed in accordance with the 'Common Requirements for National Vocational Qualifications (NVQ) in the QCF' which can be downloaded from Enginuity (Formally Semta)'s website: **http://www.Enginuity (Formally Semta).org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx**

Additional assessment requirements have been published by Enginuity (Formally Semta). These additional assessment requirements are set down in Enginuity (Formally Semta)'s Performing Manufacturing Operations Level 1 unit assessment strategy which can be downloaded from Enginuity (Formally Semta)'s website: http://www.Enginuity (Formally Semta).org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx

Unit specific additional assessment requirements:

Learning outcomes where assessor observation and/or examination of naturally occurring workplace products is mandatory: 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.10, 1.11. 1.1 should be observed and recorded over a period of time.

Learning outcomes where the use of simulation within a realistic working environment is acceptable, if the learning outcome cannot be covered by workplace evidence through the learner's job role: 1.9, 1.12.

Unit aim

This unit covers the skills and knowledge needed to prove the competences required to carry out forming operations by applying physical pressure to change the shape of the material or component. This could be by pressing, bending, vacuum forming, stretching, extrusion, shrinking, etc.

This will involve carrying out the forming operation according to defined operating procedures. The learner will be expected to monitor the forming operation, ensuring that the formed components are to the required specification. Meeting production targets will be an important issue and the learner's production records must show consistent and satisfactory performance.

The learner's responsibilities will require them to comply with organisational policy and procedures for the forming activities undertaken, and to report any problems with the forming activities to the appropriate people. The learner will be expected to work to instructions, taking personal responsibility for their actions and for the quality and accuracy of the work that they produce. The learner will also be expected to complete any necessary documentation.

The learner's knowledge will provide a good understanding of their work and will provide an informed approach to applying the required work instructions and forming procedures. The learner will have an understanding of the forming process used, and its application, and will know about the tools, equipment, materials and consumables in adequate depth to provide a sound background for carrying out the activities to the required specification.

The learner will understand the safety precautions required when working with the forming tools and equipment. The learner will be required to demonstrate safe working practices throughout and will understand the responsibility they owe to themselves and others in the workplace.

Learning outcomes

There are **two** learning outcomes to this unit. The learner will be able to:

1. Carry out forming operations
2. Know how to carry out forming operations

Unit 112 Carrying Out Forming Operations

Learning Outcomes

Outcome 1 Carry out forming operations

Assessment Criteria - Practical Skills

The learner can:

1 work safely at all times, complying with health and safety, environmental and other relevant regulations and guidelines
2 ensure that they have the correct job instructions and any relevant forming procedure and quality specifications
3 follow the relevant forming procedures and safety requirements, to include all of the following:
- health and safety regulations
- safe working practices
- job instructions
- forming equipment / tool operating instructions
- company standards and procedures

4 use the correct forming tools and equipment for the operations being carried out
5 carry out the forming operations according to instructions and safe operating procedures
6 carry out forming operations, using one of the following methods:
- hand forming operations
- manually operated machine forming operations
- fully automated machine forming operations
- combined forming operations

7 monitor the forming operation and identify any problems that occur
8 carry out checks of the formed products, to include the following:
- completeness of forming operations

and one other check from the following:
- shape/profile of the formed components
- surface quality and appearance
- freedom from deformity or ripples
- freedom from damage or tool marks

9 report problems to the appropriate person, to include one of the following:
- supervisor
- team leader
- quality control

10 produce formed products which comply with the specification and quality requirements
11 work to achieve production targets for both of the following:
- output
- quality

12 deal appropriately with finished products and complete any necessary documentation

Outcome 2 Know how to carry out forming operations

Assessment Criteria - Underpinning Knowledge

The learner can:

