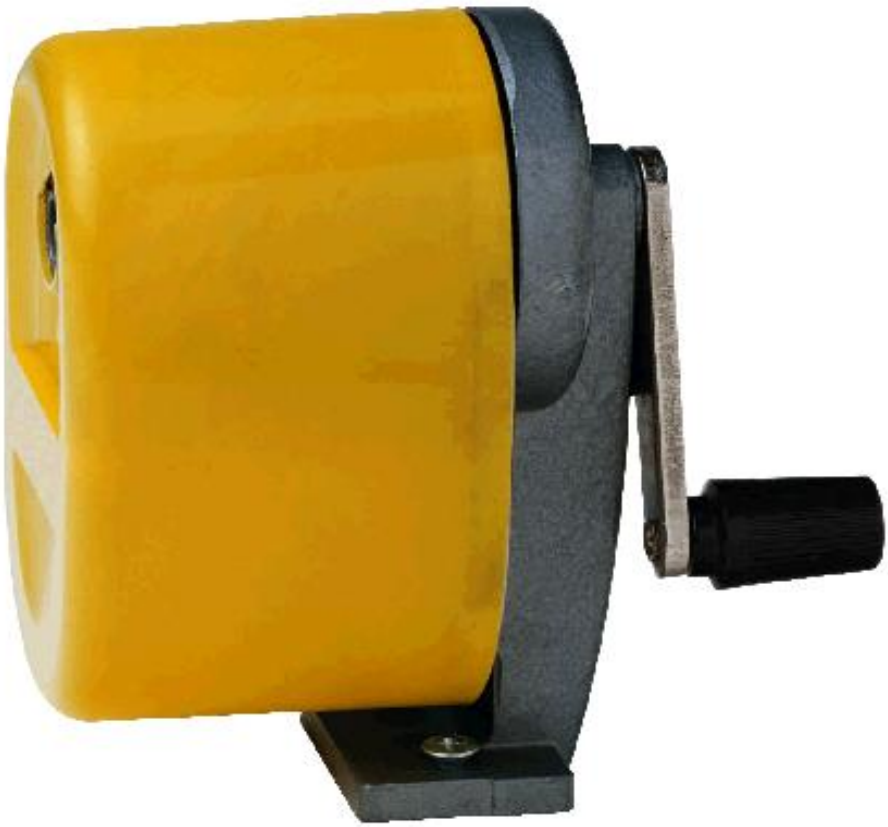
Level 2 NVQ Diploma in Business-Improvement Techniques (7576-02)

Qualification handbook for centres

500/7473/8

www.cityandguilds.com
July 2018
Version 2.3



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City & Guilds
1 Giltspur Street
London EC1A 9DD
T +44 (0)20 7294 2800
F +44 (0)20 7294 2400

www.cityandguilds.com
centresupport@cityandguilds.com

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Qualification title	Number	Ofqual ref.
Level 2 NVQ Diploma in Business-Improvement Techniques – Process Improvement.	7576-02	500/7473/8
Level 2 NVQ Diploma in Business-Improvement Techniques – Quality Improvement.	7576-02	500/7473/8

Version and date	Change detail	Section
2.0 August 2015	Amended assessor requirements	**Section 3.3 Resource requirements**
2.1 August 2017	Added TQT details Deleted QCF	**Qualification at a glance, Structure** **Throughout**
2.2 February 2018	Last registration date and certification dates removed	**Introduction**
2.3 July 2018	Last registration date and certification dates removed	**Introduction**

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1 Introduction to the qualification

This document contains the information that centres need to offer the following qualifications:

Qualification title and level	Level 2 NVQ Diploma in [Business-Improvement Techniques]
City & Guilds qualification number	(7576-[02])
GLH	249
TQT	560
Ofqual accreditation number	500/7473/8

Who is the qualification for?

- employees involved in business improvement within a team who wish to have their business improvement competencies assessed for certification purposes

- new employees who have undertaken business improvement training and are now acquiring experience within a team and wish to demonstrate their competencies for assessment purposes

What does the qualification cover?

- Mandatory units cover those areas which have a common approach such as safety and team working.
- Optional units offer a choice of techniques and systems that can be combined to meet the needs of businesses and organisations

2 About the qualification

2.1 Accreditation details

Accreditation details

This qualification is

- accredited by the Ofqual at Level 2

2 About the qualification

2.2 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.

The following tables outline the unit title, unit number, credit value, mandatory/optional and accreditation unit reference.

2 About the qualification

2.3 Level 2 NVQ Diploma in Business-Improvement Techniques, Process Improvement.

To achieve the Level 2 NVQ Diploma in Business-Improvement Techniques Process Improvement, learners must achieve the five mandatory units (47 credits) and one optional unit (minimum of 9 credits). The single optional unit may also be taken from units 213-219 in the Quality Improvement pathway. The total minimum credit value of this pathway is 56.

Accreditation unit reference	City & Guilds unit number	Unit title	Mandatory/ optional for full qualification	Credit Value
A/601/5013	Unit 201	Complying with statutory regulations and organisational safety requirements	Mandatory	5
J/600/2491	Unit 202	Contributing to effective team working	Mandatory	7
L/600/2492	Unit 203	Contributing to the application of workplace organisation techniques	Mandatory	12
Y/600/2513	Unit 204	Contributing to the application of continuous improvement techniques (Kaizen)	Mandatory	14
D/600/2514	Unit 205	Contributing to the development of visual management systems	Mandatory	9
H/600/2515	Unit 206	Contributing to the analysis and selection of parts for improvement	Optional	15
K/600/2516	Unit 207	Contributing to carrying out lead time analysis	Optional	10
M/600/2517	Unit 208	Carrying out set-up reduction techniques	Optional	15
T/600/2518	Unit 209	Carrying out autonomous maintenance	Optional	13
A/600/2519	Unit 210	Contributing to the application of problem solving techniques	Optional	9
T/600/2521	Unit 211	Carrying out flow process analysis	Optional	14
F/600/2523	Unit 212	Contributing to the creation of Standard Operating Procedures (SOP)	Optional	9

2 About the qualification

2.4 Level 2 NVQ Diploma in Business-Improvement Techniques, Quality Improvement.

To achieve the Level 2 NVQ Diploma in Business-Improvement Techniques Quality Improvement, learners must achieve the five mandatory units (54 credits) and two optional units (minimum of 18 credits). One of the two optional units may also be taken from units 203-212 in the Process Improvement pathway. The total minimum credit value of this pathway is 72.

Accreditation unit reference	City & Guilds unit number	Unit title	Mandatory/ optional for full qualification	Credit Value
A/601/5013	Unit 201	Complying with statutory regulations and organisational safety requirements	Mandatory	5
J/600/2491	Unit 202	Contributing to effective team working	Mandatory	7
J/600/2538	Unit 213	Contributing to the application of Six Sigma methodology to a project	Mandatory	15
F/600/2540	Unit 214	Contributing to the application of Six Sigma process mapping	Mandatory	14
J/600/2541	Unit 215	Contributing to the application of basic statistical analysis	Mandatory	13
Y/600/2544	Unit 216	Contributing to the application of Statistical Process Control (SPC) procedures	Optional	9
D/600/2545	Unit 217	Contributing to the application of Failure Modes and Effects Analysis (FMEA)	Optional	11
M/600/2548	Unit 218	Contributing to the application of Measurement Systems Analysis (MSA)	Optional	11
K/600/2550	Unit 219	Carrying out mistake/error proofing (Poka Yoke)	Optional	10

Total Qualification Time

Total Qualification Time (TQT) is the total amount of time, in hours, expected to be spent by a Learner to achieve a qualification. It includes both guided learning hours (which are listed separately) and hours spent in preparation, study and assessment.

Title and level	GLH	TQT
Level 2 NVQ Diploma in Business-Improvement Techniques	249	560

Qualification support materials

City & Guilds also provides the following publications and resources specifically for this qualification:

Description	How to access
Centres Information Guide	Website
Fast track approval forms/generic fast track approval form	Website
FAQ	Website
Smartscreen	Website

3 Centre requirements

3.1 Obtaining centre and qualification approval

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.

Full details of the procedures and forms for applying for centre and qualification approval are given

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 Quality Assurers. 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.

3 Centre requirements

3.2 Fast Track 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.

Centres already offering City & Guilds qualifications in this subject area

Centres approved to offer the qualification Level 2 NVQ in Business-Improvement Techniques (2257-50) may apply for approval for the new Level 2 NVQ Diploma in Business-Improvement Techniques (7576-02) using the **fast track approval form**, available from the City & Guilds website.

Centres may apply to offer the new qualification using the fast track form

- providing there have been no changes to the way the qualifications are delivered, and
- if they meet all of the approval criteria specified in the fast track form guidance notes.

Fast track approval is available for 12 months from the launch of the qualification. After this time, the qualification is subject to the **standard** Qualification Approval Process. It is the centre's responsibility to check that fast track approval is still current at the time of application.

3 Centre requirements

3.3 Resource requirements

Human resources

Staff delivering this qualification must be able to demonstrate that they meet the following occupational expertise requirements. This information is also contained in
SEMTAs Business-Improvement Techniques (B-IT) NVQ Level 2 & 3 Unit Assessment Strategy document

Assessor Requirements

Assessor requirements to demonstrate effective assessment practice

Assessment must be carried out by competent Assessors that as a minimum must hold the Level 3 Award in Assessing Competence in the Work Environment. Current and operational Assessors that hold units D32 and/or D33 or A1 and/or A2 as appropriate to the assessment being carried out, will not be required to achieve the Level 3 Award as they are still appropriate for the assessment requirements set out in this Unit Assessment Strategy. However, they will be expected to regularly review their skills, knowledge and understanding and where applicable undertake continuing professional development to ensure that they are carrying out workplace assessment to the most up to date National Occupational Standards (NOS).

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 B-IT 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 Body/Organisation assessment recording documentation used for the B-IT NVQ units against which the assessments and verification are to be carried out and other relevant Awarding Body's/Organisation's documentation and system and procedures to support the Quality Assurance process.

Internal and External Quality Assurers

Internal Quality Assurers 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 Quality Assurers that hold unit D34 must demonstrate that they are applying the verification principles and practices set down in V1.

External Quality Assurers 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 Quality Assurers 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 B-IT NVQ units against which the assessments and verification are to be carried out, the appropriate Regulatory Body's systems and procedures and the City & Guilds documentation and system and procedures within which the assessment and verification is taking place.

Specific technical requirements for Internal and External Quality Assurers

Internal and External Quality Assurers of this qualification and or units must be able to demonstrate that they have verifiable, sufficient and relevant business experience in the sector/occupational area, and must have a working knowledge of the processes, techniques and procedures that are being used where the business improvement is being implemented

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.

Candidate entry requirements

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

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

Age restrictions

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

3.4 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 Quality Assurer (IQA).

External quality assurance

External Quality Assurers 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 Quality Assurers must have appropriate occupational and verifying knowledge and expertise. City & Guilds External Quality Assurers 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 Quality Assurers are given in *Providing City & Guilds qualifications*.

4 Units

The units for this qualification follow.

