City & Guilds Level 2 NVQ Diploma in Performing Manufacturing Operations (7585-02)

Qualification Handbook for Centres

www.cityandguilds.com
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Qualification handbook for centres

Qualification title and level	City & Guilds Level 2 NVQ Diploma in Performing Manufacturing Operations
Last registration and certification date	See Online Catalogue/Walled Garden for last dates

Qualification title	Number	QAN	GLH	TQT
City & Guilds Level 2 NVQ Diploma in Performing Manufacturing Operations	7585 - 02	501/1313/6	186	475

Version and date	Change detail	Section
2.2 July 2018	Replaced seven with nine	Unit 201 Assessment 2.3
2.1 August 2017	Added TQT details Deleted QCF	Qualification at a glance, Structure Throughout
2.0 September 2015	Updated registration/certification end dates	Introduction
2.3 March 2022	Amendments to Unit 201 in line with updates in the National Occupational Standards City & Guilds added to qualification titles	Units Throughout
2.4 April 2026	Updated GLH and TQT	Throughout

Contents

1	Introduction to the qualification	5
2 Centre requirements		9
2.1	Obtaining centre and qualification approval	9
2.2	Candidate entry requirement	10
2.3	Age restrictions	10
2.4	Resource requirements	10
2.5	Registration and Certification	10
2.6	Quality assurance	13
3 Course design and delivery		15
4	Units	17
Unit 201	Complying with statutory regulations and organisational safety requirements	19
Unit 202	Promoting effective working relationships	26
Unit 203	Transferring materials	31
Unit 204	Preparing for manufacturing operations	37
Unit 205	Concluding manufacturing operations	43
Unit 206	Ensuring effective handover of manufacturing operations	48
Unit 207	Receiving and checking incoming materials	54
Unit 208	Producing shaped products	59
Unit 209	Producing products by assembly operations	65
Unit 210	Producing joined products	71
Unit 211	Producing products by processing	78
Unit 212	Producing formed products	84
Unit 213	Finishing products	90
Unit 214	Producing moulded products	96
Unit 215	Producing packaged products	102
Unit 216	Making products using computer controlled equipment	108
Unit 217	Manufacturing products using combined manufacturing operations	114
Unit 218	Controlling manufacturing operations	120
Unit 219	Contributing to improving effectiveness in the workplace	126
Unit 220	Analysing the results of inspection and confirming quality of production	133
Unit 221	Contributing to effective team working	138
Unit 222	Carrying out inspection and testing activities	144
Unit 223	Recording and reporting inspection and test results	149
Unit 223	Recording and reporting inspection and test results	151
Unit 223	Recording and reporting inspection and test results	153
5	Assessment	154
5.1	Summary of assessment methods	154

5.2	**Assessment environment**	**154**
5.3	**Minimum performance evidence requirements**	**155**
Appendix 1	**Sources of general information**	**158**

1 Introduction to the qualification

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

1.1 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 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.

1.2 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 48 for the City & Guilds Level 2 NVQ Diploma in Performing Manufacturing Operations, learners must complete:

- **two** units from the mandatory units group
- **three** 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 203 and/or unit 220 in option set A, they may **not** be selected again from option set B.

Mandatory units

Unit 201	Complying with statutory regulations and organisational safety requirements

and **one** of:

Unit 202	Promoting effective working relationships
Unit 221	Contributing to effective team working

Option set A

Any **three** of:

Unit 203	Transferring materials
Unit 204	Preparing for manufacturing operations
Unit 205*	Concluding manufacturing operations
Unit 206*	Ensuring effective handover of manufacturing operations
Unit 207	Receiving and checking incoming materials
Unit 218	Controlling manufacturing operations
Unit 219	Contributing to improving effectiveness in the workplace
Unit 220	Analysing the results of inspection and confirming quality of production
Unit 223	Recording and reporting inspection and test results

*** NB** Candidates may **not** choose both unit 205 and unit 206 from this option set. Only one of these units may be selected as one of the three units chosen.

Option set B

Any **one** of:

Unit 203**	Transferring materials
Unit 208	Producing shaped products
Unit 209	Producing products by assembly operations
Unit 210	Producing joined products
Unit 211	Producing products by processing
Unit 212	Producing formed products
Unit 213	Finishing products
Unit 214	Producing moulded products
Unit 215	Producing packaged products
Unit 216	Making products using computer controlled equipment
Unit 217	Manufacturing products using combined manufacturing operations
Unit 220**	Analysing the results of inspection and confirming quality of production
Unit 222	Carrying out inspection and testing activities

****NB** If a candidate has already chosen unit 203 and/or unit 220 in option set A, they may **not** be selected again from option set B

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

1.3 Opportunities for progression

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

- Level 1 Certificate or level 2 & 3 Diplomas in Furniture Production
- Level 2 and 3 Print NVQ and Printing and graphic communications VRQ (new qualification numbers and size to be confirmed)
- Level 2 and 3 Food Manufacture (new qualification numbers and size to be confirmed)
- Levels 2, 3 and 4 Diplomas in Business Improvement Techniques.

1.4 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:

2 The number of hours which an awarding organisation has assigned to a qualification for Guided Learning, and

3 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.

Title and level	**GLH**	**TQT**
City & Guilds Level 2 NVQ Diploma in Performing Manufacturing Operations	186	475

1.5 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

2.1 Obtaining centre and qualification approval

This section outlines the approval processes for centres to offer this qualification and any resources that centres will need in place to offer the qualifications including qualification-specific requirements for centre staff.

Only approved organisations can offer City & Guilds qualifications. Organisations approved by City & Guilds are referred to as **centres**.

Centres must meet a set of quality criteria including:

- provision of adequate resources, both physical and human
- clear management information systems
- effective assessment and quality assurance procedures including candidate support and reliable recording systems.

An organisation that has not previously offered City & Guilds qualifications must apply for approval to become a centre. This is known as the **centre approval process (CAP)**. Centres also need approval to offer a specific qualification. This is known as the **qualification approval process (QAP)**. In order to offer these qualifications, organisations which are not already City & Guilds centres must apply for centre and qualification approval at the same time. Existing City & Guilds centres will only need to apply for qualification approval for these particular qualifications.

City and Guilds branch offices will support new centres through the approval process. They will appoint an External Verifier. They will also provide details of fees applicable for approvals. The local office will be the point of contact for all enquiries for these qualifications and will be responsible for monitoring the delivery and assessments through reports submitted by External Verifiers. They will be the first point of contact for any enquiries regarding the multiple choice examination.

Assessments must not be undertaken until qualification approval has been obtained and candidates have been registered.

City & Guilds reserves the right to withdraw qualification or centre approval for reasons of debt, malpractice or non-compliance with City & Guilds' policies, regulations, requirements, procedures and guidelines, or for any reason that may be detrimental to the maintenance of authentic, reliable and valid qualifications or that may prejudice the name of City & Guilds.

Centres already offering City & Guilds qualifications in this subject area

Centres approved to offer the qualification 2255-04 Performing Manufacturing Operations will be given automatic approval for the new 7585-02 Level 2 NVQ Diploma in Performing Manufacturing Operations.

2.2 Candidate entry requirement

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.

2.3 Age restrictions

This qualification is not approved for use by candidates under the age of 16, and City & Guilds cannot accept any registrations for candidates in this age group.

2.4 Resource requirements

Human resources

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 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.

2.5 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 -7585-02

Candidates achieving the required Rules of Combination will be issued with the full Level 2 NVQ Diploma in Performing Manufacturing Operations (7585-02). For information on the registration and certification periods for the qualification, centre should refer to the City & Guilds Directory of qualifications.

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 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 required by:	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
Assessor			
Internal Verifier			
External Verifier			

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 verification, and that it takes account of any national or legislative developments.

2.6 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

External verifiers are appointed by City & Guilds to approve centres, and to monitor the assessment and internal quality assurance carried out by centres. External verification is carried out to ensure that assessment is valid and reliable, and that there is good assessment practice in centres.

To carry out their quality assurance role, external verifiers must have appropriate occupational and verifying knowledge and expertise. City & Guilds external verifiers attend training and development designed to keep them up-to-date, to facilitate standardisation between verifiers and to share good practice.

Further details of the role of external verifiers are given in *Providing City & Guilds qualifications*.

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.

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.

Access to assessment

City & Guilds' guidance and regulations on access to assessment are designed to facilitate access for assessments and qualifications for candidates who are eligible for adjustments to assessment arrangements. Access arrangements are designed to allow attainment to be demonstrated. For further information, please see Access to assessment and qualifications, available on the City & Guilds website.

4 Units

Structure of units

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

- City & Guilds reference number
- unit accreditation number
- title
- level
- credit value
- unit aim
- relationship to NOS, other qualifications and frameworks
- endorsement by a sector or other appropriate body
- information on assessment
- learning outcomes which are comprised of a number of assessment criteria
- notes for guidance.

Summary of units

City & Guilds unit number	Title	Unit number	Credit Value	GLH	Level
201	Complying with statutory regulations and organisational safety requirements	n/a	5	31	2
202	Promoting effective working relationships	R/601/3008	5	31	2
203	Transferring materials	Y/601/3009	13	41	2
204	Preparing for manufacturing operations	L/601/3010	9	41	2
205	Concluding manufacturing operations	Y/601/3012	9	36	2
206	Ensuring effective handover of manufacturing operations	H/601/3014	9	36	2
207	Receiving and checking incoming materials	T/601/3017	9	36	2
208	Producing shaped products	R/601/3025	18	56	2
209	Producing products by assembly operations	A/601/3035	18	56	2
210	Producing joined products	R/601/3039	17	56	2
211	Producing products by processing	F/601/3067	17	56	2
212	Producing formed products	T/601/3079	18	56	2
213	Finishing products	M/601/3081	17	56	2
214	Producing moulded products	J/601/3085	18	56	2
215	Producing packaged products	D/601/3089	15	56	2
216	Making products using computer controlled equipment	R/601/3090	18	56	2
217	Manufacturing products using combined manufacturing operations	H/601/3093	18	41	2
218	Controlling manufacturing operations	M/601/3095	19	31	2
219	Contributing to improving effectiveness in the workplace	A/601/3097	8	31	2
220	Analysing the results of inspection and confirming quality of production	J/601/3099	14	31	2
221	Contributing to effective team working	T/601/3101	6	38	2
222	Carrying out inspection and testing activities	H/601/3112	16	31	2
223	Recording and reporting inspection and test results	K/601/3113	8	38	2

Unit 201 Complying with statutory regulations and organisational safety requirements

Level: 2

Credit value: 5

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

Guided learning hours

It is recommended that **31** 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 Semta.

Assessment and grading

This unit must be assessed in a work environment.

Unit 201 Complying with statutory regulations and organisational safety requirements

Outcome 1 Comply with statutory regulations and organisational safety requirements

Assessment Criteria

Practical Skills

The learner can:

1.1 comply with their duties to health and safety in accordance with all relevant legislation, guidelines, policies, procedures and protocols

1.2 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

1.3 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

1.4 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

1.5 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

1.6 use correct manual lifting and carrying techniques

1.7 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.

1.8 complete and store all relevant documentation in accordance with organisational requirements

Unit 201 Complying with statutory regulations and organisational safety requirements

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

Assessment Criteria

Underpinning Knowledge

The learner can:

2.1 describe the current health and safety legislation, guidelines, policies, procedures and protocols which are relevant to their own work practice

2.2 describe the range of work activities for which they are responsible

2.3 explain how to act responsibly within the working environment

2.4 describe the warning signs and symbols for the main groups of hazardous materials

2.5 describe the sources of information for safety (such as local work procedures, codes of practice or guidance)

2.6 explain how to locate relevant health and safety information and work instructions and the sources of expert assistance when help is needed

2.7 describe the risks associated with their own working environment

2.8 describe the processes and procedures that are used to identify and rate the level of risk

2.9 explain what constitutes a hazard in the workplace

2.10 describe their responsibilities for dealing with hazards and reducing risks in the workplace

2.11 describe the control measures that can be used to eliminate hazards and reduce risks

2.12 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

2.13 explain what constitutes dangerous occurrences and hazardous malfunctions, and why these must be reported even if no-one is injured

2.14 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

2.15 describe the organisational policy with regard to firefighting procedures, the common causes of fire and what they can do to help prevent them

2.16 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

2.17 explain how to prepare and maintain a safe working environment and the standards and procedures to ensure good housekeeping

2.18 describe the importance of safe storage of tools, equipment, materials and products

2.19 describe the importance of personal hygiene in the workplace including regular handwashing and using hand sanitiser, not sharing PPE, cleaning PPE after use

2.20 describe the methods of manually handling and moving loads

2.21 explain how to lift and carry loads safely and correctly and the manual and mechanical aids available

2.22 explain when to act on their own initiative and when to seek help and advice from others

2.23 explain to whom they should report reporting issues which are beyond their competence, responsibilities and accountability

2.24 explain where to safely store all relevant documentation in accordance with organisational requirements

Unit 202 Promoting effective working relationships

Level: **2**

Credit value: **5**

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 promote 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. They will be expected to deal with any disagreements in an amicable and constructive way. They 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. They will be expected to report any problems that may affect working relationships that they cannot personally resolve, or are outside their permitted authority 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. They will be able to give an informed approach to the techniques that can be used to help maintain and develop good working relationships. They will understand how their actions will affect both internal and external working relationships.

Unit overview

This unit on promoting working relationships involves:

- promoting effective working relationships
- maintaining good working relationships
- solving problems with relationships
- providing and receiving feedback
- working in ways which maintain the safety of the learner and others

Learning outcomes

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

1. Promote effective working relationships
2. Know how to promote effective working relationships

Guided learning hours

It is recommended that **31** 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 No. 2.02: Promoting effective working relationships (Suite 2)

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Semta

Assessment and grading

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

Additional assessment requirements have been published by Semta. These additional assessment requirements are set down in Semta's Performing Manufacturing Operations Level 2 unit assessment strategy which can be downloaded from Semta's website:
http://www.semta.org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx

Unit specific additional assessment requirements

The use of simulation within a realistic working environment is acceptable for assessment criteria 1.6, 1.7, 1.8, 1.10, 1.11.