1. describe the relevant health and safety requirements of the work area in which they are carrying out the forming operations
2. describe the specific safe working practices, forming procedures and environmental regulations that must be observed
3. describe the hazards associated with carrying out the forming operations
4. describe the actions to be taken in case of emergencies
5. describe the personal protective equipment to be used during the forming activities and where can it be obtained
6. explain how to make sure that they have the necessary job instructions, forming procedures and quality specifications
7. describe the specific forming operations to be performed
8. describe the tools and equipment used for the forming operations being carried out and how to check that they are in a safe and usable condition
9. explain how to hold and secure the materials or components during the forming operation
10. explain how to carry out the forming process to achieve the required specification
11. explain why it is important to follow the specified forming sequence and procedure at all times
12. describe the problems that can occur with the forming operation, how to identify them and to whom to report them
13. explain why it is important to report problems immediately
14. explain how to check the quality of the formed item against the quality standards required
15. describe the documentation that may have to be completed
16. describe their responsibilities with regard to the reporting lines and procedures in their working area
17. describe the appropriate people and their responsibilities within the learner's working area

Unit 113 Carrying Out Finishing Operations

Level: 1

Credit value: 14

Guided learning hours

It is recommended that **33** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

This unit has been derived from national occupational standard Performing Manufacturing Operations Unit 13: Carrying Out Finishing Operations (suite 1).

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Enginuity (Formally Semta).

Assessment and grading

This unit must be assessed in a work environment and must be assessed in accordance with the 'Common Requirements for National Vocational Qualifications (NVQ) in the QCF' which can be downloaded from Enginuity (Formally Semta)'s website: **http://www.Enginuity (Formally Semta).org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx**

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Unit specific additional assessment requirements:

Learning outcomes where assessor observation and/or examination of naturally occurring workplace products is mandatory: 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.10, 1.11. 1.1 should be observed and recorded over a period of time.

Learning outcomes where the use of simulation within a realistic working environment is acceptable, if the learning outcome cannot be covered by workplace evidence through the learner's job role: 1.9, 1.12.

Unit aim

This unit covers the skills and knowledge needed to prove the competences required to carry out finishing operations on materials or products which is used, either to enhance its appearance, increase its protection or improve its safety properties. Examples of this could be applying decorative coatings, applying protective coatings, removing sharp edges, etc.

This will involve carrying out the finishing operations according to defined operating procedures. The learner will be expected to monitor the finishing operation, ensuring that the finished materials or products are to the required specification. Meeting production targets will be an important issue and the learner's production records must show consistent and satisfactory performance.

The learner's responsibilities will require them to comply with organisational policy and procedures for the finishing activities undertaken, and to report any problems with the finishing activities to the appropriate people. The learner will be expected to work to instructions, taking personal responsibility for their actions and for the quality and accuracy of the work that they produce. The learner will also be expected to complete any necessary documentation.

The learner's knowledge will provide a good understanding of their work and will provide an informed approach to applying the required work instructions and finishing procedures. The learner will have an understanding of the finishing process used, and its application, and will know about the equipment, materials and consumables in adequate depth to provide a sound background for carrying out the activities to the required specification.

The learner will understand the safety precautions required when working with the finishing equipment. The learner will be required to demonstrate safe working practices throughout and will understand the responsibility they owe to themselves and others in the workplace.

Learning outcomes

There are **two** learning outcomes to this unit. The learner will be able to:

1. Carry out finishing operations
2. Know how to carry out finishing operations

Unit 113 Carrying Out Finishing Operations

Learning Outcomes

Outcome 1 Carry out finishing operations

Assessment Criteria - Practical Skills

The learner can:

1 work safely at all times, complying with health and safety, environmental and other relevant regulations and guidelines

2 ensure that they have the correct job instructions and any relevant finishing procedure and quality specifications

3 follow the relevant finishing procedures and safety requirements, to include all of the following:
- health and safety regulations
- safe working practices
- job instructions
- finishing equipment / tool operating instructions
- company standards and procedures

4 use the correct tools and equipment for the finishing operations being performed

5 carry out the finishing operation according to instructions and safe operating procedures

6 carry out finishing operations, using one of the following methods:
- hand finishing operations
- manually controlled machine finishing operations
- fully automated finishing operations
- combined finishing operations