Structure of units

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

- title
- unit aim
- relationship to NOS, other qualifications and frameworks
- 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	A/601/5013	5	35	2
202	Contributing to effective team working	J/600/2491	7	26	2
203	Contributing to the application of workplace organisation techniques	L/600/2492	12	51	2
204	Contributing to the application of continuous improvement techniques (Kaizen)	Y/600/2513	14	55	2
205	Contributing to the development of visual management systems	D/600/2514	9	41	2
206	Contributing to the analysis and selection of parts for improvement	H/600/2515	15	55	2
207	Contributing to carrying out lead time analysis	K/600/2516	10	41	2
208	Carrying out set-up reduction techniques	M/600/2517	15	55	2
209	Carrying out autonomous maintenance	T/600/2518	13	52	2
210	Contributing to the application of problem solving techniques	A/600/2519	9	41	2
211	Carrying out flow process analysis	T/600/2521	14	55	2
212	Contributing to the creation of Standard Operating Procedures (SOP)	F/600/2523	9	41	2
213	Contributing to the application of Six	J/600/2538	15	59	2

	Sigma methodology to a project				
214	Contributing to the application of Six Sigma process mapping	F/600/2540	14	55	2
215	Contributing to the application of basic statistical analysis	J/600/2541	13	52	2
216	Contributing to the application of Statistical Process Control (SPC) procedures	Y/600/2544	9	41	2
217	Contributing to the application of Failure Modes and Effects Analysis (FMEA)	D/600/2545	11	41	2
218	Contributing to the application of Measurement Systems Analysis (MSA)	M/600/2548	11	41	2
219	Carrying out mistake/error proofing (Poka Yoke)	K/600/2550	10	41	2

Unit Endorsement

These units are endorsed by the Sector Skills Council for Science, Engineering and Manufacturing Technologies (SEMTA).

Unit 201 Complying with statutory regulations and organisational safety requirements

Overview

Rationale

This unit covers the skills and knowledge needed to prove the competences required to deal with statutory regulations and organisational safety requirements. It does not deal with specific safety regulations or detailed requirements, it does, however, cover the more general health and safety requirements that apply to working in an industrial environment.

The learner will be expected to comply with all relevant regulations that apply to their area of work, as well as their general responsibilities as defined in the Health and Safety at Work Act. The learner will need to be able to identify the relevant qualified first aiders and know the location of the first aid facilities. The learner will have a knowledge and 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 also 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's responsibilities will require them to comply with all relevant statutory and organisational policy and procedures for health and safety in the workplace.

The learner must act in a responsible and safe manner at all times, and present themselves in the workplace suitably prepared for the activities to be undertaken. The learner will be expected to report any problems with health and safety issues, to the relevant authority. The learner's knowledge will provide a good understanding of the relevant statutory regulations and organisational requirements associated with their work, and will provide an informed approach to the procedures used.

The learner will need to understand their organisation's health and safety requirements and their application, in adequate depth to provide a sound basis for carrying out their activities in a safe and competent manner.

Learning outcomes

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

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

This unit has been derived from national occupational standard Business-Improvement Techniques Unit No. 01: Complying with statutory regulations and organisational safety requirements (Suite 3)

Unit 201 Complying with statutory regulations and organisational safety requirements

Outcome 1 Comply with statutory regulations and organisational safety requirements

Assessment Criteria

The learner can:

1 Comply with their duties and obligations as defined in the Health and Safety at Work Act

2 Demonstrate their understanding of their duties and obligations to health and safety by:

- applying in principle their duties and responsibilities as an individual under the Health and Safety at Work Act
- identifying, within their organisation, appropriate sources of information and guidance on health and safety issues, such as:
- eye protection and Personal Protective Equipment (PPE)
- COSHH regulations
- Risk assessments
- identifying the warning signs and labels of the main groups of hazardous or dangerous substances
- complying with the appropriate statutory regulations at all times

3 Present themselves in the workplace suitably prepared for the activities to be undertaken

4 Follow organisational accident and emergency procedures

5 Comply with emergency requirements, to include:

- identifying the appropriate qualified first aiders and the location of first aid facilities
- identifying the procedures to be followed in the event of injury to themselves or others
- following organisational procedures in the event of fire and the evacuation of premises
- identifying the procedures to be followed in the event of dangerous occurrences or hazardous malfunctions of equipment

6 Recognise and control hazards in the workplace

7 Identify the hazards and risks that are associated with the following:

- their working environment
- the equipment that they use
- materials and substances (where appropriate) that they use
- working practices that do not follow laid-down procedures

8 Use correct manual lifting and carrying techniques

9 Demonstrate one of the following methods of manual lifting and carrying:

- lifting alone
- with assistance of others

- with mechanical assistance

10 Apply safe working practices and procedures to include:

- maintaining a tidy workplace, with exits and gangways free from obstruction
- using equipment safely and only for the purpose intended
- observing organisational safety rules, signs and hazard warnings
- taking measures to protect others from any harm resulting from the work that they are carrying out

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

The learner can:

1 Describe the roles and responsibilities of themselves and others under the Health and Safety at Work Act, and other current legislation (such as The Management of Health and Safety at Work Regulations, Workplace Health and Safety and Welfare Regulations, Personal Protective Equipment at Work Regulations, Manual Handling Operations Regulations, Provision and Use of Work Equipment Regulations, Display Screen at Work Regulations, Reporting of Injuries, Diseases and Dangerous Occurrences Regulations)

2 Describe the specific regulations and safe working practices and procedures that apply to their work activities

3 Describe the warning signs for the nine main groups of hazardous substances defined by Classification, Packaging and Labelling of Dangerous Substances Regulations

4 Explain how to locate relevant health and safety information for their tasks, and the sources of expert assistance when help is needed

5 Explain what constitutes a hazard in the workplace (such as moving parts of machinery, electricity, slippery and uneven surfaces, poorly placed equipment, dust and fumes, handling and transporting, contaminants and irritants, material ejection, fire, working at height, environment, pressure/stored energy systems, volatile, flammable or toxic materials, unshielded processes, working in confined spaces)

6 Describe their responsibilities for identifying and dealing with hazards and reducing risks in the workplace

7 Describe the risks associated with their working environment (such as the tools, materials and equipment that they use, spillages of oil, chemicals and other substances, not reporting accidental breakages of tools or equipment and not following laid-down working practices and procedures)

8 Describe the processes and procedures that are used to identify and rate the level of risk (such as safety inspections, the use of hazard checklists, carrying out risk assessments, COSHH assessments)

9 Describe the first aid facilities that exist within their work area and within the organisation in general; the procedures to be followed in the case of accidents involving injury

10 Explain what constitute dangerous occurrences and hazardous malfunctions, and why these must be reported even if no-one is injured

11 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

12 Describe the organisational policy with regard to fire fighting procedures; the common causes of fire and what they can do to help prevent them

13 Describe the protective clothing and equipment that is available for their areas of activity

14 Explain how to safely lift and carry loads, and the manual and mechanical aids available

15 Explain how to prepare and maintain safe working areas; the standards and procedures to ensure good housekeeping

16 Describe the importance of safe storage of tools, equipment, materials and products

17 Describe the extent of their own authority, and to whom they should report in the event of problems that they cannot resolve

Unit 202 Contributing to effective team working

Overview

Rationale

This unit covers the skills and knowledge needed to prove the competences required to work effectively as a team member within a continuous improvement environment. The learner will be required to establish and maintain productive working relationships whilst challenging fixed ideas, and to deal with disagreements in an amicable and constructive way.

The learner 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 disagreement. As part of the team activities, the learner will need to keep others informed about work plans or activities which affect them.

The learner's responsibilities will require them to comply with organisational policy and procedures for the activities undertaken, to report any problems with the activities to the relevant people, and to complete any necessary job/task documentation accurately and legibly. The learner will be expected to take full responsibility for their actions within the team, and for the quality and accuracy of the work that they produce.

The learner's knowledge will be sufficient to provide a good understanding of team working, and will provide an informed approach to the techniques and procedures used. The learner will need to understand how their actions will affect the overall performance of the team.

Applying safe working practices will be a key issue throughout.

Learning outcomes

1 Contribute to effective team working

2 Know how to contribute to effective team working

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

This unit has been derived from national occupational standard Business-Improvement Techniques Unit No. 02: Contributing to effective team working (Suite 2)

Unit 202 Contributing to effective team working

Outcome 1 Contribute to effective team working

Assessment Criteria

The learner can:

1 Establish and maintain productive working relationships, using the key performance measures and communication processes available to them

2 Establish and maintain good working relationships with three of the following:

- colleagues within their own workgroup
- colleagues in other workgroups
- immediate line management
- those for whom they have responsibility
- external contacts

3 Deal with disagreements in an amicable and constructive way, using relevant information and data to support views and arguments

4 Provide ideas and solutions to find ways of resolving issues that cause concern and disagreement

5 Use all relevant information available to them to keep others informed about work plans or activities which affect them

6 Communicate orally by three of the following:

- question and answer sessions
- team briefings
- brainstorming sessions
- problem resolution processes

7 Communicate in writing and/or electronically, to include three from the following:

- maintaining up-to-date key performance indicators for the work area
- adding ideas and actions to team boards
- processing information
- communicating via e-mail/internal network services
- producing briefs or updates

8 Seek assistance from others in a polite, courteous way, without disturbing normal work activities

9 Respond in a timely and positive way, using data and information available when others ask for help or information

Unit 202 Contributing to effective team working

Outcome 2 Know how to contribute to effective team working

Assessment Criteria

Candidates must be able to:

1 Describe the importance of creating and maintaining effective working relationships

2 Describe the types of problem that can occur with working relationships

3 Explain how their own behaviour, dress and language can affect working relationships

4 Describe the actions that can be taken to deal with specific difficulties in working relationships

5 Describe the importance of challenging fixed ideas within the team

6 Explain how to challenge fixed ideas without causing problems with working relationships

7 Explain how to use data and information to help resolve concerns and disagreements

8 Describe from whom they should seek assistance when they have difficulties with working relationships

9 Describe the importance of sharing their knowledge, information and 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 performance effectively to others

11 Describe the types of information and data available in their area (such as key performance measures for RFT, quality, target versus actual, scrap, OEE, SPC)

12 Describe the use of problem resolution processes and action planning; continuous improvement, brainstorming and the trialling of new ideas

13 Describe the mixture of skills and experience available in their team to support them or the process when problems occur (team skills matrix)

14 Explain why they need to keep others involved in any plans or activities that they may be doing

15 Describe the types of support or assistance that they might need from others

16 Describe the importance of being polite when requesting assistance

17 Describe the types of disruption that can be caused by inopportune requests for assistance

18 Describe the methods used in their area for effective communication (such as team briefings covering team performance, quality, cost, delivery, people; team boards for general information; process performance boards covering measures, graphs, action plans)

19 Describe the extent of their own authority, and to whom they should report in the event of problems that they cannot resolve

Unit 203 Contributing to the application of workplace organisation techniques

Overview

Rationale

This unit covers the skills and knowledge needed to prove the competences required to carry out a systemic approach to continuously make improvements to workplace organisation. It involves carrying out the principles and techniques of a workplace organisation activity such as 5S or 5C.

The learner will need to consider the work area and its activity and determine where information, materials, tools and/or equipment are missing, or require a new location and where improvements to the area or activity could be made. The learner will also be expected to actively contribute to making recommendations for the creation of, or changes to, standard operating procedures and visual controls that everyone works to within the area, which could cover such things as producing shadow boards to standardise the storage and location of area equipment, colour coding of equipment, cleaning and maintenance of equipment, production operations and health and safety. The overall objective of the activity will be to improve the condition of the working environment and in doing so establish a new improved area score.

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 solve, or are outside their responsibility, to the relevant authority. The learner will be expected to take full responsibility for their own actions within the activity and for the quality and accuracy of the work they carry out.

The learner's knowledge will provide a good understanding of the workplace organisation activity and the area in which they are working, and provide an informed approach to the techniques and procedures used. The learner will need to understand the principles of workplace organisation and their application, in adequate depth to provide a sound basis for carrying out the activities to the required criteria.