Unit 202 Promoting effective working relationships

Outcome 1 Promote effective 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. promote and maintain working relationships with three of the following:
   - immediate supervision/line management
   - colleagues in same work group
   - colleagues in other work groups
   - personnel in other departments (such as those supplying inputs or receiving outputs)
   - managers and supervisors in other departments
   - external contacts (such as customers, clients)
3. ask for information, advice and/or help politely, without causing disruption to their own or others work
4. offer help and information to others promptly and willingly
5. respect the views, rights and property of others
6. identify problems in working relationships
7. discuss problems which may affect working relationships with the appropriate person to include two of the following:
   - work colleagues
   - supervisor
   - line manager
   - team leader
   - personnel or welfare officer
8. deal with problems in working relationships in ways which minimise offence and maintain the mutual respect of others to include two of the following:
   - work related issues
   - personal issues
   - communication problems
9. make sure that any actions that they take are within the limits of their own responsibility and authority
10. refer requests for information and/or assistance that are outside their authority/responsibility to the appropriate person
11. resolve disagreements and difficulties in working relationships with the appropriate person
12. communicate in a manner which promotes understanding, goodwill and trust
13. maintain effective communication using two of the following methods:
    - in writing

- electronically
- orally

Unit 202 Promoting effective working relationships

Outcome 2 Know how to promote effective working relationships

Assessment Criteria

Underpinning Knowledge

The learner can:

1. describe the statutory regulations that can affect working relationship i.e., Disability, Equal Opportunities, Discrimination, Harassment
2. explain why it is important to present themselves in the workplace on time and ready for work
3. explain the methods in their organisation that can be used to gain information, advice and help
4. explain the methods that can be used to establish and maintain good working relationships
5. explain what might affect good working relationships
6. explain how to identify problems in working relationships
7. explain the methods of handling and resolving problems 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 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. explain who to refer to with requests that are not within the limits of their responsibility
14. explain who to refer to if they have problems with working relationships that they cannot resolve
15. explain what their responsibilities are with regard to the reporting lines and procedures in their working area
16. explain what are the responsibilities of the people identified in assessment criteria 14 and 15 above

Unit 203 Transferring materials

Level: **2**

Credit value: **13**

Unit aim

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

This will involve choosing the right equipment to use to move the materials, loading the materials correctly and following job instructions when moving the materials to their intended destination. In a manufacturing environment they could be expected to supply the production line with materials in the right place, at the right time. The learner will be expected to return any equipment used for the transfer of the materials 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 their 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 with the transfer activity, or the equipment, materials or documentation used, that they cannot personally resolve, or are outside their permitted authority to the appropriate people. They will be expected to work to instructions, with a minimum of supervision, taking personal responsibility for their actions and the work that they carry out. They will also be expected to complete any necessary documentation accurately and legibly.

The learner's knowledge will be sufficient to provide a sound basis for their work, and allow them to adopt an informed approach to applying the required work instructions and lifting and moving procedures. They will have an understanding of the lifting and moving techniques used, and their application, and 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. They will be required to demonstrate safe working practices throughout, and will understand the responsibility they owe to themselves and others in the workplace.

Unit overview

This unit on transferring materials involves:

- choosing the correct equipment to transfer the materials
- loading the materials safely and correctly
- carrying out the transfer activity, and when necessary keeping the operation going
- reporting unsolvable problems, or problems that the learner is not responsible for, to the appropriate person
- completing any necessary documentation accurately and legibly
- working in ways which maintain the safety of the learner and others

Learning outcomes

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

1. Transfer materials
2. Know how to transfer materials

Guided learning hours

It is recommended that **41** 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 No. 2.03: Transferring materials (Suite 2)

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by 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)' which can be downloaded from Semta's website:
http://www.semta.org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx

Additional assessment requirements have been published by Semta. These additional assessment requirements are set down in Semta's Performing Manufacturing Operations Level 2 unit assessment strategy which can be downloaded from Semta's website:
http://www.semta.org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx

Unit specific additional assessment requirements:

Assessment criteria 1.1 and 1.2 should be observed and recorded over a period of time.

The use of simulation within a realistic working environment is acceptable for assessment criteria 1.11, 1.12, 1.13, 1.14, 1.16.

Unit 203 Transferring materials

Outcome 1 Transfer 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. 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/techniques to move the materials
4. move materials using one or more of the following types of equipment:
   - hand operated
   - power operated

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

6. carry out safe and correct manual lifting techniques to include three of the following:
   - lifting from ground level
   - lifting from an angle
   - lifting from waist high
   - lifting from below ground level
   - lifting from overhead

7. check that the weight of the materials does not exceed the safe lifting capacity of the equipment chosen
8. check that the materials to be moved are correct, safely loaded and secure
9. carry out checks of the materials to be moved to include all of the following:
   - the materials are as specified on the documentation
   - the materials are stacked safely
   - materials are in a suitable condition for the moving operation
   - the load does not exceed the safe lifting capacity of the equipment
   - the load is secure
   - there are no restrictions or obstacles preventing movement of the materials

10. move the materials to their correct location in accordance with instructions to include one of the following:
    - production materials
    - consumable materials
    - finished products or components
    - waste or scrap

11. identify any problems with the material transfer
12. take appropriate action to solve problems which are within their permitted authority/responsibility
13. make permitted adjustments to solve problems related to two of the following:
    - equipment condition
    - material weight/suitability for moving
    - securing the load in place

14. report any problems that they cannot solve or are outside their permitted authority to the appropriate person to include one of the following:
    - supervisor
    - team leader
    - quality control

15. return any equipment they have used to its correct location on completion of the activities and leave it in a safe and reusable condition
16. maintain any material/s movement documentation accurately and legibly

Unit 203 Transferring materials

Outcome 2 Know how to transfer 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 material moving operations
2. explain the specific safe working practices, lifting and moving procedures and regulations that need to be observed
3. explain the hazards associated with carrying out the material moving operations
4. explain how can the specific hazards be minimised
5. explain what personal protective equipment needs to be used during the material movement activities and where can it be obtained
6. explain how to obtain the necessary job instructions, lifting and moving equipment operating procedures and how to interpret them
7. explain what procedures and documentation are required to allow the transfer of materials to take place
8. explain 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
9. explain how to choose the most suitable equipment for the moving operation being performed
10. explain the lifting and handling procedures, and load bearing capacities of the equipment being used
11. explain how to apply manual lifting techniques when lifting alone and with the assistance of others
12. explain what specific moving/transfer operations are being performed
13. explain how to identify problems with the moving/transfer operation
14. explain what action they should take to solve problems that are within the limits of their responsibility
15. explain why it is important to report problems to the appropriate people when they cannot solve them and/or they are not their responsibility
16. explain why is it 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
17. explain what documentation may need to be completed, and why it is important to complete it accurately and legibly
18. explain what their responsibilities are with regard to the reporting lines and procedures in their working area
19. explain who are the appropriate people and what are their responsibilities within their working area

Unit 204 Preparing for manufacturing operations

Level: **2**

Credit value: **9**

Unit aim

This unit covers the skills and knowledge needed to prove the competences required to prepare for the manufacturing operations. This involves preparing for the manufacturing operations 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 manufacturing operations and this will include ensuring the correct layout of tools and materials, maintaining accessibility for receipt and removal of materials and ensuring the area is free from obstructions or potential hazards. They will be expected to control preparation activities, making adjustments, minimising waste and solving problems that are within their permitted authority. The equipment should be cleaned where necessary, and materials should be removed and stored correctly. They will need to check all tools and equipment are in a safe condition and are operating correctly, and that sufficient materials are available for the manufacturing operation, and that they conform to the relevant specification/s. Any incorrect documentation, equipment, tools and/or materials should be corrected within the limits of their responsibility; otherwise it 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 that they cannot personally resolve, or are outside their permitted authority to the appropriate people. They will be expected to work to instructions, with a minimum of supervision, taking personal responsibility for their actions and the quality of the work that they carry out. They will also be expected to complete any necessary documentation accurately and legibly.

The learner's knowledge will be sufficient to provide a sound basis for their work, and to adopt an informed approach to applying the required work instructions and preparation procedures. They 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. They 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 involving machinery. They will be required to demonstrate safe working practices throughout, and will understand the responsibility you owe to themselves and others in the workplace.

Unit overview

This unit on preparing for manufacturing operations involves:

- working with minimum supervision
- preparing the work area, equipment and materials
- requesting replacement tools, equipment when required
- solving problems within the limits of the learner's responsibility
- confirming the status of the work area, equipment
- checking and confirming the materials
- reporting unsolvable problems, or problems that the learner is not responsible for, to the appropriate person
- working in ways which maintain the safety of the learner and others

Learning outcomes

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

1. Prepare for manufacturing operations
2. Know how to prepare for manufacturing operations

Guided learning hours

It is recommended that **41** 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 No. 2.04: Preparing for manufacturing operations (Suite 2)

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by 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)' which can be downloaded from Semta's website:
http://www.semta.org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx

Additional assessment requirements have been published by Semta. These additional assessment requirements are set down in Semta's Performing Manufacturing Operations Level 2 unit assessment strategy which can be downloaded from Semta's website:
http://www.semta.org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx

Unit specific additional assessment requirements

Assessment criteria 1.1, 1.2, 1.14 should be observed and recorded over a period of time.

The use of simulation within a realistic working environment is acceptable for assessment criteria 1.11, 1.12, 1.13.

Unit 204 Preparing for manufacturing operations

Outcome 1 Prepare 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. follow the relevant preparation procedures and safety requirements to include all of the following:
   - health and safety and environmental regulations
   - safe working practices
   - job instructions
   - equipment / tool operating instructions
   - company standards and procedures

3. obtain and follow the correct job instructions and any relevant preparation procedure specifications
4. carry out work area preparations according to procedure specification and take account of any specific safety requirements
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 equipment and material layout

6. prepare the equipment for the manufacturing operations and check that it is in a safe and usable condition to include one of the following:
   - machinery
   - process plant
   - tools-hand held and portable
   - material handling arrangements
   - equipment specific to the operation

7. when necessary, request replacement tools and equipment within the limits of their responsibility
8. ensure that the materials are available, and they meet the specification for type, quantity and quality
9. make available and check materials for manufacturing operations to include one of the following :
   - production materials

- consumable materials

10. minimise any waste during preparation activities
11. deal with problems in preparation in two of the following areas:
    - raw materials
    - documentation
    - tooling
    - equipment
    - work area

12. resolve any problems with the preparation activity within the limits of their responsibility
13. report any problems that they cannot solve or are outside their permitted authority to the appropriate person to include two of the following:
    - supervisor
    - team leader
    - maintenance personnel
    - quality control

14. maintain a safe and organised work area at all times

Unit 204 Preparing for manufacturing operations

Outcome 2 Know how to prepare 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. explain the specific safe working practices that need to be observed whilst carrying out the preparations
3. explain the hazards associated with carrying out the preparation activities and how they can be minimised
4. explain what personal protective equipment needs to be used during the preparation activities and where can it be obtained
5. explain how to obtain the necessary job instructions, equipment preparation procedures and how to interpret them
6. explain how the work area needs to be laid out, and where tools and materials need to be positioned
7. explain what material preparations may be required and how they will be carried out
8. explain what preparation checks need to be taken on the tools and/or equipment that they will use
9. explain what to do if their work area, equipment and/or materials are unsuitable for the planned operations
10. explain the arrangements for the receiving and removal of materials and products
11. explain what checks are needed to make sure materials meet the required specification
12. explain how to check that preparation is complete and correct
13. explain what methods can be used to minimise waste during preparation activities
14. explain the potential problems with carrying out preparation activities and how they can be avoided
15. explain what problems can occur in preparation activities
16. explain how to identify problems within preparation activities
17. explain what actions they can take within the limits of their responsibility to solve the problems
18. explain who to report unsolvable problems to, or problems that are not within the limits of their responsibility
19. explain what documentation may need to be completed, and why it is important to complete it accurately

20. explain what their personal responsibilities are with regard to health, safety and environmental issues
21. explain who are the appropriate people and what are their responsibilities within their working area

Unit 205 Concluding manufacturing operations

Level: **2**

Credit value: **9**

Unit aim

This unit covers the skills and knowledge needed to prove the competences required to conclude manufacturing operations.

This involves stopping the manufacturing operations according to defined company procedures, and taking account of all health and safety requirements. The learner will be expected to control the shut down of all operating systems and equipment in accordance with specified shutdown procedures, making any adjustments within their permitted authority and minimising any waste. The equipment should be cleaned where necessary, and materials should be removed and stored correctly. The work area must also be left in a clean and tidy manner. Any incorrect documentation, equipment, tools and/or materials should be corrected within the limits of their responsibility, otherwise it 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 that they cannot personally resolve, or are outside their permitted authority to the appropriate people. They will be expected to work to instructions, with a minimum of supervision, taking personal responsibility for their actions and the quality of the work that they carry out. They will be expected to complete any necessary documentation accurately and legibly.

The learner's knowledge will be sufficient to provide a sound basis for their work, and adopt an informed approach to applying the appropriate shutdown procedures/methods of completing the manufacturing operations. They 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. They will be required to demonstrate safe working practices throughout, and will understand the responsibility they owe to themselves and others in the workplace.

Unit overview

This unit on concluding manufacturing operations involves:

- working with minimum supervision
- stopping manufacturing operations according to defined company procedures
- cleaning tools and equipment when required

- storing materials when required
- reporting unsolvable problems, or problems that the learner is not responsible for, to the appropriate person
- completing any necessary documentation
- working in ways which maintain the safety of the learner and others

Learning outcomes

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

1. Conclude manufacturing operations
2. Know how to conclude manufacturing operations

Guided learning hours

It is recommended that **36** 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 No. 2.05: Concluding manufacturing operations (Suite 2)

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by 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)' which can be downloaded from Semta's website:
http://www.semta.org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx

Additional assessment requirements have been published by Semta. These additional assessment requirements are set down in Semta's Performing Manufacturing Operations Level 2 unit assessment strategy which can be downloaded from Semta's website:
http://www.semta.org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx

Unit specific additional assessment requirements

Assessment criteria 1.1, 1.2, 1.13 should be observed and recorded over a period of time.

The use of simulation within a realistic working environment is acceptable for assessment criteria 1.4, 1.6, 1.11, 1.12, 1.14, 1.15.