7 monitor the finishing operation and identify any problems that occur

8 carry out checks of the finishing operations, to include the following:
- completeness of the finishing operations

and one other check from the following:
- appearance of finished product
- freedom from contamination
- freedom from damage

9 report problems to the appropriate person, to include one of the following:
- supervisor
- team leader
- quality control

10 produce finished products which comply with the finishing specification and quality requirements

11 work to achieve production targets for both of the following:
- output
- quality

12 deal appropriately with the finished products and complete any necessary documentation

Outcome 2 Know how to carry out finishing operations

Assessment Criteria - Underpinning Knowledge

The learner can:

1 describe the relevant health and safety requirements of the work area in which they are carrying out the finishing operations
2 describe the specific safe working practices, finishing procedures and environmental regulations that must be observed
3 describe the hazards associated with carrying out the finishing operations
4 describe the actions to be taken in case of emergencies
5 describe the personal protective equipment to be used during the finishing activities and where can it be obtained
6 explain how to make sure that they have the necessary job instructions, finishing equipment operating procedures and finishing specifications
7 describe the tools and equipment used for the finishing operations undertaken and how to check that they are in a safe and usable condition
8 describe the specific finishing operations to be performed
9 explain why it is important to follow the sequence of finishing operations at all times
10 explain how to operate the finishing equipment to achieve the required specification
11 describe the problems that can occur in the finishing operation, how to identify them and to whom to report them
12 explain why it is important to report problems immediately
13 how to check the quality of the finishing operations against the required quality standards
14 describe the documentation that may have to be completed
15 describe their responsibilities with regard to the reporting lines and procedures in their working area
16 describe the appropriate people and their responsibilities within the learner's working area

Unit 114 Carrying Out Moulding Operations

Level: 1

Credit value: 15

Guided learning hours

It is recommended that **33** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards: This unit has been derived from national occupational standard Performing Manufacturing Operations Unit 14: Carrying Out Moulding Operations (suite 1).

Endorsement of the unit by a sector or other appropriate body: This unit is endorsed by Enginuity (Formally Semta).

Assessment and grading

This unit must be assessed in a work environment and must be assessed in accordance with the 'Common Requirements for National Vocational Qualifications (NVQ) in the QCF' which can be downloaded from Enginuity (Formally Semta)'s website: **http://www.Enginuity (Formally Semta).org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx**

Additional assessment requirements have been published by Enginuity (Formally Semta). These additional assessment requirements are set down in Enginuity (Formally Semta)'s Performing Manufacturing Operations Level 1 unit assessment strategy which can be downloaded from Enginuity (Formally Semta)'s website: http://www.Enginuity (Formally Semta).org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx

U**nit specific additional assessment requirements:**

Learning outcomes where assessor observation and/or examination of naturally occurring workplace products is mandatory: 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 1.11, 1.12. 1.1 should be observed and recorded over a period of time.

Learning outcomes where the use of simulation within a realistic working environment is acceptable, if the learning outcome cannot be covered by workplace evidence through the learner's job role: 1.10, 1.13.

Unit aim

This unit covers the skills and knowledge needed to prove the competences required to carry out moulding operations that involves using a pattern or mould to change the shape of the material. This will include injection moulding, casting, laying up using resin and fibre materials, etc

This will involve carrying out the moulding operation according to defined operating procedures. The learner will be expected to monitor the moulding operation, ensuring that the moulded components are to the required specification. Meeting production targets will be an important issue and the learner's production records must show consistent and satisfactory performance.

The learner's responsibilities will require them to comply with organisational policy and procedures for the moulding activities undertaken, and to report any problems with the

moulding activities to the appropriate people. The learner will be expected to work to instructions, taking personal responsibility for their actions and for the quality and accuracy of the work that they produce. The learner will also be expected to complete any necessary documentation.