Applying safe working practices will be a key issue throughout.

Learning outcomes

1 Contribute to the application of workplace organisation techniques
2 Know how to contribute to the application of workplace organisation techniques

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

This unit has been derived from national occupational standard Business-Improvement Techniques Unit No. 03: Contributing to the application of workplace organisation techniques (Suite 2)

Unit 203 Contributing to the application of workplace organisation techniques

Outcome 1 Contribute to the application of workplace organisation techniques

Assessment Criteria

The learner can:

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

2 Use workplace organisation techniques within the chosen work area and establish and agree the area score

3 Identify where information, resources or equipment is missing or is in surplus and where improvements can be made

4 Make recommendations for the creation of, or changes to, standard operating procedures (SOPs), and visual controls that everyone works to within the area

5 Recommend the creation of or changes to standard operating procedures which cover two of the following:

- cleaning of equipment/work area
- maintenance of equipment
- health and safety
- process procedures
- manufacturing operations/working processes
- quality systems
- regulatory compliance system

6 Recommend the creation of changes to visual controls, which cover two of the following:

- shadow boards or an alternative (such a labelled racking and storage systems), to standardise the storage and location of area resources and/or equipment
- colour coding
- line status systems (such as line process system)
- skills matrix
- performance measures
- process control boards
- improvement systems
- planning systems

7 Make agreed improvements to the workplace organisation and establish and agree the new improved area score

Unit 203 Contributing to the application of workplace organisation techniques

Outcome 2 Know how to contribute to the application of workplace organisation techniques

Assessment Criteria

The learner can:

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

2 Describe the factors to be considered when selecting a work area for an activity (such as: cleanliness, health and safety product quality)

3 Describe the procedure used to identify and address surplus or missing equipment or resources (such as carrying out a 'red tagging' exercise)

4 Explain how to arrange and label the necessary resources or equipment for rapid identification and access

5 Explain how to make recommendations for the creation of, or changes to, standard operating procedures (SOPs) or other approved documentation

6 Explain how to score and audit the workplace organisation

7 Describe the techniques required to communicate information using visual systems (such as shadow boards, performance charts, KPIs)

8 Describe the extent of their own authority, and to whom they should report to, in the event of problems that they cannot resolve

Unit 204 Contributing to the application of continuous improvement techniques (Kaizen)

Overview

Rationale

This unit covers the skills and knowledge needed to prove the competences required for contributing to the carrying out of continuous improvement techniques (Kaizen) to the learners work activities. It involves contributing to the planning the Kaizen process for the agreed work area/activity, to include plan, do, check, act, and to use quantifiable objectives and targets for the improvement activity. The activities undertaken will include the identification of all forms of waste, and problems or conditions within the work area or activity where improvements can be made.

The learner will need to focus on improvements which would give business benefits, such as reduced product cost, increased capacity and/or flexibility, improved safety, improved regulatory compliance, improved quality, improved customer service, improvements to working practices and procedures, reduction in lead time and reduction/elimination of waste. The learner will also be required to make recommendations for the creation of changes to standard operating procedures (SOPs), which could include cleaning of equipment, maintenance of equipment, health and safety practices and procedures, process procedures, manufacturing operations and quality improvements.

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 solve, or that are outside their responsibility, to the relevant authority. The learner will be expected to take responsibility for their own actions within the activity, and for the quality and accuracy of the work that they carry out.

The learner's knowledge will provide a good understanding of the Kaizen activity and the area in which they are working, and will provide an informed approach to the techniques and procedures used. The learner will need to understand the Kaizen principles and their application, in adequate depth to provide a sound basis for carrying out the activities to the required criteria.

Applying safe working practices will be a key issue throughout.

Learning outcomes

1 Contribute to the application of continuous improvement techniques (Kaizen)

2 Know how to contribute to the application of continuous improvement techniques (Kaizen)

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

This unit has been derived from national occupational standard Business-Improvement Techniques Unit No. 04: Contributing to the application of continuous improvement techniques (Kaizen) (Suite 2)

Unit 204 Contributing to the application of continuous improvement techniques (Kaizen)

Outcome 1 Contribute to the application of continuous improvement techniques (Kaizen)

Assessment Criteria

The learner can:

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

2 Plan the Kaizen process for the agreed work area/activity to include plan, do, check, act

3 Use the established objectives and targets for the Kaizen activity

4 Carry out the Kaizen activity within the chosen work area/activity

5 Identify waste, problems or conditions within the work area or activity where improvements can be made

6 Identify improvements which cover three of the following:

- reduction in cost
- improved health and safety and/or working environment
- improved quality
- improved regulatory compliance
- improvements to working practices
- reduction in lead time
- reduction in waste and/or energy usage
- improved customer service
- improved resource utilisation

7 Carry out a structured waste elimination activity, based on the identified wastes, problems or conditions

8 Make recommendations for the creation or changes to standard operating procedures (SOP's) or other approved documentation that will sustain the improvement made, resulting from the Kaizen activity

9 Identify and apply improvements, which cover two of the following:

- cleaning of equipment or work area
- maintenance of equipment
- health and safety
- process procedures
- manufacturing operations or work area operations
- quality system
- regulatory compliance systems

10 Use the determined measure of performance for quality, cost and delivery

11 Provide comparisons of the agreed work area/activity before and after the kaizen activity (to confirm improvements) using key performance indicators

12 Record and show business improvement, using one of the following key performance indicators:

- not right first time (as a percentage or as parts per million (PPM))
- company-specific quality measure
- delivery schedule achievement
- company-specific delivery measure
- parts per operator hour (PPOH)
- production volume
- value added per person (VAPP)
- overall equipment effectiveness (OEE)
- stock turns
- floor space utilisation (FSU)
- cost breakdown (such as labour, material, energy and overhead)
- company-specific cost measure

Unit 204 Contributing to the application of continuous improvement techniques (Kaizen)

Outcome 2 Know how to contribute to the application of continuous improvement techniques (Kaizen)

Assessment Criteria

The learner can:

1 Describe the health and safety requirements of the area in which they are carrying out the Kaizen activity

2 Explain how a work area/activity is selected for the Kaizen activity

3 Describe the principles for the deployment of Kaizen (such as where a culture focuses on sustained continuous improvement, aiming at eliminating waste in all systems and processes in the organisation and supply chain)

4 Describe the eight wastes (over-production, inventory, transport, over-processing, waiting time, operator motion, bad quality, failure to exploit human potential) and how to eliminate them

5 Describe problem solving and root cause analysis

6 Describe the importance of fully understanding the process/activity under review, and how this will affect the quality of the problem solving

7 Describe the application of the Deming cycle (plan, do, check, act)

8 Explain how to carry out a Kaizen activity and establish measurable improvements

9 Explain how to distinguish facts from opinions, in order to identify improvement actions

10 Explain how improvements to the process are achieved by engaging the knowledge and experience of the people involved in the process

11 Explain how to encourage people to identify potential improvements

12 Explain how to evaluate improvement ideas, in order to select those that are to be pursued

13 Explain how quantifiable targets and objectives are set

14 Explain how to make recommendations for the creation of changes to standard operating procedures (SOPs) or other approved documentation

15 Describe the techniques used to visually communicate the work of the Kaizen activity to participants and others

16 Describe the application of the business' key measures of competitiveness (such as the former DTI's seven measures: delivered right first time, delivery schedule achievement, people productivity, stock turns, overall equipment effectiveness, value added per person, floor space utilisation)

17 Explain how the cycle time of a process can be defined

18 Describe the techniques used to distribute work content to balance cycle times to the rate of customer demand, and how to visually represent it (e.g. line balance and process displays)

19 Describe the extent of their own authority, and to whom they should report in the event of problems that they cannot resolve.

Unit 205 Contributing to the development of visual management systems

Overview

Rationale

This unit covers the skills and knowledge needed to prove the competences required for contributing to the introduction and use of information used in visual management systems. It involves identifying the appropriate parts of the process or work area that will have visual controls and identifying the key performance indicators which are to be displayed in the work area.

The learner will also be required to ensure that the accuracy of the information submitted for the visual managements systems meets with the company requirements. The information to be displayed will include such things as safety, zero defects, process concerns or corrective actions, performance measures, standard operating procedures (SOPs), workplace organisation, skills matrices, autonomous maintenance worksheets, parts control systems, problem resolution (e.g. Kaizen boards), shadow boards and standard work-in-progress (WIP) locations and quantities.

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 solve, or that are outside their responsibility, to the relevant authority. The learner will be expected to take responsibility for their own actions within the activity, and for the quality and accuracy of the work that they carry out.

The learner's knowledge will provide a good understanding of their work, and will provide an informed approach to the techniques and procedures used. The learner will need to understand the principles and procedures of visual management and its application, in adequate depth to provide a sound basis for carrying out the activities to the required criteria.

Applying safe working practices will be a key issue throughout.

Learning outcomes

1 Contribute to the development of visual management systems
2 Know how to contribute to the development of visual management systems

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

This unit has been derived from national occupational standard Business-Improvement Techniques Unit No. 05: Contributing to the development of visual management systems (Suite 2)

Unit 205 Contributing to the development of visual management systems

Outcome 1 Contribute to the development of visual management systems

Assessment Criteria

The learner can:

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

2 Identify appropriate parts of the process or work area that will have visual controls

3 Identify the key performance indicators that will be displayed in the work area

4 Make recommendations for the production of, or changes to, standard operating procedures (SOPs), and visual controls that everyone works to within the area

5 Contribute to the development of visual management systems that promote four of the following:

- health and safety
- quality/zero defects
- process concerns or corrective actions
- performance measures
- standard operating procedures
- workplace organisation
- skills matrices
- autonomous maintenance worksheets
- parts/material control systems
- problem resolution (e.g. Kaizen boards)
- shadow boards
- standard work-in-progress (WIP) locations and quantities
- planning systems
- the delivery of effective meetings

6 Ensure the accuracy of the information submitted for visual managements systems meets with the company requirements

Unit 205 Contributing to the development of visual management systems

Outcome 2 Know how to contribute to the development of visual management systems

Assessment Criteria

The learner can:

1 Describe the health and safety requirements of the work area in which they are conducting the visual management activities

2 Describe the factors to be considered when selecting a visual management system

3 Describe the visual management systems available to create 'the visual factory' (such as using Kanban systems, card systems, colour coding, floor footprints, graphs, team boards)

4 Describe the measures of performance in a lean business environment (such as health, safety and the environment, right first time, cost, delivery, responsiveness, process concerns and corrective actions, performance measures, workplace organisation)

5 Describe the measurement techniques required for communicating the visual management within an area and to others who may use the information (such as target versus actual, % right first time, Pareto analysis, bar charting, action plans, Paynter charts)

6 Describe the extent of their own authority, and to whom they should report in the event of problems that they cannot resolve

Unit 206 Contributing to the analysis and selection of parts for improvement

Overview

Rationale

This unit covers the skills and knowledge needed to prove the competences required for contributing to the analysis and selection of parts for improvement. It involves selecting representative parts for improvements within the chosen area/product range from information provided.

The learner will be expected to make recommendations for identifying and producing part families, using criteria such as part shape, part size, the material used to manufacture the part and the manufacturing process used. The learner will also be required to make recommendations for the production of a finalised list of the representative parts for the chosen area/product range.

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 solve, or that are outside their responsibility, to the relevant authority. The learner will be expected to take responsibility for their own actions within the activity, and for the quality and accuracy of the work that they carry out.

The learner's knowledge will provide a good understanding of their work, and will provide an informed approach to the techniques and procedures used. The learner will need to understand the principles and procedures of analysing and selecting parts for improvement, and their application, in adequate depth to provide a sound basis for carrying out the activities to the required criteria.

