Pearson Edexcel Level 2 NVQ Diploma in Business-Improvement Techniques

Pearson Edexcel Level 3 NVQ Diploma in Business-Improvement Techniques

Specification

Competence-based qualification

For first registration October 2010

Issue 2

Pearson

Edexcel, BTEC and LCCI qualifications

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This specification is Issue 2. Key changes are listed in the summary table on the next page. We will inform centres of any changes to this issue. The latest issue can be found on the Pearson website: qualifications.pearson.com

These qualifications were previously known as:

Edexcel Level 2 NVQ Diploma in Business-Improvement Techniques (QCF)

Edexcel Level 3 NVQ Diploma in Business-Improvement Techniques (QCF)

The QNs remain the same.

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All information in this specification is correct at time of going to publication.

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Summary of Pearson Edexcel Level 2 and Level 3 NVQ Diploma in Business-Improvement Techniques specification Issue 2 changes

Summary of changes made between previous issue and this current issue	Page number
All references to QCF have been removed throughout the specification	
Definition of TQT added	1
Definition of sizes of qualifications aligned to TQT	2
TQT value added	6
Guided learning definition updated	18
QCF references removed from unit titles and unit levels in all units	21-299

Earlier issue(s) show(s) previous changes.
If you need further information on these changes or what they mean, contact us via our website at: qualifications.pearson.com/en/support/contact-us.html.

Contents

Introducing Pearson Edexcel NVQ qualifications

What are NVQ qualifications?

National Vocational Qualifications (NVQs) are work-based qualifications that give learners the opportunity to develop and demonstrate their competence in the area of work or job role to which the qualification relates.

NVQs are based on the National Occupational Standards (NOS) for the appropriate sector. NOS define what employees, or potential employees, must be able to do and know, and how well they should undertake work tasks and work roles. At Level 2 and above, these qualifications are recognised as the competence component of Apprenticeship Frameworks. Qualifications at Level 1 can be used in Traineeships, which are stepping-stones to Apprenticeship qualifications. NVQs qualifications can also be delivered as stand-alone for those who wish to take a work-based qualification.

NVQs qualifications are outcomes-based with no fixed learning programme – allowing flexible delivery that meets the individual learner's needs. They are suitable for those in employment or those who are studying at college and have a part-time job or access to a substantial work placement so that they are able to demonstrate the competencies that are required for work.

Most learners will work towards their qualification in the workplace or in settings that replicate the working environment as specified in the assessment requirements/strategy for the sector. Colleges, training centres and/or employers can offer these qualifications provided they have access to appropriate physical and human resources.

Sizes of NVQ/Competence-based qualifications

For all regulated qualifications, Pearson specify a total number of hours that is estimated learners will require to complete and show achievement for the qualification – this is the Total Qualification Time (TQT). The TQT value indicates the size of a qualification.

Within the TQT, Pearson identifies the number of Guided Learning Hours (GLH) that we estimate a centre delivering the qualification might provide. Guided learning means activities, such as lessons, tutorials, online instruction, supervised study and giving feedback on performance, that directly involve tutors and assessors in teaching, supervising and invigilating learners. Guided learning includes the time required for learners to complete external assessment under examination or supervised conditions.

In addition to guided learning, other required learning directed by tutors or assessors will include private study, preparation for assessment and undertaking assessment when not under supervision, such as preparatory reading, revision and independent research.

As well as TQT and GLH, qualifications can also have a credit value – equal to one tenth of TQT, rounded to the nearest whole number.

TQT and credit values are assigned after consultation with users of the qualifications.

NVQ/Competence-based qualifications are available in the following sizes:

- Award – a qualification with a TQT value of 120 or less (equivalent to a range of 1–12 credits)
- Certificate – a qualification with a TQT value in the range of 121–369 (equivalent to a range of 13–36 credits)
- Diploma – a qualification with a TQT value of 370 or more (equivalent to 37 credits and above).

Qualification titles covered by this specification

This specification gives you the information you need to offer the Pearson Edexcel NVQs in Business-Improvement Techniques:

Qualification title	Qualification Accreditation Number (QN)	Accreditation start date
Pearson Edexcel Level 2 NVQ Diploma in Business-Improvement Techniques	501/0585/1	01/08/2010
Pearson Edexcel Level 3 NVQ Diploma in Business-Improvement Techniques	501/0584/X	01/08/2010

Qualifications eligible and funded for post-16-year-olds can be found on the funding Hub. The Skills Funding Agency also publishes a funding catalogue that lists the qualifications available for 19+ funding.

You should use the Qualification Number (QN), when you wish to seek public funding for your learners. Each unit within a qualification will also have a unique reference number, which is listed in this specification.

The qualification title and unit reference numbers will appear on the learners' final certification document. Learners need to be made aware of this when they are recruited by the centre and registered with Pearson.

Key features of the Pearson Edexcel NVQs in Business-Improvement Techniques

These qualifications:

- are nationally recognised
- are based on the Semta National Occupational Standards (NOS). The NOS, Assessment Strategy and qualification structure(s) are owned by Semta.

The Pearson Edexcel Level 2 NVQ Diploma in Business-Improvement Techniques and the Pearson Edexcel Level 3 NVQ Diploma in Business-Improvement Techniques have been approved as components for the Semta Apprenticeship framework.

What is the purpose of these qualifications?

These qualifications are appropriate for employees in the engineering sector working across a broad range of areas. They are designed to assess occupational competence in the workplace where learners are required to demonstrate skills and knowledge to a level required in the engineering industry.

Who are these qualifications for?

These qualifications are for all learners aged 16 and above who are capable of reaching the required standards.

Pearson's policy is that the qualifications should:

- be free from any barriers that restrict access and progression
- ensure equality of opportunity for all wishing to access the qualifications.

What are the benefits of these qualifications to the learner and employer?

These qualifications allow learners to demonstrate competence against National Occupational Standards which are based on the needs of the engineering industry as defined by Semta, the Sector Skills Council. As such they contribute to the development of skilled labour in the sector. The qualifications may contribute towards the competence element of an Apprenticeship.

What are the potential job roles for those working towards these qualifications?

- Engineering operative
- Supervisor/team leader

What progression opportunities are available to learners who achieve these qualifications?

These qualifications allow learners to demonstrate competence in business-improvement techniques at a level required by the engineering industry. Learners can progress across the level and size of the engineering competence and knowledge qualifications and into other occupational areas such as team leading and management.

What is the qualification structure for the Pearson Edexcel Level 2 NVQ Diploma in Business-Improvement Techniques ?

Individual units can be found in the *Units* section. The level and credit value are given on the first page of each unit.

The Total Qualification Time (TQT) for this qualification is 560.

The Guided Learning Hours for this qualification are 323.

To achieve the **Pearson Edexcel Level 2 NVQ Diploma in Business-Improvement Techniques**

Learners must complete a minimum of 56 credits. Learners must complete all mandatory units in Group A (12 credits) and then choose one of the following pathways:

Pearson Edexcel Level 2 NVQ Diploma in Business-Improvement Techniques - Process Improvement

Learners must complete all units in Group B1.

Learners can choose to complete a minimum of one unit in Group B2 or a minimum of one unit in Group B3.

Pearson Edexcel Level 2 NVQ Diploma in Business-Improvement Techniques - Quality Improvement

Learners must complete all units in Group C1.

Learners can choose to complete a minimum of two units in Group C2*

*OR learners can choose to complete a minimum of one unit in Group C2 and a minimum of one unit in Group C3.

A - Mandatory units

Learners must complete all units in Group A.

Credit value required: minimum 12.

J/600/2491 - Contributing to effective team working

A/601/5013 - Complying with statutory regulations and organisational safety requirements

B - Process improvement (pathway)

Learners must complete all units in Group B1.

Learners must complete a minimum of one unit in Group B2 or a minimum of one unit in Group B3.

This group represents a pathway.

Credit value required: minimum 44.

B1 - Mandatory units (process improvement)

Credit value required: minimum 35.

L/600/2492 - Contributing to the application of workplace organisation techniques

Y/600/2513 - Contributing to the application of continuous improvement techniques (Kaizen)

D/600/2514 - Contributing to the development of visual management systems

B2 - Optional units (process improvement)

Credit value required: minimum 9.

H/600/2515 - Contributing to the analysis and selection of parts for improvement

K/600/2516 - Contributing to carrying out lead time analysis

M/600/2517 - Carrying out set-up reduction techniques

T/600/2518 - Carrying out autonomous maintenance

A/600/2519 - Contributing to the application of problem-solving techniques

T/600/2521 - Carrying out flow process analysis

F/600/2523 - Contributing to the creation of standard operating procedures (SOP)

B3 - Optional units (process improvement)

Credit value required: minimum 9.

J/600/2538 - Contributing to the application of Six Sigma methodology to a project

F/600/2540 - Contributing to the application of Six Sigma process mapping

J/600/2541 - Contributing to the application of basic statistical analysis

Y/600/2544 - Contributing to the application of statistical process control (SPC) procedures

D/600/2545 - Contributing to the application of failure modes and effects analysis (FMEA)

M/600/2548 - Contributing to the application of measurement systems analysis (MSA)

K/600/2550 - Carrying out mistake/error proofing (Poka Yoke)

C - Quality improvement (pathway)

Learners must complete all units in Group C1.

Learners can choose to complete a minimum of two units in Group C2*

*OR learners can choose to complete a minimum of one unit in Group C2 and a minimum of one unit in Group C3.

This group represents a pathway.

Credit value required: minimum 60.

C1 - Mandatory units (quality improvement)

Credit value required: minimum 42.

J/600/2538 - Contributing to the application of Six Sigma methodology to a project

F/600/2540 - Contributing to the application of Six Sigma process mapping

J/600/2541 - Contributing to the application of basic statistical analysis

C2 - Optional units (quality improvement)

Credit value required: minimum 9.

Y/600/2544 - Contributing to the application of statistical process control (SPC) procedures

D/600/2545 - Contributing to the application of failure modes and effects analysis (FMEA)

M/600/2548 - Contributing to the application of measurement systems analysis (MSA)

K/600/2550 - Carrying out mistake/error proofing (Poka Yoke)

C3 - Optional units (quality improvement)

Credit value required: minimum 9.

L/600/2492 - Contributing to the application of workplace organisation techniques

Y/600/2513 - Contributing to the application of continuous improvement techniques (Kaizen)

D/600/2514 - Contributing to the development of visual management systems

H/600/2515 - Contributing to the analysis and selection of parts for improvement

K/600/2516 - Contributing to carrying out lead time analysis

M/600/2517 - Carrying out set-up reduction techniques

T/600/2518 - Carrying out autonomous maintenance

A/600/2519 - Contributing to the application of problem-solving techniques

T/600/2521 - Carrying out flow process analysis

F/600/2523 - Contributing to the creation of standard operating procedures (SOP)

What is the qualification structure for the Pearson Edexcel Level 3 NVQ Diploma in Business-Improvement Techniques?

Individual units can be found in the *Units* section. The level and credit value are given on the first page of each unit.

The Total Qualification Time (TQT) for this qualification is 940

The Guided Learning Hours for this qualification are 433.

To achieve this qualification learners must complete a minimum of 94 credits. Learners must complete all mandatory units in Group M (14 credits) and then choose one of the following pathways:

Pearson Edexcel Level 3 NVQ Diploma in Business-Improvement Techniques - Process Improvement

Learners must complete all units in Group A.

Learners must complete a minimum of three units from units in Groups B, C and D. This must include a minimum of one unit from Group B.

Learners need to achieve a total of 94 credits (minimum).

Pearson Edexcel Level 3 NVQ Diploma in Business-Improvement Techniques - Quality Improvement

Learners must complete all units in Group E.

Learners must complete a minimum of three units from Groups F and G. Up to two units can come from Group G.

Learners need to achieve a total of 112 credits (minimum).

M - Mandatory units (all pathways)

Learners must complete all units in Group A.

Credit value required: minimum 14.

T/600/5306 - Leading effective teams

A/601/5013 - Complying with statutory regulations and organisational safety requirements

P - Pathways

Learners must choose one pathway.

Credit value required: minimum 80.

Sub-components required: minimum 1.

P1 - Process improvement (pathway)

Learners must complete all units in Group A.

Learners must complete a minimum of three units from units in Groups B, C and D. This must include a minimum of one unit from Group B.

This group represents a pathway.

Credit value required: minimum 80.

A - Group A Mandatory units (process improvement)

Credit value required: minimum 45.

J/600/5309 - Applying workplace organisation techniques

D/600/5316 - Applying continuous improvement techniques (Kaizen)

K/600/5318 - Developing visual management systems

O - Optional groups (process improvement)

Credit value required: minimum 35.

B - Group B (process improvement)

Credit value required: minimum 11.

Sub-components required: minimum 1.

K/600/5321 - Creating flexible production and manpower systems

Y/600/5315 - Carrying out problem-solving activities

C - Group C optional units (process improvement)

M/600/5319 - Analysing and selecting parts for improvement

F/600/5325 - Applying lead time analysis

L/600/5330 - Carrying out value stream mapping (VSM)

D/600/5333 - Applying set-up reduction techniques

T/600/5323 - Applying total productive maintenance (TPM)

R/600/5314 - Applying flow process analysis

H/600/5334 - Applying policy deployment (Hoshin Kanri, quality operating systems, business plan deployment)

K/600/5335 - Applying value management (value engineering and value analysis)

M/600/5336 - Creating standard operating procedures (SOP)

D - Group D optional units (process improvement)

M/600/5305 - Applying Six Sigma methodology to a project

F/600/5308 - Carrying out Six Sigma process mapping

F/600/5311 - Applying basic statistical analysis

J/600/5312 - Applying failure modes and effects analysis (FMEA)

H/600/5317 - Applying mistake/error proofing (Poka Yoke)

A/600/5307 - Carrying out statistical process control (SPC) procedures

L/600/5313 - Applying Six Sigma metrics to a project

H/600/5320 - Producing a characteristic selection matrix

J/600/5326 - Carrying out measurement systems analysis (MSA)

R/600/5331 - Carrying out capability studies

Y/600/5332 - Producing multi-variance charts

Y/600/5301 - Applying hypothesis testing

P2 - Quality improvement (pathway)

Learners must complete all units in Group E.

Learners must complete a minimum of three units from Groups F and G, of which up to two units may be taken from Group G.

This group represents a pathway.

Credit value required: minimum 98.

E - Mandatory units (quality improvement)

Credit value required: minimum 63.

M/600/5305 - Applying Six Sigma methodology to a project

F/600/5308 - Carrying out Six Sigma process mapping

F/600/5311 - Applying basic statistical analysis

J/600/5312 - Applying failure modes and effects analysis (FMEA)

F - Optional units (quality improvement)

Credit value required: minimum 12.

H/600/5317 - Applying mistake/error proofing (Poka Yoke)

A/600/5307 - Carrying out statistical process control (SPC) procedures

L/600/5313 - Applying Six Sigma metrics to a project

H/600/5320 - Producing a characteristic selection matrix

J/600/5326 - Carrying out measurement systems analysis (MSA)

R/600/5331 - Carrying out capability studies

Y/600/5332 - Producing multi-variance charts

Y/600/5301 - Applying hypothesis testing

G - Optional units (quality improvement)

Sub-components required: maximum 2.

J/600/5309 - Applying workplace organisation techniques

D/600/5316 – Applying continuous improvement techniques (Kaizen)

K/600/5318 - Developing visual management systems

K/600/5321 - Creating flexible production and manpower systems

Y/600/5315 - Carrying out problem-solving activities

M/600/5319 - Analysing and selecting parts for improvement

F/600/5325 - Applying lead time analysis

L/600/5330 - Carrying out value stream mapping (VSM)

D/600/5333 - Applying set-up reduction techniques

T/600/5323 - Applying total productive maintenance (TPM)

R/600/5314 - Applying flow process analysis

H/600/5334 - Applying policy deployment (Hoshin Kanri, quality operating systems, business plan deployment)

K/600/5335 - Applying value management (value engineering and value analysis)

M/600/5336 - Creating standard operating procedures (SOP)

How are the qualifications graded and assessed?

The overall grade for each qualification is a 'pass'. The learner must achieve all the required units within the specified qualification structure.

To pass a unit the learner must:

- achieve all the specified learning outcomes
- satisfy all the assessment criteria by providing sufficient and valid evidence for each criterion
- show that the evidence is their own.

The qualifications are designed to be assessed:

- in the workplace or
- in conditions resembling the workplace, as specified in the Assessment Strategy for the sector, or
- as part of a training programme.

Assessment strategy

The Assessment Strategy for these qualifications has been included in *Annexe D*. It has been developed by Semta in partnership with employers, training providers, awarding organisations and the regulatory authorities. The assessment strategy includes details on:

- criteria for defining realistic working environments
- roles and occupational competence of assessors, expert witnesses, internal verifiers and standards verifiers
- quality control of assessment
- evidence requirements.

Evidence of competence may come from:

- **current practice** where evidence is generated from a current job role
- a **programme of development** where evidence comes from assessment opportunities built into a learning/training programme whether at or away from the workplace
- the **Recognition of Prior Learning (RPL)** where a learner can demonstrate that they can meet the assessment criteria within a unit through knowledge, understanding or skills they already possess without undertaking a course of learning. They must submit sufficient, reliable and valid evidence for internal and standards verification purposes. RPL is acceptable for accrediting a unit, several units or a whole qualification
- a **combination** of these.

It is important that the evidence is:

Valid	relevant to the standards for which competence is claimed
Authentic	produced by the learner
Current	sufficiently recent to create confidence that the same skill, understanding or knowledge persist at the time of the claim
Reliable	indicates that the learner can consistently perform at this level
Sufficient	fully meets the requirements of the standards.

Types of evidence

To successfully achieve a unit the learner must gather evidence which shows that they have met the required standard in the assessment criteria. Evidence can take a variety of different forms including the following examples:

- direct observation of the learner's performance by their assessor
- outcomes from oral or written questioning
- products of the learner's work
- personal statements and/or reflective accounts
- outcomes from simulation, where permitted by the assessment strategy
- professional discussion
- assignment, project/case studies
- authentic statements/witness testimony
- expert witness testimony
- reflective accounts
- evidence of Recognition of Prior Learning.

Learners can use one piece of evidence to prove their knowledge, skills and understanding across different assessment criteria and/or across different units. It is, therefore, not necessary for learners to have each assessment criterion assessed separately. Learners should be encouraged to reference the assessment criteria to which the evidence relates.

Evidence must be made available to the assessor, internal verifier and Pearson standards verifier. A range of recording documents is available on the Pearson website (qualifications.pearson.com). Alternatively, centres may develop their own.

Additional requirements

The Joint Awarding Body and the SSC Working Practices Group have identified additional requirements that are needed to assess and quality assure qualifications placed on the that use NVQ within their title. These requirements are shown in *Annexe C: Additional Requirements for Qualifications that use the title NVQ within the QCF*.

What do you need to offer these qualifications?

Centre recognition

Centres that have not previously offered Pearson qualifications need to apply for and be granted centre recognition as part of the process for approval to offer individual qualifications. New centres must complete both a centre recognition approval application and a qualification approval application.

Existing centres will be given 'automatic approval' for a new qualification if they are already approved for a qualification that is being replaced by the new qualification and the conditions for automatic approval are met. Centres already holding Pearson approval are able to gain qualification approval for a different level or different sector via Edexcel online.

Approvals agreement

All centres are required to enter into an approvals agreement which is a formal commitment by the head or principal of a centre to meet all the requirements of the specification and any linked codes or regulations. Pearson will act to protect the integrity of the awarding of qualifications, if centres do not comply with the agreement. This could result in the suspension of certification or withdrawal of approval.