Unit 205 Concluding manufacturing operations

Outcome 1 Conclude 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 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

3. obtain and follow the correct job instructions and any relevant completion/shutdown procedure instructions
4. stop the operations in accordance with job instructions and specified completion/shutdown procedures, and take account of any specific safety procedures
5. close down equipment used in the manufacturing operations to include one of the following:
   - machinery
   - process plant
   - tools (hand held and portable)
   - material handling arrangements
   - equipment specific to the operation

6. make sure any related equipment is shut down to a safe condition in accordance with completion/shutdown procedures
7. ensure equipment is clean for further use
8. remove and store materials in a correct and safe manner
9. 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

10. minimise any waste during completion/shutdown activities

11. resolve any problems with the completion/shutdown activity within the limits of their responsibility
12. report any problems that they cannot solve or are outside their permitted authority to the appropriate person to include two of the following:
    - supervisor
    - team leader
    - maintenance personnel
    - quality control

13. maintain a safe and organised work area at all times
14. report on status of completion/shutdown of manufacturing operations
15. use the correct reporting procedure on completion of manufacturing operations for one of the following:
    - output
    - downtime
    - quality
    - maintenance requirements
    - scrap
    - work in progress

16. confirm completion/shutdown is correct and complete according to defined procedures/instructions

Unit 205 Concluding manufacturing operations

Outcome 2 Know how to conclude 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. explain the specific safe working practices that need to be observed whilst carrying out the completion/shut down activities
3. explain the hazards associated with carrying out the completion/shutdown activities and how they can be minimised
4. explain what personal protective equipment needs to be used during the completion/shutdown and cleaning activities and where can it be obtained
5. explain what actions need to be taken in case of emergencies when shutting down machines or fully automated manufacturing operations
6. explain how to obtain the necessary job instructions, equipment shutdown procedures and how to interpret them
7. explain when in the manufacturing operation is it safe to shut down the equipment
8. explain what completion checks need to be made
9. explain the procedures for cleaning the equipment
10. explain the procedures for storing and removing materials and waste
11. explain what methods can be used to minimise waste during completion activities
12. explain the potential problems with carrying out the completion activities and how they can be avoided
13. explain what problems can occur in completion/shutdown activities
14. explain how to identify problems within completion/shutdown activities
15. explain what actions they can take within the limits of their responsibility to solve the problems
16. explain who to report unsolvable problems to, or problems that are not within the limits of their responsibility
17. explain what documentation needs to be completed and why it is important to complete it accurately and legibly
18. explain what their responsibilities are with regard to the reporting lines and procedures in their working area
19. explain who are the other appropriate people and what are their responsibilities within their working area

Unit 206 Ensuring effective handover of manufacturing operations

Level: 2

Credit value: 9

Unit aim

This unit covers the skills and knowledge needed to prove the competences required to ensure the effective handover of 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 all operating systems, and that equipment conforms to the relevant handover instructions. They will be expected to monitor and control the handover operation, minimising waste and making adjustments within the limits of their permitted authority, the equipment should be cleaned where necessary, and materials and equipment stored correctly. The work area must also be left in a clean and tidy manner.

The learner's responsibilities will require them to comply with organisational policy and procedures for the handover activities undertaken, and to report any problems that they cannot personally resolve, or are outside their permitted authority to the appropriate people. They will be expected to work to instructions, with minimum supervision, taking personal responsibility for their actions and the quality of the work that they carry out. They will be expected to complete any necessary documentation accurately and legibly.

The learner's knowledge will be sufficient to provide a sound basis for their work, and adopt an informed approach to applying the appropriate handover procedures. They will have an understanding of the hand over operation used, and its application, in an adequate depth to provide a sound background for carrying out the handover operation, making allowable adjustments when required, to ensure that the handover operation is completed satisfactorily. They 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. They will be required to demonstrate safe working practices throughout, and will understand the responsibility they owe to themselves and others in the workplace.

Unit overview

This unit on handing over manufacturing operations involves:

- preparation of area, equipment and materials for handover
- cleaning tools and equipment when required
- confirming the status of the area, equipment and materials for handover
- handover of manufacturing operations
- monitoring and controlling the handover operation
- reporting unsolvable problems or problems that the learner is not responsible for, to the appropriate person
- completing any necessary documentation
- working in ways which maintain the safety of the learner and others

Learning outcomes

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

1. Ensure effective handover of manufacturing operations
2. Know how to ensure effective handover of manufacturing operations

Guided learning hours

It is recommended that **36** 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 No. 2.06: Ensuring effective handover of manufacturing operations (Suite 2)

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by 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)' which can be downloaded from Semta's website:
http://www.semta.org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx

Additional assessment requirements have been published by Semta. These additional assessment requirements are set down in Semta's Performing Manufacturing Operations Level 2 unit assessment strategy which can be downloaded from Semta's website:
http://www.semta.org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx

Unit specific additional assessment requirements

Assessment criteria 1.1 and 1.2 should be observed and recorded over a period of time.

The use of simulation within a realistic working environment is acceptable for assessment criteria 1.10, 1.11, 1.12, 1.13, 1.15.

Unit 206 Ensuring effective handover of manufacturing operations

Outcome 1 Ensure effective handover of 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 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

3. obtain and follow the correct job instructions and any relevant handover instructions
4. carry out pre-handover checks, and prepare the manufacturing operation for handover
5. prepare and handover equipment used in the manufacturing operations to include one of the following:
   - machinery
   - process plant
   - tools (hand held and portable)
   - material handling arrangements
   - equipment specific to the operation

6. 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

7. make sure that they take account of any specific safety requirements involved in the handover
8. perform the handover operation

9. monitor and control the handover operation, and identify any faults, variation, problems that occur
10. make any necessary adjustments within their permitted authority

11. make permitted adjustments to solve handover problems to include two of the following:
    - quality
    - accuracy
    - material utilisation
    - operational safety
    - manufacturing changes
    - productivity

12. report any faults, variations or problems that they cannot solve or are outside their permitted authority to the appropriate person to include one of the following:
    - supervisor
    - team leader
    - quality control

13. minimise any waste during the handover operation
14. confirm handover as correct and complete
15. complete any necessary documentation accurately and legibly

Unit 206 Ensuring effective handover of manufacturing operations

Outcome 2 Know how to ensure effective handover of 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. explain the specific safe working practices that need to be observed whilst carrying out the handover activities
3. explain the hazards associated with carrying out the handover activities and how they can be minimised
4. explain what personal protective equipment needs to be used during the preparation activities for handover and where can it be obtained
5. explain what actions need 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, handover procedures, and how to interpret them
7. explain when in the manufacturing operation is it safe to carry out the handover procedure
8. explain what pre handover checks need to be made
9. explain what the layout of the work area should be for the handover operation
10. explain the procedures for cleaning the equipment, and storing and removing materials and waste
11. explain how to carry out the handover operation safely and correctly
12. explain what faults, problems or variations can occur in the handover operation
13. explain how to identify faults, problems or variations in the handover operation
14. explain what adjustments they are allowed to make during the handover operation
15. explain why it is important to report faults, variations or problems that are outside their permitted authority or they cannot solve
16. explain what documentation may need to be completed on handover, and why it is important to complete it accurately and legibly
17. explain what their responsibilities are with regard to the reporting lines and procedures in their working area
18. explain who are the other appropriate people and what are their responsibilities within their working area

Unit 207 Receiving and checking incoming materials

Level: **2**

Credit value: **9**

Unit aim

This unit covers the skills and knowledge needed to prove the competences required to receive and check 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 the area is free from obstructions or potential hazards. They 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, equipment, tools and/or materials should be corrected within the limits of their responsibility; otherwise it 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 that they cannot personally resolve, or are outside their permitted authority to the relevant people. They will be expected to work to instructions, with a minimum of supervision, taking personal responsibility for their actions and the quality of the work that they carry out. They will also be expected to complete any necessary documentation accurately and legibly.

The learner's knowledge will be sufficient to provide a sound basis for their work, and to adopt an informed approach to applying the required work instructions and preparation procedures. They 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. They will understand why their actions are important in the manufacturing operation.

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

Unit overview

This unit on receiving and checking incoming materials involves:

- working with minimum supervision
- preparation of work area for receipt of materials
- receiving materials
- confirming the status of the materials
- completing any necessary documentation accurately and legibly
- working in ways which maintain the safety of the learner and others

Learning outcomes

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

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

Guided learning hours

It is recommended that **36** 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 No. 2.07: Receiving and checking incoming materials (Suite 2)

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by 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)' which can be downloaded from Semta's website:
http://www.semta.org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx

Additional assessment requirements have been published by Semta. These additional assessment requirements are set down in Semta's Performing Manufacturing Operations Level 2 unit assessment strategy which can be downloaded from Semta's website:
http://www.semta.org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx

Unit specific additional assessment requirements

Assessment criteria 1.1, 1.2, 1.12 should be observed and recorded over a period of time.

The use of simulation within a realistic working environment is acceptable for assessment criteria 1.10, 1.11, 1.14.

Unit 207 Receiving and checking incoming materials

Outcome 1 Receive and check 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. 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

3. obtain and follow the correct job instructions and any relevant material specifications
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
   - hazardous materials

9. confirm that the materials meet the specification for type, quantity and quality
10. resolve any problems that are within the limits of their responsibility in two of the following areas:
    - material quantity
    - material quality
    - delivery time of material
    - work area
    - location of material

11. report any problems that they cannot solve or are outside their permitted authority to the appropriate person to include one of the following:
    - supervisor/manager
    - team leader
    - quality control

12. maintain a safe and organised work area at all times
13. confirm materials are correct and complete
14. complete documentation accurately and legibly

Unit 207 Receiving and checking incoming materials

Outcome 2 Know how to receive and check 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. explain the specific safe working practices that need to be observed whilst carrying out the receipt of materials
3. explain the hazards associated with carrying out the receipt of the materials and how they can be minimised
4. explain what personal protective equipment needs to be used and where can it be obtained
5. explain how to obtain the necessary job instructions, material specifications and preparation procedures and how to interpret them
6. explain how the work area needs to be laid out, in readiness for the receipt of the materials
7. explain what the arrangements are for receiving the materials
8. explain what checks are needed to make sure materials meet the required specification
9. explain what methods can be used to minimise waste during receipt of materials
10. explain the potential problems with carrying out the receipt of materials and how they can be avoided
11. explain what problems can occur in receiving materials
12. explain how to identify problems with receiving materials
13. explain what to do if the materials are not to the required specification or are damaged or unsuitable for the planned production operations
14. explain what actions they can take within the limits of their responsibility to solve problems
15. explain who to report unsolvable problems to, or problems that are not within the limits of their responsibility
16. explain what their responsibilities are with regard to the reporting lines and procedures in their working area
17. explain who are the appropriate people and what are their responsibilities within their working area

Unit 208 Producing shaped products

Level: **2**

Credit value: **18**

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 producing shaped products according to defined operating procedures. The learner will be expected to monitor and control the shaping operation, minimising any waste, making adjustments within the limits of their permitted authority and ensuring that the completed components are to the required specification. Meeting production targets will be an important issue and their 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 that they cannot personally resolve or are outside their permitted authority to the appropriate people.

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

The learner's knowledge will be sufficient to provide a sound basis for their work, and will enable them to adopt an informed approach to applying the required work instructions and shaping procedures. They 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, making allowable adjustments when required, to ensure that the required specification is achieved.

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

NB This unit is NOT applicable to wood machining operations, to which other industry specific standards and strict regulations apply.

Unit overview

This unit on producing shaped products involves:

- working with minimum supervision
- using the correct tools, equipment and materials
- performing the shaping operation
- monitoring and controlling the shaping operation
- making adjustments within the learner's permitted authority
- reporting unsolvable problems or problems that the learner is not responsible for, to the appropriate person
- completing any necessary documentation
- working in ways which maintain the safety of the learner and others

Learning outcomes

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

1. Produce shaped products
2. Know how to produce shaped products

Guided learning hours

It is recommended that **56** 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 No. 2.08: Producing shaped products (Suite 2)

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by 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)' which can be downloaded from Semta's website:
http://www.semta.org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx

Additional assessment requirements have been published by Semta. These additional assessment requirements are set down in Semta's Performing Manufacturing Operations Level 2 unit assessment strategy which can be downloaded from Semta's website:
http://www.semta.org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx

Unit specific additional assessment requirements

Assessment criteria 1.1, 1.2 should be observed and recorded over a period of time.

The use of simulation within a realistic working environment is acceptable for assessment criteria 1.7, 1.8, 1.9, 1.10, 1.15.

Unit 208 Producing shaped products

Outcome 1 Produce shaped products

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 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

3. obtain and follow the correct job instructions and any relevant shaping procedure and quality specifications
4. use the correct shaping tools, equipment, materials and work holding methods for the shaping operations being performed
5. perform shaping operations using one of the following methods:
   - hand shaping operations
   - manually operated machine shaping operations
   - fully automated machine shaping operations
   - combined shaping operations

6. perform the shaping operation according to instructions and safe operating procedures
7. monitor and control the shaping operation and identify any faults, variations or problems that occur
8. make permitted adjustments to solve production faults, variations or problems related to two of the following:
   - quality
   - accuracy
   - material utilisation
   - operational safety
   - manufacturing changes
   - productivity

9. make any necessary adjustments within their permitted authority
10. report any problems that they cannot solve or are outside their permitted authority to the appropriate person to include one of the following:
    - supervisor

- team leader
- quality control

11. minimise any waste during the shaping operation
12. produce shaped products which comply with the shaping specification and quality requirements
13. carry out checks of the shaped products to include the following:
    - completeness of shaping operations

    and two other checks from the following:
    - dimensional accuracy of shaped product
    - quality of finish
    - freedom from damage or false tool cuts

14. work to achieve their production targets for both of the following:
    - output
    - quality

15. deal appropriately with finished components and complete any necessary documentation accurately and legibly

Unit 208 Producing shaped products

Outcome 2 Know how to produce shaped products

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. explain the specific safe working practices, shaping procedures and environmental regulations that need to be observed
3. explain the hazards associated with carrying out the shaping operations and how they can be minimised
4. explain what actions need to be taken in case of emergencies
5. explain what personal protective equipment needs to be used during the shaping activities and where can it be obtained
6. explain how to obtain the necessary job instructions, operating procedures and shaping specifications that are used, and how to interpret them
7. explain what tools and equipment are 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 monitor and control the shaping equipment to achieve the required specification
10. explain 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. explain what methods can be used to minimise waste during shaping operations
13. explain what faults, problems or variations can occur in the shaping operation
14. explain how to identify faults, problems or variations in the shaping operation
15. explain what allowable adjustments they can make to achieve specification in the shaping operation
16. explain why it is important to report faults, variations or problems that are outside their permitted authority and or they cannot solve immediately
17. explain how to check the quality of the shaped components, against the required quality standards and what tools and equipment are used
18. explain what documentation may need to be completed, and why it is important to complete it accurately and legibly
19. explain what their responsibilities are with regard to the reporting lines and procedures in their working area
20. explain who are the appropriate people and what are their responsibilities within their working area

Unit 209 Producing products by assembly operations

Level: **2**

Credit value: **18**

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 and control the assembly operation, making adjustments within their permitted authority, minimising any waste and ensuring that the completed assemblies are to the required specification. Meeting production targets will be an important issue and their 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 they cannot personally resolve, or are outside their permitted authority to the appropriate people. They will be expected to work to instructions, with a minimum of supervision, taking personal responsibility for their actions and the quality and accuracy of the work that they produce. They will also be expected to complete any necessary documentation accurately and legibly.