Applying safe working practices will be a key issue throughout.

Learning outcomes

1 Contribute to the analysis and selection of parts for improvement

2 Know how to contribute to the analysis and selection of parts for improvement

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

This unit has been derived from national occupational standard Business-Improvement Techniques Unit No. 06: Contributing to the analysis and selection of parts for improvement (Suite 2)

Unit 206 Contributing to the analysis and selection of parts for improvement

Outcome 1 Contribute to the analysis and selection of parts for improvement

Assessment Criteria

The learner can:

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

2 Obtain all the information, documentation and equipment required to carry out the activity

3 Select the representative parts for improvements within the chosen area/product range using information provided

4 Carry out an analysis against three of the following criteria:

- customer schedules (volume)
- cost of producing the part
- profit for each part, as a percentage
- manufacturing lead time
- quality (scrap and non-conformance percentage)
- process/manufacturing route

5 Make recommendations for the grouping of identified parts into appropriate part families

6 Make recommendations for the production of part families, using one of the following criteria:

- part shape
- part size
- material used to manufacture the part
- manufacturing process

7 Make recommendations for the production of a finalised list of the representative parts for the chosen area/product range

Unit 206 Contributing to the analysis and selection of parts for improvement

Outcome 2 Know how to contribute to the analysis and selection of parts for improvement

Assessment Criteria

The learner can:

1 Describe the health and safety requirements of the work area in which they are conducting the activity

2 Describe the information required to conduct the activity, and where and from whom the information can be found

3 Describe the principles and process of analysis (such as, pie charts, bar charts (Pareto analysis))

4 Describe the techniques used to communicate the information and results gained by this process

5 Explain how to create and present bar graphs/histograms

6 Explain how to differentiate between lead-time and cycle-time

7 Describe the bill of materials (BOM) structure for each of the representative parts

8 Explain how to identify the origin/source of the parts within the chosen area

9 Explain how to evaluate the information in order to select the representative parts for the chosen area

10 Describe the use of problem solving and root cause analysis techniques

11 Describe the extent of their own authority, and to whom they should report in the event of problems that they cannot resolve

Unit 207 Contributing to carrying out lead time analysis

Overview

Rationale

This unit covers the skills and knowledge needed to prove the competences required for carrying out lead time analysis. It involves adhering to the principles and carrying out the processes of lead time analysis to selected parts or processes.

The learner will be expected to collect information/data for the production of a frequency diagram listing the major bottlenecks or constraints as identified by each lead time profile and to recommend quantifiable objectives and targets for the reduction in lead time of the chosen parts or processes. The learner will also be expected to make recommendations to identify any problems or conditions within the work area/process where improvements can be made and make recommendations for the production of revised lead time profiles, identifying the improved process.

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 solve, or that are outside their responsibility, to the relevant authority. The learner will be expected to take responsibility for their own actions within the activity, and for the quality and accuracy of the work that they carry out.

The learner's knowledge will provide a good understanding of their work, and will provide an informed approach to the techniques and procedures used. The learner will need to understand the principles and procedures of lead time analysis, and its application, in adequate depth to provide a sound basis for carrying out the activities to the required criteria.

Applying safe working practices will be a key issue throughout.

Learning outcomes

1 Contribute to carrying out lead time analysis
2 Know how to contribute to carrying out lead time analysis

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

This unit has been derived from national occupational standard Business-Improvement Techniques Unit No. 07: Contributing to carrying out lead time analysis (Suite 2)

Specific unit requirements

The word 'contribute' is used within this unit. This means that, although the outcomes of this unit may be carried out and achieved as part of a team, in order to prove consistent competent performance the learner must be able to demonstrate:

- specific, quantifiable and auditable personal contributions in the achievement of this unit
- skills and knowledge needed to contribute to proving the competences in all the areas required by the standard
- their ability to combine the assessment criteria specified when contributing to the application of the principles and processes of this unit.

Unit 207 Contributing to carrying out lead time analysis

Outcome 1 Contribute to carrying out lead time analysis

Assessment Criteria

The learner can:

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

2 Collect information/data for the production of a frequency diagram

3 Recommend quantifiable objectives and targets for the reduction in lead time of the chosen parts or processes

4 Carry out lead time analysis and create lead time profiles for all of the representative parts or processes chosen

5 Make recommendations to identify any waste, problems or conditions within the work area where improvements can be made

6 Contribute to the identification of improvement opportunities covering two of the following:

- supply or delivery of parts
- improved workflow
- improved quality
- flexibility of people
- launch of material
- inventory balancing

7 Make recommendations for the production of revised lead time profiles, identifying the improved process

8 Make recommendations for the production of a plan for the improvement activities and resources required with timescales to achieve the targeted lead time.

Unit 207 Contributing to carrying out lead time analysis

Outcome 2 Know how to contribute to carrying out lead time analysis

Assessment Criteria

The learner can:

1 Describe the health and safety requirements of the work area in which they are conducting the activity

2 Describe from whom authority is gained for the release of the information required to create lead time profiles

3 Describe the information required to construct the lead time profiles, and where this information can be obtained

4 Explain how to create lead time profiles

5 Explain how to create frequency charts

6 Describe the techniques used to communicate the information and results obtained by this process

7 Explain how to differentiate between lead time and cycle time

8 Describe problem solving and root cause analysis (such as: Ishikawa diagrams, brainstorming)

9 Describe the extent of their authority, and to whom they should report in the event of problems that they cannot resolve.

Unit 208 Carrying out set-up reduction techniques

Overview

Rationale

This unit covers the skills and knowledge needed to prove the competences required for carrying out set-up reduction techniques. It involves carrying out the principles and processes of set-up reduction on a machine or process set-up, a change over, a clean down or turnaround, an activity that is a bottleneck or a constraint that affects the process such as capacity, flexibility, lead time, inventory or other business performance measure. The learner will be expected to identify where problems or conditions occur within the set-up process and determine where improvements can be made.

The learner will need to make recommendations for setting suitable quantifiable objectives and targets against which the improvements are to be made. The activities will require the learner to carry out set-up reduction activities on different machines or processes and to make improvements to the current set-up, such as reduced set-up time, improved safety, improved quality and improved work practice. The learner will also be required to make recommendations for the creation of or changes to standard operating procedures for the new set-up, which includes all of the new steps to be carried out, the time required for each step, differentiation between internal and external steps, standard equipment and its location (e.g. cutting tools, clamps, hand tools, inspection equipment) and information required for a quick set-up and its location (e.g. CNC programs, drawings and manufacturing instructions).

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 solve, or that are outside their responsibility, to the relevant authority. The learner will be expected to take responsibility for their own actions within the activity, and for the quality and accuracy of the work that they carry out.

The learner's knowledge will provide a good understanding of their work, and will provide an informed approach to the techniques and procedures used. The learner will need to understand the principles and procedures of set-up reduction and its application, in adequate depth to provide a sound basis for carrying out the activities to the required criteria.

Applying safe working practices will be a key issue throughout.

Learning outcomes

1 Carry out set-up reduction techniques

2 Know how to carry out set-up reduction techniques

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

This unit has been derived from national occupational standard Business-Improvement Techniques Unit No. 08: Carrying out set-up reduction techniques (Suite 2)

Unit 208 Carrying out set-up reduction techniques

Outcome 1 Carry out set-up reduction techniques

Assessment Criteria

The learner can:

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

2 Use the given information to carry out set-up reduction activity on the chosen machine or process, using the appropriate techniques

3 Identify problems or conditions within the current set-up, where improvements can be made

4 Make recommendations for quantifiable objectives/targets for improvements to the set-up chosen

5 Carry out improvements to the current set-up which cover three of the following:

- reduced set-up time
- improved safety
- improved quality
- improved work practice
- improved regulatory compliance
- reduced cost

6 Carry out improvements to the current set-up to meet the identified objectives and targets

7 Make recommendations for the creation of or changes to standard operating procedures (SOPs) or other approved documentation that will sustain the improvements made to the set-up requirements

8 Identify and apply improvements to the new set-up, which cover three of the following:

- all of the new steps, and the time required for each step
- differentiation between internal and external steps
- standard equipment and its location (e.g., cutting tools, clamps, hand tools, inspection equipment)
- information required for a quick set-up and its location (such as CNC programs, drawings and manufacturing instructions)
- methods and standards
- documentation for co-ordination control

Unit 208 Carrying out set-up reduction techniques

Outcome 2 Know how to carry out set-up reduction techniques

Assessment Criteria

The learner can:

1 Describe the health and safety requirements of the area in which you are carrying out the set-up reduction activities

2 Explain why a machine or process is selected for a set-up reduction activity

3 Describe from whom authority is gained for the release of people and resources for the set-up reduction activity

4 Describe the application of the Deming cycle (plan, do, check, act)

5 Describe the processes for carrying out a set-up reduction activity

6 Explain how improvements to the set-up can be achieved

7 Describe the need to evaluate improvement ideas and select those that will give most benefit for the least spend

8 Describe the need for quantifiable targets and objectives for the improved set-up

9 Explain how to correlate information to create or update standard operating procedures (SOPs) or other approved documentation for the revised set-up

10 Describe the need to distinguish between internal and external activities, with reference to set-up

11 Describe the difference between 'motion' and 'work'

12 Describe what constitutes a value adding and non-value adding activity

13 Describe the extent of your own authority, and to whom you should report in the event of problems that you cannot resolve.

Unit 209 Carrying out autonomous maintenance

Overview

Rationale

This unit covers the skills and knowledge needed to prove the competences required to carry out autonomous maintenance (front line asset care) principles on equipment and processes and aims to prevent equipment problems by identifying potential causes and not waiting for the problem to occur. It involves using information gained from the measurement of the six classic hidden losses, assessment of potential and priorities for loss reduction. It covers the application of autonomous maintenance principles and processes to resources such as plant and equipment, machines, office equipment, service equipment and utilities. It also concerns assessment of the equipment/process condition and the steps required to restore the equipment/process to good working order.

The learner will be required to carry out the appropriate autonomous maintenance techniques and use the data gathered on the resource to refine the working practices through the application of front line asset care. Working practice improvement will include cleaning and checking, early problem detection and process monitoring routine servicing. This will involve close working with both production and maintenance staff, and include cross shift implementation (if applicable to your organisation).

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 solve, or are outside their responsibility, to the relevant authority. The learner will also be responsible for ensuring that all tools and equipment used during the maintenance activities are correctly accounted for and that all necessary job/task documentation is completed accurately and legibly. The learner will be expected to take responsibility for their own actions within the activity and for the quality and accuracy of the work they carry out.

The learner's knowledge will provide a good understanding of their work, and provide an informed approach to the autonomous maintenance techniques and procedures used. The learner will need to understand the principles and procedures of autonomous maintenance and its application, in adequate depth to provide a sound basis for carrying out the activities to the required criteria.

Applying safe working practices will be a key issue throughout.

Learning outcomes

1 Carry out autonomous maintenance

2 Know how to carry out autonomous maintenance

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

This unit has been derived from national occupational standard Business-Improvement Techniques Unit No. 09: Carrying out autonomous maintenance (Suite 2).