Quality assurance

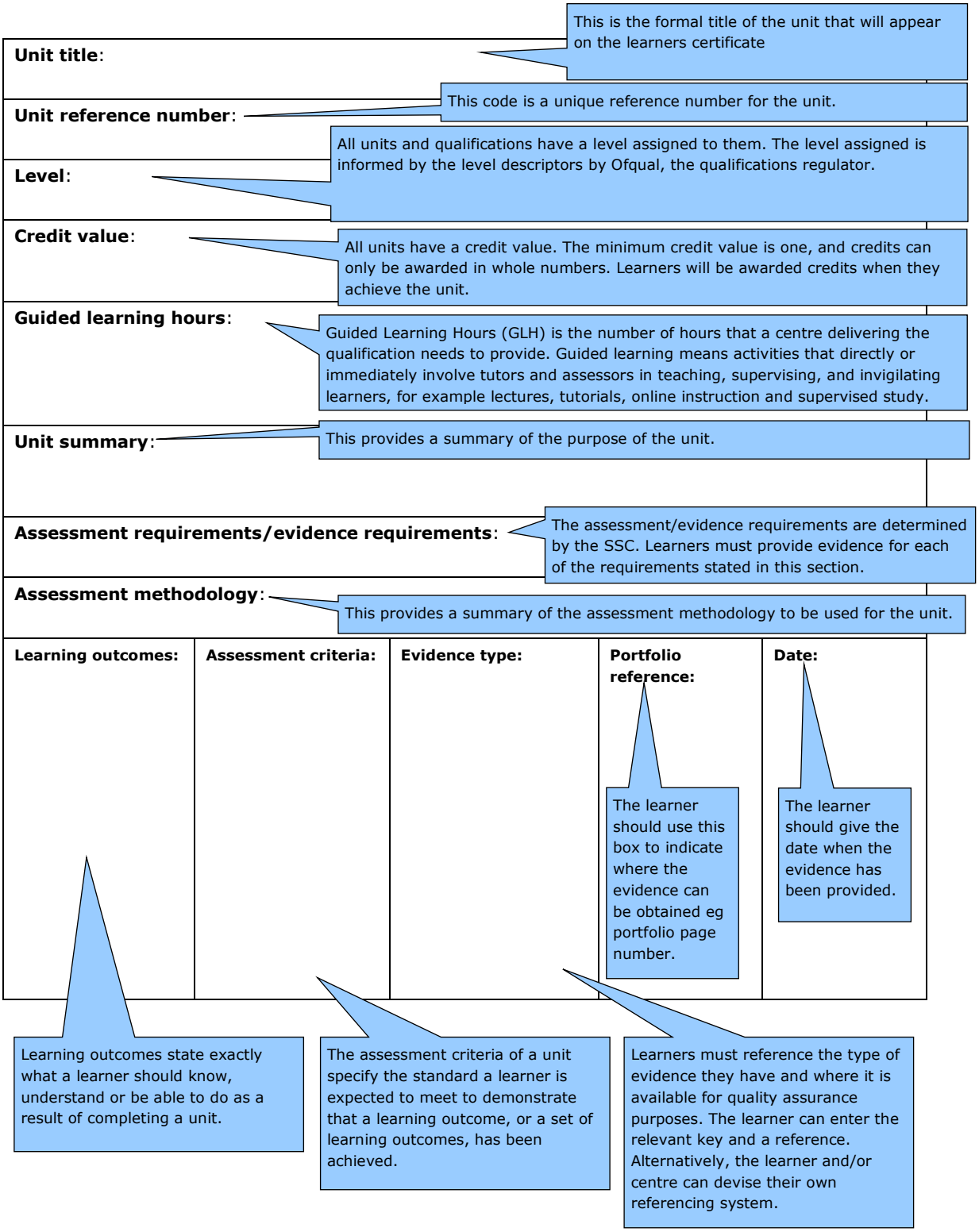
Detailed information on Pearson's quality assurance processes is given in *Annexe A*.

What resources are required to deliver these qualifications?

Each qualification is designed to support learners working in the Engineering sector. Physical resources need to support the delivery of the qualifications and the assessment of the learning outcomes and must be of industry standard. Centres must meet any specific resource requirements outlined in *Annexe D: Assessment Strategy*. Staff assessing the learner must meet the requirements within the overarching assessment strategy for the sector.

Unit format

Each unit in this specification contains the following sections.



Units

Unit 1: Complying with statutory regulations and organisational safety requirements

Unit reference number: A/601/5013

Level: 2

Credit value: 5

Guided learning hours: 35

Unit summary

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.

Assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Semta Assessment Strategy'. Detailed information is given in *Annexe D*.

Assessment methodology

Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
1 Comply with statutory regulations and organisational safety requirements	1.1 comply with their duties and obligations as defined in the Health and Safety at Work Act 1.2 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 1.3 present themselves in the workplace suitably prepared for the activities to be undertaken			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	1.4 follow organisational accident and emergency procedures 1.5 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 1.6 recognise and control hazards in the workplace 1.7 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			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	1.8 use correct manual lifting and carrying techniques 1.9 demonstrate one of the following methods of manual lifting and carrying: – lifting alone – with assistance of others – with mechanical assistance 1.10 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			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
2 Know how to comply with statutory regulations and organisational safety requirements	2.1 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) 2.2 describe the specific regulations and safe working practices and procedures that apply to their work activities 2.3 describe the warning signs for the seven main groups of hazardous substances defined by Classification, Packaging and Labelling of Dangerous Substances Regulations 2.4 explain how to locate relevant health and safety information for their tasks, and the sources of expert assistance when help is needed			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	2.5 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) 2.6 describe their responsibilities for identifying and dealing with hazards and reducing risks in the workplace 2.7 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) 2.8 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) 2.9 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			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	2.10 explain what constitute dangerous occurrences and hazardous malfunctions, and why these must be reported even if no-one is injured 2.11 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 2.12 describe the organisational policy with regard to fire fighting procedures; the common causes of fire and what they can do to help prevent them 2.13 describe the protective clothing and equipment that is available for their areas of activity 2.14 explain how to safely lift and carry loads, and the manual and mechanical aids available 2.15 explain how to prepare and maintain safe working areas; the standards and procedures to ensure good housekeeping 2.16 describe the importance of safe storage of tools, equipment, materials and products 2.17 describe the extent of their own authority, and to whom they should report in the event of problems that they cannot resolve			

Learner name: _____ Date:_____

Learner signature: _____ Date:_____

Assessor signature: _____ Date:_____

Internal verifier signature: _____ Date:_____
(*if sampled*)

Unit 2: Contributing to effective team working

Unit reference number: J/600/2491

Level: 2

Credit value: 7

Guided learning hours: 26

Unit summary

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.

Assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Semta Assessment Strategy'. Detailed information is given in *Annexe D*.

Assessment methodology

Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
1 Contribute to effective team working	1.1 establish and maintain productive working relationships, using the key performance measures and communication processes available to them 1.2 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 1.3 deal with disagreements in an amicable and constructive way, using relevant information and data to support views and arguments 1.4 provide ideas and solutions to find ways of resolving issues that cause concern and disagreement 1.5 use all relevant information available to them to keep others informed about work plans or activities which affect them			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	1.6 communicate orally by three of the following: – question and answer sessions – team briefings – brainstorming sessions – problem resolution processes 1.7 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 1.8 seek assistance from others in a polite, courteous way, without disturbing normal work activities 1.9 respond in a timely and positive way, using data and information available when others ask for help or information			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
2 Know how to contribute to effective team working	2.1 describe the importance of creating and maintaining effective working relationships 2.2 describe the types of problem that can occur with working relationships 2.3 explain how their own behaviour, dress and language can affect working relationships 2.4 describe the actions that can be taken to deal with specific difficulties in working relationships 2.5 describe the importance of challenging fixed ideas within the team 2.6 explain how to challenge fixed ideas without causing problems with working relationships 2.7 explain how to use data and information to help resolve concerns and disagreements 2.8 describe from whom they should seek assistance when they have difficulties with working relationships 2.9 describe the importance of sharing their knowledge, information and performance measures with other people in their team and with other groups 2.10 explain how to use the data and information available to them to communicate their performance effectively to others			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	2.11 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) 2.12 describe the use of problem resolution processes and action planning; continuous improvement, brainstorming and the trialling of new ideas 2.13 describe the mixture of skills and experience available in their team to support them or the process when problems occur (team skills matrix) 2.14 explain why they need to keep others involved in any plans or activities that they may be doing 2.15 describe the types of support or assistance that they might need from others 2.16 describe the importance of being polite when requesting assistance 2.17 describe the types of disruption that can be caused by inopportune requests for assistance			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	2.18 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) 2.19 describe the extent of their own authority, and to whom they should report in the event of problems that they cannot resolve			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 3: Contributing to the application of workplace organisation techniques

Unit reference number: L/600/2492

Level: 2

Credit value: 12

Guided learning hours: 51

Unit summary

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.

Assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Semta Assessment Strategy'. Detailed information is given in *Annexe D*.

Assessment methodology

Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
1. Contribute to the application of workplace organisation techniques	1.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines 1.2 use workplace organisation techniques within the chosen work area and establish and agree the area score 1.3 identify where information, resources or equipment is missing or is in surplus and where improvements can be made 1.4 make recommendations for the creation of, or changes to, standard operating procedures (SOPs), and visual controls that everyone works to within the area 1.5 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			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	1.6 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 1.7 make agreed improvements to the workplace organisation and establish and agree the new improved area score			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
2. Know how to contribute to the application of workplace organisation techniques	2.1 describe the health and safety requirements of the area in which they are carrying out the workplace organisation activity 2.2 describe the factors to be considered when selecting a work area for an activity (such as: cleanliness, health and safety product quality) 2.3 describe the procedure used to identify and address surplus or missing equipment or resources (such as carrying out a 'red tagging' exercise) 2.4 explain how to arrange and label the necessary resources or equipment for rapid identification and access 2.5 explain how to make recommendations for the creation of, or changes to, standard operating procedures (SOPs) or other approved documentation 2.6 explain how to score and audit the workplace organisation 2.7 describe the techniques required to communicate information using visual systems (such as shadow boards, performance charts, KPIs) 2.8 describe the extent of their own authority, and to whom they should report to, in the event of problems that they cannot resolve			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 4: Contributing to the application of continuous improvement techniques (Kaizen)

Unit reference number: Y/600/2513

Level: 2

Credit value: 14

Guided learning hours: 55

Unit summary

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.

Assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Semta Assessment Strategy'. Detailed information is given in *Annexe D*.

Assessment methodology

Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
1. Contribute to the application of continuous improvement techniques (Kaizen)	1.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines 1.2 plan the Kaizen process for the agreed work area/activity to include plan, do, check, act 1.3 use the established objectives and targets for the Kaizen activity 1.4 carry out the Kaizen activity within the chosen work area/activity 1.5 identify waste, problems or conditions within the work area or activity where improvements can be made 1.6 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			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	– improved customer service – improved resource utilisation 1.7 carry out a structured waste elimination activity, based on the identified wastes, problems or conditions 1.8 make recommendations for the creation or changes to standard operating procedures (SOPs) or other approved documentation that will sustain the improvement made, resulting from the Kaizen activity 1.9 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 1.10 use the determined measure of performance for quality, cost and delivery			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	1.11 provide comparisons of the agreed work area/activity before and after the kaizen activity (to confirm improvements) using key performance indicators 1.12 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			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
2 Know how to contribute to the application of continuous improvement techniques (Kaizen)	2.1 describe the health and safety requirements of the area in which they are carrying out the Kaizen activity 2.2 explain how a work area/activity is selected for the Kaizen activity 2.3 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) 2.4 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 2.5 describe problem solving and root cause analysis 2.6 describe the importance of fully understanding the process/activity under review, and how this will affect the quality of the problem solving 2.7 describe the application of the Deming cycle (plan, do, check, act) 2.8 explain how to carry out a Kaizen activity and establish measurable improvements			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	2.9 explain how to distinguish facts from opinions, in order to identify improvement actions 2.10 explain how improvements to the process are achieved by engaging the knowledge and experience of the people involved in the process 2.11 explain how to encourage people to identify potential improvements 2.12 explain how to evaluate improvement ideas, in order to select those that are to be pursued 2.13 explain how quantifiable targets and objectives are set 2.14 explain how to make recommendations for the creation of changes to standard operating procedures (SOPs) or other approved documentation 2.15 describe the techniques used to visually communicate the work of the Kaizen activity to participants and others			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	2.16 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) 2.17 explain how the cycle time of a process can be defined 2.18 describe the techniques used to distribute work content to balance cycle times to the rate of customer demand, and how to visually represent it (eg line balance and process displays) 2.19 describe the extent of their own authority, and to whom they should report in the event of problems that they cannot resolve			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 5: Contributing to the development of visual management systems

Unit reference number: D/600/2514

Level: 2

Credit value: 9

Guided learning hours: 41

Unit summary

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 (eg Kaizen boards), shadow boards and standard work-in-progress (WIP) locations and quantities.

Assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Semta Assessment Strategy'. Detailed information is given in *Annexe D*.

Assessment methodology

Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
1 Contribute to the development of visual management systems	1.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines 1.2 identify appropriate parts of the process or work area that will have visual controls 1.3 identify the key performance indicators that will be displayed in the work area 1.4 make recommendations for the production of, or changes to, standard operating procedures (SOPs), and visual controls that everyone works to within the area			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	1.5 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 (eg Kaizen boards) – shadow boards – standard work-in-progress (WIP) locations and quantities – planning systems – the delivery of effective meetings 1.6 ensure the accuracy of the information submitted for visual managements systems meets with the company requirements			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
2	Know how to contribute to the development of visual management systems	2.1	describe the health and safety requirements of the work area in which they are conducting the visual management activities			
		2.2	describe the factors to be considered when selecting a visual management system			
		2.3	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)			
		2.4	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)			
		2.5	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)			
		2.6	describe the extent of their own authority, and to whom they should report in the event of problems that they cannot resolve			

Learner name: _____ Date:_____

Learner signature: _____ Date:_____

Assessor signature: _____ Date:_____

Internal verifier signature: _____ Date:_____
(*if sampled*)

Unit 6: Contributing to the analysis and selection of parts for improvement

Unit reference number: H/600/2515

Level: 2

Credit value: 15

Guided learning hours: 55

Unit summary

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.

Assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Semta Assessment Strategy'. Detailed information is given in *Annexe D*.

Assessment methodology

Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
1 Contribute to the analysis and selection of parts for improvement	1.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines 1.2 obtain all the information, documentation and equipment required to carry out the activity 1.3 select the representative parts for improvements within the chosen area/product range using information provided 1.4 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			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	1.5 make recommendations for the grouping of identified parts into appropriate part families 1.6 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 1.7 make recommendations for the production of a finalised list of the representative parts for the chosen area/product range			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
2. Know how to contribute to the analysis and selection of parts for improvement	2.1 describe the health and safety requirements of the work area in which they are conducting the activity 2.2 describe the information required to conduct the activity, and where and from whom the information can be found 2.3 describe the principles and process of analysis (such as, pie charts, bar charts (Pareto analysis)) 2.4 describe the techniques used to communicate the information and results gained by this process 2.5 explain how to create and present bar graphs/histograms 2.6 explain how to differentiate between lead-time and cycle-time 2.7 describe the bill of materials (BOM) structure for each of the representative parts 2.8 explain how to identify the origin/source of the parts within the chosen area 2.9 explain how to evaluate the information in order to select the representative parts for the chosen area 2.10 describe the use of problem solving and root cause analysis techniques 2.11 describe the extent of their own authority, and to whom they should report in the event of problems that they cannot resolve			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 7: Contributing to carrying out lead time analysis

Unit reference number: K/600/2516

Level: 2

Credit value: 10

Guided learning hours: 41

Unit summary

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.

Assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Semta Assessment Strategy'. Detailed information is given in *Annexe D*.

Assessment methodology

Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
1. Contribute to carrying out lead time analysis	1.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines 1.2 collect information/data for the production of a frequency diagram 1.3 recommend quantifiable objectives and targets for the reduction in lead time of the chosen parts or processes 1.4 carry out lead time analysis and create lead time profiles for all of the representative parts or processes chosen 1.5 make recommendations to identify any waste, problems or conditions within the work area where improvements can be made			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	1.6 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 1.7 make recommendations for the production of revised lead time profiles, identifying the improved process 1.8 make recommendations for the production of a plan for the improvement activities and resources required with timescales to achieve the targeted lead time			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
2 Know how to contribute to carrying out lead time analysis	2.1 describe the health and safety requirements of the work area in which they are conducting the activity 2.2 describe from whom authority is gained for the release of the information required to create lead time profiles 2.3 describe the information required to construct the lead time profiles, and where this information can be obtained 2.4 explain how to create lead time profiles 2.5 explain how to create frequency charts 2.6 describe the techniques used to communicate the information and results obtained by this process 2.7 explain how to differentiate between lead time and cycle time 2.8 describe problem solving and root cause analysis (such as: Ishikawa diagrams, brainstorming) 2.9 describe the extent of their authority, and to whom they should report in the event of problems that they cannot resolve			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 8: Carrying out set-up reduction techniques

Unit reference number: M/600/2517

Level: 2

Credit value: 15

Guided learning hours: 55

Unit summary

This unit is a generic unit which covers the skills and knowledge needed to prove the competences required for carrying out set-up reduction techniques and is intended for use in any context. 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 and information required for a quick set-up and its location.

Assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Semta Assessment Strategy'. Detailed information is given in *Annexe D*.

Assessment methodology

Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
1 Carry out set-up reduction techniques	1.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines 1.2 use the given information to carry out set-up reduction activity on the chosen machine or process, using the appropriate techniques 1.3 identify problems or conditions within the current set-up, where improvements can be made 1.4 make recommendations for quantifiable objectives/targets for improvements to the set-up chosen 1.5 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			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	1.6 carry out improvements to the current set-up to meet the identified objectives and targets 1.7 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 1.8 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			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
2 Know how to carry out set-up reduction techniques	2.1 describe the health and safety requirements of the area in which you are carrying out the set-up reduction activities 2.2 explain why a machine or process is selected for a set-up reduction activity 2.3 describe from whom authority is gained for the release of people and resources for the set-up reduction activity 2.4 describe the application of the Deming cycle (plan, do, check, act) 2.5 describe the processes for carrying out a set-up reduction activity 2.6 explain how improvements to the set-up can be achieved 2.7 describe the need to evaluate improvement ideas and select those that will give most benefit for the least spend 2.8 describe the need for quantifiable targets and objectives for the improved set-up 2.9 explain how to correlate information to create or update standard operating procedures (SOPs) or other approved documentation for the revised set-up			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	2.10 describe the need to distinguish between internal and external activities, with reference to set-up 2.11 describe the difference between 'motion' and 'work' 2.12 describe what constitutes a value adding and non-value adding activity 2.13 describe the extent of your own authority, and to whom you should report in the event of problems that you cannot resolve			

Learner name: _____ Date:_____

Learner signature: _____ Date:_____

Assessor signature: _____ Date:_____

Internal verifier signature: _____ Date:_____
(*if sampled*)

Unit 9: Carrying out autonomous maintenance

Unit reference number: T/600/2518

Level: 2

Credit value: 13

Guided learning hours: 52

Unit summary

This unit is a generic unit which 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 and is intended for use in any context. 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).

Assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Semta Assessment Strategy'. Detailed information is given in *Annexe D*.