The learner's knowledge will provide a good understanding of their work and will provide an informed approach to applying the required work instructions and moulding procedures. The learner will have an understanding of the moulding process used, and its application, and will know about the tools, equipment, materials and consumables in adequate depth to provide a sound background for carrying out the activities to the required specification.

The learner will understand the safety precautions required when working with the moulding tools and equipment. The learner will be required to demonstrate safe working practices throughout and will understand the responsibility they owe to themselves and others in the workplace.

Learning outcomes

There are **two** learning outcomes to this unit. The learner will be able to:

1. Carry out moulding operations
2. Know how to carry out moulding operations

Unit 114 Carrying Out Moulding Operations

Learning outcomes

Outcome 1 Carry out moulding operations

Assessment Criteria - Practical Skills

The learner can:

1 work safely at all times, complying with health and safety, environmental and other relevant regulations and guidelines
2 ensure that they have the correct job instructions and any relevant moulding procedure and quality specifications
3 follow the relevant moulding procedures and safety requirements, to include all of the following:
- health and safety regulations
- safe working practices
- job instructions
- moulding equipment / tool operating instructions
- company standards and procedures

4 use the correct moulding tools and equipment for the operations being carried out
5 apply appropriate release agents to the patterns or moulds when required
6 carry out the moulding operations according to instructions and safe operating procedures
7 carry out moulding operations, using one of the following methods:
- hand moulding operations
- manually controlled machine moulding operations
- fully automated machine moulding operations
- combined moulding operations

8 monitor the moulding operation and identify any problems that occur
9 carry out checks of the moulded products, to include the following:
- completeness of moulding operations

and one other check from the following:
- shape/profile of the moulded components
- surface quality and appearance
- freedom from deformity or damage
- freedom from contamination

10 report problems to the appropriate person, to include one of the following:
- supervisor
- team leader
- quality control

11 produce moulded products which comply with the specification and quality requirements
12 work to achieve production targets for both of the following:
- output
- quality

13 deal appropriately with finished products and complete any necessary documentation

Outcome 2 Know how to carry out moulding operations

Assessment Criteria - Underpinning Knowledge

The learner can:

1 describe the relevant health and safety requirements of the work area in which they are carrying out the moulding operations
2 describe the specific safe working practices, moulding procedures and environmental regulations that must be observed
3 describe the hazards associated with carrying out the moulding operations
4 describe the actions to be taken in case of emergencies
5 describe the personal protective equipment to be used during the moulding activities and where can it be obtained
6 explain how to make sure that they have the necessary job instructions, moulding procedures and quality specifications that are used
7 describe the specific moulding operations to be performed
8 describe the tools and equipment used for the moulding operations being carried out and how to check that they are in a safe and usable condition
9 explain how to prepare the patterns or moulds in readiness for the moulding activities, and the use of mould release agents where applicable
10 explain how to carry out the moulding process to achieve the required specification
11 explain why it is important to follow the specified moulding sequence and procedure at all times
12 describe the problems that can occur with the moulding operation, how to identify them and to whom to report them
13 explain why it is important to report problems immediately
14 explain how to monitor and check the quality of the moulding operations against the quality standards required
15 describe the documentation that may have to be completed
16 describe their responsibilities with regard to the reporting lines and procedures in their working area
17 describe the appropriate people and their responsibilities within the learner's working area

Unit 115 Carrying Out Packaging Operations

Level: 1

Credit value: 13

Guided learning hours

It is recommended that **33** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

This unit has been derived from national occupational standard Performing Manufacturing Operations Unit 15: Carrying Out Packaging Operations (suite 1).

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Enginuity (Formally Semta).

Assessment and grading

This unit must be assessed in a work environment and must be assessed in accordance with the 'Common Requirements for National Vocational Qualifications (NVQ) in the QCF' which can be downloaded from Enginuity (Formally Semta)'s website: **http://www.Enginuity (Formally Semta).org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx**

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Unit specific additional assessment requirements:

Learning outcomes where assessor observation and/or examination of naturally occurring workplace products is mandatory: 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.10, 1.11. 1.1 should be observed and recorded over a period of time.