Unit 209 Carrying out autonomous maintenance

Outcome 1 Carry out autonomous maintenance

Assessment Criteria

The learner can:

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

2 Seek approval for use of the appropriate asset on which to carry out the autonomous maintenance activity

3 Carry out autonomous maintenance on at least one asset from the following:

- plant and equipment
- machines
- office equipment
- service equipment
- utilities

4 Use the given information to carry out the activity

5 Carry out the autonomous maintenance activity by applying the appropriate techniques

6 Carry out the autonomous maintenance process and show how one of the following is undertaken:

- assess criticality of equipment/process condition and identify refurbishment needs
- identify an integrated asset care plan for both operator and maintenance staff

7 Use the Overall Equipment Effectiveness (OEE) measure and information to determine which elements of the OEE and their associated losses need improvement

8 Use information relating to all of the following:

- load or demand
- capacity
- Takt time or bottleneck analysis

9 Use an action plan that which will reduce/eliminate the losses and hence improve the Overall Equipment Effectiveness

10 Implement improvements to working practices through autonomous maintenance

11 Show improvements to working practices through two of the following:

- initial cleaning
- countermeasures for cause and effect of dust and dirt
- cleaning and lubrication standards
- general inspection
- autonomous inspection
- workplace organisation
- full-circle implementation of autonomous maintenance.

Unit 209 Carrying out autonomous maintenance

Outcome 2 Know how to carry out autonomous maintenance

Assessment Criteria

The learner can:

1 Describe the health and safety requirements of the area in which they are carrying out the autonomous maintenance activities

2 Describe the principles of autonomous maintenance (front line asset care) as a part of total productive maintenance, and how they can be applied in administration procedures, safety improvement and quality maintenance

3 Explain how to select an asset on which to carry out the activity (assets could be plant and equipment, machines, office equipment, service equipment, utilities)

4 Describe the systematic and structured approach to carrying out autonomous maintenance

5 Describe the difference between a chronic and sporadic loss

6 Explain why it is necessary to calculate overall equipment effectiveness (OEE)

7 Describe the benefits of having an autonomous maintenance system

8 Describe the importance of taking ownership of the autonomous maintenance system

9 Describe the six major losses

10 Describe the use of standard operating procedures, single point lessons and machine/process start-up and shutdown procedures

11 Describe an awareness of the improvement activities that will drive the implementation of the autonomous maintenance activities (Kaizen and team working)

12 Describe critical processes and early problem detection steps

13 Describe loss areas and opportunities for improvement

14 Describe standards of wear

15 Describe the techniques of visual management used to communicate the information and results obtained by this process (including autonomous maintenance activity boards and checklists)

16 Describe the integration with workplace organisation and improving OEE

17 Describe contaminants and sources of contaminants

18 Describe the extent of their own authority, and to whom they should report in the event of problems that they cannot resolve

Unit 210 Contributing to the application of problem solving techniques

Overview

Rationale

This unit covers the skills and knowledge needed to prove the competences required for contributing to the application of problem solving techniques. It involves identifying the nature and extent of the problem and obtaining all the relevant information relating to it, using appropriate problem solving tools and applying them within a team focused environment. In carrying out the problem solving activities, the learner will be expected to take on one of the key roles such as facilitator, timekeeper, scribe or active team member involved in the collection of support information.

The learner will be required to contribute to the identification of the root cause of the problem and the determination of what permanent corrective actions need to be implemented to meet with organisational requirements. Typically, these corrective actions will lead to reduced costs, improved quality, improved delivery and responsiveness (lead time reduction), improved output, health and safety and regulatory compliance.

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 solve, or that are outside their responsibility, to the relevant authority. The learner will be expected to take responsibility for their own actions within the activity, and for the quality and accuracy of the work that they carry out.

The learner's knowledge will provide a good understanding of their work, and will provide an informed approach to the techniques and procedures used. The learner will need to understand the principles and procedures of structured problem solving and their application, in adequate depth to provide a sound basis for carrying out the activities to the required criteria.

Applying safe working practices will be a key issue throughout.

Learning outcomes

1 Contribute to the application of problem solving techniques
2 Know how to contribute to the application of problem solving techniques

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

This unit has been derived from national occupational standard Business-Improvement Techniques Unit No. 10: Contributing to the application of problem solving techniques (Suite 2).

Specific unit requirements

The word 'contribute' is used throughout this unit. This means that, although the outcomes of this unit may be carried out and achieved as part of a team, in order to prove consistent competent performance the learner must be able to demonstrate:

- specific, quantifiable and auditable personal contributions in the achievement of this unit
- competence in all the areas required by the standard
- their ability to combine the assessment criteria specified when contributing to the application of the principles and processes of this unit.

Unit 210 Contributing to the application of problem solving techniques

Outcome 1 Contribute to the application of problem solving techniques

Assessment Criteria

The learner can:

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

2 Contribute to identifying the nature and extent of the problem, and to obtaining all relevant information relating to it

3 Support a structured approach to problem resolution

4 Participate in problem solving activities, taking on one of the following key roles:

- facilitator
- timekeeper
- sourcing data and/or information required
- scribe

5 Contribute to the identification of appropriate problem solving tools, and to applying them within a team focused environment

6 Contribute to the identification of the root cause of the problem and the determination of permanent corrective actions

7 Contribute to identifying the savings within the chosen problem solving activity, covering two of the following:

- cost
- quality
- delivery or service
- responsiveness (lead time reduction, output or capacity)
- health and safety
- regulatory compliance

8 Contribute to ensuring that the corrective actions determined meet with organisational requirements

9 Contribute to obtaining the appropriate authority, and to the implementation of the agreed permanent corrective actions, within agreed timescales

10 Contribute to monitoring the problem resolution progress, and recording progress in the appropriate information systems

Unit 210 Contributing to the application of problem solving techniques

Outcome 2 Know how to contribute to the application of problem solving techniques

Assessment Criteria

The learner can:

1 Describe the business need for problem identification and removal

2 Describe the benefits of adopting a formalised problem solving process

3 Explain how to establish and select the team to be used for the problem solving activity

4 Explain why there must be clearly defined roles within the team, and what these roles are (such as facilitator, scribe, timekeeper)

5 Explain how to formally define the problem, and the level of involvement required from others in the problem solving process

6 Describe time line graphing, and how this is applied to the problem solving process

7 Describe the importance of good data collection and analysis to support problem solving

8 Describe containment action planning (to include process risk, action planning, testing decisions, determining timescales and protecting the customer)

9 Explain how to identify and verify the root cause of a problem (to include the use of brainstorming, the 5 'Why's, Ishikawa diagrams, testing decisions, verification techniques, root cause paths)

10 Explain how to determine and select permanent corrective actions

11 Explain how to implement the permanent corrective actions identified

12 Explain how to prevent recurrence of the problems (to include changes to management systems, operating systems and procedures, and the identification of opportunities for improvements)

13 Explain how to capture process improvement opportunities

14 Explain how to recognise the team's problem solving efforts, review the lessons learned and ensure that implementation has occurred

15 Describe the extent of their own authority, and to whom they should report in the event of problems that they cannot resolve.

Unit 211 Carrying out flow process analysis

Overview

Rationale

This unit covers the skills and knowledge needed to prove the competences required to carry out flow process analysis. It involves using the principles and procedures of flow process analysis within a given work area to produce a flow process analysis sheet.

The learner will be required to contribute to the identification of elements of waste, and problems or conditions within the process and make recommendations where improvements can be made. The learner will use the information gathered to evaluate and prioritise the opportunities for improvements. The learner will also be expected to make recommendations for quantifiable objectives and targets for all the identified improvement activities, with an appropriate measure and timescale for their implementation. The flow process analysis will focus on establishing value added and non-value added activity.

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 solve, or that are outside their responsibility, to the relevant authority. The learner will be expected to take responsibility for their own actions within the activity, and for the quality and accuracy of the work that they carry out.

The learner's knowledge will provide a good understanding of their work, and will provide an informed approach to the techniques and procedures used. The learner will need to understand the principles and procedures of flow process analysis and its application, in adequate depth to provide a sound basis for carrying out the activities to the required criteria.

Applying safe working practices will be a key issue throughout.

Learning outcomes

1 Carry out flow process analysis

2 Know how to carry out flow process analysis

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

This unit has been derived from national occupational standard Business-Improvement Techniques Unit No. 11: Carrying out flow process analysis (Suite 2).

Unit 211 Carrying out flow process analysis

Outcome 1 Carry out flow process analysis

Assessment Criteria

The learner can:

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

2 Map the current process flow analysis within a given work area

3 Make recommendations where improvements can be made by establishing value added and non value added activities

4 Evaluate the opportunities for improvement and prioritise these using suitable criteria

5 Make recommendations to the analysis of the data obtained above into:

- non-value added activity
- value added activity

6 Make recommendations for quantifiable objectives and targets for all the defined improvement activities

7 Make recommendations to the creation of an action plan covering both of the following:

- eliminates non-value added activity
- simplifies value added activity

Unit 211 Carrying out flow process analysis

Outcome 2 Know how to carry out flow process analysis

Assessment Criteria

The learner can:

1 Describe the health and safety requirements of the area in which they are carrying out the flow process analysis

2 Describe the need to describe a process in its elements/activities of work

3 Describe the eight forms of waste within a working environment

4 Describe the symbols and abbreviations used for flow process analysis (such as those defined by the American Standard for Methods Engineering (ASME)) (to include operation, inspection, transport, waiting, storage)

5 Explain how to map out a process or deployment flowchart, using the recognised symbols

6 Describe the difference between value-added and non-value added activities

7 Explain how to establish which elements/activities in the process are value added or non-value added

8 Explain how to identify opportunities for improvements to the process

9 Describe the need to use data to eliminate activities that do not add value to the process

10 Explain how to construct an action plan that will simplify the value added activities and eliminate the non-value added activities

11 Describe the purpose of an action plan (such as payback matrix)

12 Describe the extent of their own authority, and to whom they should report in the event of problems that they cannot resolve

Unit 212 Contributing to the creation of Standard Operating Procedures (SOP)

Overview

Rationale

This unit covers the skills and knowledge needed to prove the competences required to contribute to the creation of Standard Operating Procedures (SOP) for work activities. This will involve gathering information of the method used when performing the operation/process.

The learner will list the preparations required from start to finish, the quality and safety standards to be maintained, the drawings, tooling, fixtures, gauges, and other items that are used during the operation or process. The learner will need to highlight 'key points' in the document, using drawings, photographs and/or sketches, as appropriate. The learner will be required to make recommendations to the production and revision of standard operating procedures for a range of activities, such as cleaning of equipment, maintenance of equipment, health and safety practices and procedures, process procedures, manufacturing operations and quality improvements.

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 solve, or that are outside their responsibility, to the relevant authority. The learner will be expected to take responsibility for their own actions within the activity, and for the quality and accuracy of the work that they carry out.

The learner's knowledge will provide a good understanding of their work, and will provide an informed approach to the techniques and procedures used. The learner will need to understand the principles and procedures for creating standard operating procedures, and their application, in adequate depth to provide a sound basis for carrying out the activities to the required criteria.

Applying safe working practices will be a key issue throughout.

Learning outcomes

1 Contribute to the creation of Standard Operating Procedures (SOP)

2 Know how to contribute to the creation of Standard Operating Procedures (SOP)

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

This unit has been derived from national occupational standard Business-Improvement Techniques Unit No. 12: Contributing to the creation of Standard Operating Procedures (SOP) (Suite 2).