Assessment methodology

Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
1 Carry out autonomous maintenance	1.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines 1.2 seek approval for use of the appropriate asset on which to carry out the autonomous maintenance activity 1.3 carry out autonomous maintenance on at least one asset from the following: – plant and equipment – machines – office equipment – service equipment – utilities 1.4 use the given information to carry out the activity 1.5 carry out the autonomous maintenance activity by applying the appropriate techniques 1.6 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			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	1.7 use the Overall Equipment Effectiveness (OEE) measure and information to determine which elements of the OEE and their associated losses need improvement 1.8 use information relating to all of the following: – load or demand – capacity – Takt time or bottleneck analysis 1.9 use an action plan that which will reduce/eliminate the losses and hence improve the overall equipment effectiveness 1.10 implement improvements to working practices through autonomous maintenance 1.11 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			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
2 Know how to carry out autonomous maintenance	2.1 describe the health and safety requirements of the area in which they are carrying out the autonomous maintenance activities 2.2 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 2.3 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) 2.4 describe the systematic and structured approach to carrying out autonomous maintenance 2.5 describe the difference between a chronic and sporadic loss 2.6 explain why is it necessary to calculate overall equipment effectiveness (OEE) 2.7 describe the benefits of having an autonomous maintenance system 2.8 describe the importance of taking ownership of the autonomous maintenance system			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	2.9 describe the six major losses 2.10 describe the use of standard operating procedures, single point lessons and machine/process start-up and shutdown procedures 2.11 describe an awareness of the improvement activities that will drive the implementation of the autonomous maintenance activities (Kaizen and team working) 2.12 describe critical processes and early problem detection steps 2.13 describe loss areas and opportunities for improvement 2.14 describe standards of wear 2.15 describe the techniques of visual management used to communicate the information and results obtained by this process (including autonomous maintenance activity boards and checklists) 2.16 describe the integration with workplace organisation and improving OEE 2.17 describe contaminants and sources of contaminants 2.18 describe the extent of their own authority, and to whom they should report in the event of problems that they cannot resolve			

Learner name: _____ Date:_____

Learner signature: _____ Date:_____

Assessor signature: _____ Date:_____

Internal verifier signature: _____ Date:_____
(*if sampled*)

Unit 10: Contributing to the application of problem-solving techniques

Unit reference number: A/600/2519

Level: 2

Credit value: 9

Guided learning hours: 41

Unit summary

This unit is a generic unit which covers the skills and knowledge needed to prove the competences required for contributing to the application of problem solving techniques and is intended for use in any context. 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.

Assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Semta Assessment Strategy'. Detailed information is given in *Annexe D*.

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.

Assessment methodology

Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
1 Contribute to the application of problem solving techniques	1.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines 1.2 contribute to identifying the nature and extent of the problem, and to obtaining all relevant information relating to it 1.3 support a structured approach to problem resolution 1.4 participate in problem solving activities, taking on one of the following key roles: – facilitator – timekeeper – sourcing data and/or information required – scribe 1.5 contribute to the identification of appropriate problem solving tools, and to applying them within a team focused environment 1.6 contribute to the identification of the root cause of the problem and the determination of permanent corrective actions			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	1.7 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 1.8 contribute to ensuring that the corrective actions determined meet with organisational requirements 1.9 contribute to obtaining the appropriate authority, and to the implementation of the agreed permanent corrective actions, within agreed timescales 1.10 contribute to monitoring the problem resolution progress, and recording progress in the appropriate information systems			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
2 Know how to contribute to the application of problem solving techniques	2.1 describe the business need for problem identification and removal 2.2 describe the benefits of adopting a formalised problem solving process 2.3 explain how to establish and select the team to be used for the problem solving activity 2.4 explain why there must be clearly defined roles within the team, and what these roles are (such as facilitator, scribe, timekeeper) 2.5 explain how to formally define the problem, and the level of involvement required from others in the problem solving process 2.6 describe time line graphing, and how this is applied to the problem solving process 2.7 describe the importance of good data collection and analysis to support problem solving 2.8 describe containment action planning (to include process risk, action planning, testing decisions, determining timescales and protecting the customer) 2.9 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)			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	2.10 explain how to determine and select permanent corrective actions 2.11 explain how to implement the permanent corrective actions identified 2.12 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) 2.13 explain how to capture process improvement opportunities 2.14 explain how to recognise the team's problem solving efforts, review the lessons learned and ensure that implementation has occurred 2.15 describe the extent of their own authority, and to whom they should report in the event of problems that they cannot resolve			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 11: Carrying out flow process analysis

Unit reference number: T/600/2521

Level: 2

Credit value: 14

Guided learning hours: 55

Unit summary

This unit is a generic unit which covers the skills and knowledge needed to prove the competences required to carry out flow process analysis and is intended for use in any context. 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.

Assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Semta Assessment Strategy'. Detailed information is given in *Annexe D*.

Assessment methodology

Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
1 Carry out flow process analysis	1.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines 1.2 map the current process flow analysis within a given work area 1.3 make recommendations where improvements can be made by establishing value added and non-value-added activities 1.4 evaluate the opportunities for improvement and prioritise these using suitable criteria 1.5 make recommendations to the analysis of the data obtained above into: – non-value added activity – value added activity 1.6 make recommendations for quantifiable objectives and targets for all the defined improvement activities 1.7 make recommendations to the creation of an action plan covering both of the following: – eliminates non-value-added activity – simplifies value-added activity			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
2 Know how to carry out flow process analysis	2.1 describe the health and safety requirements of the area in which they are carrying out the flow process analysis 2.2 describe the need to describe a process in its elements/activities of work 2.3 describe the eight forms of waste within a working environment 2.4 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) 2.5 explain how to map out a process or deployment flowchart, using the recognised symbols 2.6 describe the difference between value-added and non-value added activities 2.7 explain how to establish which elements/activities in the process are value-added or non-value-added 2.8 explain how to identify opportunities for improvements to the process 2.9 describe the need to use data to eliminate activities that do not add value to the process			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	2.10 explain how to construct an action plan that will simplify the value added activities and eliminate the non-value added activities 2.11 describe the purpose of an action plan (such as payback matrix) 2.12 describe the extent of their own authority, and to whom they should report in the event of problems that they cannot resolve			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 12: Contributing to the creation of standard operating procedures (SOP)

Unit reference number: F/600/2523

Level: 2

Credit value: 9

Guided learning hours: 41

Unit summary

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.

Assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Semta Assessment Strategy'. Detailed information is given in *Annexe D*.

Assessment methodology

Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
1 Contribute to the creation of standard operating procedures (SOP)	1.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines 1.2 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			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	1.3 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			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	1.4 gather information of the current operation or process 1.5 identify tools, equipment, fixtures, documentation and standards required 1.6 make recommendations to the production of standard operating procedures in an agreed format, and monitor their use against the operation or process requirements 1.7 make recommendations to the production of standard operating procedures that minimise all of the following: – time – effort – waste 1.8 make recommendations to the revision of standard operating procedures, as appropriate, to ensure their effectiveness in the workplace 1.9 confirm that the method defined will meet quality, productivity, health, safety and environmental requirements			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
2 Know how to contribute to the creation of standard operating procedures (SOP)	2.1 describe the health and safety requirements of the area for which they are creating standard operating procedures (SOPs) 2.2 describe the various documents used in creating standard operating procedures 2.3 explain where to find the SOP documents to be used in their business 2.4 describe the information that will be required to create a SOP 2.5 explain how SOPs are structured, and the importance of their use 2.6 describe methods of communicating to ensure that all the required information for the SOP is captured 2.7 describe the operation/process to be captured in the SOP			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	2.8 describe the link between SOPs and quality and continuous Improvement 2.9 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 2.10 explain how to simplify work done, by eliminating waste and the potential for human error 2.11 describe Takt time 2.12 describe the extent of their own authority, and to whom they should report in the event of problems that they cannot resolve			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 13: Contributing to the application of Six Sigma methodology to a project

Unit reference number: J/600/2538

Level: 2

Credit value: 15

Guided learning hours: 59

Unit summary

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. You 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.

Assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Semta Assessment Strategy'. Detailed information is given in *Annexe D*.

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.

Assessment methodology

Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
1 Contribute to the application of Six Sigma methodology to a project	1.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines 1.2 contribute to applying the structured Six Sigma methodology and approach to the selected project 1.3 contribute in Six Sigma projects which cover two the following: – manufacturing – quality level – administration 1.4 contribute to utilising the five phases of Six Sigma within the project: – define – measure – analyse – improve – control			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	1.5 contribute to identifying the Six Sigma organisational infrastructure, roles and responsibilities and business-specific metrics that would apply 1.6 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 1.7 contribute to producing a metric chart for the Six Sigma projects undertaken, to include: – financial – quality – process			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	1.8 contribute to identifying areas where the Six Sigma tools, techniques and activities can be applied 1.9 contribute to identifying the Critical To Quality Characteristic (CTQC) of the projects, to include: – cost – quality – delivery 1.10 contribute to the identification of the cost of poor quality, by identifying the defects per million opportunities (DPMO) 1.11 contribute to relating defects per million opportunities to the sigma score and identifying the gap to Six Sigma performance			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
2	Know how to contribute to the application of Six Sigma methodology to a project	2.1	describe the Six Sigma methodology and how it is applied to a project			
		2.2	describe the Six Sigma infrastructure of the business			
		2.3	describe the benefits that could arise from a Six Sigma project			
		2.4	describe the parts per million opportunities goal of Six Sigma			
		2.5	describe the calculation of defects per million opportunities			
		2.6	describe the five phases of Six Sigma that are applied to a project			
		2.7	explain how to define a Critical to Quality Characteristic (CTQC)			
		2.8	explain how non-value added activity can serve as a 'roadblock' to achieving zero defect			
		2.9	explain how to identify an 'Opportunity for Defect'			
		2.10	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)			
		2.11	describe the relationship between key process input variables and key process output variables			
		2.12	describe the extent of their own authority, and to whom they should report in the event of problems that they cannot resolve			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 14: Contributing to the application of Six Sigma process mapping

Unit reference number: f/600/2540

Level: 2

Credit value: 14

Guided learning hours: 55

Unit summary

This unit covers the skills and knowledge needed to prove the competences required for contributing to a Six Sigma process mapping activity. It requires that the learner contributes to selecting a suitable process on which to carry out the process mapping activity, and to identifying the key stages that form the overall process under investigation. These would be the process input variables and the process output variables, and would include items that are controllable, critical, noise, and standard operating procedures.

The learner will be required to contribute to the construction of the process map for the Six Sigma project, and the identification of the value added and non-value added steps in the process. The learner will also need to contribute to considering the information gathered in the Six Sigma mapping activity, and to suggesting areas where improvements can be made to the process as a result of the information gathered.

Assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Semta Assessment Strategy'. Detailed information is given in *Annexe D*.

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.

Assessment methodology

Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
1 Contribute to the application of Six Sigma process mapping	1.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines 1.2 contribute to the selection of a suitable process on which to carry out the process mapping activity 1.3 contribute to identifying the key stages that form the overall process under investigation 1.4 contribute to the collection of data necessary to construct the Six Sigma process map 1.5 contribute to the construction of the process map for the Six Sigma project 1.6 contribute to the production of a process map, which identifies both: – the key process input variables – the key process output variables 1.7 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			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	1.8 contribute to the identification of value added and non-value-added steps in a process 1.9 contribute to identifying improvements to the process, as a result of the information gathered in the Six Sigma mapping activity 1.10 contribute to the identification and adding to the process map, the specifications of both: – key process input variables – key process output variables			
2 Know how to contribute to the application of Six Sigma process mapping	2.1 describe the health and safety requirements of the area in which they are carrying out the process mapping activity 2.2 describe the benefits of carrying out Six Sigma process mapping 2.3 explain how to define a Six Sigma process map 2.4 explain how the Six Sigma process map fits within a Six Sigma project 2.5 describe the meanings of key process input variables and the key process output variables 2.6 describe the data collection point for the key process input variables and the key process output variables (such as gauges, forms and samples)			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	2.7 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 2.8 describe the people who should create a Six Sigma process map 2.9 describe the difference between a value added activity and a non-value added activity 2.10 describe the roles of individuals within a process mapping team 2.11 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			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

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Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 15: Contributing to the application of basic statistical analysis

Unit reference number: J/600/2541

Level: 2

Credit value: 13

Guided learning hours: 52

Unit summary

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.

Assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Semta Assessment Strategy'. Detailed information is given in *Annexe D*.

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.

Assessment methodology

Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
1 Contribute to the application of basic statistical analysis	1.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines 1.2 consult with appropriate people and contribute to gathering the relevant data for statistical analysis 1.3 contribute to the production of data gathering forms or charts to gather information, to enable statistical and graphical analysis to take place 1.4 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 1.5 contribute to statistical and graphical analysis on a Six Sigma project			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	1.6 contribute to the production of descriptive statistics of data, to include: – mean – median – mode – standard deviation – range and variance 1.7 contribute to the production of a normal distribution, to assess a population from the representative sample 1.8 contribute to the interpretation of the statistical data collected, in order to validate the pre-determined courses of action 1.9 contribute to the production of an action plan, as a result of the statistical and graphical analysis undertaken			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
2 Know how to contribute to the application of basic statistical analysis	2.1 describe the health and safety requirements of the area in which they are collecting data 2.2 describe the meaning of the term 'variation' 2.3 explain why a number of data points are needed to draw a statistically valid conclusion 2.4 explain why we need to use basic statistics 2.5 explain what is meant by the terms 'population' and 'sample' when applied to basic statistics 2.6 describe distribution curves and the properties of a normal curve 2.7 explain how to use charts and diagrams (such as bar charts, histograms, box plots, time series charts, Pareto diagrams, stem and leaf diagrams) 2.8 explain how to calculate mean, median, mode, standard deviation, range and variance 2.9 describe the difference between descriptive and inferential statistics 2.10 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			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 16: Contributing to the application of statistical process control (SPC) procedures

Unit reference number: Y/600/2544

Level: 2

Credit value: 9

Guided learning hours: 41

Unit summary

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.

Assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Semta Assessment Strategy'. Detailed information is given in *Annexe D*.

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.

Assessment methodology

Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
1 Contribute to the application of statistical process control (SPC) procedures	1.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines 1.2 work to, and comply with all the required process monitoring documentation and work instruction sheets 1.3 contribute to selecting and/or confirming the process on which the process analysis is to be carried out 1.4 contribute to the consultation with relevant people and gathering of the necessary data for analysis 1.5 apply the principles and contribute to the processes of statistical process control to the chosen process 1.6 contribute to basic statistical process control, using appropriate tools and techniques 1.7 contribute to statistical and graphical methods to represent the process conditions 1.8 contribute to the calculation of the capability of the process, and the identification of both: – Cp – Cpk			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	1.9 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 1.10 contribute to the identification of activities that will improve the process performance 1.11 contribute to the production of an action plan to implement the improvements			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
2 Know how to contribute to the application of statistical process control (SPC) procedures	2.1 describe the health and safety requirements of the area in which they are carrying out the process control activities 2.2 explain where process control fits in within a continuous improvement environment 2.3 explain how process performance affects customer satisfaction and process costs 2.4 explain where and why statistical process control is used 2.5 describe the importance of standardisation within a process operation, and why process performance can only be determined when it is controlled 2.6 explain how process control can improve process performance 2.7 describe the benefits of prevention versus detection 2.8 describe the two types of variation within a process (common cause, special cause) 2.9 explain how to gather data and effectively analyse it, understanding how the data can be used to communicate abnormalities within a process 2.10 describe the main types of control charts used for SPC			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	2.11 explain what is meant by a 'population' and a 'sample' 2.12 describe the measurements of central tendency and variability 2.13 describe the properties of a normal curve of distribution 2.14 describe the terms mean, median, mode, standard deviation, range and variance 2.15 describe process capability (Cp and Cpk) 2.16 describe the extent of their own authority, and to whom they should report in the event of problems that they cannot resolve			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 17: Contributing to the application of failure modes and effects analysis (FMEA)

Unit reference number: D/600/2545

Level: 2

Credit value: 11

Guided learning hours: 41

Unit summary

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.

Assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Semta Assessment Strategy'. Detailed information is given in *Annexe D*.

Assessment methodology

Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
1 Contribute to the application of failure modes and effects analysis (FMEA)	1.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines 1.2 identify the key features of failure modes and effects analysis required for the activity under investigation 1.3 contribute to the application of a failure modes and effects analysis on two of the following: – concept – product – design – process – system – machine 1.4 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 1.5 carry out, as a team member, the production of a failure modes and effects analysis			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	1.6 record the information gathered in an appropriate format 1.7 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 1.8 contribute to making valid judgements about the activity using failure modes and effects analysis principles 1.9 contribute to calculating risk priority numbers (RPNs), identification of high RPNs, and develop actions to improve them 1.10 contribute to establishing rating tables for all of the following: – occurrence – severity – detection 1.11 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			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
2	Know how to contribute to the application of failure modes and effects analysis (FMEA)	2.1	describe the health and safety requirements of the area in which they are conducting the failure modes and effects analysis			
		2.2	describe the main features and benefits of carrying out a failure modes and effects analysis			
		2.3	describe who should be part of a team that constructs and updates a failure modes and effects analysis			
		2.4	describe the meaning of a failure mode, failure effect or failure cause			
		2.5	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)			
		2.6	explain how to calculate a risk priority number (RPN)			
		2.7	explain how to use the risk priority numbers			
		2.8	describe the structured approach to risk reduction			
		2.9	describe when to start a failure modes and effects analysis			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	2.10 describe when to update a failure modes and effects analysis 2.11 describe the roles of individuals within a failure modes and effects analysis team 2.12 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			

Learner name: _____ Date:_____

Learner signature: _____ Date:_____

Assessor signature: _____ Date:_____

Internal verifier signature: _____ Date:_____
(*if sampled*)

Unit 18: Contributing to the application of measurement systems analysis (MSA)

Unit reference number: M/600/2548

Level: 2

Credit value: 11

Guided learning hours: 41

Unit summary

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.

Assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Semta Assessment Strategy'. Detailed information is given in *Annexe D*.

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.

Assessment methodology

Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
1 Contribute to the application of measurement systems analysis (MSA)	1.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines 1.2 contribute to the selection of an appropriate measurement system on which to carry out the analysis 1.3 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			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	1.4 determine the type of measurement system variation, to include two of the following: – bias – linearity – stability – accuracy – repeatability – reproducibility 1.5 contribute to obtaining all the necessary data in order to carry out the measurement systems analysis 1.6 contribute to the analysis, using the appropriate techniques 1.7 record the results of the analysis in the appropriate format 1.8 contribute to determining the percentage gauge repeatability and reproducibility of the measurement system under study, and to suggesting ways of improving the measurement system 1.9 contribute to the production of a measurement systems analysis report, detailing ways of improving the measurement system under study			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
2 Know how to contribute to the application of measurement systems analysis (MSA)	2.1 describe the health and safety requirements of the area in which they are carrying out the measurement systems analysis 2.2 explain why we should study our measurement systems 2.3 explain how to select a measurement system for analysis 2.4 describe the possible sources of measurement system variation 2.5 explain how measurement systems analysis be used in a Six Sigma improvement project 2.6 describe the meaning of 'repeatability and reproducibility study' 2.7 describe the terminology used in measurement systems analysis (such as bias, linearity, stability, accuracy, repeatability, discrimination, resolution, reproducibility) 2.8 explain how to conduct a measurement systems analysis study 2.9 describe the calculation for gauge repeatability and reproducibility			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	2.10 describe the calculation for gauge precision and tolerance 2.11 describe the industry rules for repeatability and reproducibility results 2.12 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			

Learner name: _____ Date:_____

Learner signature: _____ Date:_____

Assessor signature: _____ Date:_____

Internal verifier signature: _____ Date:_____
(*if sampled*)

Unit 19: Carrying out mistake/error proofing (Poka Yoke)

Unit reference number: K/600/2550

Level: 2

Credit value: 10

Guided learning hours: 41

Unit summary

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.

Assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Semta Assessment Strategy'. Detailed information is given in *Annexe D*.

Assessment methodology

Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
1 Carry out mistake/error proofing (Poka Yoke)	1.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines 1.2 use information and data to make recommendations for a suitable process on which to carry out mistake/error proofing 1.3 carry out the mistake/error proofing process to the chosen activity 1.4 analyse the data received and make recommendations for inclusion in the worksheet 1.5 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 1.6 use the worksheet to identify the root cause of the problem 1.7 recommend potential solutions and carry out agreed trials to measure the effectiveness of the solution			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	1.8 identify suitable solutions, and determine their: – effectiveness – cost – complexity 1.9 implement the optimum solution 1.10 gather information/data for the measurement and documentation of results from the activity 1.11 identify the benefits of mistake/error proofing in terms of: – improved quality/compliance (such as ISO9001 and EFQM) – reduced costs – delivery or service			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
2 Know how to carry out mistake/error proofing (Poka Yoke)	2.1 describe mistake/error proofing, and the benefits of carrying this out 2.2 describe the difference and benefits between mistake/error proofing and prevention and detection 2.3 describe the selection criteria used to determine a suitable product or process on which to carry out the mistake/error proofing activity 2.4 explain how mistake/error proofing can lead to zero defects 2.5 describe the difference between errors and defects 2.6 describe the different types of mistake 2.7 explain how defects originate in products or processes 2.8 explain how the role of source inspection contributes to the reduction of defects 2.9 describe the use of mistake/error proofing (Poka Yoke) tools (such as cause and effect, the 5 'why's) 2.10 describe the types of mistake/error proofing documentation			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	2.11 explain how to undertake trials and measure the effectiveness of mistake/error proofing projects 2.12 describe the different types of mistake proofing devices available 2.13 describe the roles and responsibilities of individuals within a mistake/error proofing team (including facilitator, timekeeper, scribe) 2.14 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			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 20: Leading effective teams

Unit reference number: T/600/5306

Level: 3

Credit value: 9

Guided learning hours: 26

Unit summary

This unit covers the skills and knowledge needed to prove the competences required for leading effective teams, which are involved in carrying out continuous improvement activities. It involves obtaining appropriate authority and support for the release of resources to carry out team activities, which will include people, work space/work area, documentation and information. The learner will be required to determine and agree individual roles and responsibilities, and to set realistic and achievable goals for both the individuals within the team and the team as a whole. Coaching/mentoring and monitoring the performance of their team will also feature in this unit. The learner will also be expected to prioritise the work activities to achieve the overall objectives, cost-effectively and efficiently.

Assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Semta Assessment Strategy'. Detailed information is given in *Annexe D*.

Assessment methodology

Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
1 Lead effective teams	1.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines 1.2 work in accordance with the roles and responsibilities identified for the team leader role 1.3 obtain the authority and support for the release of the necessary resources to carry out the team activities 1.4 consult with appropriate people in order to secure the release of the following resources: – people involved – work space/work area required – documentation and information required 1.5 set realistic and achievable goals and objectives for their team, in accordance with the targets set for themselves or for the work area/activity 1.6 prioritise the work activities to achieve the objectives, cost-effectively and efficiently 1.7 develop action plans which clearly identify activities and responsibilities required to meet the team targets: – for themselves – for the team			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	1.8 determine and agree individual roles and responsibilities, and coach/mentor their team, focusing on the objectives that have been set 1.9 monitor the performance of their team against the goals and objectives which have been set, and communicate this to the relevant people 1.10 communicate effectively with: – management – peers – subordinates 1.11 communication must include: – verbal – written – electronic methods 1.12 consult with subject specialists when required, to gain the necessary information to support the team goals and objectives 1.13 deal promptly and effectively with any problems within their control, and report those that cannot be resolved			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
2 Know how to lead effective teams	2.1 describe the roles and responsibilities of themselves and others under the Health and Safety at Work Act 2.2 describe the business targets set for their area of responsibility, and how to set personal, individual and team targets to achieve them (action planning) 2.3 explain how to prioritise their own and their team's workload to ensure that targets are met 2.4 explain how to communicate effectively, listen, question, support and coach others to work towards the business targets 2.5 explain how to present information effectively to management, peers or team members, using different methods 2.6 explain how to conduct a team performance review and how to involve the team in brainstorming activities to identify opportunities, threats and solutions 2.7 describe the types of conflict and problem that might emerge between work activities 2.8 describe the organisational processes and procedures required to run their area of responsibility effectively (such as quality procedures, code of conduct, standard operations, problem resolution procedures)			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	2.9 describe the improvement tools and techniques being used in their area of responsibility (such as hourly count monitor, Takt time, continuous flow process, flexible manpower systems, quality level, defects per million opportunities, workplace organisation) 2.10 describe the specialist help that they may require in their area of responsibility, and how this can be obtained 2.11 explain how to structure and lead a team event, and the presentation materials and work documentation required 2.12 explain how to train others in the processes and procedures relevant to them, and their area of responsibility 2.13 explain how to monitor and check that their team is working to identified quality and safety standards 2.14 describe the extent of their own authority, and to whom they should report in the event of problems that they cannot resolve			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

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Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 21: Applying workplace organisation techniques

Unit reference number: J/600/5309

Level: 3

Credit value: 14

Guided learning hours: 51

Unit summary

This unit is a generic unit which covers the skills and knowledge needed to prove the competences required to apply a systemic approach to continuously making improvements to the workplace organisation and is intended for use in any context. It involves co-ordinating and applying the principles and techniques of workplace organisation (such as 5S or 5C). The learner will need to consider the work area and its activity, to determine where information, materials, tools and/or equipment are missing or require a new location and what improvements to the area or activity could be made. The learner will be expected to produce standard operating procedures and visual controls for the work 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.

Assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Semta Assessment Strategy'. Detailed information is given in *Annexe D*.

Assessment methodology

Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
1 Apply workplace organisation techniques	1.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines 1.2 co-ordinate and apply the process of workplace organisation within the chosen work area, and establish the area score 1.3 identify and confirm where information, resources or equipment is missing or is in surplus, and what improvements can be made 1.4 produce changes to standard operation procedures (SOPs), and visual controls that everyone works to within the area 1.5 make changes to standard operating procedures which cover three 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			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	1.6 make changes to visual controls, which cover three of the following: – producing 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 1.7 make improvements to the workplace organisation and establish the new improved area score			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
2 Know how to apply workplace organisation techniques	2.1 describe the health and safety requirements of the area in which they are carrying out the workplace organisation activity 2.2 describe the factors to be considered when selecting a work area for an activity (to include: cleanliness, health and safety, product quality, equipment and organisation) 2.3 describe the procedure used to identify and address surplus or missing equipment or resources (such as carrying out a 'red tagging' exercise) 2.4 explain how to arrange and label the necessary resources or equipment for rapid identification and access 2.5 explain how to correlate information to create or update standard operating procedures (SOPs) or other approved documentation 2.6 explain how to evaluate and prioritise the improvements required for the workplace 2.7 explain how to score and audit the workplace organisation 2.8 describe the techniques required to communicate information using visual control systems (such as shadow boards, performance charts, KPIs) 2.9 describe the extent of their own authority, and to whom they should report in the event of problems that they cannot resolve			

Learner name: _____ Date:_____

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(*if sampled*)

Unit 22: Applying continuous improvement techniques (Kaizen)

Unit reference number: D/600/5316

Level: 3

Credit value: 18

Guided learning hours: 55

Unit summary

This unit is a generic unit which covers the skills and knowledge needed to prove the competences required for applying continuous improvement techniques (Kaizen) to their work activities and is intended for use in any context. It involves planning the Kaizen process for the agreed work area/activity, to include plan, do, check, act, and to establish 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 co-ordinating and carrying out improvement activities 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 produce 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.

Assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Semta Assessment Strategy'. Detailed information is given in *Annexe D*.

Assessment methodology

Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
1 Apply continuous improvement techniques (Kaizen)	1.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines 1.2 plan the Kaizen process to the agreed work area/activity to include plan, do, check, act 1.3 establish objectives and targets for the Kaizen activity 1.4 carry out the Kaizen activity within the chosen work area/activity 1.5 identify and confirm waste, problems or conditions within the work area or activity and what improvements can be made 1.6 identify and confirm improvements within the working area/activity which cover three of the following: – reduction in cost – improved health, safety and/or working environment – improved quality – improved regulatory compliance – improvements to working practices			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	– reduction in lead time – reduction in waste and/or energy usage – improved customer service – improved resource utilisation 1.7 co-ordinate and carry out a structured waste elimination activity, based on the identified wastes, problems or conditions 1.8 produce changes to standard operating procedures (SOPs), or other approved documentation that will sustain the improvements resulting from the Kaizen activity 1.9 identify and apply improvements, which cover three 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			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	1.10 determine and calculate measures of performance for quality, cost and delivery 1.11 determine and calculate one of the following quality measures: – not right first time (as a percentage or as parts per million (PPM)) – company-specific quality measure 1.12 determine and calculate one of the following measures: – delivery schedule achievement – company-specific delivery or service measure 1.13 determine and calculate one of the following cost measures: – parts per operator hour (PPOH) – production volume – value added per person (VAPP) – overall equipment effectiveness (OEE) – stock turns – floor space utilization (FSU) – cost breakdown (such as labour, material, energy and overhead) – company-specific cost measure			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	1.14 calculate and visually represent the optimum resources required for a process based on customer demand 1.15 provide comparisons of the agreed work area/activity before and after the kaizen activity to confirm improvements using key performance indicators 1.16 record and show business improvements, 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 utilization (FSU) – cost breakdown (such as labour, material, energy and overhead) – company-specific cost measure			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
2 Know how to apply continuous improvement techniques (Kaizen)	2.1 describe the health and safety requirements of the area in which they are carrying out the Kaizen activity 2.2 explain how a work area/activity is selected for the Kaizen activity 2.3 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) 2.4 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 2.5 describe problem solving and root cause analysis 2.6 describe the importance of understanding the process/activity under review, and how this will affect the quality of the problem solving 2.7 describe the application of the Deming cycle (plan, do, check, act) 2.8 explain how to carry out a Kaizen activity and establish measurable improvements 2.9 explain how to distinguish facts from opinions in order to identify improvement actions			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	2.10 explain how improvements to the process are achieved by engaging the knowledge and experience of the people involved in the process 2.11 explain how to encourage people to identify potential improvements 2.12 explain how to evaluate improvement ideas in order to select those that are to be pursued 2.13 explain how to set quantifiable targets and objectives 2.14 explain how to produce/propose the creation of or changes to standard operating procedures (SOPs) or other approved documentation 2.15 describe the techniques used to visually communicate the work of the Kaizen activity to participants and others 2.16 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) 2.17 explain how the cycle time of a process can be defined.			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	2.18 explain how to calculate the required production rate for a process by using a calculation (such as Takt Time) 2.19 explain how to calculate the optimal resources (such as people, equipment, facilities and materials) required for a process based on customer demand 2.20 describe the techniques used to distribute work content to balance cycle times to the rate of customer demand, and how to visually represent it (eg line balance and process displays 2.21 describe the extent of their own authority, and to whom they should report to in the event of problems that they cannot resolve			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 23: Developing visual management systems

Unit reference number: K/600/5318

Level: 3

Credit value: 13

Guided learning hours: 41

Unit summary

This unit covers the skills and knowledge needed to prove the competences required for developing and applying the principles and processes of visual management. 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 measure the effectiveness of the visual management system and to change and maintain the quality of the information that is being displayed.

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.

Assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Semta Assessment Strategy'. Detailed information is given in *Annexe D*.

Assessment methodology

Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
1 Develop visual management systems	1.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines 1.2 identify and confirm appropriate parts of the process or work area that will have visual controls 1.3 create, or make changes to, visual management systems 1.4 identify and confirm the key performance indicators that will be displayed in the work area 1.5 produce or make changes to standard operating procedures (SOPs), and visual controls that everyone works to within the area 1.6 create and update visual management systems that promote six of the following: – health and safety – quality/zero defects – process concerns or corrective actions – performance measures – standard operating procedures – workplace organisation			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	– skills matrices – autonomous maintenance worksheets – parts/material control systems – problem resolution (eg Kaizen boards) – shadow boards – standard work-in-progress (WIP) locations and quantities – planning systems – the delivery of effective meetings 1.7 measure the effectiveness of the visual management system and maintain the quality of information being displayed			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
2 Know how to develop visual management systems	2.1 describe the health and safety requirements of the work area in which they are conducting the visual management activities 2.2 describe the factors to be considered when selecting a visual management system 2.3 explain where to find the information required to develop a local visual management system 2.4 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) 2.5 explain how to differentiate between business performance measures and local performance measures 2.6 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)			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	2.7 describe the application of 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) 2.8 describe the extent of their own authority, and to whom they should report in the event of problems that they cannot resolve			

Learner name: _____ Date: _____

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Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 24: Creating flexible production and manpower systems

Unit reference number: K/600/5321

Level: 3

Credit value: 11

Guided learning hours: 42

Unit summary

This unit covers the skills and knowledge needed to prove the competences required for creating flexible business systems. It involves applying the principles and processes of creating flexible production and manpower systems to the chosen activity. This will include obtaining the schedule and batch size for the parts in the work area, and creating level schedules for those parts. The activities will require the learner to identify improvement opportunities, and waste which needs to be removed, in order to achieve Takt time and flow processing. The learner will also be required to produce a visual representation for identifying which resources do not meet the Takt time requirements. This would typically cover areas such as standard work in progress, consignment stocks, part routers, physical control signals, number of people required and their flexibility, and the rules and disciplines of the pull system.

Assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Semta Assessment Strategy'. Detailed information is given in *Annexe D*.

Assessment methodology

Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
1 Create flexible production and manpower systems	1.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines 1.2 apply the principles and processes of creating flexible production and manpower systems to the chosen activity 1.3 choose three different parts or materials in the work area, and calculate the following: – workload – capacity of resource (equipment, people) – Takt time 1.4 obtain the schedule and batch size for the parts or materials in the work area 1.5 Create level schedules for the parts in the work area 1.6 Produce a visual communication of the schedule, which includes: – workload – resource capacity – Takt time for the work area			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	1.7 identify improvement opportunities, and waste which needs to be removed, in order to achieve Takt time and flow processing 1.8 produce a local workforce flexibility matrix (skills matrix) 1.9 produce a visual representation, identifying resources that do not meet the Takt time requirements 1.10 create a visually controlled system, based on the demand of subsequent processes for the chosen parts or materials, which includes four of the following: – standard work in progress – safety stocks – part or material routers – physical control signals – rules and disciplines of the implemented control system 1.11 implement a visually controlled system, based on the demand of subsequent processes for the chosen parts, and which improves the overall process effectiveness			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
2 Know how to create flexible production and manpower systems	2.1 describe the health and safety requirements of the work area in which they are conducting the activity 2.2 describe the information required to create level schedules, load and capacity, Takt time and batch sizes 2.3 describe the meaning of 'level schedules', and how to create them 2.4 explain how to create a load and capacity diagram 2.5 describe Takt time, and how this is calculated 2.6 describe the application of standard work in progress 2.7 describe the application of visually controlled systems and signals, based on the demand of subsequent processes 2.8 describe the application of skills matrices 2.9 describe the application of consignment stocking 2.10 explain how to simplify working practices and reduce the human error risk 2.11 describe the consequences of introducing a new improved part/process/material router 2.12 describe problem solving and route cause analysis			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	2.13 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 2.14 explain how to stabilise and then optimise equipment effectiveness 2.15 explain how to conduct a review of asset care/best practice effectiveness, and establish a robust routine of asset care and correct operation 2.16 describe the appropriate techniques that provides value to the customer (such as push-pull systems, single piece flow, just in time (JIT), Kanban, autonomation) 2.17 describe the techniques used to visually communicate the work done (such as level schedules, load and capacity diagrams, revised batch sizes, and Takt time) 2.18 explain how to lay out an effective workplace, utilising recognised techniques (such as cellular manufacturing incorporating parallel lines or U-shaped cells) 2.19 describe the extent of their own authority, and to whom they should report in the event of problems that they cannot resolve			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 25: Carrying out problem-solving activities

Unit reference number: Y/600/5315

Level: 3

Credit value: 12

Guided learning hours: 41

Unit summary

This unit is a generic unit which covers the skills and knowledge needed to prove the competences required to solve problems, in accordance with approved procedures, and is intended for use in any context. Problems could occur in any aspect of the business, such as manufacturing, engineering, processing, service and support functions. The learner will be expected to take prompt and appropriate action to identify, analyse and implement corrective actions to solve the problem.

The learner will be required to investigate problems by obtaining all the necessary data and information, to enable them to identify and evaluate the possible corrective actions and their effects on both the process and the people involved.

Assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Semta Assessment Strategy'. Detailed information is given in *Annexe D*.

Assessment methodology

Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
1 Carry out problem-solving activities	1.1 take prompt action to identify the nature and extent of the problems that arise 1.2 carry out all of the following as part of the problem-solving activity: – ensure that performance monitoring/measurement and review processes are in place (such as the former DTI's seven measures of QCD, the seven quality tools, SPC) – utilise a team-based approach for the problem-solving activity – discuss/consult with the relevant people on the nature and extent of the problem – follow a structured problem solving process, and use appropriate techniques to identify the root cause(s) – communicate the proposed corrective action to the relevant people, obtaining feedback where appropriate			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	– prepare a plan of action for implementation of the appropriate corrective action – monitor the implementation of corrective actions, and make necessary revisions to the plan of action (Plan, Do, Check, Act) – monitor the effectiveness of corrective actions following their implementation – review the effectiveness of corrective actions against the costs of implementation – review the problem-solving process to understand the lessons learned, in order to achieve further improvements within the business 1.3 obtain all relevant data and information relating to the problem			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	1.4 obtain and use data on the problem from four of the following sources: – statistical data – historical records (e.g. maintenance or shift logs) – quality audits – external sources – feedback from customers – mapping the process – operating procedures / manufacturing manuals – company procedures – health and safety information – environmental documents – observation – designed and controlled trials/experiments			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	1.5 establish possible root causes to problems by two of the following methods/techniques: – cause and effect diagram – five 'why' analysis – flowcharting – fault tree analysis 1.6 evaluate all realistic root causes of the problem 1.7 identify the most effective corrective action			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	1.8 evaluate possible corrective actions to problems, by considering all of the following: – operational effectiveness – ease of implementation – timescale for implementation – financial impact – functionality of the system – environmental impact – staffing implications – quality implications – conformity with company policies – health and safety implications – customer delivery implications 1.9 ensure that corrective actions are implemented correctly and promptly 1.10 implement corrective actions to problems, which comply with one of the following: – company standards and procedures – BS and/or ISO standards and procedures – customer standards and requirements			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	1.11 monitor the effectiveness of corrective actions, by using one of the following: – one or more of the former DTI's seven measures of QCD – one or more of the seven quality tools – statistical process control (SPC) 1.12 keep all relevant people informed of progress throughout the problem-solving activity 1.13 communicate with the relevant people throughout the problem solving activity, by using both of the following: – verbal communication – completion of company-specific documentation (paper or IT based) 1.14 ensure that corrective actions to problems comply with all relevant regulations and guidelines			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
2 Know how to carry out problem-solving activities	2.1 describe the health and safety requirements of the area in which they are carrying out the problem-solving activity 2.2 describe the importance of wearing protective clothing and other appropriate safety equipment during the investigation of the problem, and where it may be obtained 2.3 describe the methods used to detect that a problem has occurred 2.4 describe the methods of containment of a non-conforming product or process 2.5 describe the structured process for problem solving (such as DMAIC methodology - Define, Measure, Analyse, Improve, Control) 2.6 describe the processes and procedures used within the scope of the problem-solving activity 2.7 explain how to obtain any necessary resources to support the problem-solving activity 2.8 describe the extent of their own responsibility, and to whom they should report if they have problems that they cannot resolve 2.9 describe the use of performance measurement and analysis to direct and focus improvement effort			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	2.10 describe the techniques used to obtain data and information on problems (such as the former DTI's seven measures of QCD), and the sources of information 2.11 describe the methods and techniques involved in evaluating information (such as the seven quality tools, Is / Is Not sheets, capability studies, measurement system analysis) 2.12 describe the importance of getting to the root cause 2.13 describe the methods and techniques involved in root cause analysis (such as 5 'Why' analysis, cause and effect diagrams, fault tree analysis, flowcharting, FMEA, process flow analysis) 2.14 describe the criticality of different types of problem, and how to prioritise the problems to be solved 2.15 explain how to obtain and interpret company policy and procedures 2.16 describe the factors that have to be taken into account when selecting the corrective action to a problem			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	2.17 describe the methods used to choose and implement corrective actions (such as decision matrix, design of experiments, Gantt chart, Deming cycle (Plan-Do-Check-Act), error proofing) 2.18 explain whom to inform of actions taken, and by what means 2.19 describe the reporting procedures and documentation, and their application 2.20 describe the methods used to monitor the effectiveness of corrective actions (such as statistical process control (SPC), the former DTI's seven measures of QCD, seven quality tools) 2.21 explain how to review the problem-solving process to understand the lessons learned, in order to achieve further improvements within the business			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 26: Analysing and selecting parts for improvement

Unit reference number: M/600/5319

Level: 3

Credit value: 18

Guided learning hours: 58

Unit summary

This unit is a generic unit which covers the skills and knowledge needed to prove the competences required for analysing and selecting parts for improvement and is intended for use in any context. It involves applying the principles and processes of analysing and selecting parts for improvements within the chosen area/product range. The learner will be expected to co-ordinate and analyse information to identify and produce part families, using criteria such as part shape, part size, materials used to manufacture the part, and the manufacturing process used.