Learning outcomes where the use of simulation within a realistic working environment is acceptable, if the learning outcome cannot be covered by workplace evidence through the learner's job role: 1.9, 1.12.

Unit aim

This unit covers the skills and knowledge needed to prove the competences required to carry out packaging operations on finished products which may be for protective, decorative, marketing or transportation purposes. This will include wrapping, boxing, bagging, bottling, etc.

This will involve carrying out the packaging operations according to defined operating procedures. The learner will be expected to monitor the packaging operation, ensuring that the packaged products are to the required specification. Meeting production targets will be an important issue and the learner's production records must show consistent and satisfactory performance.

The learner's responsibilities will require them to comply with organisational policy and procedures for the packaging activities undertaken, and to report any problems with the packaging activities to the appropriate people. The learner will be expected to work to instructions, taking personal responsibility for their actions and for the quality and accuracy of the work that they produce. The learner will also be expected to complete any necessary documentation.

The learner's knowledge will provide a good understanding of their work and will provide an informed approach to applying the required work instructions and packaging procedures. The learner will have an understanding of the packaging process used, and its application, and will know about the tools, equipment, materials and consumables in adequate depth to provide a sound background for carrying out the activities to the required specification.

The learner will understand the safety precautions required when working with the packaging equipment. The learner will be required to demonstrate safe working practices throughout and will understand the responsibility they owe to themselves and others in the workplace.

Learning outcomes

There are **two** learning outcomes to this unit. The learner will be able to:

1. Carry out packaging operations
2. Know how to carry out packaging operations

Unit 115 Carrying Out Packaging Operations

Learning Outcomes

Outcome 1 Carry out moulding operations

Assessment Criteria - Practical Skills

The learner can:

1 work safely at all times, complying with health and safety, environmental and other relevant regulations and guidelines

2 ensure that they have the correct job instructions and any relevant packaging procedure and quality specifications

3 follow the relevant packaging procedures and safety requirements, to include all of the following:
- health and safety regulations
- safe working practices
- job instructions
- packaging equipment / tool operating instructions
- company standards and procedures

4 use the correct tools, equipment and materials for the packaging operations being performed

5 carry out the packaging operation according to instructions and safe operating procedures

6 carry out packaging operations, using one of the following methods:
- hand packaging operations
- manually controlled machine packaging operations
- fully automated packaging operations
- combined packaging operations

7 monitor the packaging operation and identify any problems that occur

8 carry out checks of the packaging operations, to include the following:
- completeness of the packaging operations

and one other check from the following:
- appearance of finished product
- security of the packaging
- freedom from contamination
- freedom from damage
- correct quantity
- correct volume

9 report problems to the appropriate person, to include one of the following:
- supervisor
- team leader
- quality control

10 produce packaged products which comply with the packaging specification and quality requirements

11 work to achieve production targets for both of the following:
- output
- quality

12 deal appropriately with the packaged products and complete any necessary documentation

Outcome 2 Know how to carry out packaging operations

Assessment Criteria - Underpinning Knowledge

The learner can:

1 describe the relevant health and safety requirements of the work area in which they are carrying out the packaging operations
2 describe the specific safe working practices, packaging procedures and environmental regulations that must be observed
3 describe the hazards associated with carrying out the packaging operations
4 describe the actions to be taken in case of emergencies
5 describe the personal protective equipment to be used during the packaging activities and where can it be obtained
6 explain how to make sure that they have the necessary job instructions, packaging equipment operating procedures and packaging specifications
7 describe the tools and equipment used for the packaging operations undertaken and how to check that they are in a safe and usable condition
8 describe the specific packaging operations to be performed
9 explain why it is important to follow the sequence of packaging operations at all times
10 explain how to operate the packaging equipment to achieve the required specification
11 describe the problems that can occur in the packaging operation, how to identify them and to whom to report them
12 explain why it is important to report problems immediately
13 explain how to check the quality of the packaging operations against the required quality standards
14 describe the documentation that may have to be completed
15 describe their responsibilities with regard to the reporting lines and procedures in their working area
16 describe the appropriate people and their responsibilities within the learner's working area

Unit 116 Servicing the Line

Level: 1

Credit value: 10

Guided learning hours: It is recommended that **35** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards: This unit has been derived from national occupational standard Performing Manufacturing Operations Unit 16: Servicing the Line (suite 1).