The learner's knowledge will be sufficient to provide a sound basis for their work, and will enable them to adopt an informed approach to applying the required work instructions and assembly procedures. They 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. They will be required to demonstrate safe working practices throughout, and will understand the responsibility they owe to themselves and others in the workplace.

Unit overview

This unit on producing products by assembly operations involves:

- working with minimum supervision
- using the correct, tools, equipment and materials for the assembly operation
- performing the product assembly in the correct sequence
- monitoring and controlling the assembly operation
- making adjustments within the learner's permitted authority
- reporting unsolvable problems, or problems that the learner is not responsible for, to the appropriate person
- completing any necessary documentation accurately and legibly

Learning outcomes

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

1. Produce shaped products
2. Know how to produce products by assembly operations

Guided learning hours

It is recommended that **56** 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 No. 2.09: Producing products by assembly operations (Suite 2)

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by 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)' which can be downloaded from Semta's website:
http://www.semta.org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx

Additional assessment requirements have been published by Semta. These additional assessment requirements are set down in Semta's Performing Manufacturing Operations Level 2 unit assessment strategy which can be downloaded from Semta's website:
http://www.semta.org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx

Unit specific additional assessment requirements

Assessment criteria 1.1, 1.2 should be observed and recorded over a period of time.

The use of simulation within a realistic working environment is acceptable for assessment criteria 1.9, 1.10, 1.11, 1.15.

Unit 209 Producing products by assembly operations

Outcome 1 Produce products by 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. obtain and follow the correct job instructions and any relevant assembly procedure and quality specifications
4. check that they have all the necessary components and that they are undamaged and in a usable condition
5. position and align the components correctly
6. secure the components in position using the specified fastening device/method
7. use appropriate tools, equipment and materials during the assembly operations
8. carry out assembly operations using one of the following methods:
   - hand assembly operations
   - manually operated machine assembly operations
   - fully automated assembly operations
   - combined assembly operations

9. monitor and control the assembly operation and identify any faults/variations/problems that occur
10. make permitted adjustments to solve production faults, variations or problems related to two of the following:
    - quality
    - accuracy
    - material utilisation
    - operational safety
    - productivity
    - manufacturing changes

11. report any problems that they cannot solve or are outside their permitted authority to the appropriate person to include one of the following:
    - supervisor
    - quality control
    - team leader

12. produce assembled product/s which comply with the specification and quality requirements
13. carry out checks of the assembly to include the following:
    - completeness of the assembly
    - and three other checks from the following:
    - positional accuracy of components
    - correct orientation of components
    - component alignment
    - component security
    - freedom from damage or foreign objects
    - volume/quantity

14. work to achieve their production targets for both of the following:
    - output
    - quality

15. deal appropriately with finished assemblies and complete any necessary documentation accurately and legibly

Unit 209 Producing products by assembly operations

Outcome 2 Know how to produce products by 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. explain the specific safe working practices, assembly procedures and environmental regulations that need to be observed
3. explain the hazards associated with carrying out the assembly operations and how they can be minimised
4. explain what actions need to be taken in case of emergencies
5. explain what personal protective equipment needs to be used during the assembly activities and where can it be obtained
6. explain how to obtain the necessary job instructions, operating procedures and assembly specifications that are used, and how to interpret them
7. explain what tools and equipment are used for the assembly operation and how to check that they are in a safe and usable condition
8. explain 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. explain what methods are used to align and position the components prior to fixing them into position
11. explain what methods are used to fix the components securely in position
12. explain what methods can be used to minimise waste during the assembly operation
13. explain how to monitor the quality of the assembly and identify any variations from the specification
14. explain how to check the quality of the assembly, against the required quality standards and what tools and equipment are used
15. explain what fault, problems or variations can occur in the assembly operation
16. explain how to identify the faults, problems or variations in the assembly operation
17. explain what allowable adjustments they can make to achieve the required outcome
18. explain what documentation may need to be completed, and why it is important to complete it accurately and legibly
19. explain what their responsibilities are with regard to the reporting lines and procedures in their working area

20. explain who are the appropriate people and what are their responsibilities within their working area

Unit 210 Producing joined products

Level: **2**

Credit value: **17**

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':- soldering, bonding, gluing, welding or brazing.

This will involve producing joined products according to defined operating procedures. The learner will be expected to monitor and control the joining operation, minimising any waste, making adjustments within the limits of their permitted authority and ensuring that the completed components are to the required specification. Meeting production targets will be an important issue and their 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 they cannot personally resolve, or are outside their permitted authority to the appropriate people.

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

The learner's knowledge will be sufficient to provide a sound basis for their work, and will enable them to adopt an informed approach to applying the required work instructions and joining procedures. They 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, making allowable adjustments when required, to ensure that the required specification is achieved.

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

Unit overview

This unit on producing joined products involves:

- working with minimum supervision
- performing the joining operation, using the correct joining 'medium'
- monitoring and controlling the joining operation
- making adjustments within the learner's permitted authority
- reporting unsolvable problems, or problems that the learner is not responsible for, to the appropriate person
- completing any necessary documentation
- working in ways which maintain the safety of the learner and others

Learning outcomes

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

1. Produce joined products
2. Know how to produce joined products

Guided learning hours

It is recommended that **56** 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 No. 2.10: Producing joined products (Suite 2)

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by 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)' which can be downloaded from Semta's website:
http://www.semta.org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx

Additional assessment requirements have been published by Semta. These additional assessment requirements are set down in Semta's Performing Manufacturing Operations Level 2 unit assessment strategy which can be downloaded from Semta's website:
http://www.semta.org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx

Unit specific additional assessment requirements

Assessment criteria 1.1, 1.2 should be observed and recorded over a period of time.

The use of simulation within a realistic working environment is acceptable for assessment criteria 1.7, 1.8, 1.9, 1.14.

Unit 210 Producing joined products

Outcome 1 Produce joined products

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 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

3. prepare the surface to be joined, making sure that it is free of any defects which may affect the joining operation
4. use the correct joining tools, equipment and techniques to correctly position and align the components to be joined
5. perform joining operations using one of the following methods:
   - hand joining operations
   - manually operated machine joining operations
   - fully automated machine joining operations
   - combined joining operations

6. perform the joining operation according to instructions and safe operating procedures
7. monitor and control the joining operation and identify any faults, variations or problems that occur
8. make permitted adjustments to solve production faults, variations or problems related to two of the following:
   - quality
   - accuracy
   - material utilisation
   - operational safety
   - manufacturing changes
   - productivity

9. report any problems that they cannot solve or are outside their permitted authority to the appropriate person to include one of the following:
   - supervisor
   - team leader

- quality control

10. minimise any waste during the joining operation
11. produce joined products which comply with the joining specification and quality requirements
12. carry out checks of the joined products to include all of the following:
    - completeness of joining operations
    - positional accuracy of product
    - joint quality and appearance
    - security of joint
    - freedom from excessive joining medium

13. work to achieve their production targets both of the following:
    - output
    - quality

14. deal appropriately with finished components and complete any necessary documentation accurately and legibly

Unit 210 Producing joined products

Outcome 2 Know how to produce joined products

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. explain the specific safe working practices, joining procedures and environmental regulations that need to be observed
3. explain the hazards associated with carrying out the joining operations and how they can be minimised
4. explain what actions need to be taken in case of emergencies
5. explain what personal protective equipment needs to be used during the joining activities and where can it be obtained
6. explain how to obtain the necessary job instructions, operating procedures and joining specifications that are used, and how to interpret them
7. explain what tools and equipment are used for the joining operations undertaken and how to check that they are in a safe and usable condition
8. explain the methods of surface preparation that are used in the joining operation and why they are necessary
9. explain how to correctly position and align the components to be joined
10. explain the specific joining operations to be performed
11. explain how to perform the joining process to achieve the required specification
12. explain why it is important to follow the specified joining sequence and procedure at all times
13. explain what methods can be used to minimise waste during joining operations
14. explain what faults, problems or variations can occur in the joining operation
15. explain how to identify faults, problems or variations in the joining operation
16. explain what allowable adjustments they can make to achieve specification in the joining operation
17. explain why it is important to report faults, variations or problems that are outside their permitted authority and or they cannot solve immediately
18. explain how to monitor and check the quality of the joined components, against the required quality standards and what tools and equipment are used
19. explain what documentation may need to be completed, and why it is important to complete it accurately and legibly
20. explain what their responsibilities are with regard to the reporting lines and procedures in their working area

21. explain who are the appropriate people and what are their responsibilities within their working area

Unit 211 Producing products by processing

Level: **2**

Credit value: **17**

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 involves using a pre-defined sequence of events that 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 producing products by processing according to defined operating procedures. The learner will be expected to monitor and control the processing operation, minimising any waste, making adjustments within the limits of their permitted authority and ensuring that the completed components are to the required specification. Meeting production targets will be an important issue and their 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 that they cannot personally resolve, or are outside their permitted authority the appropriate people.

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

The learner's knowledge will be sufficient to provide a sound basis for their work, and will enable them to adopt an informed approach to applying the required work instructions and processing procedures. They will have an understanding of the processing 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, making allowable adjustments when required, to ensure that the required specification is achieved.

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

Unit overview

This unit on producing products by processing involves:

- working with minimum supervision
- performing the processing operation
- monitoring and controlling the processing operation
- making adjustments within the learner's permitted authority
- reporting unsolvable problems, or problems that the learner is not responsible for, to the appropriate person
- completing any necessary documentation
- working in ways which maintain the safety of the learner and others

Learning outcomes

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

1. Produce products by processing
2. Know how to produce products by processing

Guided learning hours

It is recommended that **56** 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 No. 2.11: Producing products by processing (Suite 2)

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by 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)' which can be downloaded from Semta's website:
http://www.semta.org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx

Additional assessment requirements have been published by Semta. These additional assessment requirements are set down in Semta's Performing Manufacturing Operations Level 2 unit assessment strategy which can be downloaded from Semta's website:
http://www.semta.org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx

Unit specific additional assessment requirements

Assessment criteria 1.1, 1.2, 1.4 should be observed and recorded over a period of time.

The use of simulation within a realistic working environment is acceptable for assessment criteria 1.8, 1.9, 1.10, 1.15.

Unit 211 Producing products by processing

Outcome 1 Produce products by processing

Assessment Criteria

Underpinning Knowledge

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 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

3. obtain and follow the correct job instructions and any relevant processing procedure and quality specifications
4. follow the pre-defined sequence of events at all times
5. use the correct tools, equipment and materials to further the process
6. perform processing operations using one of the following methods:
   - hand processing operations
   - manually operated machine processing operations
   - fully automated machine processing operations
   - combined processing operations

7. perform the processing operation according to instructions and safe operating procedures
8. monitor and control the processing operation and identify any faults, variations or problems that occur
9. make permitted adjustments to solve production faults, variations or problems related to two of the following:
   - quality
   - accuracy
   - material utilisation
   - operational safety
   - manufacturing changes
   - productivity

10. report any problems that they cannot solve or are outside their permitted authority to the appropriate person to include one of the following:
    - supervisor
    - team leader
    - quality control

11. minimise any waste during the processing operation
12. produce processed products which comply with the processing specification and quality requirements
13. carry out checks of the processed products to include the following:
    - completeness of processing operations
    - and two other checks from the following:
    - appearance of product
    - freedom from contamination
    - quantity
    - volume

14. work to achieve their production targets for both of the following:
    - output
    - quality

15. complete any necessary documentation accurately and legibly

Unit 211 Producing products by processing

Outcome 2 Know how to produce products by processing

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. explain the specific safe working practices, processing procedures and environmental regulations that need to be observed
3. explain the hazards associated with carrying out the processing operations and how they can be minimised
4. explain what actions need to be taken in case of emergencies
5. explain what personal protective equipment needs to be used during the processing activities and where can it be obtained
6. explain how to obtain the necessary job instructions, operating procedures and processing specifications that are used, and how to interpret them
7. explain what tools and equipment are used for the processing operations undertaken and how to check that they are in a safe and usable condition
8. explain why it is important to follow the pre-determined sequence of events in the processing operation
9. explain the consequences of not following the pre-determined sequence of events in the processing operation
10. explain the specific processing operations to be performed
11. explain how to perform the processing operation to achieve the required specification
12. explain what methods can be used to minimise waste during processing operations
13. explain what faults, problems or variations can occur in the processing operation
14. explain how to identify faults, problems or variations in the processing operation
15. explain what allowable adjustments they can make to achieve specification in the processing operation
16. explain why it is important to report faults, variations or problems that are outside their permitted authority and or they cannot solve immediately
17. explain how to monitor and check the quality of the processed products, against the required quality standards
18. explain what documentation may need to be completed, and why it is important to complete it accurately and legibly
19. explain what their responsibilities are with regard to the reporting lines and procedures in their working area
20. explain who are the appropriate people and what are their responsibilities within their working area

Unit 212 Producing formed products

Level: **2**

Credit value: **18**

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 producing formed products according to defined operating procedures. The learner will be expected to monitor and control the forming operation, minimising any waste, making adjustments within the limits of their permitted authority and ensuring that the completed components are to the required specification. Meeting production targets will be an important issue and their 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 that they cannot personally resolve, or are outside their permitted authority to the appropriate people.

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

The learner's knowledge will be sufficient to provide a sound basis for their work, and will enable them to adopt an informed approach to applying the required work instructions and forming procedures. They will have an understanding of the forming operation 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, making allowable adjustments when required, to ensure that the required specification is achieved.