The learner will also be required to carry out an analysis within the chosen area/product range, typically focusing on customer schedules (volume), cost of producing the part, profit for each part as a percentage, manufacturing lead time, quality (scrap and non-conformance percentage) and the process/manufacturing route.

Assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Semta Assessment Strategy'. Detailed information is given in *Annexe D*.

Assessment methodology

Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
1 Analyse and select parts for improvement	1.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines 1.2 obtain all the information, documentation and equipment required to carry out the activity 1.3 co-ordinate and analyse information to identify and confirm the representative parts for improvement within the chosen area/product range 1.4 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			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	1.5 evaluate and group the identified parts into appropriate part families 1.6 produce part families, using all the following criteria: – part shape – part size – materials used to manufacture the part – manufacturing process 1.7 produce and confirm a finalised list of the representative parts for the chosen area/product range			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
2 Know how to analyse and select parts for improvement	2.1 describe the health and safety requirements of the work area in which they are conducting the activity 2.2 describe the information required to conduct the activity, and where and from whom authority can be found 2.3 describe the principles and process of analysis (such as, pie charts, bar charts (Pareto analysis)) 2.4 describe the techniques used to communicate the information and results gained by this process 2.5 explain how to create and present bar graphs/histograms 2.6 explain how to differentiate between lead time and cycle time 2.7 explain how the bill of materials (BOM) structure is configured for each of the representative parts 2.8 explain how to identify the origin/source of the parts within the chosen area 2.9 explain how to evaluate the information, in order to select the representative parts for the chosen area 2.10 describe the application of problem solving and root cause analysis 2.11 describe the extent of their own authority, and to whom they should report in the event of problems that they cannot resolve			

Learner name: _____ Date: _____

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Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 27: Applying lead time analysis

Unit reference number: F/600/5325

Level: 3

Credit value: 13

Guided learning hours: 42

Unit summary

This unit is a generic unit which covers the skills and knowledge needed to prove the competences required for applying lead time analysis and is intended for use in any context. It involves applying the principles and processes of lead time analysis to selected parts or processes. The learner will be expected to identify suitable parts or processes for which lead time profiles are to be produced, and then to define and confirm suitable and quantifiable objectives and targets for the reduction in lead time and the creation of lead time profiles for all of the representative parts or processes chosen.

The learner will also be expected to identify and confirm any problems or conditions within the work area/process where improvements can be made. This will require the production of a frequency diagram, listing the major bottlenecks or constraints as identified by each lead time profile. Typically, improvements would focus on supply or delivery of parts, improved workflow, improved quality, flexibility of people, launch of material and inventory balancing.

Assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Semta Assessment Strategy'. Detailed information is given in *Annexe D*.

Assessment methodology

Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
1 Apply lead time analysis	1.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines 1.2 collect and co-ordinate information/data to produce a frequency diagram, listing the major bottlenecks or constraints as identified by each lead time profile 1.3 define and confirm quantifiable objectives and targets for the reduction in lead time of the chosen parts or processes 1.4 co-ordinate the lead time analysis, and the production of lead time profiles for all of the representative parts or processes chosen 1.5 identify and confirm any problems or conditions within the work area where improvements can be made			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	1.6 identify improvement opportunities for three of the following: – supply or delivery of parts – improved workflow – improved quality – flexibility of people – launch of material – inventory balancing 1.7 produce revised lead time profiles, identifying the improved process 1.8 produce a plan of the improvement activities and resources required, with timescales to achieve the targeted lead time			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
2 Know how to apply lead time analysis	2.1 describe the health and safety requirements of the work area in which they are conducting the activity 2.2 describe the sort of information required to create lead time profiles 2.3 describe the sort of information required to construct the lead time profiles, and where this information can be obtained 2.4 explain how to co-ordinate and create lead time profiles 2.5 explain how to co-ordinate and create frequency charts 2.6 describe the techniques used to communicate the information and results obtained by this process 2.7 explain how to differentiate between lead time and cycle time 2.8 describe the application of problem solving and root cause analysis (such as: Ishikawa diagrams, brainstorming) 2.9 describe the extent of their own authority, and to whom they should report in the event of problems that they cannot resolve			

Learner name: _____ Date: _____

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(*if sampled*)

Unit 28: Carrying out value stream mapping (VSM)

Unit reference number: L/600/5330

Level: 3

Credit value: 17

Guided learning hours: 58

Unit summary

This unit covers the skills and knowledge needed to prove the competences required carrying out value stream mapping (VSM). It involves applying the principles and processes of value stream mapping to the chosen parts, using appropriate improvement tools and techniques. The learner will be expected to create a current state map for the parts or materials chosen, and to identify problems or conditions within the current state map where improvements can be made. Typically, the improvements will include improved workflow, improved lead time, improved quality, reduced waste and improved safety.

The learner will also need to produce future state maps, which include part or material flow through the process, information flow, inventory, set-up and cycle times for each operation, lead time for the part or material, value-adding percentage of lead time, delays which occur between each operation, Takt time and schedules for the chosen part or material, and customer and supplier ordering and delivery.

Assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Semta Assessment Strategy'. Detailed information is given in *Annexe D*.

Assessment methodology

Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
1 Carry out value stream mapping (VSM)	1.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines 1.2 select appropriate parts or materials on which to carry out the activity 1.3 carry out the value stream mapping process on the chosen parts, using appropriate improvement tools and techniques 1.4 create a current state map for the parts or materials chosen which includes all of the following: – part or material flow through the process – information flow – inventory – set-up and cycle times for each operation – lead time for the part or material – value-adding percentage of lead time – delays which occur between each operation – Takt time and schedules for the chosen part – customer and supplier ordering and delivery 1.5 identify problems or conditions within the current state map where improvements can be made			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	1.6 identify opportunities for improvements and waste that needs to be removed, in order to create a future state map covering three of the following: – improved workflow – improved lead time – improved quality – improved safety – less inventory – improved flexibility – less waste/cost 1.7 produce a future state map which includes all of the following: – part or material flow through the process – information flow – inventory – set-up and cycle times for each operation – lead time for the part or material – value-adding percentage of lead time – delays which occur between each operation – Takt time and schedules for the chosen part – customer and supplier ordering and delivery 1.8 implement the changes identified			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
2 Know how to carry out value stream mapping (VSM)	2.1 describe the health and safety requirements of the area in which they are carrying out the value stream mapping activity 2.2 explain how a part is selected for a value stream mapping activity 2.3 describe from whom authority is gained for release of people and resources for the value stream mapping activity 2.4 explain how to structure and run a value stream mapping event 2.5 describe the principles and processes for the deployment of value stream mapping 2.6 explain how improvements to the process can be achieved 2.7 explain how to evaluate improvement ideas and select those that will give the greatest benefit for the least spend 2.8 explain how to set quantifiable objectives and targets for the future state maps 2.9 explain how to create standard operating procedures (SOPs) 2.10 describe the techniques used to visually communicate the information and results of the process			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	2.11 describe the techniques of problem solving and root cause analysis 2.12 describe systems lead time, how they differ from actual lead time, and how both are constructed 2.13 explain how to calculate Takt time 2.14 describe the principles of increasing process capacity 2.15 explain what constitutes value adding and non-value adding activities 2.16 describe the extent of their own authority, and to whom they should report in the event of problems that they cannot resolve			

Learner name: _____ Date: _____

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(*if sampled*)

Unit 29: Applying set-up reduction techniques

Unit reference number: D/600/5333

Level: 3

Credit value: 18

Guided learning hours: 58

Unit summary

This unit covers the skills and knowledge needed to prove the competences required for applying set-up reduction techniques. It involves applying the principles and processes of set-up reduction to a machine or process set-up, changeover, clean-down or turnaround activity that is a bottleneck or constraint which affects the process, such as capacity, flexibility, lead time, inventory or other business performance measure.

The learner will be expected to identify and confirm where the problems occur within the set-up process, and to determine where improvements can be made. The learner will need to set suitable quantifiable objectives and targets against which the improvements are to be made. The activities will require them to co-ordinate and carry out set-up reduction activities on different machines or processes, and to make improvements to the current set-up, which will include such things as reduced set-up time, improved safety, improved quality and improved work practice.

The learner will also be required to produce changes to standard operating procedures for the new set-up, which include 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 (eg cutting tools, clamps, hand tools, inspection equipment) and information required for a quick set-up, and its location (eg CNC programs, drawings and manufacturing instructions).

Assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Semta Assessment Strategy'. Detailed information is given in *Annexe D*.

Assessment methodology

Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
1 Apply set-up reduction techniques	1.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines 1.2 identify a machine or process set-up activity that is a bottleneck or constraint which affects productivity 1.3 co-ordinate and carry out the set-up reduction activity on the chosen machine or process, using the appropriate techniques 1.4 identify and confirm problems or conditions within the current set-up, where improvements can be made 1.5 define quantifiable objectives/targets for improvements to the chosen set-up 1.6 make 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			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	1.7 co-ordinate improvements to the current set-up, to meet the identified objectives and targets 1.8 produce changes to standard operating procedures (SOPs) or other approved documentation that will sustain the improvements made to the set-up requirements 1.9 identify and apply improvements to the new set-up, which covers 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 (eg, 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			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
2 Know how to apply set-up reduction techniques	2.1 describe the health and safety requirements of the area in which they are carrying out the set-up reduction activities 2.2 explain how a machine or process is selected for a set-up reduction activity 2.3 describe from whom authority is gained for the release of people and resources for the set-up reduction activity 2.4 describe the application of the Deming cycle (plan, do, check, act) 2.5 explain how to structure and run a set-up reduction activity 2.6 explain how improvements to the set-up can be achieved 2.7 explain how to evaluate improvement ideas and select those that will give most benefit for the least spend 2.8 explain how to set quantifiable targets and objectives for the improved set-up 2.9 explain how to correlate information to create or update standard operating procedures (SOPs) or other approved documentation for the revised set-up			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	2.10 explain how to distinguish between internal and external activities with reference to set-up 2.11 describe problem solving and the application of root cause analysis 2.12 describe the difference between 'motion' and 'work' 2.13 explain what constitutes a value adding and non-value adding activity 2.14 describe the extent of their own authority, and to whom they should report in the event of problems that they cannot resolve			

Learner name: _____ Date: _____

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(*if sampled*)

Unit 30: Applying total productive maintenance (TPM)

Unit reference number: T/600/5323

Level: 3

Credit value: 15

Guided learning hours: 54

Unit summary

This unit is a generic unit which covers the skills and knowledge needed to prove the competences required to apply total productive maintenance (TPM) principles to equipment and processes, and aims to prevent equipment problems by identifying potential causes rather than waiting for a problem to occur, and is intended for use in any context. It involves the measurement of the six classic hidden losses, assessment of potential and priorities for loss reduction. It covers the application of the TPM 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, the steps required to restore the equipment/process to good working order, and then to set a robust asset care regime to maintain this condition.

The learner will be required to apply the appropriate TPM techniques, and to use the data gathered on the resource to refine the working practices through the application of autonomous, condition based and planned maintenance. Working practice improvement will include cleaning and checking, early problem detection and process monitoring, and routine servicing. This will involve close working with both production and maintenance staff, and will include cross-shift implementation (if applicable to their organisation).

Assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Semta Assessment Strategy'. Detailed information is given in *Annexe D*.

Assessment methodology

Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
1 Apply total productive maintenance (TPM)	1.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines 1.2 select the appropriate asset on which to carry out the total productive maintenance activity 1.3 carry out the total productive maintenance process on at least two assets from the following: – plant and equipment – machines – office equipment – service equipment – utilities 1.4 obtain the necessary information to carry out the activity 1.5 carry out the total productive maintenance activity by applying the appropriate techniques			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	1.6 carry out the total productive 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 1.7 calculate and use the overall equipment effectiveness (OEE) measure and information to determine which elements of the OEE and their associated losses need improvement 1.8 collect information relating to all of the following: – load or demand – capacity – Takt time or bottleneck analysis 1.9 develop and use an action plan which will reduce/eliminate the losses, and hence improve the overall equipment effectiveness 1.10 implement improvements to working practices through the total productive maintenance activities			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	1.11 show improvements to working practices through three 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 1.12 carry out all of the following total productive maintenance activities: – autonomous maintenance (front line asset care) – condition based maintenance (predictive) – planned maintenance steps (fixed interval)			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
2 Know how to apply total productive maintenance (TPM)	2.1 describe the health and safety requirements of the area in which they are carrying out the total productive maintenance (TPM) activities 2.2 describe the principles of TPM, and how they can be applied in administration procedures, safety improvement and quality maintenance 2.3 explain how to select an asset on which to carry out the TPM activity (assets could be plant and equipment, machines, office equipment, service equipment, utilities) 2.4 explain how to implement a systematic and structured approach to carrying out autonomous, condition based and planned maintenance 2.5 describe the difference between a chronic and sporadic loss, and the countermeasures to both 2.6 explain how to calculate overall equipment effectiveness (OEE) 2.7 explain where to find the information required to calculate the OEE for the chosen asset 2.8 describe the benefits of having a total productive maintenance system 2.9 describe the importance of taking ownership of the TPM system, and the issues that can be expected to be resolved			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	2.10 describe the six major losses and how loss-reduction actions need to be prioritised 2.11 describe the use of standard operating procedures, single point lessons and machine/process start-up and shutdown procedures 2.12 explain how an awareness of the improvement activities will drive the implementation of the TPM activities (Kaizen and team working) 2.13 describe the critical processes and early problem detection steps 2.14 describe the loss areas and opportunities for improvement 2.15 describe the standards of wear, and the ability to stabilise the component life 2.16 describe the techniques of visual management used to communicate the information and results obtained by this process (including TPM activity boards and checklists) 2.17 describe the integration with workplace organisation and improving OEE 2.18 describe the contaminants and sources of contaminants 2.19 describe the extent of their own authority, and to whom they should report in the event of problems that they cannot resolve			

Learner name: _____ Date:_____

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(*if sampled*)

Unit 31: Applying flow process analysis

Unit reference number: R/600/5314

Level: 3

Credit value: 18

Guided learning hours: 58

Unit summary

This unit is a generic unit which covers the skills and knowledge needed to prove the competences required to apply flow process analysis and is intended for use in any context. It involves applying 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 identify and establish elements of waste and problems or conditions within the process where improvements can be made. The learner will need to evaluate and prioritise the opportunities for improvement, and to assist in this activity they will be required to produce a payback matrix.

The learner will also be expected to use the information gathered to define 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.

Assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Semta Assessment Strategy'. Detailed information is given in *Annexe D*.

Assessment methodology

Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
1 Apply flow process analysis	1.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines 1.2 co-ordinate and carry out the process flow analysis mapping activity within a given work area 1.3 produce a flow process analysis sheet 1.4 identify and record the opportunities for improvement within the process 1.5 evaluate the opportunities for improvement, and prioritise these using suitable criteria 1.6 analyse the data obtained into both: – non-value-added activity – value-added activity 1.7 define quantifiable objectives and targets for all the defined improvement activities 1.8 create and agree an action plan which: – eliminates non-value-added activity – simplifies value-added activity			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
2 Know how to apply flow process analysis	2.1 describe the health and safety requirements of the area in which they are carrying out the flow process analysis activities 2.2 describe a process in its elements/activities of work 2.3 describe the eight forms of waste within a lean working environment 2.4 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) 2.5 explain how to map out a process or deployment flowchart, using the recognised symbols 2.6 explain what are classed as value-added and non-value-added activities 2.7 explain how to establish which of the elements/activities in the process are value added or non-value added 2.8 explain how to identify opportunities for improvements to the process 2.9 explain how to use data to eliminate activities that do not add value to the process			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	2.10 explain how to construct an action plan that will simplify the value added activities and eliminate the non-value added activities 2.11 explain how to construct an action plan (such as payback matrix) 2.12 describe the extent of their own authority, and to whom they should report in the event of problems that they cannot resolve			

Learner name: _____ Date: _____

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Assessor signature: _____ Date: _____

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(*if sampled*)

Unit 32: Applying policy deployment (Hoshin Kanri, quality operating systems, business plan deployment)

Unit reference number: H/600/5334

Level: 3

Credit value: 13

Guided learning hours: 42

Unit summary

This unit covers the skills and knowledge needed to prove the competences required for applying Policy Deployment (Hoshin Kanri, quality operating systems, business plan deployment). It involves applying the principles and processes of business plan deployment in the learner's local area, and defining the area goals for the customer and the business they work in, to enable improvement opportunities and conditions to be identified which, when implemented, will deliver the local area policy deployment plan.

Typically, improvement opportunities will focus on such things as whether there is a local commitment to deliver the improvement plan, whether the policy deployment plan is communicated to everyone in the business, whether there are procedures for making all employees aware of and engaged in the local policy plan, whether there are local measures reflecting policy deployment plans, whether policy review dates are adhered to, whether there are procedures for eliminating cross-functional boundaries, and whether improvement actions are being linked to the policy deployment plan.

The learner will be required to create a visual communication of the plans, which must include the resources required, measures of performance, timescales for completion, review dates of each activity, assigned ownership and responsibility for each action, and the order of importance of each improvement activity.

Assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Semta Assessment Strategy'. Detailed information is given in *Annexe D*.