Endorsement of the unit by a sector or other appropriate body: This unit is endorsed by Enginuity (Formally Semta).

Assessment and grading

This unit must be assessed in a work environment and must be assessed in accordance with the 'Common Requirements for National Vocational Qualifications (NVQ) in the QCF' which can be downloaded from Enginuity (Formally Semta)'s website: **http://www.Enginuity (FormallySemta).org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx**

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Unit specific additional assessment requirements:

Learning outcomes where assessor observation and/or examination of naturally occurring workplace products is mandatory: 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 1.10, 1.11, 1.13. 1.1, 1.2, 1.3, 1.9, 1.10, 1.11 should be observed and recorded over a period of time.

Learning outcomes where the use of simulation within a realistic working environment is acceptable, if the learning outcome cannot be covered by workplace evidence through the learner's job role: 1.12, 1.14.

Unit aim

This unit covers the skills and knowledge needed to prove the competences required to keep the manufacturing operation going, by 'servicing the line'.

This will involve supplying the work area for which the learner is responsible with the correct materials and/or products, whilst taking account of all relevant health and safety requirements. The learner will be expected to identify and anticipate when the materials and/or products will be required in the manufacturing operation, and to make sure that adequate supplies of materials and/or products are maintained to keep the manufacturing operation going. The learner will be expected to transfer materials and/or products to the manufacturing area at the right time, in the right way, using safe methods. The learner must also ensure that the area of work for which they are responsible is kept free from obstructions, and they must perform all activities according to operating procedures, taking account of all health and safety

requirements. Meeting production requirements will be an important issue and the learner's records must show consistent and satisfactory performance.

The learner's responsibilities will require them to comply with organisational policy and procedures for servicing the line, and to report any problems to the appropriate people. The learner will be expected to work to instructions, taking personal responsibility for their actions and for the work that they carry out. The learner will also be expected to complete any necessary documentation.

The learner's knowledge will provide a good understanding of their work and will provide an informed approach to applying the required work instructions and procedures for servicing the line. The learner will have an understanding of the techniques used, and their application, and will know about the materials and/or products in an adequate depth to provide a sound background for carrying out the activities to the required standard.

The learner will understand the safety precautions required when servicing the line. The learner will be required to demonstrate safe working practices throughout and will understand the responsibility they owe to themselves and others in the workplace.

Learning outcomes

There are **two** learning outcomes to this unit. The learner will be able to:

1. Service the line
2. Know how to service the line

Unit 116 Servicing the Line

Learning Outcomes

Outcome 1 Service the line

Assessment Criteria - Practical Skills

The learner can:

1 work safely at all times, complying with health and safety, environmental and other relevant regulations and guidelines
2 follow the relevant lifting and moving procedures and safety requirements, to include all of the following:
- health and safety regulations
- safe working practices
- job instructions
- lifting and moving equipment operating instructions
- company standards and procedures

3 move materials/products safely, using one of the following methods:
- hand
- power operated
- combination

4 ensure that they have the correct equipment, job instructions and any relevant specifications
5 identify when materials/products will be required in the work area that they are responsible for
6 transfer the materials/products to the work area that they are responsible for, at the correct time, in the correct quantity
7 transfer materials, to include one of the following:
- production materials
- consumable materials
- work in progress
- finished products or components
- waste or scrap

8 check availability of stocks and take action to replenish them when required
9 always maintain correct levels of supplies of materials/products in the area of work that they are responsible for
10 keep the manufacturing operation going, by carrying out all of the following when transferring materials/products to the line:
- identify when materials/products will be required
- check that the materials/products are as specified on the documentation
- ensure that the materials/products are transferred safely
- check that there are no restrictions or obstacles preventing the transfer of the materials/products