Unit 212 Contributing to the creation of Standard Operating Procedures (SOP)

Outcome 1 Contribute to the creation of Standard Operating Procedures (SOP)

Assessment Criteria

The learner can:

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

2 Make recommendations to the production of standard operating procedures for one of the following:

- cleaning of equipment
- maintenance of equipment
- health, safety and environmental practices and procedures
- process procedures
- manufacturing operations
- quality improvements
- improvements to customer satisfaction

3 Make recommendations to the production of standard operating procedures that include all of the following:

- operation/process to be performed
- part/product number and part/product description/operation reference
- operation/process number
- preparation activities prior to starting the operation/process
- description of the full operation/process, broken down into appropriate tasks/activities
- quality standards, health and safety requirements, environmental issues/requirements
- tooling/ fixtures/gauges/equipment required
- sketches/photographs/drawings that assist completion of the operation/process
- date of first issue
- originator of the document
- latest revision date

4 Gather information of the current operation or process

5 Identify tools, equipment, fixtures, documentation and standards required

6 Make recommendations to the production of standard operating procedures in an agreed format, and monitor their use against the operation or process requirements

7 Make recommendations to the production of standard operating procedures that minimise all of the following:

- time
- effort
- waste

8 Make recommendations to the revision of standard operating procedures, as appropriate, to ensure their effectiveness in the workplace

9 Confirm that the method defined will meet quality, productivity, health, safety and environmental requirements

Unit 212 Contributing to the creation of Standard Operating Procedures (SOP)

Outcome 2 Know how to contribute to the creation of Standard Operating Procedures (SOP)

Assessment Criteria

The learner can:

1 Describe the health and safety requirements of the area for which they are creating standard operating procedures (SOPs)

2 Describe the various documents used in creating standard operating procedures

3 Explain where to find the SOP documents to be used in their business

4 Describe the information that will be required to create a SOP

5 Explain how SOPs are structured, and the importance of their use

6 Describe methods of communicating to ensure that all the required information for the SOP is captured

7 Describe the operation/process to be captured in the SOP

8 Describe the link between SOPs and quality and continuous Improvement

9 Describe the eight wastes (over-production, inventory, transport, over-processing, waiting time, operator motion, bad quality, failure to exploit human potential), and how to eliminate them

10 Explain how to simplify work done, by eliminating waste and the potential for human error

11 Describe Takt time

12 Describe the extent of their own authority, and to whom they should report in the event of problems that they cannot resolve

Unit 213 Contributing to the application of Six Sigma methodology to a project

Overview

Rationale

This unit covers the skills and knowledge needed to prove the competences required for contributing to the application of a structured Six Sigma methodology to a project. It involves contributing to the identification of the Six Sigma organisational infrastructure, roles and responsibilities and business-specific metrics that will apply. These will include financial, quality and process aspects of the project.

The learner will be expected to contribute to identifying areas where the Six Sigma tools, techniques and activities can be applied, in order to demonstrate those factors that are critical to the customer, business and process. Contribution to the identification of the cost of poor quality, by identifying the defects per million opportunities (DPMO), is a major part of this unit.

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 solve, or that are outside their responsibility, to the relevant authority. The learner will need to contribute to all the five phases of Six Sigma within the project (such as define, measure, analyse, improve and control) and to the completion of all necessary project documentation, which must be accurate and legible. The learner will be expected to take responsibility for their own actions within the activity, and for the quality and accuracy of the work that they produce.

The learner's knowledge will provide a good understanding of the application of Six Sigma methodology, and will provide an informed approach to the techniques and procedures used. The learner will need to understand the principles and application of Six Sigma methodology, in adequate depth to provide a sound basis for carrying out the activities to the required criteria.

Applying safe working practices will be a key issue throughout.

Learning outcomes

1 Contribute to the application of Six Sigma methodology to a project
2 Know how to contribute to the application of Six Sigma methodology to a project

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

This unit has been derived from national occupational standard Business-Improvement Techniques Unit No. 13: Contributing to the application of Six Sigma methodology to a project (Suite 2).

Specific unit requirements

The word 'contribute' is used throughout this unit. This means that, although the outcomes of this unit may be carried out and achieved as part of a team, in order to prove consistent competent performance the learner must be able to demonstrate:

- specific, quantifiable and auditable personal contributions in the achievement of this unit
- competence in all the areas required by the standard
- their ability to combine the assessment criteria specified when contributing to the application of the principles and processes of this unit.

Unit 213 Contributing to the application of Six Sigma methodology to a project

Outcome 1 Contribute to the application of Six Sigma methodology to a project

Assessment Criteria

The learner can:

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

2 Contribute to applying the structured Six Sigma methodology and approach to the selected project

3 Contribute in Six Sigma projects which cover two the following:

- manufacturing
- quality level
- administration

4 Contribute to utilising the five phases of Six Sigma within the project:

- define
- measure
- analyse
- improve
- control

5 Contribute to identifying the Six Sigma organisational infrastructure, roles and responsibilities and business-specific metrics that would apply

6 Contribute to producing a diagram (family tree) of the Six Sigma organisational infrastructure and the roles of the following:

- Champion
- Mentor
- Yellow Belt
- Green Belt
- Black Belt
- Master Black Belt

7 Contribute to producing a metric chart for the Six Sigma projects undertaken, to include:

- financial
- quality
- process

8 Contribute to identifying areas where the Six Sigma tools, techniques and activities can be applied

9 Contribute to identifying the Critical To Quality Characteristic (CTQC) of the projects, to include:

- cost
- quality
- delivery

10 Contribute to the identification of the cost of poor quality, by identifying the defects per million opportunities (DPMO)

11 Contribute to relating defects per million opportunities to the sigma score and identifying the gap to Six Sigma performance

Unit 213 Contributing to the application of Six Sigma methodology to a project

Outcome 2 Know how to contribute to the application of Six Sigma methodology to a project

Assessment Criteria

The learner can:

1 Describe the Six Sigma methodology and how it is applied to a project

2 Describe the Six Sigma infrastructure of the business

3 Describe the benefits that could arise from a Six Sigma project

4 Describe the parts per million opportunities goal of Six Sigma

5 Describe the calculation of defects per million opportunities

6 Describe the five phases of Six Sigma that are applied to a project

7 Explain how to define a Critical to Quality Characteristic (CTQC)

8 Explain how non-value added activity can serve as a 'roadblock' to achieving zero defect

9 Explain how to identify an 'Opportunity for Defect'

10 Describe the different roles of the key people in the Six Sigma process (Champion, Mentor, Master Black Belt, Black Belt, Green Belt and Yellow Belt)

11 Describe the relationship between key process input variables and key process output variables

12 Describe the extent of their own authority, and to whom they should report in the event of problems that they cannot resolve.

Unit 214 Contributing to the application of Six Sigma process mapping

Overview

Rationale

This unit covers the skills and knowledge needed to prove the competences required for contributing to the application of a structured Six Sigma methodology to a project. It involves contributing to the identification of the Six Sigma organisational infrastructure, roles and responsibilities and business-specific metrics that will apply. These will include financial, quality and process aspects of the project.

The learner will be expected to contribute to identifying areas where the Six Sigma tools, techniques and activities can be applied, in order to demonstrate those factors that are critical to the customer, business and process. Contribution to the identification of the cost of poor quality, by identifying the defects per million opportunities (DPMO), is a major part of this unit.

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 solve, or that are outside their responsibility, to the relevant authority. The learner will need to contribute to all the five phases of Six Sigma within the project (such as define, measure, analyse, improve and control) and to the completion of all necessary project documentation, which must be accurate and legible. The learner will be expected to take responsibility for their own actions within the activity, and for the quality and accuracy of the work that they produce.

The learner's knowledge will provide a good understanding of the application of Six Sigma methodology, and will provide an informed approach to the techniques and procedures used. The learner will need to understand the principles and application of Six Sigma methodology, in adequate depth to provide a sound basis for carrying out the activities to the required criteria.

Applying safe working practices will be a key issue throughout.

Learning outcomes

1 Contribute to the application of Six Sigma process mapping
2 Know how to contribute to the application of Six Sigma process mapping

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

This unit has been derived from national occupational standard Business-Improvement Techniques Unit No. 14: Contributing to the application of Six Sigma process mapping (Suite 2).

Specific unit requirements

The word 'contribute' is used throughout this unit. This means that, although the outcomes of this unit may be carried out and achieved as part of a team, in order to prove consistent competent performance the learner must be able to demonstrate:

- specific, quantifiable and auditable personal contributions in the achievement of this unit
- competence in all the areas required by the standard
- their ability to combine the assessment criteria specified when contributing to the application of the principles and processes of this unit.

Unit 214 Contributing to the application of Six Sigma process mapping

Outcome 1 Contribute to the application of Six Sigma process mapping

Assessment Criteria

The learner can:

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

2 Contribute to the selection of a suitable process on which to carry out the process mapping activity

3 Contribute to identifying the key stages that form the overall process under investigation

4 Contribute to the collection of data necessary to construct the Six Sigma process map

5 Contribute to the construction of the process map for the Six Sigma project

6 Contribute to the production of a process map, which identifies both:

- the key process input variables
- the key process output variables

7 Contribute to the classification of both the key process input variables and the key process output variables, as one or more of the following:

- controllable
- critical
- noise
- standard operating procedure

8 Contribute to the identification of value added and non-value added steps in a process

9 Contribute to identifying improvements to the process, as a result of the information gathered in the Six Sigma mapping activity

10 Contribute to the identification and adding to the process map, the specifications of both:

- key process input variables
- key process output variables

Unit 214 Contributing to the application of Six Sigma process mapping

Outcome 2 Know how to contribute to the application of Six Sigma process mapping

Assessment Criteria

The learner can:

1 Describe the health and safety requirements of the area in which they are carrying out the process mapping activity

2 Describe the benefits of carrying out Six Sigma process mapping

3 Explain how to define a Six Sigma process map

4 Explain how the Six Sigma process map fits within a Six Sigma project

5 Describe the meanings of key process input variables and the key process output variables

6 Describe the data collection point for the key process input variables and the key process output variables (such as gauges, forms and samples)

7 Explain what the main types of key process input variables and the key process output variables are in terms of being controllable, critical, noise, or standard operating procedures

8 Describe the people who should create a Six Sigma process map

9 Describe the difference between a value added activity and a non-value added activity

10 Describe the roles of individuals within a process mapping team

11 Describe the extent of their own authority within the project, and to whom they should report in the event of problems that they cannot resolve

Unit 215 Contributing to the application of basic statistical analysis

Overview

Rationale

This unit covers the skills and knowledge needed to prove the competences required for contributing to basic statistical analysis by consulting with the appropriate people and gathering the relevant data for statistical analysis on a Six Sigma project. The learner will need to contribute to using the data gathered to produce descriptive statistics, which cover mean, median, mode, standard deviation, range and variance for the selected representative sample.

The learner will be expected to contribute to recording the statistics gathered, using a variety of techniques that could include bar charts, histograms, Pareto diagrams, stem and leaf diagrams, box plots and time series charts. The learner will also be required to contribute to producing an action plan as a result of the statistical and graphical analysis undertaken.

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 solve, or that are outside their responsibility, to the relevant authority. The learner will need to ensure that all the necessary documentation and/or visual representations are completed accurately and legibly. The learner will be expected to take responsibility for their own actions within the activity, and for the quality and accuracy of the work that they produce.

The learner's knowledge will provide a good understanding of basic statistic al analysis, and will provide an informed approach to the techniques and procedures used. The learner will need to understand the principles and application of basic statistics, in adequate depth to provide a sound basis for carrying out the activities to the required criteria.

Applying safe working practices will be a key issue throughout.

Learning outcomes

1 Contribute to the application of basic statistical analysis
2 Know how to contribute to the application of basic statistical analysis

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

This unit has been derived from national occupational standard Business-Improvement Techniques Unit No. 15: Contributing to the application of basic statistical analysis (Suite 2).

Specific unit requirements

The word 'contribute' is used throughout this unit. This means that, although the outcomes of this unit may be carried out and achieved as part of a team, in order to prove consistent competent performance the learner must be able to demonstrate:

- specific, quantifiable and auditable personal contributions in the achievement of this unit
- competence in all the areas required by the standard

their ability to combine the assessment criteria specified when contributing to the application of the principles and processes of this unit.