Assessment methodology

Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
1 Apply Policy Deployment (Hoshin Kanri, quality operating systems, business plan deployment)	1.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines 1.2 obtain the current policy deployment plan 1.3 carry out the policy deployment process in their local area and define the area goals 1.4 define the area goals for: – customers – the business in which they work 1.5 identify improvement opportunities and conditions which, when implemented, deliver the local area policy deployment plan 1.6 use at least four of the following criteria when identifying improvement opportunities: – is there local commitment to deliver the improvement plan? – is the plan communicated to everyone in the business? – are all employees aware of and engaged in the local policy plan? – do local measures reflect policy deployment plans?			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	– are policy review dates adhered to? – are cross-functional boundaries eliminated? – are improvement actions linked to the policy deployment plan? 1.7 produce quantifiable objectives and targets for all the defined improvement activities, with an appropriate measure and timescale for completion 1.8 produce and communicate the plan in an appropriate visual format 1.9 create a visual communication of the plans, which must include all of the following: – the resources required – measures of performance – timescales for completion – review dates of each activity – assigned ownership and responsibility for each action – the order of importance of each improvement activity			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
2 Know how to apply Policy Deployment (Hoshin Kanri, quality operating systems, business plan deployment)	2.1 describe the health and safety requirements of the work area in which they are carrying out the improvement activities 2.2 explain where to find the information required to develop a local policy deployment plan 2.3 explain how to create policy deployment plans 2.4 describe the techniques used to communicate the information and results obtained by this process 2.5 explain how to differentiate between their business vision, mission and main business drivers 2.6 describe the measures of performance in a lean business environment 2.7 describe the limits of their responsibility and involvement in the policy deployment planning process			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	2.8 describe the types of improvement activity that will drive the implementation of the business plan (eg management tools and techniques which contribute to quality, cost, delivery and responsiveness) 2.9 describe the meaning and application of the Deming cycle (plan, do, check, act) 2.10 describe the application of gap analysis (current situation versus desired situation) 2.11 describe the extent of their own authority, and to whom they should report in the event of problems that they cannot resolve			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 33: Applying value management (value engineering and value analysis)

Unit reference number: K/600/5335

Level: 3

Credit value: 15

Guided learning hours: 50

Unit summary

This unit covers the skills and knowledge needed to prove the competences required for applying value management (value engineering and value analysis). It involves applying the principles and processes of value management (VM) to the chosen product or process. The learner will be expected to identify what the customer requires from the product or the process, and to set quantifiable objectives and targets to achieve this. The learner will need to analyse the functions of the process, identify and allocate costs of each of these functions, and identify the added and non-value added activities within the process. The learner will also be expected to identify the most appropriate alternatives, carry out a risk assessment of the alternatives, prioritise and rank the alternatives, and identify the expected benefits. The learner will need to develop these alternatives into detailed proposals that will improve the value of the product or process, and to provide costing recommendations for management approval.

Assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Semta Assessment Strategy'. Detailed information is given in *Annexe D*.

Assessment methodology

Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
1 Apply value management (value engineering and value analysis)	1.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines 1.2 apply the principles and processes of value management (VM) to the chosen product or process 1.3 identify what the customer requires from the product or the process, and set quantifiable objectives and targets for the value management activity 1.4 analyse the functions of the product or process being studied, and allocate costs to those functions 1.5 produce a total cost model and supply chain map for the product or process, which shows how cost are related to function 1.6 identify the non-value-added activity within the product or process, and suggest alternatives			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	1.7 develop these alternatives into detailed proposals that will improve the value of the product or process 1.8 produce detailed proposals of the findings of the value management activities which: – identify the non-value-added activities and indicate alternatives – prioritise and rank the alternatives – include a risk assessment of the alternatives – identify the most appropriate alternatives – provide costing recommendations for management approval – identify expected benefits 1.9 identify the new value added process, and implement the plan within agreed timescales			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
2 Know how to apply value management (value engineering and value analysis)	2.1 describe the health and safety requirements of the work area in which they are carrying out the value management activities 2.2 explain how to select a product or process on which to carry out the value management activity 2.3 explain how to structure and run a value management activity 2.4 explain how to set quantifiable objectives and targets for the value management activity 2.5 explain how to carry out a function analysis 2.6 describe the performance related tools used to qualify customer wants and needs 2.7 describe the 'cost of function' equation, and how to calculate the cost of function 2.8 describe FAST diagramming and value trees 2.9 describe the decision making process and the use of creativity techniques (brainstorming)			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	2.10 explain how value management relates to the overall business strategy and competitive positioning 2.11 explain how to produce a total cost model and supply chain map for the product or process 2.12 explain what constitutes value-adding and non-value-adding activities 2.13 explain how to identify what a customer requires from a product or process 2.14 explain how to prioritise and rank the alternatives 2.15 explain how to complete a risk assessment of the alternatives 2.16 explain how to prepare the findings into proposals 2.17 explain how to monitor and track proposals to implementation 2.18 describe the extent of their own authority, and to whom they should report in the event of problems that they cannot resolve			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 34: Creating standard operating procedures (SOP)

Unit reference number: M/600/5336

Level: 3

Credit value: 12

Guided learning hours: 42

Unit summary

This unit covers the skills and knowledge needed to prove the competences required to create standard operating procedures (SOP) for work activities.

This will involve co-ordinating, analysing and documenting the information gathered from the method used when performing the operation/process. The learner will confirm what preparations are required from start to finish, the quality and safety standards to be maintained, and 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 ensure that those involved in performing the operation or process have the opportunity to contribute, and agree the method identified.

The learner will also be required to produce 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.

Assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Semta Assessment Strategy'. Detailed information is given in *Annexe D*.

Assessment methodology

Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
1 Create standard operating procedures (SOP)	1.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines 1.2 produce a standard operating procedure 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 1.3 produce 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			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	– 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 1.4 co-ordinate and analyse the gathering of information of the current operation or process to identify the optimum and safest method 1.5 confirm what tools, equipment, fixtures, documentation and standards are required 1.6 ensure that all operators performing the operation or process have the opportunity to contribute, and agree the method identified			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	1.7 produce standard operating procedures in an agreed format and monitor their use against the operation or process requirements 1.8 produce standard operating procedures that minimise all of the following: – time – effort – waste 1.9 supply standard operating procedures at their point of use, and store copies and master copies in accordance with company requirements 1.10 revise standard operating procedures, as appropriate, to ensure their effectiveness in the workplace 1.11 confirm that the method defined will meet quality, productivity, health, safety and environmental requirements			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
2 Know how to create standard operating procedures (SOP)	2.1 describe the health and safety requirements of the area for which they are creating standard operating procedures (SOP) 2.2 describe the various formats used in creating SOP 2.3 explain where to find the SOP document format to be used in their business 2.4 describe the information that will be required to create a SOP 2.5 explain how SOP are structured, and the importance of their use 2.6 describe the methods of communicating/facilitating to ensure that all the required information for the SOP is captured 2.7 describe the operation/process to be captured in the SOP			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	2.8 explain why SOP are the basis for quality and continuous improvement 2.9 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 2.10 explain how to simplify work done, eliminating waste and potential for human error 2.11 describe Takt time, and the relationship with achieving flow in a process 2.12 describe the extent of their own authority, and to whom they should report in the event of problems that they cannot resolve			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 35: Applying Six Sigma methodology to a project

Unit reference number: M/600/5305

Level: 3

Credit value: 18

Guided learning hours: 62

Unit summary

This unit covers the skills and knowledge needed to prove the competences required for applying a structured Six Sigma methodology to a project. It involves identifying 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 identify 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.

Assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Semta Assessment Strategy'. Detailed information is given in *Annexe D*.

Assessment methodology

Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
1 Apply Six Sigma methodology to a project	1.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines 1.2 apply the structured Six Sigma methodology and approach to the selected project 1.3 identify and participate in Six Sigma projects which cover two the following: – manufacturing – quality level – administration 1.4 utilise the five phases of Six Sigma within the project: – define – measure – analyse – improve – control			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	1.5 identify the Six Sigma organisational infrastructure, roles and responsibilities and business-specific metrics that would apply 1.6 produce a diagram (family tree) of the Six Sigma organisational infrastructure and the roles of: – Champion – Mentor – Yellow Belt – Green Belt – Black Belt – Master Black Belt 1.7 contribute to producing a metric chart for the Six Sigma projects undertaken, to include – financial – quality – process			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	1.8 identify areas where the Six Sigma tools, techniques and activities can be applied, and demonstrate the need to measure those factors that are critical to quality characteristic (CTQC) for the customer, business and process 1.9 identify the critical to quality characteristic (CTQC) of the projects, to include: – cost – quality – delivery 1.10 contribute to the identification of the cost of poor quality, by identifying the defects per million opportunities (DPMO) 1.11 relate defects per million opportunities to the sigma score, and identify the gap to Six Sigma performance			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
2 Know how to apply Six Sigma methodology to a project	2.1 describe the Six Sigma methodology, and how it is applied to a project 2.2 describe the Six Sigma infrastructure and philosophy 2.3 describe the benefits that will arise from a Six Sigma project 2.4 describe the 'parts per million opportunities' goal of Six Sigma 2.5 describe the calculation of defects per million opportunities (DPMO) 2.6 describe the five phases of Six Sigma that are applied to a project 2.7 explain how to define a critical to quality characteristic (CTQC) 2.8 explain how non-value added activity can serve as a roadblock for achieving zero defect 2.9 explain how to define an 'opportunity for defect'			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	2.10 describe the roles and responsibilities of the key players in the Six Sigma process (Champion, Mentor, Master Black Belt, Black Belt, Green Belt and Yellow Belt) 2.11 describe the relationship between key process input variables (KPIV) and key process output variables (KPOV) (using the equation Y=(f)x) 2.12 describe the extent of their own authority, and to whom they should report in the event of problems that they cannot resolve			

Learner name: _____ Date: _____

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Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 36: Carrying out Six Sigma process mapping

Unit reference number: F/600/5308

Level: 3

Credit value: 18

Guided learning hours: 58

Unit summary

This unit covers the skills and knowledge needed to prove the competences required for carrying out a Six Sigma process mapping activity. It requires the learner to select a suitable process on which to carry out the process mapping activity, and to identify the key stages that form the overall process under investigation. These would be the process input variables and the process output variables, and would include things which are controllable, critical, noise, and standard operating procedures.

The learner will be required to contribute to the construction of the process map for the Six Sigma project and to identify the value added and non-value added steps in the process. The learner will also need to consider the information gathered in the Six Sigma mapping activity, and to suggest areas where improvements can be made to the process as a result of the information gathered.

Assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Semta Assessment Strategy'. Detailed information is given in *Annexe D*.

Assessment methodology

Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
1 Carry out Six Sigma process mapping	1.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines 1.2 select a suitable process on which to carry out the process mapping activity 1.3 identify the key stages that form the overall process under investigation 1.4 collect the data necessary to construct the Six Sigma process map 1.5 carry out the construction of the process map for the Six Sigma project 1.6 produce a process map, which identifies: – the key process input variables – the key process output variables 1.7 classify 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			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	1.8 identify value added and non-value added steps in a process 1.9 identify improvements to the process as a result of the information gathered in the Six Sigma mapping activity 1.10 identify and add to the process map the specifications of both the: – key process input variables – key process output variables			
2 Know how to carry out Six Sigma process mapping	2.1 describe the health and safety requirements of the area in which they are carrying out the process mapping activity 2.2 describe the benefits of carrying out Six Sigma process mapping 2.3 explain what a Six Sigma process map is and how it is constructed 2.4 explain how the Six Sigma process map integrates within a Six Sigma project 2.5 explain what is meant by key process input variables (KPIVs) and key process output variables (KPOVs)			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	2.6 describe the data collection point for the key process input variables and key process output variables (such as gauges, forms and samples) 2.7 explain what the main types of key process input variables and key process output variables are in terms of being controllable, critical, noise, or standard operating procedures 2.8 explain who should create a Six Sigma process map 2.9 describe the difference between a value added activity and a non-value added activity 2.10 describe the roles and responsibilities of individuals within a process mapping team 2.11 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			

Learner name: _____ Date: _____

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(*if sampled*)

Unit 37: Applying basic statistical analysis

Unit reference number: F/600/5311

Level: 3

Credit value: 14

Guided learning hours: 36

Unit summary

This unit is a generic unit which covers the skills and knowledge needed to prove the competences required for applying basic statistical analysis, by consulting with the appropriate people and gathering the relevant data for statistical analysis on a Six Sigma project, and is intended for use in any context. The learner will need to use 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 record 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 produce an action plan as a result of the statistical and graphical analysis undertaken.

Assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Semta Assessment Strategy'. Detailed information is given in *Annexe D*.

Assessment methodology

Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
1 Apply basic statistical analysis	1.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines 1.2 consult with appropriate people and gather the relevant data for statistical analysis 1.3 produce data gathering forms or charts to gather information to enable statistical and graphical analysis to take place 1.4 record the collected data, utilising three of the following methods: – bar charts – histograms – Pareto diagrams – stem and leaf diagrams – box plots – time series charts 1.5 utilise statistical and graphical analysis on a Six Sigma project			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	1.6 produce descriptive statistics of data, to include all of the following: – mean – median – mode – standard deviation – range and variance 1.7 produce a normal distribution to assess a population from the representative sample 1.8 interpret the statistical data collected, in order to validate the pre-determined courses of action 1.9 produce an action plan as a result of the statistical and graphical analysis undertaken			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
2 Know how to apply basic statistical analysis	2.1 describe the health and safety requirements of the area in which they are collecting data 2.2 describe the meaning of 'variation', how this can be detected with statistics, and how this variation can affect a process 2.3 describe the number of data points needed to draw a statistically valid conclusion 2.4 explain why we need to use basic statistics 2.5 describe the meaning of the terms 'population' and 'sample' when applied to basic statistics 2.6 describe distribution curves and the properties of a normal curve 2.7 explain how to create and use charts and diagrams (such as histograms, box plots, time series charts, Pareto diagrams, stem and leaf diagrams) 2.8 explain how to calculate mean, median, mode, standard deviation, range and variance 2.9 describe the difference between descriptive and inferential statistics 2.10 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			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

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Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 38: Applying failure modes and effects analysis (FMEA)

Unit reference number: J/600/5312

Level: 3

Credit value: 13

Guided learning hours: 42

Unit summary

This unit is a generic unit which covers the skills and knowledge needed to prove the competences required for applying failure modes and effects analysis (FMEA) and is intended for use in any context. It involves applying the principles and processes of FMEA and determining 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 determine the key features of FMEA, co-ordinating and recording the information gathered in an appropriate format, and to make 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, the learner will need to reassess the activity and re-score severity, occurrence and detection.

Assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Semta Assessment Strategy'. Detailed information is given in *Annexe D*.

Assessment methodology

Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
1 Apply failure modes and effects analysis (FMEA)	1.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines 1.2 determine the key features of failure modes and effects analysis required for the activity under investigation 1.3 carry out a failure modes and effects analysis on two of the following: – concept – product – design – process – system – machine 1.4 identify, for the activities analysed: – the potential failure modes – the potential effects from failure modes – the potential causes of failure modes 1.5 co-ordinate and produce a failure modes and effects analysis			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	1.6 record the information gathered in an appropriate format 1.7 identify and score all of the following: – the likely occurrence of a potential failure modes – the severity of the potential failure modes – the likelihood of detection of the potential failure modes 1.8 make valid judgements about the activity using failure modes and effects analysis principles 1.9 calculate risk priority numbers (RPNs), identify high RPNs, and develop actions to improve them 1.10 establish rating tables for all of the following: – occurrence – severity – detection 1.11 reassess a failure modes and effects analysis once actions have been completed, and re-score severity, occurrence and detection			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
2	Know how to apply failure modes and effects analysis (FMEA)	2.1	describe the health and safety requirements of the area in which they are conducting the failure modes and effects analysis			
		2.2	describe the main features and benefits of carrying out a failure modes and effects analysis			
		2.3	explain who should be part of a team that constructs and updates a failure modes and effects analysis			
		2.4	describe System FMEA, Concept FMEA, Design FMEA and Process FMEA - what they are, and where they should use them			
		2.5	describe the meaning of failure mode, failure effect and failure cause			
		2.6	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			
		2.7	explain how to calculate a risk priority number (RPN)			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	2.8 explain how to use the risk priority numbers 2.9 explain how to apply a structured approach to risk reduction 2.10 explain when to start a failure modes and effects analysis 2.11 explain when to update a failure modes and effects analysis 2.12 describe the roles and responsibilities of individuals within a failure modes and effects analysis team 2.13 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			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 39: Applying mistake/error proofing (Poka Yoke)

Unit reference number: H/600/5317

Level: 3

Credit value: 13

Guided learning hours: 42

Unit summary

This unit is a generic unit which covers the skills and knowledge needed to prove the competences required for applying mistake/error proofing (Poka Yoke), which is a method of making an activity 'foolproof', and is intended for use in any context. It involves applying the principles and procedures of mistake/error proofing to the chosen activity, to enable worksheets to be produced for the activity that identify the problem, evaluate any actions to be taken, and 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 conduct trials on the suggested improvements, which will include determining their effectiveness, cost and complexity.

Assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Semta Assessment Strategy'. Detailed information is given in *Annexe D*.

Assessment methodology

Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
1 Apply mistake/error proofing (Poka Yoke)	1.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines 1.2 use information and data to select and confirm a suitable process on which to carry out mistake/error proofing activity 1.3 apply the mistake/error proofing process to the chosen activity 1.4 use appropriate techniques to analyse the data received, and draw valid conclusions 1.5 evaluate recommendations and produce worksheets for the activity that identify the problem and actions to be taken 1.6 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			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	1.7 determine suitable solutions, and conduct agreed trials to measure the effectiveness of the solution 1.8 identify the merits of suitable solutions and determine their: – effectiveness – cost – complexity 1.9 confirm and co-ordinate the implementation of the optimum solution 1.10 measure and document the results 1.11 identify the benefits of mistake/error proofing in terms of: – improved quality/compliance (such as ISO9001) – reduced costs – delivery or service			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
2 Know how to apply mistake/error proofing (Poka Yoke)	2.1 explain how to define a mistake/error proofing activity, and the benefits of carrying this out 2.2 describe the difference and benefits between mistake/error proofing and prevention and detection 2.3 describe the selection criteria used to determine a suitable product or process on which to carry out the mistake/error proofing activity 2.4 explain how mistake/error proofing can lead to zero defects 2.5 describe the relationship between errors and defects 2.6 describe the different types and range of mistakes 2.7 explain how defects originate in products or processes 2.8 explain how the role of source inspection contributes to the reduction of defects 2.9 describe the application of mistake/error proofing (Poka Yoke) tools (such as 'cause and effect', and the 5 'why's) 2.10 describe the type of mistake/error proofing documentation, and the information it should contain			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	2.11 describe the analysis and charting methodology used for mistake/error proofing 2.12 describe the financial implications of mistake/error proofing projects 2.13 describe the relationship between mistake/error proofing and other continuous improvement processes (such as workplace organisation 5S/5C, quick changeovers, cellular manufacturing, total productive maintenance, structured problem solving and visual management) 2.14 explain how to undertake trials and measure the effectiveness of mistake/error proofing projects 2.15 describe the different types and range of mistake proofing devices used 2.16 describe the roles and responsibilities of individuals within a mistake/error proofing team (including facilitator, timekeeper, scribe) 2.17 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			

Learner name: _____ Date: _____

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Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 40: Carrying out statistical process control (SPC) procedures

Unit reference number: A/600/5307

Level: 3

Credit value: 12

Guided learning hours: 35

Unit summary

This unit covers the skills and knowledge needed to prove the competences required for carrying out statistical process control (SPC) procedures. It involves applying the principles and processes of SPC to a selected process, and gathers all the necessary data for analysis, in consultation with relevant people. The learner will be expected to apply statistical process control, 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 perform basic statistical process control, identifying special cause versus common cause. The learner will also be expected to identify activities which will improve the process performance, and to produce an action plan to implement the improvements. Calculation of the capability of the process will focus on identifying Cp and Cpk.

Assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Semta Assessment Strategy'. Detailed information is given in *Annexe D*.

Assessment methodology

Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
1 Carry out statistical process control (SPC) procedures	1.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines 1.2 work to, and comply with all the required process monitoring documentation and work instruction sheets 1.3 select and/or confirm the process on which the process analysis is to be carried out 1.4 consult with relevant people and gather all the necessary data for analysis 1.5 apply the principles and processes of statistical process control to the chosen process 1.6 perform basic statistical process control, using appropriate tools and techniques 1.7 utilise statistical and graphical methods to represent the process conditions 1.8 calculate the capability of the process, identifying: – Cp – Cpk			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	1.9 produce charts for process and control information, to include three from: – simple run charts – tally charts – bar charts – histograms – box plots – time series charts – Pareto diagrams – stem and leaf plots – run charts 1.10 identify activities which will improve the process performance 1.11 contribute to the production of an action plan to implement the improvements			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
2	Know how to carry out statistical process control (SPC) procedures	2.1	describe the health and safety requirements of the area in which they are carrying out the process control activities			
		2.2	explain where process control fits within a continuous improvement environment			
		2.3	explain how process performance affects customer satisfaction and process costs			
		2.4	explain where and why statistical process control is used, the benefits, and how it is applied			
		2.5	describe the importance of standardisation within a process operation, and why process performance can only be determined when it is controlled			
		2.6	explain how process control can improve process performance			
		2.7	describe the benefits of prevention and detection			
		2.8	describe the two types of variation within a process (common cause, special cause), and the impact they have within the process			
		2.9	explain how to gather data and effectively analyse it; how the data can be used to communicate abnormalities within a process			
		2.10	describe the main types of control charts used for SPC, their features and benefits, and how to construct and implement them			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	2.11 describe the meaning of a 'population' and a 'sample' 2.12 describe the measurements of central tendency and variability, and how they are calculated 2.13 describe the properties of a normal curve of distribution 2.14 explain how to create charts or diagrams (such as run charts, histograms, box plots, time series charts, Pareto diagrams, and stem and leaf plots) 2.15 explain the terms and calculate mean, median, mode, standard deviation, range and variance 2.16 explain and calculate process capability (Cp and Cpk) 2.17 describe the extent of their own authority, and to whom they should report in the event of problems that they cannot resolve			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 41: Applying Six Sigma metrics to a project

Unit reference number: L/600/5313

Level: 3

Credit value: 13

Guided learning hours: 42

Unit summary

This unit covers the skills and knowledge needed to prove the competences required for applying Six Sigma metrics to products and processes. It involves consulting with appropriate personnel and gathering all the necessary data to produce a metric graph. The learner will need to apply Six Sigma metrics to monitor the process and justify improvements, applying both primary and secondary metrics for the Six Sigma project. The learner will be expected to use the data collected and the graph produced to identify where improvements can be made, and to prepare an action plan that will bring about the improvements.

Assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Semta Assessment Strategy'. Detailed information is given in *Annexe D*.

Assessment methodology

Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
1 Apply Six Sigma metrics to a project	1.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines 1.2 carry out Six Sigma metrics activities on both: – products – processes 1.3 consult with appropriate personnel and gather the necessary data to produce a metric graph 1.4 for the selected activity, apply Six Sigma metrics to monitor the process and justify improvements 1.5 calculate, for each of the activities covered: – defects per million opportunities – defects per unit – rolled through put yield (Yrt) – the sigma score 1.6 calculate metrics, which are: – long-term – short-term – variable or attribute			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	1.7 apply both primary and secondary metrics for the Six Sigma project 1.8 where appropriate, transform variable data to attribute data 1.9 use the data collected to complete a primary metric graph 1.10 use the graph produced to identify where improvements to metrics can be made 1.11 prepare an action plan that will bring about the improvements			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
2 Know how to apply Six Sigma metrics to a project	2.1 describe the health and safety requirements of the area in which they are conducting the Six Sigma metrics activity 2.2 describe the main features and benefits of carrying out a Six Sigma metrics activity 2.3 describe the importance of using metrics to drive a Six Sigma project 2.4 explain how to calculate defects per million opportunities, defects per unit and rolled throughput yield 2.5 explain how to utilise Z tables to calculate the sigma score 2.6 describe the time period necessary to calculate a meaningful baseline 2.7 explain how to set realistic objectives and targets for the Six Sigma metrics activity 2.8 explain how to gather the data required for inclusion in a metric chart 2.9 explain how to construct a Six Sigma metric chart			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	2.10 describe the relationship between 'parts per million', 'defects per million opportunities', Yrt and the sigma score 2.11 describe the difference between variable and attribute data 2.12 explain why it is advantageous to transform attribute data into variable data 2.13 explain how to transform attribute data into variable data 2.14 describe the significance of the 1.5S shift, and how it can be utilised to infer long-term metric values 2.15 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			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 42: Producing a characteristic selection matrix

Unit reference number: H/600/5320

Level: 3

Credit value: 13

Guided learning hours: 42

Unit summary

This unit covers the skills and knowledge needed to prove the competences required for producing a characteristic selection matrix. It involves working with the customer to score the customer requirements, and applying a characteristic selection matrix to the Six Sigma project to create greater customer satisfaction.

The learner will need to collect the necessary data and, by completing the five-step process, produce a characteristic selection matrix for the chosen activity. This will require them to list the customer key process output variables, score them, list the key process input variables that impact them, numerically rate the interaction between these input and output variables, and use ranking to prioritise future team focus. The learner will then be expected to use this information to identify activities in the process where improvements can be made.

Assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Semta Assessment Strategy'. Detailed information is given in *Annexe D*.

Assessment methodology

Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
1 Produce a characteristic selection matrix	1.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines 1.2 work with the customer to score the customer requirements, and apply a characteristic selection matrix to the Six Sigma project 1.3 produce a characteristic selection matrix for two of the following: – concept – product – design – process – system – machine			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	1.4 complete the five-step process for generating a characteristic selection matrix: – list the customer key process output variables – score the key process output variables – list the key process input variables that impact the customer key process output variables – numerically rate the interaction between key process input variables and customer key process output variables – use ranking to prioritise future team focus 1.5 collect all the required data necessary to create the matrix 1.6 produce a characteristic selection matrix for the chosen activity 1.7 use the characteristic selection matrix produced to generate scoring parameters for: – customers – team members 1.8 use the matrix produced to identify activities in the process where improvements can be made 1.9 prepare an action plan that will bring about the improvements			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
2 Know how to produce a characteristic selection matrix	2.1 describe the health and safety requirements of the area in which they are carrying out the characteristic selection matrix activity 2.2 describe a characteristic selection matrix; why we need to produce them; who should create them 2.3 explain how to generate a characteristic selection matrix using the five-step process 2.4 describe the meaning of the term 'customer' when producing a characteristic selection matrix 2.5 explain how to identify key process output variables and key process input variables 2.6 where the characteristic selection matrix appears in the quality function deployment matrix 2.7 describe the inter-relationship between a characteristic selection matrix and a failure modes and effects analysis			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	2.8 describe the inter-relationship between Six Sigma process mapping and a characteristic selection matrix 2.9 explain how to score a characteristic selection matrix 2.10 explain how a process map links into a characteristic selection matrix 2.11 explain how to utilise the results of a characteristic selection matrix 2.12 explain how to prioritise a Six Sigma project team's focus 2.13 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			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 43: Carrying out measurement systems analysis (MSA)

Unit reference number: J/600/5326

Level: 3

Credit value: 13

Guided learning hours: 42

Unit summary

This unit covers the skills and knowledge needed to prove the competences required for carrying out measurement systems analysis (MSA). It involves selecting an appropriate measurement system on which to carry out the analysis, and obtaining all the necessary data in order to carry out the measurement systems analysis. The learner will be expected to apply 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, 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 carry out the analysis using the appropriate techniques, and to record the results of the analysis in the appropriate format. From this information, they will need to determine the percentage gauge repeatability and reproducibility of the measurement system under study, and to produce a detail report suggesting ways in which the measurement system might be improved.

Assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Semta Assessment Strategy'. Detailed information is given in *Annexe D*.

Assessment methodology

Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
1 Carry out measurement systems analysis (MSA)	1.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines 1.2 select an appropriate measurement system on which to carry out the analysis 1.3 carry out a measurement system analysis, which includes three 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 study 1.4 obtain all the necessary data in order to carry out the measurement systems analysis 1.5 carry out the analysis, using the appropriate techniques			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	1.6 determine the type of measurement system variation, to include two of the following: – bias – linearity – stability – accuracy – repeatability – reproducibility 1.7 record the results of the analysis in the appropriate format 1.8 determine the percentage gauge repeatability and reproducibility of the measurement system under study, and suggest ways of improving the measurement system 1.9 produce a measurement systems analysis report, detailing ways of improving the measurement system under study			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
2 Know how to carry out measurement systems analysis (MSA)	2.1 describe the health and safety requirements of the area in which they are carrying out the measurement systems analysis 2.2 explain why measurement systems should be studied 2.3 explain how to select a measurement system for analysis 2.4 describe the possible sources of measurement systems variation 2.5 describe the use of measurement systems analysis, and how it can be used in a Six Sigma improvement project 2.6 explain how to conduct a variable and a attribute repeatability and reproducibility study 2.7 describe the terminology used in measurement system analysis (such as bias, linearity, stability, accuracy, repeatability, discrimination, resolution, reproducibility)			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	2.8 explain how to conduct a measurement systems analysis study 2.9 explain how to calculate gauge repeatability and reproducibility 2.10 explain how to calculate gauge precision and tolerance 2.11 explain the industry rules for repeatability and reproducibility results 2.12 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			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 44: Carrying out capability studies

Unit reference number: R/600/5331

Level: 3

Credit value: 18

Guided learning hours: 58

Unit summary

This unit is a generic unit which covers the skills and knowledge needed to prove the competences required for carrying out capability studies and is intended for use in any context. It involves obtaining all the necessary data in order to carry out the study analysis, and determining the appropriate sample size using statistically based techniques. From the study, the learner will be required to produce statistical information, which will include calculating mean, mode, median, standard deviation, range, variance, and the capability indices Cp and Cpk for the process. The learner will also need to calculate the sigma score (Z) from the Cpk, and the parts per million outside upper and lower specification limits for the processes studied, for both the long and short term.

The learner will be expected to analyse the information gained, and to identify activities which will improve the process capability. The learner will also need to present their findings in a process capability report, highlighting the improvements to be made and the actions to be taken.

Assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Semta Assessment Strategy'. Detailed information is given in *Annexe D*.

Assessment methodology

Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
1 Carry out capability studies	1.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines 1.2 carry out a capability study, which covers both: – the short term – the long term 1.3 obtain all the necessary data in order to carry out the capability study analysis 1.4 determine the appropriate sample size, using statistically based techniques 1.5 determine whether rational sub-grouping is appropriate 1.6 carry out the process capability study and produce relevant statistics 1.7 calculate the following statistics: – mean – median – mode – standard deviation – range – variance			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	1.8 calculate the following from the above statistics: – the capability indices Cp and Cpk for the process – the sigma score (Z) from the Cpk – the parts per million outside upper and lower specification limits for the processes studied 1.9 produce a histogram to represent the Cp and Cpk graphically 1.10 analyse the information gained and identify activities to improve the process capability 1.11 produce a process capability report, highlighting the improvements to be made and the actions to be taken			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
2 Know how to carry out capability studies	2.1 describe the health and safety requirements of the area in which they are carrying out the capability studies 2.2 explain why we need to assess process capability, and how this affects a Six Sigma project 2.3 describe the meaning of the term 'sigma score' (Z) 2.4 explain how to calculate the sigma score (Z) and use this to estimate the percentage outside of specification 2.5 explain Cp and Cpk, and how they are calculated 2.6 explain how to calculate long-term capability from short term data 2.7 describe the number of samples needed for a statistically valid short-term capability study 2.8 describe the meaning of a 'population' and a 'sample' 2.9 explain how to select appropriate sample sizes 2.10 explain how to calculate parts per million 2.11 explain how to calculate mean, median, mode, standard deviation, range, and variance 2.12 explain how to perform rational sub-grouping 2.13 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			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 45: Producing multi-variance charts

Unit reference number: Y/600/5332

Level: 3

Credit value: 13

Guided learning hours: 42

Unit summary

This unit covers the skills and knowledge needed to prove the competences required for producing multi-variance charts. It involves selecting a suitable activity on which to carry out the multi-variance charting process, consulting with the appropriate people and gathering the relevant data necessary for the analysis. The learner will be required to use the data collected to produce a data demographics form for the process and, subsequently, a multi-variance chart showing within part variation, piece-to-piece variation and time-to-time variation. The learner will need to record and display the information as bar charts, histograms, Pareto diagrams, stem and leaf diagrams, box plots and time series charts. The learner will also be expected to produce a report of the activity highlighting the opportunities for improvement and an action plan, which makes recommendations of how they can be implemented.

Assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Semta Assessment Strategy'. Detailed information is given in *Annexe D*.

Assessment methodology

Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
1 Produce multi-variance charts	1.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines 1.2 produce multi-variance charts for two of the following: – concept – product – design – process – system – machine 1.3 select a suitable activity on which to carry out the multi-variance charting process 1.4 consult with the appropriate people and gather the relevant data necessary for the multi-variance charting analysis 1.5 record the collected data, utilising at least three of the following techniques: – bar charts – histograms – Pareto diagrams – stem and leaf diagrams			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	– box plots – time series charts 1.6 produce a data demographics form for the selected activity 1.7 use the data demographics form to produce a multi-variance chart, showing: – within-part variation – piece-to-piece variation – time-to-time variation 1.8 produce a multi-variance chart on the activity selected 1.9 identify opportunities for improvement from the multi-variance chart 1.10 create an action plan that minimises variation, and make recommendations of how the improvements can be implemented			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
2 Know how to produce multi-variance charts	2.1 describe the health and safety requirements of the area in which they are gathering the data for a multi-variance chart activity 2.2 explain the need to carry out multi-variance charting, and the benefits to be gained from this activity 2.3 explain how to construct a data demographics form and a multi-variance chart 2.4 explain how to assess the chart for within-piece variation, piece-to-piece variation and time-to-time variation 2.5 describe the amount of data required to draw statistically valid conclusions from the chart 2.6 explain how to draw further conclusions (by utilising such tools as bar charts, box plots, histograms, stem and leaf diagrams, Pareto diagrams and time series charts) 2.7 describe the benefits of multi-variance analysis with respect to design of experiments (DOE) 2.8 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			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 46: Applying hypothesis testing

Unit reference number: Y/600/5301

Level: 3

Credit value: 13

Guided learning hours: 42

Unit summary

This unit is a generic unit which covers the skills and knowledge needed to prove the competences required for applying hypothesis testing and is intended for use in any context. It involves calculating the correct sample size to ensure the statistical validity of the hypothesis test, and producing a suitable sampling plan to reduce systematic errors. The tests should be conducted on a variable or process in a Six Sigma project, where the actual statistics from data collected is compared with the calculated statistics, so that a decision can be reached as to which hypothesis is true. Typically tests that can be carried out could be F-Test, Chi-Square test, normality tests, T-test, Levene's test, Bartlett's test, contingency table, one-way ANOVA (analysis of variation). The learner will be required to produce a hypothesis test report on the variable or process studied.

Assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Semta Assessment Strategy'. Detailed information is given in *Annexe D*.

Assessment methodology

Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
1 Apply hypothesis testing	1.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines 1.2 utilise sample size selection to ensure the statistical validity of a hypothesis test, and calculate the correct sample size required for the test 1.3 produce a suitable sampling plan to reduce systematic errors 1.4 conduct a hypothesis test on a variable or process in a Six Sigma project 1.5 determine the correct statistic from one of the following: – F-test – Chi-Square test – normality tests – T-test – Levene's test – Bartlett's test – contingency table – one-way ANOVA			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
	1.6 calculate the actual statistic from data collected 1.7 determine for a hypothesis test: – the Delta/Sigma ratio – the Alpha risk – the Beta risk 1.8 use the appropriate test to compare the calculated statistic against actual statistic, and decide which hypothesis is true 1.9 determine the following: – null hypothesis – alternative hypothesis – test statistic 1.10 produce a hypothesis test report on the variable or process studied			

Learning outcomes	Assessment criteria	Evidence type	Portfolio reference	Date
2 Know how to apply hypothesis testing	2.1 explain the need and use of hypothesis testing, and how this benefits a Six Sigma improvement project 2.2 explain the need to identify a suitable sample size 2.3 explain how to calculate a suitable sample size 2.4 describe the meaning of Alpha risk, Beta risk and Delta/Sigma ratio 2.5 describe the meaning of 'practical difference' and 'statistical difference' 2.6 explain how to conduct a hypothesis test 2.7 explain how to calculate test statistics such as mean, median, mode, standard deviation, range and variance 2.8 describe the meaning of a 'population' and a 'sample' 2.9 describe the meaning of 'null hypothesis' 2.10 describe the meaning of 'alternate hypothesis' 2.11 explain how to determine the correct statistic from the following: F-test, Chi-Square test, normality tests, T-test, Levene's test, Bartlett's test, contingency tables, one way ANOVA 2.12 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			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)

Further information

To get in touch with us visit our 'Contact us' pages:

- Edexcel, BTEC and Pearson Work Based Learning contact details: qualifications.pearson.com/en/support/contact-us.html
- books, software and online resources for UK schools and colleges: www.pearsonschoolsandfecolleges.co.uk

Key publications

- *Adjustments for candidates with disabilities and learning difficulties, Access and Arrangements and Reasonable Adjustments, General and Vocational qualifications* (Joint Council for Qualifications (JCQ))
- *Supplementary guidance for reasonable adjustments and special consideration in vocational internally assessed units* (Pearson)
- *General and Vocational qualifications, Suspected Malpractice in Examination and Assessments: Policies and Procedures* (JCQ)
- *Equality Policy* (Pearson)
- *Recognition of Prior Learning Policy and Process* (Pearson)
- *UK Information Manual* (Pearson)
- *Pearson Edexcel NVQs, SVQs and competence-based qualifications – Delivery Requirements and Quality Assurance Guidance* (Pearson)

All of these publications are available on our website: qualifications.pearson.com

Further information and publications on the delivery and quality assurance of NVQ/Competence-based qualifications are available at our website on the Delivering BTEC pages. Our publications catalogue lists all the material available to support our qualifications. To access the catalogue and order publications, please go to the resources page of our website.

How to obtain National Occupational Standards

Semta (Head Office)
14 Upton Road
Watford
WD18 0JT

Telephone: 01923 238441
Fax: 01923 256086
Email: customerservices@semta.org.uk

Professional development and training

Pearson supports UK and international customers with training related to NVQ and BTEC qualifications. This support is available through a choice of training options offered in our published training directory or through customised training at your centre.

The support we offer focuses on a range of issues including:

- planning for the delivery of a new programme
- planning for assessment and grading
- developing effective assignments
- building your team and teamwork skills
- developing student-centred learning and teaching approaches
- building functional skills into your programme
- building effective and efficient quality assurance systems.

The national programme of training we offer can be viewed on our website (qualifications.pearson.com). You can request customised training through the website or by contacting one of our advisers in the Training from the Pearson team via Customer Services to discuss your training needs.

The training we provide:

- is active
- is designed to be supportive and thought provoking
- builds on best practice
- may be suitable for those seeking evidence for their continuing professional development.