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

Unit overview

This unit on producing formed products involves:

- working with minimum supervision
- using the correct tools, equipment and materials for the forming operation
- performing the forming operation
- monitoring and controlling the forming operation
- making adjustments within the learner's permitted authority
- reporting unsolvable problems or problems that the learner is not responsible for, to the appropriate person
- completing any necessary documentation accurately and legibly
- working in ways which maintain the safety of the learner and others

Learning outcomes

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

1. Produce formed products
2. Know how to produce formed products

Guided learning hours

It is recommended that **56** 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 No. 2.12: Producing formed products (Suite 2)

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by 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)' which can be downloaded from Semta's website:
http://www.semta.org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx

Additional assessment requirements have been published by Semta. These additional assessment requirements are set down in Semta's Performing Manufacturing Operations Level 2 unit assessment strategy which can be downloaded from Semta's website:
http://www.semta.org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx

Unit specific additional assessment requirements

Assessment criteria 1.1, 1.2 should be observed and recorded over a period of time.

The use of simulation within a realistic working environment is acceptable for assessment criteria 1.7, 1.8, 1.9, 1.14.

Unit 212 Producing formed products

Outcome 1 Produce formed products

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 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

3. obtain and follow the correct job instructions and any relevant forming procedure and quality specifications
4. use the correct forming tools, equipment, materials and work holding methods for the forming operations being performed
5. perform forming operations using one of the following methods:
   - hand forming operations
   - manually operated machine forming operations
   - fully automated machine forming operations
   - combined forming operations

6. perform the forming operation according to instructions and safe operating procedures
7. monitor and control the forming operation and identify any faults, variations or problems that occur
8. make permitted adjustments to solve production faults, variations or problems related to two of the following:
   - quality
   - accuracy
   - material utilisation
   - operational safety
   - manufacturing changes
   - productivity

9. report any problems that they cannot solve or are outside their permitted authority to the appropriate person to include one of the following:
   - supervisor

- team leader
- quality control

10. minimise any waste during the forming operation
11. produce formed products which comply with the forming specification and quality requirements
12. carry out checks of the formed products to include all of the following:
    - completeness of forming operations
    - shape/profile of formed product
    - quality of finish and appearance
    - freedom from deformity or ripples
    - freedom from damage or tool marks

13. work to achieve their production targets for both of the following:
    - output
    - quality

14. deal appropriately with finished components and complete any necessary documentation accurately and legibly

Unit 212 Producing formed products

Outcome 2 Know how to produce formed products

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. explain the specific safe working practices, forming procedures and environmental regulations that need to be observed
3. explain the hazards associated with carrying out the forming operations and how they can be minimised
4. explain what actions need to be taken in case of emergencies
5. explain what personal protective equipment needs to be used during the forming activities and where can it be obtained
6. explain how to obtain the necessary job instructions, operating procedures and forming specifications that are used, and how to interpret them
7. explain what tools and equipment are used for the forming 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, monitor and control the forming equipment to achieve the required specification
10. explain the specific forming operations to be performed
11. explain why it is important to follow the specified forming sequence and procedure at all times
12. explain what methods can be used to minimise waste during forming operations
13. explain what faults, problems or variations can occur in the forming operation
14. explain how to identify faults, problems or variations in the forming operation
15. explain what allowable adjustments they can make to achieve specification in the forming operation
16. explain why it is important to report faults, variations or problems that are outside their permitted authority and or they cannot solve immediately
17. explain how to check the quality of the formed components, against the required quality standards and what tools and equipment are used
18. explain what documentation may need to be completed, and why it is important to complete it accurately and legibly
19. explain what their responsibilities are with regard to the reporting lines and procedures in their working area
20. explain who are the appropriate people and what are their responsibilities within their working area

Unit 213 Finishing products

Level: **2**

Credit value: **17**

Unit aim

This unit covers the skills and knowledge needed to prove the competences required to carry out finishing operations on materials or products that is used to either; 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 producing finished products according to defined operating procedures. The learner will be expected to monitor and control the finishing operation, minimising any waste, making adjustments within the limits of their permitted authority and ensuring that the completed components are to the required specification. Meeting production targets will be an important issue and their 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 that they cannot personally resolve, or are outside their permitted authority to the appropriate people.

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

The learner's knowledge will be sufficient to provide a sound basis for their work, and will enable them to adopt an informed approach to applying the required work instructions and finishing procedures. They will have an understanding of the finishing operation 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, making allowable adjustments when required, to ensure that the required specification is achieved.

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

Unit overview

This unit on finishing products involves:

- working with minimum supervision
- using the correct tools, equipment and materials for the finishing operation
- performing the finishing operation
- monitoring and controlling the finishing operation
- making adjustments within the learner's permitted authority
- reporting unsolvable problems or problems that the learner is not responsible for, to the appropriate person
- completing any necessary documentation accurately and legibly
- working in ways which maintain the safety of the learner and others

Learning outcomes

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

1. Finish products
2. Know how to finish products

Guided learning hours

It is recommended that **56** 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 No. 2.13: Finishing products (Suite 2)

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by 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)' which can be downloaded from Semta's website:
http://www.semta.org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx

Additional assessment requirements have been published by Semta. These additional assessment requirements are set down in Semta's Performing Manufacturing Operations Level 2 unit assessment strategy which can be downloaded from Semta's website:
http://www.semta.org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx

Unit specific additional assessment requirements

Assessment criteria 1.1, 1.2 should be observed and recorded over a period of time.

The use of simulation within a realistic working environment is acceptable for assessment criteria 1.8, 1.9, 1.10, 1.15.

Unit 213 Finishing products

Outcome 1 Finish products

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 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

3. obtain and follow the correct job instructions and any relevant finishing procedure and quality specifications
4. use the correct finishing tools, equipment, materials for the finishing operations being performed
5. perform finishing operations using one of the following methods:
   - hand finishing operations
   - manually operated machine finishing operations
   - fully automated machine finishing operations
   - combined finishing operations

6. perform the finishing operation according to instructions and safe operating procedures
7. follow the correct sequence of events in the finishing operation
8. monitor and control the finishing operation and identify any faults, variations or problems that occur
9. make permitted adjustments to solve production faults, variations or problems related to two of the following:
   - quality
   - accuracy
   - material utilisation
   - operational safety
   - manufacturing changes
   - productivity

10. report any problems that they cannot solve or are outside their permitted authority to the appropriate person to include one of the following:
    - supervisor
    - team leader
    - quality control

11. minimise any waste during the finishing operation
12. produce finished products which comply with the finishing specification and quality requirements
13. carry out checks of the finished products to include all of the following:
    - completeness of finishing operations
    - quality of finish and appearance
    - freedom from damage
    - freedom from deformity
    - freedom from contamination

14. work to achieve their production targets for both of the following:
    - output
    - quality

15. deal appropriately with finished components and complete any necessary documentation accurately and legibly

Unit 213 Finishing products

Outcome 2 Know how to finish products

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. explain the specific safe working practices, finishing procedures and environmental regulations that need to be observed
3. explain the hazards associated with carrying out the finishing operations and how they can be minimised
4. explain what actions need to be taken in case of emergencies
5. explain what personal protective equipment needs to be used during the finishing activities and where can it be obtained
6. explain how to obtain the necessary job instructions, operating procedures and finishing specifications that are used, and how to interpret them
7. explain what tools and equipment are used for the finishing operations undertaken and how to check that they are in a safe and usable condition
8. explain how to operate, monitor and control the finishing equipment to achieve the required specification
9. explain the specific finishing operations to be performed
10. explain why it is important to follow the specified finishing sequence and procedure at all times
11. explain what methods can be used to minimise waste during finishing operations
12. explain what faults, problems or variations can occur in the finishing operation
13. explain how to identify faults, problems or variations in the finishing operation
14. explain what allowable adjustments they can make to achieve specification in the finishing operation
15. explain why it is important to report faults, variations or problems that are outside their permitted authority and or they cannot solve
16. explain how to check the quality of the finished components, against the required quality standards and what tools and equipment are used
17. explain what documentation may need to be completed, and why it is important to complete it accurately and legibly
18. explain what their responsibilities are with regard to the reporting lines and procedures in their working area
19. explain who are the appropriate people and what are their responsibilities within their working area

Unit 214 Producing moulded products

Level: **2**

Credit value: **18**

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 producing moulded products according to defined operating procedures. The learner will be expected to monitor and control the moulding operation, minimising any waste, making adjustments within the limits of their permitted authority and ensuring that the completed components are to the required specification. Meeting production targets will be an important issue and their 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 that they cannot personally resolve, or are outside their permitted authority to the appropriate people.

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

The learner's knowledge will be sufficient to provide a sound basis for their work, and will enable them to adopt an informed approach to applying the required work instructions and moulding procedures. They will have an understanding of the moulding operation 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, making allowable adjustments when required, to ensure that the required specification is achieved.

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

Unit overview

This unit on producing moulded products involves:

- working with minimum supervision
- using the correct tools, equipment and materials for the moulding operation
- performing the moulding operation
- monitoring and controlling the moulding operation
- making adjustments within the learner's permitted authority
- reporting unsolvable problems or problems that the learner is not responsible for, to the appropriate person
- completing any necessary documentation accurately and legibly
- working in ways which maintain the safety of the learner and others

Learning outcomes

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

1. Produce moulded products
2. Know how to produce moulded products

Guided learning hours

It is recommended that **56** 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 No. 2.14: Producing moulded products (Suite 2)

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by 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)' which can be downloaded from Semta's website:
http://www.semta.org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx

Additional assessment requirements have been published by Semta. These additional assessment requirements are set down in Semta's Performing Manufacturing Operations Level 2 unit assessment strategy which can be downloaded from Semta's website:
http://www.semta.org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx

Unit specific additional assessment requirements

Assessment criteria 1.1, 1.2 should be observed and recorded over a period of time.

The use of simulation within a realistic working environment is acceptable for assessment

criteria 1.8, 1.9, 1.10, 1.15.

Unit 214 Producing moulded products

Outcome 1 Produce moulded products

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 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

3. obtain and follow the correct job instructions and any relevant moulding procedure and quality specifications
4. use the correct moulding tools, equipment, materials and work holding methods for the moulding operations being performed
5. apply release agents to patterns/moulds when required
6. perform moulding operations using one of the following methods:
   - hand moulding operations
   - manually operated machine moulding operations
   - fully automated machine moulding operations
   - combined moulding operations

7. perform the moulding operation according to instructions and safe operating procedures
8. monitor and control the moulding operation and identify any faults, variations or problems that occur
9. make permitted adjustments to solve production faults, variations or problems related to two of the following:
   - quality
   - accuracy
   - material utilisation
   - operational safety
   - manufacturing changes
   - productivity

10. report any problems that they cannot solve or are outside their permitted authority to the

appropriate person to include one of the following:

- supervisor
- team leader
- quality control

11. minimise any waste during the moulding operation
12. produce moulded products which comply with the specification and quality requirements
13. carry out checks of the moulded products to include all of the following:
    - completeness of moulding operations
    - shape/profile of moulded product
    - quality of finish and appearance
    - freedom from damage or deformity
    - freedom from contamination
14. work to achieve their production targets for both of the following:
    - output
    - quality
15. deal appropriately with moulded components and complete any necessary documentation accurately and legibly

Unit 214 Producing moulded products

Outcome 2 Know how to produce moulded products

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. explain the specific safe working practices, moulding procedures and environmental regulations that need to be observed
3. explain the hazards associated with carrying out the moulding operations and how they can be minimised
4. explain what actions need to be taken in case of emergencies
5. explain what personal protective equipment needs to be used during the moulding activities and where can it be obtained
6. explain how to obtain the necessary job instructions, operating procedures and moulding specifications that are used, and how to interpret them
7. explain what tools and equipment are used for the moulding operations undertaken and how to check that they are in a safe and usable condition
8. explain how to apply release agents when required
9. explain how to operate, monitor and control the moulding equipment to achieve the required specification
10. explain the specific moulding operations to be performed
11. explain why it is important to follow the specified moulding sequence and procedure at all times
12. explain what methods can be used to minimise waste during moulding operations
13. explain what faults, problems or variations can occur in the moulding operation
14. explain how to identify faults, problems or variations in the moulding operation
15. explain what allowable adjustments they can make to achieve specification in the moulding operation
16. explain why it is important to report faults, variations or problems that are outside their permitted authority and or they cannot solve immediately
17. explain how to check the quality of the moulded components, against the required quality standards and what tools and equipment are used
18. explain what documentation may need to be completed, and why it is important to complete it accurately and legibly
19. explain what their responsibilities are with regard to the reporting lines and procedures in their working area
20. explain who are the appropriate people and what are their responsibilities within their working area

Unit 215 Producing packaged products

Level: **2**

Credit value: **15**

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 packaging finished products according to defined operating procedures. The learner will be expected to monitor and control the packaging operation, minimising any waste, making adjustments within the limits of their permitted authority and ensuring that the packaged products meet the required specification. Meeting production targets will be an important issue and their 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 that they cannot personally resolve, or are outside their permitted authority to the appropriate people.

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

The learner's knowledge will be sufficient to provide a sound basis for their work, and will enable them to adopt an informed approach to applying the required work instructions and packaging procedures. They will have an understanding of the packaging operation 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, making allowable adjustments when required, to ensure that the required specification is achieved.

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

Unit overview

This unit on producing packaging products involves:

- working with minimum supervision
- using the correct tools, equipment and materials for the packaging operation
- performing the packaging operation
- monitoring and controlling the packaging operation
- making adjustments within the learner's permitted authority
- reporting unsolvable problems or problems that the learner is not responsible for, to the appropriate person
- completing any necessary documentation accurately and legibly
- working in ways which maintain the safety of the learner and others

Learning outcomes

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

1. Produce packaged products
2. Know how to produce packaged products

Guided learning hours

It is recommended that **56** 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 No. 2.15: Producing packaged products (Suite 2)

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by 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)' which can be downloaded from Semta's website:
http://www.semta.org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx

Additional assessment requirements have been published by Semta. These additional assessment requirements are set down in Semta's Performing Manufacturing Operations Level 2 unit assessment strategy which can be downloaded from Semta's website:
http://www.semta.org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx

Unit specific additional assessment requirements

Assessment criteria 1.1, 1.2 should be observed and recorded over a period of time.

The use of simulation within a realistic working environment is acceptable for assessment criteria 1.8, 1.9, 1.10, 1.15.