Unit 215 Contributing to the application of basic statistical analysis

Outcome 1 Contribute to the application of basic statistical analysis

Assessment Criteria

The learner can:

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

2 Consult with appropriate people and contribute to gathering the relevant data for statistical analysis

3 Contribute to the production of data gathering forms or charts to gather information, to enable statistical and graphical analysis to take place

4 Contribute to the recording of collected data, utilising two of the following methods:

- bar charts
- histograms
- Pareto diagrams
- stem and leaf diagrams
- box plots
- time series charts

5 Contribute to statistical and graphical analysis on a Six Sigma project

6 Contribute to the production of descriptive statistics of data, to include:

- mean
- median
- mode
- standard deviation
- range and variance

7 Contribute to the production of a normal distribution, to assess a population from the representative sample

8 Contribute to the interpretation of the statistical data collected, in order to validate the pre-determined courses of action

9 Contribute to the production of an action plan, as a result of the statistical and graphical analysis undertaken

Unit 215 Contributing to the application of basic statistical analysis

Outcome 2 Know how to contribute to the application of basic statistical analysis

Assessment Criteria

The learner can:

1 Describe the health and safety requirements of the area in which they are collecting data

2 Describe the meaning of the term 'variation'

3 Explain why a number of data points are needed to draw a statistically valid conclusion

4 Explain why we need to use basic statistics

5 Explain what is meant by the terms 'population' and 'sample' when applied to basic statistics

6 Describe distribution curves and the properties of a normal curve

7 Explain how to use charts and diagrams (such as bar charts, histograms, box plots, time series charts, Pareto diagrams, stem and leaf diagrams)

8 Explain how to calculate mean, median, mode, standard deviation, range and variance

9 Describe the difference between descriptive and inferential statistics

10 Describe the extent of their own authority within the project, and to whom they should report in the event of problems that they cannot resolve

Unit 216 Contributing to the application of Statistical Process Control (SPC) procedures

Overview

Rationale

This unit covers the skills and knowledge needed to prove the competences required for contributing to the application of Statistical Process Control (SPC) procedures. It involves adhering to the principles and contributing to the processes of SPC to a selected process, and gathering all the necessary data for analysis in consultation with relevant people.

The learner will be expected to contribute to the application of statistical process control procedures, utilising statistical and graphical methods to represent the process conditions. Typically, these would focus on simple run charts, tally charts, bar charts, histograms, run charts, box plots, time series charts, Pareto diagrams, and stem and leaf plots. The learner will need to contribute to performing basic statistical process control, identifying special cause versus common cause. The learner will also be expected to contribute to identifying activities which will improve the process performance, and to contribute to the production of an action plan to implement the improvements. Calculation of the capability of the process will identify Cp and Cpk.

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 solve, or that are outside their responsibility, to the relevant authority. The learner will be expected to take responsibility for their own actions within the activity, and for the quality and accuracy of the work that they carry out.

The learner's knowledge will provide a good understanding of their work, and will provide an informed approach to the techniques and procedures used. The learner will need to understand the principles and procedures of statistical process control and its application, in adequate depth to provide a sound basis for carrying out the activities to the required criteria. Applying safe working practices will be a key issue throughout.

Learning outcomes

1 Contribute to the application of Statistical Process Control (SPC) procedures

2 Know how to contribute to the application of Statistical Process Control (SPC) procedures

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

This unit has been derived from national occupational standard Business-Improvement Techniques Unit No. 16: Contributing to the application of Statistical Process Control (SPC) procedures (Suite 2).

Specific unit requirements

The word 'contribute' is used within this unit. This means that, although the outcomes of this unit may be carried out and achieved as part of a team, in order to prove consistent competent performance the learner must be able to demonstrate:

- specific, quantifiable and auditable personal contributions in the achievement of this unit
- skills and knowledge needed to contribute to proving the competences in all the areas required by the standard
- their ability to combine the assessment criteria specified when contributing to the application of the principles and processes of this unit.

Unit 216 Contributing to the application of Statistical Process Control (SPC) procedures

Outcome 1 Contribute to the application of Statistical Process Control (SPC) procedures

Assessment Criteria

The learner can:

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

2 Work to, and comply with all the required process monitoring documentation and work instruction sheets

3 Contribute to selecting and/or confirming the process on which the process analysis is to be carried out

4 Contribute to the consultation with relevant people and gathering of the necessary data for analysis

5 Apply the principles and contribute to the processes of statistical process control to the chosen process

6 Contribute to basic statistical process control, using appropriate tools and techniques

7 Contribute to statistical and graphical methods to represent the process conditions

8 Contribute to the calculation of the capability of the process, and the identification of both:

- Cp
- Cpk

9 Contribute to the production of charts for process and control information, to include two from:

- simple run charts
- tally charts
- bar charts
- histograms
- box plots
- time series charts
- Pareto diagrams
- stem and leaf plots
- run charts

10 Contribute to the identification of activities that will improve the process performance

11 Contribute to the production of an action plan to implement the improvements

Unit 216 Contributing to the application of Statistical Process Control (SPC) procedures

Outcome 2 Know how to contribute to the application of Statistical Process Control (SPC) procedures

Assessment criteria

The learner can:

1 Describe the health and safety requirements of the area in which they are carrying out the process control activities

2 Explain where process control fits in within a continuous improvement environment

3 Explain how process performance affects customer satisfaction and process costs

4 Explain where and why statistical process control is used

5 Describe the importance of standardisation within a process operation, and why process performance can only be determined when it is controlled

6 Explain how process control can improve process performance

7 Describe the benefits of prevention versus detection

8 Describe the two types of variation within a process (common cause, special cause)

9 Explain how to gather data and effectively analyse it, understanding how the data can be used to communicate abnormalities within a process

10 Describe the main types of control charts used for SPC

11 Explain what is meant by a 'population' and a 'sample'

12 Describe the measurements of central tendency and variability

13 Describe the properties of a normal curve of distribution

14 Describe the terms mean, median, mode, standard deviation, range and variance

15 Describe process capability (Cp and Cpk)

16 Describe the extent of their own authority, and to whom they should report in the event of problems that they cannot resolve

Unit 217 Contributing to the application of Failure Modes and Effects Analysis (FMEA)

Overview

Rationale

This unit covers the skills and knowledge needed to prove the competences required for carrying out Failure Modes and Effects Analysis (FMEA). It involves adhering to the principles and processes of FMEA, contributing to the process and supporting the key features of FMEA required for the activity under investigation. The activities will include concepts, designs, systems, products, processes and machines.

The learner will be required to contribute, as part of a team activity, to the recording of the information gathered in an appropriate format and to the making of valid judgements about the activity, using FMEA principles. This will include calculating risk priority numbers (RPNs), identifying high RPNs and developing actions to improve them. Once actions have been completed, they will need to contribute to the reassessment of the activity and re-scoring of severity, occurrence and detection.

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 can not solve, or that are outside their responsibility, to the relevant authority. The learner will need to ensure that all the necessary documentation is completed accurately and legibly. The learner will be expected to take responsibility for their own actions within the activity, and for the quality and accuracy of the work that they produce.

The learner's knowledge will provide a good understanding of FMEA, and will provide an informed approach to the techniques and procedures used. The learner will need to understand the principles and application of FMEA, in adequate depth to provide a sound basis for carrying out the activities to the required criteria.

Applying safe working practices will be a key issue throughout.

Learning outcomes

1 Contribute to the application of Failure Modes and Effects Analysis (FMEA)

2 Know how to contribute to the application of Failure Modes and Effects Analysis (FMEA)

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

This unit has been derived from national occupational standard Business-Improvement Techniques Unit No. 17: Contributing to the application of Failure Modes and Effects Analysis (FMEA) (Suite 2).

Unit 217 Contributing to the application of Failure Modes and Effects Analysis (FMEA)

Outcome 1 Contribute to the application of Failure Modes and Effects Analysis (FMEA)

Assessment Criteria

The learner can:

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

2 Identify the key features of failure modes and effects analysis required for the activity under investigation

3 Contribute to the application of a failure modes and effects analysis on two of the following:

- concept
- product
- design
- process
- system
- machine

4 Contribute to identifying, for the activities analysed, all of the following:

- the potential failure modes
- the potential effects from failure modes
- the potential causes of failure modes

5 Carry out, as a team member, the production of a failure modes and effects analysis

6 Record the information gathered in an appropriate format

7 Contribute to identifying and scoring of all of the following:

- the likely occurrence of a potential failure modes
- the severity of the potential failure modes
- the likely hood of detection of the potential failure modes

8 Contribute to making valid judgements about the activity using failure modes and effects analysis principles

9 Contribute to calculating risk priority numbers (RPNs), identification of high RPNs, and develop actions to improve them

10 Contribute to establishing rating tables for all of the following:

- occurrence
- severity
- detection

11 Make recommendations for the reassessment of an failure modes and effects analysis once actions have been completed, and to re-scoring severity, occurrence and detection

Unit 217 Contributing to the application of Failure Modes and Effects Analysis (FMEA)

Outcome 2 Know how to contribute to the application of Failure Modes and Effects Analysis (FMEA)

Assessment Criteria

The learner can:

1 Describe the health and safety requirements of the area in which they are conducting the failure modes and effects analysis

2 Describe the main features and benefits of carrying out a failure modes and effects analysis

3 Describe who should be part of a team that constructs and updates a failure modes and effects analysis

4 Describe the meaning of a failure mode, failure effect or failure cause

5 Describe the rating scale used in failure modes and effects analysis projects (to include the severity rating scale, the occurrence rating scale and the detection rating scale)

6 Explain how to calculate a risk priority number (RPN)

7 Explain how to use the risk priority numbers

8 Describe the structured approach to risk reduction

9 Describe when to start a failure modes and effects analysis

10 Describe when to update a failure modes and effects analysis

11 Describe the roles of individuals within a failure modes and effects analysis team

12 Describe the extent of their own authority within the project, and to whom they should report in the event of problems that they cannot resolve

Unit 218 Contributing to the application of Measurement Systems Analysis (MSA)

Overview

Rationale

This unit covers the skills and knowledge needed to prove the competences required for contributing to the application of Measurement Systems Analysis (MSA).

The learner will contribute to the selection of an appropriate measurement system on which to carry out the analysis, and to the obtaining of all the necessary data in order to carry out the measurement systems analysis. The learner will be expected to contribute to the application of the principles and processes of measurement system analysis, which will include such things as completing a calibration study on a gauge, conducting a gauge linearity study, completing either an attribute or a variable gauge repeatability and reproducibility study, and conducting a metrology study on a measurement system which includes either a variable or attribute gauge repeatability and reproducibility study.

The learner will be required to contribute to the analysis, using the appropriate techniques and recording the results of the analysis in the appropriate format. From this information, they will contribute to determining the percentage gauge repeatability and reproducibility of the measurement system under study, and to produce a detailed report suggesting ways in which the measurement system might be improved.

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 solve, or that are outside their responsibility, to the relevant authority. The learner will need to ensure that all the necessary documentation is completed accurately and legibly. The learner will be expected to take responsibility for their own actions within the activity, and for the quality and accuracy of the work that they produce.

The learner's knowledge will provide a good understanding of measurement systems analysis, and will provide an informed approach to the techniques and procedures used. The learner will need to understand the principles and application of MSA, in adequate depth to provide a sound basis for carrying out the activities to the required criteria.

Applying safe working practices will be a key issue throughout.