11 maintain a safe and organised work area at all times
12 report problems to the appropriate person, to include one of the following:
- supervisor
- team leader
- quality control

13 work to achieve their production targets
14 complete documentation when necessary

Outcome 2 Know how to service the line

Assessment Criteria - Underpinning Knowledge

The learner can:

1 describe the relevant health and safety requirements of the work area in which they are carrying out the material moving operations
2 describe the specific safe working practices, procedures and regulations that must be observed
3 describe the hazards associated with carrying out the operation
4 describe the personal protective equipment to be used during the activities and where can it be obtained
5 explain how to make sure that they have the necessary job instructions, specifications and/or operating procedures
6 describe the tools and equipment that may be used for the transfer of materials/products and how to check that they are in a safe and usable condition
7 explain how to identify when materials/products will be required in the work area that they are responsible for
8 explain how to transfer materials/products safely to the line
9 explain how to apply safe manual movement techniques when working alone
10 explain how to check stock levels to ensure that materials/products are available when required
11 explain why it is important to keep the operation going
12 describe the problems that may occur in servicing the line, how to identify them, and to whom to report them
13 explain why it is important to keep their area of work clean and tidy
14 describe the documentation that may have to be completed
15 describe their responsibilities with regard to the reporting lines and procedures in their working area
16 describe the appropriate people and their responsibilities within the learner's working area

Appendix 1 Sources of general information

The following documents contain essential information for centres delivering City & Guilds qualifications. They should be referred to in conjunction with this handbook. To download the documents and to find other useful documents, go to the **Centre document library** on **www.cityandguilds.com** or click on the links below:

Centre Handbook: Quality Assurance Standards
This document is for all approved centres and provides guidance to support their delivery of our qualifications. It includes information on:

- centre quality assurance criteria and monitoring activities
- administration and assessment systems
- centre-facing support teams at City & Guilds/ILM
- centre quality assurance roles and responsibilities.

The Centre Handbook should be used to ensure compliance with the terms and conditions of the centre contract.

Centre Assessment: Quality Assurance Standards
This document sets out the minimum common quality assurance requirements for our regulated and non-regulated qualifications that feature centre-assessed components. Specific guidance will also be included in relevant qualification handbooks and/or assessment documentation.

It incorporates our expectations for centre internal quality assurance and the external quality assurance methods we use to ensure that assessment standards are met and upheld. It also details the range of sanctions that may be put in place when centres do not comply with our requirements or actions that will be taken to align centre marking/assessment to required standards. Additionally, it provides detailed guidance on the secure and valid administration of centre assessments.

Access arrangements: When and how applications need to be made to City & Guilds provides full details of the arrangements that may be made to facilitate access to assessments and qualifications for candidates who are eligible for adjustments in assessment.

The **Centre document library** also contains useful information on such things as:

- conducting examinations
- registering learners
- appeals and malpractice.

Useful contacts

Please visit the **Contact us** section of the City & Guilds website.

Who we are

City & Guilds Limited (Registered Company 16513878) is the Awarding Organisation for City & Guilds qualifications.

About City & Guilds

City & Guilds is the global skills partner, empowering people, organisations and economies to develop the skills they need for growth. With almost 150 years of trusted expertise, we support people into work, help them develop on the job and move into the next job.

We work with Governments, employers, training providers, colleges and industry stakeholders to design and deliver high-quality training, qualifications, assessments and credentials that lead to meaningful career progression. We understand the life changing link between skills development, social mobility and success. Our solutions span critical sectors including construction, engineering, transport, energy and electrical, serving over 1 million learners annually.

Through our comprehensive portfolio of brands and trusted global network, we set industry-wide standards for technical, behavioural and commercial skills to improve performance and productivity. We believe you can achieve your potential - and we're here to help make it happen.

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