Unit 215 Producing packaged products

Outcome 1 Produce packaged products

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 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

3. obtain and follow the correct job instructions and any relevant packaging procedure and quality specifications
4. use the correct packaging tools, equipment, materials for the packaging operations being performed
5. perform packaging operations using one of the following methods:
   - hand packaging operations
   - manually operated machine packaging operations
   - fully automated machine packaging operations
   - combined packaging operations

6. perform the packaging operation according to instructions and safe operating procedures
7. follow the correct sequence of events in the finishing operation
8. monitor and control the packaging operation and identify any faults, variations or problems that occur
9. make permitted adjustments to solve production faults, variations or problems to related to two of the following:
   - quality
   - accuracy
   - material utilisation
   - operational safety
   - manufacturing changes
   - productivity

10. report any problems that they cannot solve or are outside their permitted authority to the appropriate person to include one of the following:
    - supervisor

- team leader
- quality control

11. minimise any waste during the packaging operation
12. produce finished products which comply with the packaging specification and quality requirements
13. carry out checks of the packaged products to include the following:
    - completeness of packaging operations
    - and three other checks from the following:
    - quality of finish and appearance
    - freedom from damage
    - freedom from contamination
    - security of packaging
    - quantity
    - volume

14. work to achieve their production targets for both of the following:
    - output
    - quality

15. deal appropriately with packaged components and complete any necessary documentation accurately and legibly

Unit 215 Producing packaged products

Outcome 2 Know how to produce packaged products

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. explain the specific safe working practices, packaging procedures and environmental regulations that need to be observed
3. explain the hazards associated with carrying out the packaging operations and how they can be minimised
4. explain what actions need to be taken in case of emergencies
5. explain what personal protective equipment needs to be used during the packaging activities and where can it be obtained
6. explain how to obtain the necessary job instructions, operating procedures and packaging specifications that are used, and how to interpret them
7. explain what tools and equipment are used for the packaging operations undertaken and how to check that they are in a safe and usable condition
8. explain how to operate, monitor and control the packaging equipment to achieve the required specification
9. explain the specific packaging operations to be performed
10. explain why it is important to follow the specified packaging sequence and procedure at all times
11. explain what methods can be use to minimise waste during packaging operations
12. explain what faults, problems or variations can occur in the packaging operation
13. explain how to identify faults, problems or variations in the packaging operation
14. explain what allowable adjustments they can make to achieve the specification in the packaging operation
15. explain why it is important to report faults, variations or problems that are outside their permitted authority and or they cannot solve
16. explain how to check the quality of the packaged products, against the required quality standards and what tools and equipment are used
17. explain what documentation may need to be completed, and why it is important to complete it accurately and legibly
18. explain what their responsibilities are with regard to the reporting lines and procedures in their working area
19. explain who are the appropriate people and what are their responsibilities within their working area

Unit 216 Making products using computer controlled equipment

Level: 2

Credit value: 18

Unit aim

This unit covers the skills and knowledge needed to prove the competences required to produce products using computer controlled equipment. This could include using programmable logic controllers, monitoring the manufacturing operation, responding to error messages etc.

This will involve operating the equipment according to defined operating procedures. The learner will be expected to monitor and control the operation, minimising any waste, making adjustments within the limits of your permitted authority and ensuring that the completed output is to the required specification. Meeting production targets will be an important issue and their production records must show consistent and satisfactory performance.

The learner's responsibilities will require them to comply with organisational policy and procedures for the computer controlled manufacturing activities undertaken, and to report any problems with the manufacturing activities they cannot personally resolve, or are outside their permitted authority to the appropriate people.

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

The learner's knowledge will be sufficient to provide a sound basis for their work, and will enable them to adopt an informed approach to applying the required work instructions and procedures. They will have an understanding of the computer controlled equipment 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, making allowable adjustments when required, to ensure that the required specification is achieved.

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

Unit overview

This unit on making products using computer controlled equipment involves:

- working with minimum supervision
- using the correct tools, equipment and materials
- performing the manufacturing operation
- monitoring and controlling the manufacturing operation
- making adjustments within the learner's permitted authority
- reporting unsolvable problems or problems that the learner is not responsible for, to the appropriate person
- completing any necessary documentation
- working in ways which maintain the safety of the learner and others

Learning outcomes

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

1. Make products using computer controlled equipment
2. Know how to make products using computer controlled equipment

Guided learning hours

It is recommended that **56** 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 No. 2.16: Making products using computer controlled equipment (Suite 2)

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by 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)' which can be downloaded from Semta's website:
http://www.semta.org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx

Additional assessment requirements have been published by Semta. These additional assessment requirements are set down in Semta's Performing Manufacturing Operations Level 2 unit assessment strategy which can be downloaded from Semta's website:
http://www.semta.org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx

Unit specific additional assessment requirements

Assessment criteria 1.1, 1.2 should be observed and recorded over a period of time.

The use of simulation within a realistic working environment is acceptable for assessment

criteria 1.7, 1.8, 1.9, 1.14

Unit 216 Making products using computer controlled equipment

Outcome 1 Make products using computer controlled equipment

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 manufacturing procedures and safety requirements to include all of the following:
   - health and safety regulations
   - safe working practices
   - job instructions
   - computer controlled equipment / tool operating instructions
   - company standards and procedures

3. obtain and follow the correct job instructions and any relevant manufacturing procedure and quality specifications
4. ensure the manufacturing program is at the correct start point before running the equipment
5. follow the correct procedures for starting, running and stopping the computer program
6. respond in an appropriate manner to any error/display screen messages received
7. monitor and control the computer controlled manufacturing operation and identify any faults, variations or problems that occur
8. make permitted adjustments related to two of the following:
   - quality
   - accuracy
   - material utilisation
   - operational safety
   - manufacturing changes
   - productivity

9. report any problems that they cannot solve or are outside their permitted authority to the appropriate person to include one of the following:
   - supervisor
   - team leader
   - quality control

10. minimise any waste during the computer controlled manufacturing operation
11. produce manufactured products which comply with the specification and quality requirements
12. carry out checks of the manufactured products to include the following:
    - completeness of manufacturing operation

    and three other checks from the following:

    - dimensional accuracy
    - quality of finish
    - freedom from damage
    - quantity
    - volume
    - freedom from contamination

13. work to achieve their production targets for both of the following:
    - output
    - quality

14. deal appropriately with finished components and complete any necessary documentation accurately and legibly

Making products using computer controlled equipment

Outcome 2 Know how to make products using computer controlled equipment

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 computer controlled manufacturing operations
2. explain the specific safe working practices, equipment procedures and environmental regulations that need to be observed
3. explain the hazards associated with carrying out the computer controlled operations and how they can be minimised
4. explain what actions need to be taken in case of emergencies when using computer controlled equipment
5. explain what personal protective equipment may be used during the operation and where can it be obtained
6. explain how to obtain the necessary job instructions, operating procedures and manufacturing specifications that are used, and how to interpret them
7. explain how to start up and check the computer equipment is at the correct start point in the operating program
8. explain what to do if error messages are displayed
9. explain how to restart the equipment after it has been closed down in an emergency situation
10. explain what methods can be used to minimise waste during computer controlled manufacturing operations
11. explain what faults, problems or variations can occur in the computer controlled manufacturing operation
12. explain how to identify faults, problems or variations in the computer controlled manufacturing operation
13. explain what allowable adjustments they can make to achieve specification in the computer controlled manufacturing operation
14. explain why it is important to report faults, variations or problems that are outside their permitted authority and or they cannot solve immediately
15. explain how to check the quality of the manufactured products, against the required quality standards
16. explain what documentation may need to be completed, and why it is important to complete it accurately and legibly

17. explain what their responsibilities are with regard to the reporting lines and procedures in their working area
18. explain who are the appropriate people and what are their responsibilities within their working area

Unit 217 Manufacturing products using combined manufacturing operations

Level: 2

Credit value: 18

Unit aim

This unit covers the skills and knowledge needed to prove the competences required to produce products by several manufacturing processes using combined operations such as cutting/shaping, bending/forming, processing/packaging etc.

This will involve making products according to defined operating procedures. The learner will be expected to monitor and control the operation, minimising any waste, making adjustments within the limits of their permitted authority and ensuring that the completed products are to the required specification. Meeting production targets will be an important issue and their production records must show consistent and satisfactory performance.

The learner's responsibilities will require them to comply with organisational policy and procedures for the manufacturing activities undertaken, and to report any problems with the manufacturing activities they cannot personally resolve, or are outside their permitted authority to the appropriate people.

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

The learner's knowledge will be sufficient to provide a sound basis for their work, and will enable them to adopt an informed approach to applying the required work instructions and procedures. They will have an understanding of the combined operations 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, making allowable adjustments when required, to ensure that the required specification is achieved.

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

Unit overview

This unit on manufacturing products using combined manufacturing operations involves:

- working with minimum supervision
- using the correct tools, equipment and materials
- performing the manufacturing operation
- monitoring and controlling the manufacturing operation
- making adjustments within the learner's permitted authority
- reporting unsolvable problems or problems that the learner is not responsible for, to the appropriate person
- completing any necessary documentation
- working in ways which maintain the safety of the learner and others

Learning outcomes

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

1. Manufacture products using combined manufacturing operations
2. Know how to manufacture products using combined manufacturing operations

Guided learning hours

It is recommended that **41** 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 No. 2.17: Manufacturing products using combined manufacturing operations (Suite 2)

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by 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)' which can be downloaded from Semta's website:
http://www.semta.org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx

Additional assessment requirements have been published by Semta. These additional assessment requirements are set down in Semta's Performing Manufacturing Operations Level 2 unit assessment strategy which can be downloaded from Semta's website:
http://www.semta.org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx

Unit specific additional assessment requirements

Assessment criteria 1.1, 1.2 should be observed and recorded over a period of time.

The use of simulation within a realistic working environment is acceptable for assessment criteria 1.6 (for identification of faults, variations or problems if none occur during observed work practice), 1.7, 1.8, 1.13.

Unit 217 Manufacturing products using combined manufacturing operationsUnit 217 Manufacturing products using combined manufacturing operations

Outcome 1 Manufacture products using combined manufacturing operations

Assessment Criteria

Underpinning Knowledge

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

3. obtain and follow the correct job instructions and any relevant manufacturing procedure and quality specifications tools
4. use the correct equipment for the manufacturing operations being performed
5. perform the combined operations according to instructions and safe operating procedures
6. monitor and control the combined operations and identify any faults, variations or problems that occur
7. make permitted adjustments to solve production faults, variations or problems related to two of the following:
   - quality
   - accuracy
   - material utilisation
   - operational safety
   - manufacturing changes
   - productivity

8. report any problems that they cannot solve or are outside their permitted authority to the appropriate person to include one of the following:
   - supervisor
   - team leader

- quality control

9. minimise any waste during the combined operation
10. produce manufactured products which comply with the specification and quality requirements
11. carry out checks of the manufactured products to include the following:
    - completeness of manufacturing operation

12. and three other checks from the following:
    - dimensional accuracy
    - quality of finish
    - freedom from damage
    - quantity
    - volume
    - freedom from contamination

13. work to achieve their production targets for both of the following:
    - output
    - quality

14. deal appropriately with finished components and complete any necessary documentation accurately and legibly

Unit 217 Manufacturing products using combined manufacturing operationsUnit 217 Manufacturing products using combined manufacturing operations

Outcome 2 Know how to manufacture products using combined 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 combined operation
2. explain the specific safe working practices, equipment procedures and environmental regulations that need to be observed
3. explain the hazards associated with carrying out the combined operations and how they can be minimised
4. explain what actions need to be taken in case of emergencies when using combined operations
5. explain what personal protective equipment may be used during the combined operations and where it can be obtained
6. explain how to obtain the necessary job instructions, operating procedures and manufacturing specifications that are used, and how to interpret them
7. explain what equipment is used for the combined operations and how do they check that it is in a safe and usable condition
8. explain how to operate, monitor and control the combined operation to achieve the required specification
9. explain the specific manufacturing operations to be performed
10. explain what methods can be used to minimise waste during combined operations
11. explain what faults, problems or variations can occur in the combined operations
12. explain how to identify faults, problems or variations in the combined operation
13. explain what allowable adjustments they can make to achieve specification in the combined operation
14. explain why it is important to report faults, variations or problems that are outside their permitted authority and or they cannot solve immediately
15. explain how to check the quality of the manufactured products, against the required quality standards
16. explain what documentation may need to be completed, and why it is important to complete it accurately and legibly

17. explain what their responsibilities are with regard to the reporting lines and procedures in their working area
18. explain who are the appropriate people and what are their responsibilities within their working area

Unit 218 Controlling manufacturing operations

Level: **2**

Credit value: **19**

Unit aim

This unit covers the skills and knowledge needed to prove the competences required to control manufacturing operations according to defined operating procedures.

It involves gathering data that accurately reflects the condition of the manufacturing process, interpreting the data to identify any trends, variance or discrepancy, and restoring operating parameters to the process specifications promptly by making any adjustments allowable within the limits of the learner's responsibility. The learner will also be expected to seek authorisation from the appropriate person for any necessary adjustments that are outside the limits of their responsibility and ensure that production continues to comply with the specification.

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 that they cannot personally resolve, or are outside their permitted authority, to the relevant people. They will be expected to work with a minimum of supervision, taking personal responsibility for their actions and the quality and accuracy of the work that they produce. They will also be expected to complete any necessary documentation accurately and legibly.

The learner's knowledge will be sufficient to provide a sound basis for their work, and to adopt an informed approach to applying the required procedures for controlling the manufacturing output. They will have a sound understanding of the manufacturing 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, identifying and correcting faults and ensuring the production output is to the required specification. Meeting production targets will be an important issue and their production records must show consistent and satisfactory performance.

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

Unit overview

This unit on controlling manufacturing operations involves:

- gathering data which accurately reflects the condition of the manufacturing process
- interpreting the data to identify any trends, variance or discrepancy
- restoring operating parameters by making allowable adjustments
- making sure the production continues to meet specification
- correctly recording information about data collection, data interpretation and any adjustments made to the manufacturing operation
- reporting problems to the relevant person
- working in ways which maintain the safety of the learner and others

Learning outcomes

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

1. Control manufacturing operations
2. Know how to control manufacturing operations

Guided learning hours

It is recommended that **31** 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 No. 2.18: Controlling manufacturing operations (Suite 2)

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by 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)' which can be downloaded from Semta's website:
http://www.semta.org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx

Additional assessment requirements have been published by Semta. These additional assessment requirements are set down in Semta's Performing Manufacturing Operations Level 2 unit assessment strategy which can be downloaded from Semta's website:
http://www.semta.org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx

Unit specific additional assessment requirements

Assessment criteria 1.1, 1.2 should be observed and recorded over a period of time.

The use of simulation within a realistic working environment is acceptable for assessment criteria 1.11, 1.12, 1.13, 1.14.