Learning outcomes

1 Contribute to the application of Measurement Systems Analysis (MSA)
2 Know how to contribute to the application of Measurement Systems Analysis (MSA)

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

This unit has been derived from national occupational standard Business-Improvement Techniques Unit No. 18: Contributing to the application of Measurement Systems Analysis (MSA) (Suite 2).

Specific unit requirements

The word 'contribute' is used throughout this unit. This means that, although the outcomes of this unit may be carried out and achieved as part of a team, in order to prove consistent competent performance the learner must be able to demonstrate:

- specific, quantifiable and auditable personal contributions in the achievement of this unit
- competence in all the areas required by the standard
- their ability to combine the assessment criteria specified when contributing to the application of the principles and processes of this unit.

Unit 218 Contributing to the application of Measurement Systems Analysis (MSA)

Outcome 1 Contribute to the application of Measurement Systems Analysis (MSA)

Assessment Criteria

The learner can:

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

2 Contribute to the selection of an appropriate measurement system on which to carry out the analysis

3 Contribute to a measurement system analysis, which includes two from the following:

- completing a calibration study on a gauge
- conducting a gauge linearity study
- completing either an attribute or a variable gauge repeatability and reproducibility study
- conducting a metrology study on a measurement system, which includes either a variable or attribute gauge repeatability and reproducibility

4 Determine the type of measurement system variation, to include two of the following:

- bias
- linearity
- stability
- accuracy
- repeatability
- reproducibility

5 Contribute to obtaining all the necessary data in order to carry out the measurement systems analysis

6 Contribute to the analysis, using the appropriate techniques

7 Record the results of the analysis in the appropriate format

8 Contribute to determining the percentage gauge repeatability and reproducibility of the measurement system under study, and to suggesting ways of improving the measurement system

9 Contribute to the production of a measurement systems analysis report, detailing ways of improving the measurement system under study

Unit 218 Contributing to the application of Measurement Systems Analysis (MSA)

Outcome 2 Know how to contribute to the application of Measurement Systems Analysis (MSA)

Assessment Criteria

The learner can:

1 Describe the health and safety requirements of the area in which they are carrying out the measurement systems analysis

2 Explain why we should study our measurement systems

3 Explain how to select a measurement system for analysis

4 Describe the possible sources of measurement system variation

5 Explain how measurement systems analysis be used in a Six Sigma improvement project

6 Describe the meaning of 'repeatability and reproducibility study'

7 Describe the terminology used in measurement systems analysis (such as bias, linearity, stability, accuracy, repeatability, discrimination, resolution, reproducibility)

8 Explain how to conduct a measurement systems analysis study

9 Describe the calculation for gauge repeatability and reproducibility

10 Describe the calculation for gauge precision and tolerance

11 Describe the industry rules for repeatability and reproducibility results

12 Describe the extent of their own authority within the project, and to whom they should report in the event of problems that they cannot resolve

Unit 219 Carrying out mistake/error proofing (Poka Yoke)

Overview

Rationale

This unit covers the skills and knowledge needed to prove the competences required for carrying out mistake/error proofing (Poka Yoke), which is a method of making an activity 'foolproof'. It involves adhering to the principles and carrying out the procedures of mistake/error proofing to the chosen activity, to enable worksheets to be produced for the activity, which identify the problem, recommend any actions to be taken, and which indicate the benefits to be gained. Typically, worksheets would focus on the description of the mistake/error identified, the containment action taken, the root cause of the mistake/error and the permanent corrective action to be taken.

The learner will be required to support trials on the suggested improvements, which will include determining their effectiveness, cost and complexity.

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 solve, or that are outside their responsibility, to the relevant authority. The learner will need to ensure that all necessary job/task documentation is completed accurately and legibly. The learner will be expected to take responsibility for their own actions within the activity, and for the quality and accuracy of the work that they produce.

The learner's knowledge will provide a good understanding of mistake/error proofing, and will provide an informed approach to the techniques and procedures used. The learner will need to understand the principles and application of mistake/error proofing, in adequate depth to provide a sound basis for carrying out the activities to the required criteria.

Applying safe working practices will be a key issue throughout.

Learning outcomes

1 Carry out mistake/error proofing (Poka Yoke)
2 Know how to carry out mistake/error proofing (Poka Yoke)

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

This unit has been derived from national occupational standard Business-Improvement Techniques Unit No. 19: Carrying out mistake/error proofing (Poka Yoke) (Suite 2).

Unit 219 Carrying out mistake/error proofing (Poka Yoke)

Outcome 1 Carry out mistake/error proofing (Poka Yoke)

Assessment Criteria

The learner can:

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

2 Use information and data to make recommendations for a suitable process on which to carry out mistake/error proofing

3 Carry out the mistake/error proofing process to the chosen activity

4 Analyse the data received and make recommendations for inclusion in the worksheet

5 Create a worksheet of the mistake/error proofing activity, identifying:

- the description of the mistake/error identified
- the containment action taken
- the root cause of the mistake/error
- the permanent corrective action to be taken

6 Use the worksheet to identify the root cause of the problem

7 Recommend potential solutions and carry out agreed trials to measure the effectiveness of the solution

8 Identify suitable solutions, and determine their:

- effectiveness
- cost
- complexity

9 Implement the optimum solution

10 Gather information/data for the measurement and documentation of results from the activity

11 Identify the benefits of mistake/error proofing in terms of:

- improved quality/compliance (such as ISO9001 and EFQM)
- reduced costs
- delivery or service

Unit 219 Carrying out mistake/error proofing (Poka Yoke)

Outcome 2 Know how to carry out mistake/error proofing (Poka Yoke)

Assessment Criteria

The learner can:

1 Describe mistake/error proofing, and the benefits of carrying this out

2 Describe the difference and benefits between mistake/error proofing and prevention and detection

3 Describe the selection criteria used to determine a suitable product or process on which to carry out the mistake/error proofing activity

4 Explain how mistake/error proofing can lead to zero defects

5 Describe the difference between errors and defects

6 Describe the different types of mistake

7 Explain how defects originate in products or processes

8 Explain how the role of source inspection contributes to the reduction of defects

9 Describe the use of mistake/error proofing (Poka Yoke) tools (such as cause and effect, the 5 'why's)

10 Describe the types of mistake/error proofing documentation

11 Explain how to undertake trials and measure the effectiveness of mistake/error proofing projects

12 Describe the different types of mistake proofing devices available

13 Describe the roles and responsibilities of individuals within a mistake/error proofing team (including facilitator, timekeeper, scribe)

14 Describe the extent of their own authority within the activity, and to whom they should report in the event of problems that they cannot resolve.

5 Assessment

Summary of assessment methods

These units must be assessed in a work environment and must be assessed in accordance with the 'Common Requirements for National Vocational Qualifications (NVQ).
Additional assessment requirements have been published by SEMTA. These additional assessment requirements are set down in SEMTA's Business-Improvement Techniques Level 2 Unit Assessment Strategy.

Both these documents can be downloaded from SEMTA's website:
http://www.semta.org.uk/training_providers__awarding/national_occupational_standard/qca_assessment_requirements.aspx

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.

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.

Amendable (MS Word) versions of the forms are available on the City & Guilds website.

6 Course design and delivery

6.1 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.

Further guidance about initial assessment and induction, as well as a learning contract that centres may use, are available on the City & Guilds website.

6 Course design and delivery

6.2 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.

In particular, staff should consider the skills and knowledge related to the national occupational standards.

City & Guilds recommends that centres address the wider curriculum, where appropriate, when designing and delivering the course. Centres should also consider links to the National Occupational Standards, Key/Core Skills and other related qualifications. Relationship tables are provided in Appendix 1 Relationships to other qualifications to assist centres with the design and delivery of the qualification.

Centres may wish to include topics as part of the course programme which will not be assessed through the qualification.

Appendix 1 Relationships to other qualifications

Links to other qualifications and frameworks

City & Guilds has identified the connections to other qualifications/previous qualifications. This mapping is provided as guidance and suggests areas of overlap and commonality between the qualifications. It does not imply that candidates completing units in one qualification are automatically covering all of the content of the qualifications listed in the mapping.

Centres are responsible for checking the different requirements of all qualifications they are delivering and ensuring that candidates meet requirements of all units/qualifications. For example, units within a qualification may be similar in content to units in the NQF qualification which the candidate may have already undertaken and this may present opportunities for APL.

This qualification has connections to the:

- Level 2 NVQ in Business-Improvement Techniques (2257-50)

Appendix 2 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 **Centres and Training Providers homepage** on **www.cityandguilds.com**.

Centre Guide – Delivering International Qualifications contains detailed information about the processes which must be followed and requirements which must be met for a centre to achieve 'approved centre' status, or to offer a particular qualification. Specifically, the document includes sections on:

- The centre and qualification approval process and forms
- Assessment, verification and examination roles at the centre
- Registration and certification of candidates
- Non-compliance
- Complaints and appeals
- Equal opportunities
- Data protection
- Frequently asked questions.

Providing City & Guilds qualifications – a guide to centre and qualification approval contains detailed information about the processes which must be followed and requirements which must be met for a centre to achieve 'approved centre' status, or to offer a particular qualification. Specifically, the document includes sections on:

- The centre and qualification approval process and forms
- Assessment, verification and examination roles at the centre
- Registration and certification of candidates
- Non-compliance
- Complaints and appeals
- Equal opportunities
- Data protection
- Frequently asked questions.

Ensuring quality contains updates and good practice exemplars for City & Guilds assessment and policy issues. Specifically, the document contains information on:

- Management systems
- Maintaining records
- Assessment
- Internal verification and quality assurance
- External verification.

Access to Assessment & Qualifications 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 homepage** section of the City & Guilds website also contains useful information such on such things as:

- ***Walled Garden***
  Find out how to register and certificate candidates on line

- ***Events***
  Contains dates and information on the latest Centre events
- ***Online assessment***
  Contains information on how to register for GOLA assessments.

Useful contacts

Type	Contact	Query
UK learners	T: +44 (0)20 7294 2800 E: learnersupport@cityandguilds.com	• General qualification information
International learners	T: +44 (0)20 7294 2885 F: +44 (0)20 7294 2413 E: intcg@cityandguilds.com	• General qualification information
Centres	T: +44 (0)20 7294 2787 F: +44 (0)20 7294 2413 E: centresupport@cityandguilds.com	• Exam entries • Registrations/enrolment • Certificates • Invoices • Missing or late exam materials • Nominal roll reports • Results
Single subject qualifications	T: +44 (0)20 7294 8080 F: +44 (0)20 7294 2413 F: +44 (0)20 7294 2404 (BB forms) E: singlesubjects@cityandguilds.com	• Exam entries • Results • Certification • Missing or late exam materials • Incorrect exam papers • Forms request (BB, results entry) • Exam date and time change
International awards	T: +44 (0)20 7294 2885 F: +44 (0)20 7294 2413 E: intops@cityandguilds.com	• Results • Entries • Enrolments • Invoices • Missing or late exam materials • Nominal roll reports
Walled Garden	T: +44 (0)20 7294 2840 F: +44 (0)20 7294 2405 E: walledgarden@cityandguilds.com	• Re-issue of password or username • Technical problems • Entries • Results • GOLA • Navigation • User/menu option problems
Employer	T: +44 (0)121 503 8993 E: business_unit@cityandguilds.com	• Employer solutions • Mapping • Accreditation • Development Skills • Consultancy
Publications	T: +44 (0)20 7294 2850 F: +44 (0)20 7294 3387	• Logbooks • Centre documents • Forms • Free literature

If you have a complaint, or any suggestions for improvement about any of the services that City & Guilds provides, email: **feedbackandcomplaints@cityandguilds.com**