Unit 218 Controlling manufacturing operations

Outcome 1 Control manufacturing operations

Assessment Criteria

Underpinning Knowledge

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

3. obtain and follow the correct job instructions and any relevant production and quality specifications
4. collect data in relation to one of the following production methods:
   - hand manufacturing operations
   - manually operated machine operations
   - fully automated machine operations
   - combined manufacturing operations

5. collect data which reflects the condition of the manufacturing process to include three of the following:
   - quality of finished product
   - dimensional accuracy
   - raw material use
   - consumable material use
   - machinery condition
   - equipment or tool condition
   - output/production targets

6. collect up to date, comprehensive and accurate operational data in line with production requirements
7. record the data in the required format accurately and legibly
8. use the data collected to make decisions about the condition of the manufacturing process
9. deal with two of the following problems identified by the data collected:
   - trends
   - variation from specification
   - discrepancies

10. deal with problems within the manufacturing process by both of the following methods:
    - by taking action themselves
    - by reporting the problem to someone else

11. make any allowable adjustments to the operating parameters to ensure the production output meets the specification requirements
12. make adjustments in relation to three of the following:
    - process effectiveness relating to operational sequence
    - process effectiveness relating to production time
    - process characteristics relating to quality
    - process characteristics relating to accuracy
    - material utilisation relating to production
    - materials utilisation relating to consumables
    - manufacturing programme changes
    - operational safety

13. seek authorisation from the appropriate person for any adjustments to operating parameters which are outside the limits of their responsibility
14. check that production continues to comply with specification following any adjustments made

Unit 218 Controlling manufacturing operations

Outcome 2 Know how to manufacture products using combined 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 manufacturing activities
2. explain the specific safe working practices, data collection and adjustment procedures and environmental regulations that need to be observed
3. explain the hazards associated with carrying out the data collection and equipment adjustment procedures and how they can be minimised
4. explain what actions need to be taken in case of emergencies
5. explain what personal protective equipment needs to be used during the activities and where it can be obtained
6. explain how to obtain the necessary job instructions, equipment operating and adjustment procedures and quality control specifications that are used, and how to interpret and understand them
7. describe the type of production data which will provide information about the various aspects of the manufacturing operation
8. explain how to collect the required data and how it is to be used and recorded
9. explain how to check and interpret data relating to manufacturing operations
10. explain why it is important to maintain the security of the information collected
11. describe the potential problems with the data collected such as trends, variance or discrepancy, how these occur and how to correct them
12. explain how to deal with problems which affect aspects of data collection, data interpretation and adjustments to manufacturing operations
13. describe the adjustments that can be made to manufacturing operations, equipment and tools, materials and manufacturing programme and the procedures involved
14. describe the various process operating parameters on the equipment used and how adjustments to these will affect the manufacturing output
15. explain why it is important to follow the specified adjustment sequence and procedure at all times
16. explain what documentation may need to be completed, and why it is important to complete it accurately and legibly
17. explain how to report any problems they are not able to deal with themselves and why it is important to report faults, variations or problems immediately
18. explain what their responsibilities are with regard to the reporting lines and procedures in their working area

19. explain who are the appropriate people and what are their responsibilities within their working area

Unit 219 Contributing to improving effectiveness in the workplace

Level: 2

Credit value: 8

Unit aim

This unit covers the skills and knowledge needed to prove the competences required to contribute to improving effectiveness within the manufacturing environment in accordance with approved procedures and practices.

It involves working effectively in relation to the learners own and others' work, informing others of any delay which may affect them, reviewing their objectives and targets for their personal development to ensure that their skills and knowledge match those required and are employed effectively within the manufacturing environment. It also covers dealing with problems that affect the manufacturing process, contributing to and communicating any opportunities for improvements that could be made to working practices and procedures.

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 personal development activities, problem solving or improvement activities that they cannot personally resolve, or are outside their permitted authority, to the relevant people. They will be expected to take personal responsibility for their own actions and the work that they carry out.

The learner's knowledge will be sufficient to provide a good understanding of the workplace organisational activities, and the area they are working in and provide an informed approach to working efficiently and effectively in a manufacturing environment. They will understand the need to work efficiently and effectively and its application, and will know about the areas they need to consider when agreeing their development objectives and targets, dealing with problems and contributing to workplace improvements, in adequate depth to provide a sound basis for carrying out the activities safely and correctly.

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

Unit overview

This unit on improving workplace effectiveness involves:

- working to meet work flow and quality targets
- reviewing personal development objectives and targets
- contributing to problem solving
- identifying opportunities for improving work place effectiveness

- working in ways which maintain the safety of the learner and others

Learning outcomes

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

1. Contribute to improving effectiveness in the workplace
2. Know how to contribute to improving effectiveness in the workplace

Guided learning hours

It is recommended that **31** 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 No. 2.19: Contributing to improving effectiveness in the workplace (Suite 2)

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by 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)' which can be downloaded from Semta's website:
http://www.semta.org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx

Additional assessment requirements have been published by Semta. These additional assessment requirements are set down in Semta's Performing Manufacturing Operations Level 2 unit assessment strategy which can be downloaded from Semta's website:
http://www.semta.org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx

Unit specific additional assessment requirements

Assessment criteria 1.1 should be observed and recorded over a period of time.

The use of simulation within a realistic working environment is acceptable for assessment criteria 1.7, 1.8, 1.9, 1.10, 1.11, 1.12.

Unit 219 Contributing to improving effectiveness in the workplace

Outcome 1 Contribute to improving effectiveness in the workplace

Assessment Criteria

Practical Skills

The learner can:

1. work safely at all times, complying with health and safety and other relevant regulations and guidelines
2. work in a way which is effective in relation to their own work and the work of colleagues within the organisation
3. work effectively with colleagues to include three of the following:
   - colleagues in same work group
   - colleagues in other work groups
   - immediate supervision/line management
   - personnel in other departments
   - external contacts
   - those for whom they have responsibility

4. make sure that any actions that they take are within the limits of their own responsibility and authority
5. contribute to reviewing their personal training and development as is appropriate to the job role
6. review personal development objectives and targets to include one of the following:
   - dual or multi skilling
   - training on new equipment/technology
   - increased responsibility
   - understanding of company working practices, procedures, plans and policies
   - other specific requirements

7. deal promptly and effectively with problems within their responsibility
8. deal with problems affecting the manufacturing process to include three of the following:
   - materials
   - tools and equipment
   - machinery or plant
   - drawings / specifications
   - job instructions
   - production quality
   - production output/timescales
   - people

- safety
- activities or procedures

9. report problems that they cannot resolve and or are not their responsibility
10. identify any opportunities for improvements to working practices and procedures
11. contribute to organisational procedures for identifying opportunities for improvement to one of the following:
    - working practices
    - working methods
    - quality
    - safety
    - tools and equipment
    - suppliers
    - internal communication
    - customer service
    - training and development
    - teamwork
    - other

12. share any suggestions for improving working practices and procedures with others using the appropriate method
13. present ideas for potential improvements using two of the following methods:
    - orally
    - written
    - electronic
    - visually aided

Unit 219 Contributing to improving effectiveness in the workplaceUnit 219 Contributing to improving effectiveness in the workplace

Outcome 2 Know how to contribute to improving effectiveness in the workplace

Assessment Criteria

Underpinning Knowledge

The learner can:

1. describe the relevant health and safety requirements and guidelines associated with their role within the workplace
2. explain how to obtain and correctly use any equipment used to protect the health and safety of themselves and their colleagues
3. explain what factors within the workplace affect effectiveness and why it is importance to work effectively
4. explain the potential difficulties and delays which may affect their work and who else may also be affected by them
5. explain how to communicate information, difficulties and ideas to colleagues in the appropriate way
6. explain why it is important to contribute to their own personal development
7. explain the benefits of continuous personal development
8. explain what training opportunities are available in the workplace
9. explain why it is important to review training and development objectives
10. explain who to discuss training and development issues with
11. explain the procedures for dealing with and reporting problems that affect the manufacturing process
12. explain the types of problems that occur in the manufacturing process undertaken and how they can be avoided
13. explain what techniques can be used to help solve problems
14. explain who to refer to if they have problems that they cannot resolve
15. explain why it is important to suggest ways in which they think improvements to working practices may be made
16. explain how to identify and define improvement opportunities
17. explain the procedure for making suggestions for improvements
18. explain how do the suggestions need to be made (such as verbally, in writing, formally or informally)
19. explain the benefits to themselves and the organisation if improvements can be identified
20. explain how to use the data and information available to them to communicate their ideas effectively to others

21. explain what their responsibilities are with regard to the reporting lines and procedures in their working area
22. explain who are the appropriate people and what are their responsibilities within their working area

Unit 220 Analysing the results of inspection and confirming quality of production

Level: 2

Credit value: 14

Unit aim

This unit covers the skills and knowledge needed to prove the competences required to evaluate the results of the inspection and testing procedure, taking the appropriate action to confirm the quality of the products and materials according to defined operating procedures.

It involves confirming which products and materials comply with the specified quality control requirements after inspection and testing. It also involves identifying which products and materials do not conform to the specified quality control requirements and evaluating what action is required. Materials and products that do not conform to the required quality standards must be dealt with in the appropriate way according to specified quality control requirements. This also involves the reporting of results of the sampling procedure 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 that they cannot personally resolve, or are outside their permitted authority, to the appropriate people. They will be expected to work with a minimum of supervision, taking personal responsibility for their actions and the quality and accuracy of the work that they carry out. They will also be expected to complete any necessary documentation accurately and legibly.

The learner's knowledge will be sufficient to provide a sound basis for their work, and to adopt an informed approach to applying the required quality standards. They will understand the principles of inspection and testing in order to confirm the quality of the production, in an adequate depth to provide a sound background for carrying out the activities, identifying any problems and ensuring that the production output is to the required quality specification.

The learner will understand the safety precautions required when working with the manufacturing equipment and when reporting on the required samples. They will be required to demonstrate safe working practices throughout, and will understand the responsibility they owe to themselves and others in the workplace.

Unit overview

This unit on analysing the results of inspection and confirming quality of production involves:

- evaluating and interpreting results of inspection and testing
- confirming the quality of samples, products and materials
- identifying and reporting any samples, products and materials which do not meet quality requirements
- correctly recording inspection and testing results
- reporting unsolvable problems, or problems that the learner is not responsible for, to the appropriate person
- working in ways which maintain the safety of the learner and others

Learning outcomes

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

1. Analyse the results of inspection and confirm quality of production
2. Know how to analyse the results of inspection and confirm quality of production

Guided learning hours

It is recommended that **31** 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 No. 2.20: Analysing the results of inspection and confirming quality of production (Suite 2)

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by 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)' which can be downloaded from Semta's website:
http://www.semta.org.uk/training_providers__awarding/national_occupational_standard qca_assessment_requirements.aspx

Additional assessment requirements have been published by Semta. These additional assessment requirements are set down in Semta's Performing Manufacturing Operations Level 2 unit assessment strategy which can be downloaded from Semta's website:
http://www.semta.org.uk/training_providers__awarding/national_occupational_standard qca_assessment_requirements.aspx

Unit specific additional assessment requirements

Assessment criteria 1.1, 1.2 should be observed and recorded over a period of time.
The use of simulation within a realistic working environment is acceptable for assessment criteria 1.7 (in relation to products or materials which do not meet quality specifications), 1.9,

1.10.

Unit 220 Analysing the results of inspection and confirming quality of production

Outcome 1 Analyse the results of inspection and confirm quality of production

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 inspection, testing procedures and safety requirements to include all of the following:
   - health and safety and environmental regulations
   - safe working practices
   - quality control job instructions
   - machinery/equipment safety procedures
   - company standards and procedures

3. report on samples obtained from one of the following manufacturing methods:
   - hand manufacturing operations
   - manually operated machine operations
   - computer controlled operations
   - fully automated machine operations
   - combined manufacturing operations

4. make sure they have all the required data to hand before starting to analyse them
5. confirm quality requirements related to both of the following sampling procedures:
   - random
   - defined (e.g. first/final)

6. accurately interpret the data/results gained from two of the following inspection and testing procedures:
   - visual inspection
   - measurement
   - analysis testing
   - functional operation

7. accurately distinguish between products and materials which meet the quality requirements and those which do not

8. take appropriate action with products and materials according to the results of the inspection and testing procedure

9. take appropriate action following the outcome of the evaluation activities related to both of the following:
   - acceptable samples - within required quality
   - unacceptable samples - outside required quality

10. report any problems that they cannot solve, or are outside their permitted authority, to the appropriate person to include one of the following:
    - team leader
    - production supervisor
    - quality control supervisor

Unit 220 Analysing the results of inspection and confirming quality of production

Outcome 2 Know how to analyse the results of inspection and confirm quality of production

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 inspection and analysis activities
2. explain the specific safe working practices and environmental regulations that need to be observed
3. explain the hazards associated with the analysis and testing procedures and how they can be minimised
4. explain what personal protective equipment needs to be used during the activities and where can it be obtained
5. explain how to obtain the necessary job instructions, analysis and evaluation documentation and quality control specifications that are used, and how to interpret them
6. explain the correct methods of handling and storing the samples
7. explain how to confirm samples, products and materials meet the quality requirements
8. explain how to identify which samples, products and materials do not meet the quality requirements
9. explain how to interpret the results of the inspection and testing procedure
10. explain what action needs to be taken with samples, products and materials that do not meet the quality requirements
11. explain the potential problems associated with stages of the inspection and testing process, how they occur and how they can be corrected
12. explain how to report any problems they are not able to deal with themselves and why it is important to report faults, variations or problems immediately
13. explain what their responsibilities are with regard to the reporting lines and procedures in their working area
14. explain who are the appropriate people and what are their responsibilities within their working area

Unit 221 Contributing to effective team working

Level: **2**

Credit value: **6**

Unit aim

This unit covers the skills and knowledge needed to prove the competences required to work effectively as a team member within a manufacturing environment.

The learner will be required to establish and maintain productive working relationships and deal with disagreements in an amicable and constructive way. They will also be expected to contribute to team activities by providing ideas and solutions and to find ways of resolving issues that cause concern and/or disagreement. As part of their team activities they will need to keep others informed about work plans or activities that affect them.

The learner's responsibilities will require them to comply with organisational policy and procedures for the activities undertaken, and to report any problems that may affect the working of the team that they cannot personally resolve, or are outside their individual responsibilities, to the appropriate people. They will understand their individual role within the team and how their actions may affect the teams overall performance. They will be expected to take full responsibility for their actions within the team and for the quality and accuracy of the work that they carry out.

The learner's knowledge will be sufficient to provide a good understanding of team working and the sort of things that can affect good team working relationships. They will be able to give an informed approach to the techniques and procedures used to help maintain and develop a good team working relationships.

Unit overview

This unit on contributing to effective team working involves:

- developing and establishing team relationships
- maintaining good working relationships
- providing and receiving feedback
- working in ways which maintain the safety of the learner and others

Learning outcomes

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

1. Contribute to effective team working
2. Know how to contribute to effective team working

Guided learning hours

It is recommended that **38** 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 No. 2.21: Contributing to effective team working (Suite 2)

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by 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)' which can be downloaded from Semta's website:

http://www.semta.org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx

Additional assessment requirements have been published by Semta. These additional assessment requirements are set down in Semta's Performing Manufacturing Operations Level 2 unit assessment strategy which can be downloaded from Semta's website:

http://www.semta.org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx

Unit specific additional assessment requirements

The use of simulation within a realistic working environment is acceptable for assessment criteria 1.10, 1.11, 1.12, 1.13, 1.14.

Unit 221 Contributing to effective team working

Outcome 1 Contribute to effective team working

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 other team members
2. develop and maintain team working relationships with two of the following:
   - immediate supervision/line management
   - colleagues in same work group
   - colleagues in other work groups
   - those for whom they have responsibility
   - personnel in other departments
   - external contacts

3. work in accordance with the roles and responsibilities identified for their individual and team activities
4. make sure that any actions that they take are within the limits of their own responsibility and authority
5. ask for information, advice and/or help politely, without causing disruption to their own or other team members work
6. offer help to others promptly and willingly in order to ensure team objectives are met
7. contribute to team discussion/briefing sessions in a positive manner that shows respect for the views and rights of others
8. deal with problems in team relationships in ways which minimise offence and maintain mutual respect
9. discuss problems which may affect team relationships with the appropriate person to include two of the following:
   - other team members
   - team leader
   - immediate line manager
   - personnel or welfare officer

10. refer requests for information and/or assistance that are outside their authority/responsibility to the appropriate people
11. work together to resolve disagreements and difficulties in team relationships
12. communicate orally with team members by two of the following methods:
    - team briefings
    - question and answer sessions
    - group discussions

- problem resolution processes

13. communicate in writing or electronically to include using one of the following methods:
    - adding ideas and actions to team boards
    - maintaining up to date key performance/production indicators
    - processing information
    - communicating via e-mail/internal network services
14. communicate in a manner which promotes understanding, goodwill and trust

Unit 221 Contributing to effective team working

Outcome 2 Know how to contribute to effective team working

Assessment Criteria

Underpinning Knowledge

The learner can:

1. describe the statutory regulations that can affect working relationship i.e. disability, equal opportunities, discrimination, harassment
2. explain why it is important to create and maintain good team working relationships
3. explain what are the sort of things that might affect good team working relationships
4. explain why it is important to present themselves in the workplace on time and ready for work
5. explain the methods that can be used to establish and maintain good team working relationships
6. explain the methods of handling and resolving difficulties in team working relationships
7. explain how to use data and team information to help resolve concerns and disagreements
8. explain why it is important to resolve difficulties or misunderstandings quickly and not let them develop into more serious problems
9. explain why it is important to share their knowledge and information and their performance measures with other people in their team and with other groups
10. explain how to use the data and information available to them to communicate their performances effectively to others
11. explain what types of information and data are available in their area such as key performance measures, production targets, quality, scrap ratios, problem resolution processes, action planning brainstorming and continuous improvement processes
12. explain what mixture of skills and experience is available in their team to support them or the manufacturing process when problems occur (such as a team skills matrix)
13. explain why they need to keep other team members involved in or informed of any plans or activities they may be doing
14. explain what type of support or assistance might they need from other team members
15. explain why it is important to request help from other team members in a polite and timely manner and to offer assistance to them when help is needed
16. explain why it is important to show respect for the views, rights and property of other team members
17. explain how asking for help or assistance at inappropriate times can lead to disruption and problems within the team
18. describe the methods used in their area for effective communication (such as team briefings covering team performance, quality, cost and delivery issues, general information, personnel issues and action plans)
19. explain who to refer to with requests that are not within the limits of their responsibility
20. explain who to refer to if they have problems with team relationships that they cannot resolve

21. explain what their responsibilities are with regard to the reporting lines and procedures in their working area
22. explain who are the appropriate people and what are their responsibilities within their working area

Unit 222 Carrying out inspection and testing activities

Level: **2**

Credit value: **16**

Unit aim

This unit covers the skills and knowledge needed to prove the competences required to carry out inspection and testing activities according to defined operating procedures.

It involves gathering and preparing samples of materials and products for inspection and testing to ensure that the learner complies with the quality control requirements. This will involve checks and tests such as visual checks for defects and appearance, checks for dimensional accuracy and tests of product specification that may be carried out by themselves or sent to other departments for specific analysis.

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 that they cannot personally resolve, or are outside their permitted authority, to the appropriate people. They will be expected to work with a minimum of supervision, taking personal responsibility for their actions and the quality and accuracy of the work that they carry out. They will also be expected to complete any necessary documentation accurately and legibly.

The learner's knowledge will be sufficient to provide a sound basis for their work, and to adopt an informed approach to applying the required quality sampling procedures. They will understand the principles of gathering samples in order to confirm the quality of the production in an adequate depth to provide a sound background for carrying out the activities.

The learner will understand the safety precautions required when working with the manufacturing equipment and when taking and testing the required samples. They will be required to demonstrate safe working practices throughout, and will understand the responsibility they owe to themselves and others in the workplace

Unit overview

This unit on carrying out inspection and testing activities involves:

- gathering samples at the appropriate level of frequency
- preparing the samples for inspection and testing
- carrying out the inspection and testing activities
- reporting unsolvable problems, or problems that the learner is not responsible for, to the appropriate person
- working in ways which maintain the safety of the learner and others

Learning outcomes

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

1. Carry out inspection and testing activities
2. Know how to carry out inspection and testing activities

Guided learning hours

It is recommended that **31** 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 No. 2.22: Carrying out inspection and testing activities (Suite 2)

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by 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)' which can be downloaded from Semta's website:
http://www.semta.org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx

Additional assessment requirements have been published by Semta. These additional assessment requirements are set down in Semta's Performing Manufacturing Operations Level 2 unit assessment strategy which can be downloaded from Semta's website:
http://www.semta.org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx

Unit specific additional assessment requirements

Assessment criteria 1.1, 1.2 should be observed and recorded over a period of time.

The use of simulation within a realistic working environment is acceptable for assessment criteria 1.10, 1.13.

Unit 222 Carrying out inspection and testing activities

Outcome 1 Carry out inspection and testing activities

Assessment Criteria

Underpinning Knowledge

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 sampling procedures and safety requirements to include all of the following:
   - health and safety and environmental regulations
   - safe working practices
   - quality control job instructions
   - machinery/equipment safety procedures
   - company standards and procedures

3. collect production samples in relation to one of the following manufacturing methods:
   - hand manufacturing operations
   - manually operated machine operations
   - computer controlled operations
   - fully automated machine operations
   - combined manufacturing operations

4. obtain and follow the correct job instructions and any relevant quality control specifications
5. carry out the inspection and testing activities using the specified methods and equipment
6. carry out sampling activities to include both of the following sampling procedures:
   - random
   - defined (e.g. first/final)

7. work in line with all of the following aspects of the inspection specification:
   - use the correct method of sampling
   - obtain the required number of samples
   - obtain the correct size of samples
   - use the correct source of sample
   - take samples at the correct time/frequency

8. take samples of the production output at the required frequency and in line with the inspection specification and operating procedures
9. handle and store the samples safely and correctly in keeping with the quality control procedures
10. transfer any samples which need to be inspected and tested in other departments promptly and in the correct way

11. prepare samples for inspection and testing in line with the defined procedures
12. carry out checks of the samples to include two of the following as is appropriate to the process:
    - visual inspection
    - measurement
    - analysis testing
    - functional operation

13. report any problems that they cannot solve or are outside their permitted authority to the appropriate person to include one of the following:
    - team leader
    - production supervisor
    - quality control supervisor

Unit 222 Carrying out inspection and testing activities

Outcome 2 Know how to carry out inspection and testing activities

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 sampling and inspection/testing activities
2. explain what specific safe working practices, sampling collection, testing procedures and environmental regulations need to be observed
3. explain the hazards associated with carrying out the sample collection and inspection and testing procedures and how they can be minimised
4. explain what personal protective equipment needs to be used during the sampling and inspection/testing activities and where can it be obtained
5. explain how to obtain the necessary job instructions, sampling equipment, inspection and testing procedures and quality control specifications that are used, and how to interpret them
6. explain how to carry out the sampling activities in line with the production and quality control procedures including first off, random, defined and final sampling procedures
7. explain why it is important to follow the specified sampling sequence and inspection and testing procedure at all times
8. describe what specific sampling and inspection and testing equipment is to be used, and the precautions to be taken when handling and using it
9. explain what factors may make the equipment, or the samples obtained unsuitable for the testing or inspection activities
10. describe the correct methods of preparing, handling and storing the samples
11. explain how to carry out an inspection or testing of sample materials and products in line with operating and quality control procedures
12. describe the potential problems associated with stages of the inspection and testing process, how they occur and how they can be corrected
13. explain how to deal with problems which affect aspects of sample collection, inspection and testing activities and the interpretation of the results
14. explain how to report any problems they are not able to deal with themselves and why it is important to report faults, variations or problems immediately
15. explain what their responsibilities are with regard to the reporting lines and procedures in their working area
16. explain who are the appropriate people and what are their responsibilities within their working area

Unit 223 Recording and reporting inspection and test results

Level: 2

Credit value: 8

Unit aim

This unit covers the skills and knowledge needed to prove the competences required to record and report on the results of inspection and testing activities according to defined operating procedures.

It involves completing required quality control documentation accurately and in full and in making reports to the appropriate people in line with organisational procedures. This will involve completing checklist and written documentation and in making verbal and written reports on the results of inspection and test activities.

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 that they cannot personally resolve, or are outside their permitted authority, to the appropriate people. They will be expected to work with a minimum of supervision, taking personal responsibility for their actions and the quality and accuracy of the work that they carry out.

The learner's knowledge will be sufficient to provide a sound basis for their work, and to adopt an informed approach to recording and reporting the information accurately and legibly. They will understand the principles of inspection and testing and the importance of accurate, clear and complete records in order to provide a sound background for carrying out the activities.

The learner will understand the safety precautions required when working within the manufacturing environment. They will be required to demonstrate safe working practices throughout, and will understand the responsibility they owe to themselves and others in the workplace.

Unit overview

This unit on recording and reporting the results of inspection and testing involves:

- maintaining accurate, clear and complete records
- providing reports on inspection and test results in a timely fashion
- reporting unsolvable problems, or problems that they are not responsible for, to the appropriate person
- working in ways which maintain the safety of the learner and others

Learning outcomes

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

1. Record and report inspection and test results
2. Know how to record and report inspection and test results

Guided learning hours

It is recommended that **38** 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 No. 2.23: Recording and reporting inspection and test results (Suite 2)

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by 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)' which can be downloaded from Semta's website:
http://www.semta.org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx

Additional assessment requirements have been published by Semta. These additional assessment requirements are set down in Semta's Performing Manufacturing Operations Level 2 unit assessment strategy which can be downloaded from Semta's website:
http://www.semta.org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx

Unit specific additional assessment requirements

Assessment criteria 1.1 should be observed and recorded over a period of time.

The use of simulation within a realistic working environment is acceptable for assessment criteria 1.11.

Unit 223 Recording and reporting inspection and test results

Outcome 1 Record and report inspection and test results

Assessment Criteria

Underpinning Knowledge

The learner can:

1. work safely at all times, complying with health and safety, environmental and other relevant regulations and guidelines
2. obtain and use the correct quality control documentation for the manufacturing method and product
3. use the correct documentation for one of the following:
   - hand manufacturing operations
   - manually operated machine operations
   - computer controlled operations
   - fully automated machine operations
   - combined manufacturing operations

4. record details in relation to two of the following as appropriate to the process:
   - visual inspection
   - measurement
   - analysis testing
   - functional operation

5. record the results of the inspection activities in the appropriate format to include two of the following:
   - check box/tick list
   - written
   - electronic

6. complete records related to both of the following sampling procedures:
   - random
   - defined (e.g. first/final)

7. record inspection and test results accurately and legibly
8. record all required details of the inspection and test activities and results
9. pass completed records on to the correct person/location

10. provide required reports on time and through the correct channels of communication to include two of the following:
    - oral
    - written
    - electronic

11. report any problems that they cannot solve or are outside their permitted authority to the appropriate person to include one of the following:
    - team leader
    - production supervisor
    - quality control supervisor

Unit 223 Recording and reporting inspection and test results

Outcome 2 Know how to record and report inspection and test results

Assessment Criteria

Underpinning Knowledge

The learner can:

1. describe the relevant health and safety requirements of the work area in which they are recording the results of inspection/testing activities
2. explain what specific safe working practices, sampling collection, testing procedures and environmental regulations need to be observed
3. explain how to obtain the necessary quality control documentation that is used
4. explain how to complete quality control documentation
5. explain why it is important to complete documentation accurately and legibly
6. describe when quality control documentation should be completed
7. explain what information needs to be recorded in relation to the manufacturing method and sample type
8. explain what use is made of quality control documentation by the organisation
9. explain where/to whom they should pass on completed records
10. describe the potential problems associated with completing records and passing on reports, how they can be avoided and what can be done if they arise
11. explain how to report any problems they are not able to deal with themselves and why it is important to report problems immediately
12. explain what their responsibilities are with regard to the reporting lines and procedures in their working area
13. explain who are the appropriate people to whom records should be passed and problems reported to

5 Assessment

5.1 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 Semta. Further guidance is available in this section, and for specific units and assessment criteria in **Section 4, Units**.

The following guidance is taken from the Semta Performing Manufacturing Operations NVQ Level 1 and the Unit Assessment Strategy.

5.2 Assessment environment

The evidence put forward for the units within the qualificationcan 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.

5.3 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. 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.

Recording forms

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

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

Although it is expected that new centres will use these forms, centres may devise or customise alternative forms, which must be approved for use by the external verifier, before they are used by candidates and assessors at the centre.

City & Guilds endorses several ePortfolio systems. Further details are available at: **www.cityandguilds.com/eportfolios**.

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:

Quality Assurance Standards: Centre Handbook

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.

Quality Assurance Standards: Centre Assessment

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