Annexe A: Quality assurance

Key principles of quality assurance

- A centre delivering Pearson qualifications must be a Pearson recognised centre and must have approval for qualifications that it is offering.
- The centre agrees as part of gaining recognition to abide by specific terms and conditions around the effective delivery and quality assurance of assessment; the centre must abide by these conditions throughout the period of delivery.
- Pearson makes available to approved centres a range of materials and opportunities to exemplify the processes required for effective assessment and provide examples of effective standards. Approved centres must use the guidance on assessment to ensure that staff who are delivering Pearson qualifications are applying consistent standards.
- An approved centre must follow agreed protocols for: standardisation of assessors; planning, monitoring and recording of assessment processes; internal verification and recording of internal verification processes; and for dealing with special circumstances, appeals and malpractice.

Quality assurance processes

The approach to quality assured assessment is made through a partnership between a recognised centre and Pearson. Pearson is committed to ensuring that it follows best practice and employs appropriate technology to support quality assurance process where practicable. Therefore, the specific arrangements for working with centres will vary. Pearson seeks to ensure that the quality assurance processes that it uses do not place undue bureaucratic processes on centres and works to support centres in providing robust quality assurance processes.

The learning outcomes and assessment criteria in each unit within this specification set out the standard to be achieved by each learner in order to gain each qualification. Pearson operates a quality assurance process, which is designed to ensure that these standards are maintained by all assessors and verifiers.

For the purposes of quality assurance all individual qualifications and units are considered as a whole. Centres offering these qualifications must be committed to ensuring the quality of the units and qualifications they offer, through effective standardisation of assessors and internal verification of assessor decisions. Centre quality assurance and assessment processes are monitored by Pearson.

The Pearson quality assurance processes will involve:

- gaining centre recognition and qualification approval if a centre is not currently approved to offer Pearson qualifications
- annual visits to centres by Pearson for quality review and development of overarching processes and quality standards. Quality review and development visits will be conducted by a Pearson quality development reviewer
- annual visits by occupationally competent and qualified Pearson Standards Verifiers for sampling of internal verification and assessor decisions for the occupational sector
- the provision of support, advice and guidance towards the achievement of National Occupational Standards.

Centres are required to declare their commitment to ensuring quality and appropriate opportunities for learners that lead to valid and accurate assessment outcomes. In addition, centres will commit to undertaking defined training and online standardisation activities.

Annexe B: Centre certification and registration

Pearson Standards Verifiers will provide support, advice and guidance to centres to achieve Direct Claims Status (DCS). Pearson will maintain the integrity of Pearson NVQs through ensuring that the awarding of these qualifications is secure. Where there are quality issues identified in the delivery of programmes, Pearson will exercise the right to:

- direct centres to take actions
- limit or suspend certification
- suspend registration.

The approach of Pearson in such circumstances is to work with the centre to overcome the problems identified. If additional training is required, Pearson will aim to secure the appropriate expertise to provide this.

What are the access arrangements and special considerations for the qualifications in this specification?

Centres are required to recruit learners to Pearson qualifications with integrity.

Appropriate steps should be taken to assess each applicant's potential and a professional judgement made about their ability to successfully complete the programme of study and achieve the qualification. This assessment will need to take account of the support available to the learner within the centre during their programme of study and any specific support that might be necessary to allow the learner to access the assessment for the qualification. Centres should consult Pearson's policy on learners with particular requirements.

Pearson's policy on access arrangements and special considerations for Pearson qualifications aims to enhance access to the qualifications for learners with disabilities and other difficulties (as defined by the 2010 Equality Act) without compromising the assessment of skills, knowledge, understanding or competence. Please refer to *Access Arrangements and Special Considerations for BTEC and Pearson NVQ Qualifications* for further details. qualifications.pearson.com.

Annexe C: Additional requirements for qualifications that use the title NVQ within the QCF

Contents

Purpose of document

1 The purpose of this document is to make clear what additional requirements are needed to assess and quality assure qualifications that use the title NVQ within the QCF.

2 When an SSC/SSB and awarding organisation wants to use the title NVQ in the naming of a qualification within the QCF, the awarding organisation is required to make sure this qualification is assessed and quality assured in accordance with these additional requirements and other requirements described in the SSC/SSB assessment strategy.

3 The aims of these additional requirements are to:

- ensure that all competence based qualifications that use the title NVQ within the QCF are:
  - assessed consistently
  - quality assured consistently
- maintain the integrity of qualifications that use the title NVQ within the QCF
- establish the NVQ brand within the QCF
- keep bureaucracy associated with assessment and quality assurance of qualifications that use the title NVQ within the QCF to a minimum.

Background

4 [1]"At the heart of an NVQ is the concept of occupational competence; the ability to perform to the standards required in employment across a range of circumstances and to meet changing demands. NVQs are first and foremost about what people can do. They go beyond technical skills to include planning, problem solving, dealing with unexpected occurrences, working with other people and applying the knowledge and understanding that underpins overall competence".

5 NVQs are based entirely on National Occupational Standards (NOS) developed by an SSC/SSB, which describe the competence needed in an occupational role.

6 Qualifications that use the title NVQ within the QCF must comply with the rules of combination determined by the SSC/SSB. Awarding organisations are not allowed to develop another qualification that does not use the title NVQ within the QCF, if it uses the same rules of combination as a qualification that does use the title NVQ within the QCF.

7 The QCF offers increased flexibility in the way occupational competence can be assessed and demonstrated. Qualifications that use the title NVQ in the title within the QCF are just one way of assessing and demonstrating occupational competence. SSCs/SSBs are free to work with their awarding organisations to agree what qualifications will be used to assess occupational competence. Qualifications that use the title NVQ within the QCF, are not a preferred method for assessing occupational competence and all qualifications accredited through the QCF have equal status.

8 When developing a qualification for the QCF, including qualifications that use the title NVQ within the QCF, an awarding organisation must be a recognised awarding organisation and must meet the Qualification Requirements in the Regulatory Arrangements for the Qualifications and Credit Framework, published by The Office of the Qualifications and Examinations Regulator (Ofqual) in August 2008.

9 The qualification regulators confirmed that a group of SSCs and SSBs would be free to develop specific, additional requirements about the way in which qualifications that use the title NVQ within the QCF will be assessed and quality assured. For those recognised awarding organisations that want to assess occupational competence through the use of qualifications that use the title NVQ within the QCF, it has been agreed by SSCs and SSBs that the following additional requirements must be met.

[1] NCVQ's NVQ Criteria and Guidance 1995.

Additional requirements for qualifications that use the title NVQ within the QCF

Introduction

10 Qualifications that use the title NVQ within the QCF must be assessed and quality assured in accordance with the following additional requirements.

Assessment requirements

11 When a qualification uses the title NVQ within the QCF, awarding organisations are required to make sure their recognised assessment centres understand how learners are to be assessed.

12 Assessment methodologies must meet the assessment strategy developed in partnership between the relevant SSC or SSB and awarding organisations for the qualification. The assessment strategy must be published and made available separately and will include the requirements for assessment of qualifications that use the title NVQ within the QCF. The assessment criteria for each unit will be part of the units that make up the qualification.

13 Learners must complete real work activities in order to produce evidence to demonstrate they have met the NOS and are occupationally competent.

14 When a learner cannot complete a real work activity, simulation is allowed.

15 Simulation is allowed when:

- a learner is required to complete a work activity that does not occur on a regular basis and therefore opportunities to complete a particular work activity do not easily arise
- a learner is required to respond to a situation that rarely occurs, such as responding to an emergency situation
- the safety of a learner, other individuals and/or resources will be put at risk.

16 When simulation is used, assessors must be confident that the simulation replicates the workplace to such an extent that learners will be able to fully transfer their occupational competence to the workplace and real situations.

17 Units that must not be assessed by simulation must be identified by the SSC/SSB in the assessment strategy for the qualification or family of qualifications.

18 Learners must be assessed by assessors:

- who are occupationally competent in the occupational areas they are assessing where they have sufficient and relevant technical/occupational competence in the unit, at or above the level of the unit being assessed and as defined by the assessment strategy for that qualification
- [2]who must hold or be working towards a suitable assessor qualification to confirm they understand assessment and how to assess learners
- must be fully conversant with the unit(s) against which the assessments and verification are to be undertaken.

19 All assessors must carry out assessment to the standards specified in the A units.

20 All assessment decisions made by a trainee assessor must be checked by a qualified assessor or an assessor recognised by an awarding organisation.

21 Trainee assessors must have a plan, which is overseen by the recognised assessment centre, to achieve the relevant assessor qualification(s) within an agreed timescale.

Quality assurance requirements

22 When a qualification uses the title NVQ within the QCF, awarding organisations are required to make sure their recognised assessment centres understand how the qualification will be quality assured.

23 Qualifications that use the title NVQ within the QCF, must be verified:

- internally by an internal verifier, who is accountable to the assessment centre
- externally by an external verifier, who is accountable to the awarding organisation or an agent of the awarding organisation.

24 With reference to internal verification, internal verifiers must:

- [3]hold or be working towards a suitable internal verifier qualification to confirm they understand how to internally verify assessments
- have sufficient and relevant technical/occupational familiarity in the unit(s) being verified
- be fully conversant with the standards and assessment criteria in the units to be assessed
- understand the awarding organisation's quality assurance systems and requirements for this qualification.

25 Trainee internal verifiers must have a plan, which is overseen by the recognised assessment centre, to achieve the internal verifier qualification within an agreed timescale.

[2] NCVQ's NVQ Criteria and Guidance 1995.

[3] NCVQ's NVQ Criteria and Guidance 1995.

26 With reference to external verification, external verifiers must:

- [4]hold or be working towards a suitable external verification qualification to confirm they understand and are able to carry out external verification
- have no connections with the assessment centre, in order to maintain objectivity
- have sufficient and relevant technical/occupational understanding in the unit(s) being verified
- be fully conversant with the standards and performance criteria in the units to be assessed
- understand the awarding organisation's quality assurance systems for this qualification.

27 Trainee external verifiers must have a plan, which is overseen by the awarding organisation, to achieve the external verifier qualification within an agreed timescale.

28 Awarding organisations must decide the frequency of external monitoring activities. Any decision must be based on:

- the risks associated with a qualification that is designed to help a learner demonstrate occupational competence
- an evaluation of the centre's performance and past record.

29 Awarding organisations will have in place suitably constituted audit processes, which are supported by naturally occurring quality assurance and monitoring systems that already exist in workplace assessment environments.

[4] NCVQ's NVQ Criteria and Guidance 1995.

Business - Improvement Techniques (B-IT)

NVQ Level 2 and 3

QCF Unit Assessment Strategy

Version 3. 19 April 2010

Contents

Introduction

[Semta], the Sector Skills Council for the Science Engineering Manufacturing Technologies Sector, has produced this QCF Unit Assessment Strategy to:

- assist Assessors, Internal Verifiers and External Verifiers
- encourage and promote consistent assessment of B-IT NVQ units
- promote cost effective assessment plans

This document also provides definitions for:

- the scope of activities and the characteristics of typical learners undertaking B-IT NVQ units at level 2 and/or 3
- the qualifications and experience required for Assessors and Verifiers
- the assessment environment and notes on simulation/replication.
- access to units

and requirements relating to:

- carrying out assessments
- performance evidence
- assessing knowledge and understanding

The importance and value in which employers and learners place on undertaking B-IT NVQ units will provide a key measure of [Semta's] success with this unit assessment strategy. Another key success factor will be [Semta's] partnership with the relevant Awarding Bodies/Organisations and the relevant SSC Academies.

Learners undertaking Level 2 and/or Level 3 QCF NVQ units

The Business-Improvement Techniques NVQ units at Level 2 have been designed for those learners who are making a contribution to the identification and implementation of business improvements such as:

- 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

The Business-Improvement Techniques NVQ units at Level 3 have been designed for those learners who will be applying business improvement activities where they are:

- employed as supervisors, team leaders or facilitators and are responsible for carrying out business improvement activities
- people who through Continuous Professional Development are being prepared to take on staff responsibilities in a Business Improvement environment

Assessor requirements

Assessor requirements to demonstrate effective assessment practice

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

Assessor technical requirements

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

Knowledge and understanding

To ensure workplace assessors have the required knowledge and understanding to assess B-IT NVQ units of competence they must have successfully completed a diagnostic assessment of their current knowledge and understanding of B-IT tools and techniques. Following the diagnostic the assessor must undertake a programme of learning against any gaps identified by the diagnostic assessment. The assessor will be required to repeat the process of assess, train and assess until they have achieved the level of knowledge and understanding required (see *annexe 1* for information on the diagnostic assessment requirements and existing SSC Academies that currently offer an approved B-IT diagnostic and training programme to meet these requirements).

Occupational competence

In order to demonstrate Occupational competence assessors must achieve the B-IT NVQ Level 3 qualification in order to assess learners undertaking Level 2 and/or Level 3 B-IT NVQ units. Assessors will only have to achieve the B-IT NVQ Level 2 qualification if they are only going to assess Level 2 learners.

Note: Assessors that already hold an N/SVQ Level 2 and/or 3 in B-IT will not be required to undertake the knowledge and understanding diagnostic assessment

To allow development of the Assessor network to achieve this requirement the following timetable will be implemented for current and new Assessors:

Current B-IT Assessors

- Within 6 months of the operational start date of the B-IT NVQ Level 2 QCF qualification all current and active B-IT Assessors will have to have achieved the knowledge and understanding requirement as detailed in *annexe 1.*
- Within a 12 month period of completing the knowledge requirement B-IT Assessors must have achieved the B-IT NVQ level 2 or 3 qualification with the relevant Awarding Organisation to be able to carry out assessment of the B-IT NVQ units.

New B-IT Assessors

Where new B-IT Assessors join the assessment network post the operational start date of the B-IT NVQ Level 2 QCF qualification they will need to meet the following requirements:

- Within 6 months of registering with an Awarding Body/Organisation to be a B-IT Assessor they will have to have met the knowledge and understanding requirements as detailed in *annexe 1.*
- Within a 12 month period of completing the knowledge and understanding requirement, B-IT Assessors must have achieved the B-IT NVQ level 2 or 3 qualification with the relevant Awarding Organisation to be able to carry out assessment of the B-IT NVQ units.

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 QA process.

Verifier requirements

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

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

Verifiers, both Internal and External, will also be expected to be fully conversant with the terminology used in the 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 relevant Awarding Body's/Organisation's documentation and system and procedures within which the assessment and verification is taking place.

Specific technical requirements for internal and external verifiers

Internal and External Verifiers of this qualification 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.

The tables on the following page show the recommended levels of technical competence for Assessors, Internal Verifiers, and External Verifiers.

Technical requirements for assessors and verifiers

Position	Prime activity requirements	Support activity requirements	Technical requirements (see notes)
Internal Verifier	Verification Skills	Assessment Knowledge	Technical *understanding* of the areas covered by the qualifications
External Verifier	Verification skills	Assessment Understanding	Technical *awareness* of the areas covered by the qualifications

Notes

1 Technical competence is defined here as a combination of practical skills, knowledge, and the ability to apply both of these, in familiar and new situations, within a real working environment.

2 Technical understanding is defined here as having a good understanding of the technical activities being assessed, together with knowledge of relevant health & safety implications and requirements of the assessments.

3 Technical awareness is defined here as a general overview of the subject area, sufficient to ensure that assessment and portfolio evidence are reliable, and that relevant health and safety requirements have been complied with.

4 The competence required by the Assessor, Internal Verifier and External Verifier, in the occupational area being assessed, is likely to exist at three levels as indicated by the shaded zones in the following table.

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

Assessment environment

The evidence put forward by the learner B-IT NVQ units can only be regarded valid, reliable, sufficient and authentic if demonstrated in a real working environment, where work activities or work outcomes assessed are the learners own work/contribution and provides evidence of improvements to the business eg Quality, Cost and Delivery, etc. As with all aspects of assessment, assessors must obtain agreement with internal and/or external verifiers before assessing any learners and determine what constitutes acceptable performance evidence.

Assessment using **Simulation or replication** of the working environment is **only** acceptable in the following units

Unit: 1: Complying with Statutory Regulations and Organisational Safety Requirements

Performance Statement 3 in relation to:

- Following organisational procedures in the event of fire.
- Following organisational procedures for the evacuation of premises.
- Identifying procedures to be followed in the event of dangerous occurrences or
- Hazardous malfunctions.

Performance statement 5

Use correct manual lifting and carrying techniques.

Performance evidence must be the main form of evidence gathered to prove learner competence and MUST come from the working environment.

Simulation of any form will ONLY be regarded as a means for providing Underpinning Knowledge for B-IT qualifications apart for the area identified in Unit 1.

Access to assessment

There are no entry qualifications or age limits required by learners to undertake the B-IT NVQ units unless this is a legal requirement of the process or the environment. Assessment is open to any learner who has the potential to achieve the assessment criteria set out in the units.

Aids or appliances, which are designed to alleviate disability, may be used during assessment, providing they do not compromise the standard required.

Carrying out assessment

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

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

Assessment of individual NVQ units

It should be noted that whilst unit certification is acceptable it is unlikely that the achievement of individual units will lead to the implementation of sustainable business improvements in quality, cost and delivery targets

Due to the nature of the B-IT units and their direct relationship to overall business performance, Semta recommends that: the achievement of groups of units such as the qualification and pathway mandatory units set out in the relevant Rules of Combination for a level 2 and/or level 3 Diploma would as a minimum provide evidence to support sustainable improvement activities within organisations.

Performance evidence requirements

Performance evidence must be the main form of evidence gathered. In order to demonstrate consistent competent performance for a unit, a minimum of three different examples of performance of the unit activity will be required. Items of performance evidence often contain features that apply to more than one unit, and can be used as evidence in any unit where they are suitable.

Performance evidence must be:

- products of the learners' work, such as items that have been produced or worked on, plans, charts, reports, standard operating procedures, documents produced as part of a work activity, records or photographs of the completed activity

together with:

- evidence of the way the learners carried out the activities, such as witness testimonies, assessor observations or authenticated learner reports of the activity undertaken.

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

If there is any doubt as to what constitutes suitable evidence the internal/external verifier should be consulted.

Assessing knowledge and understanding

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

Knowledge and understanding can be demonstrated in a number of different ways. Semta expects oral questioning and practical demonstrations to be used, as these are considered the most appropriate for this qualification. Assessors should ask enough questions to make sure that the learner has an appropriate level of knowledge and understanding, as required by the unit. Awarding Bodies/Organisations may choose other methods, which must be supported by a suitable rationale.

Witness testimony

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

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

Additional Notes:

- It is recognised that some Awarding Bodies provide supplementary guidance and documentation to centres to support the quality of assessment and verification practice of N/SVQs.

Annexe 1 Knowledge and understanding diagnostic assessment requirements for assessors

As previous stated there are a number of existing SSC Academies that currently offer an approved B-IT diagnostic tool. These organisations are also able to offer a wide range of training programmes to develop assessors to enable them to meet the required levels of knowledge and understanding.

The SScs are Semta, Cogent, Improve and Proskills

Developing alternative knowledge and understanding diagnostic tools

Other organisations may develop and submit an alternative B-IT assessor diagnostic tool to Semta to put forward to the employer led B-IT NOS and qualification steering group for approval. Organisations wishing to take forward this option must ensure that they are able to meet both the diagnostic tool and organisational requirements set out below

1 The knowledge and understanding diagnostic must be based on the knowledge statements set out in the following B-IT Suite 3 National Occupational Standards

   a For the process improvement pathway

      Unit 03: Applying workplace organisation techniques

      Unit 04: Applying continuous improvement techniques (Kaizen)

      Unit 05: Developing visual management systems

      Plus one of the following:

      Unit 06: Creating flexible production and manpower systems

      Unit 07: Carrying out problem solving activities

   b For the quality improvement pathway

      Unit 17: Applying six sigma methodology to a project

      Unit 18: Carrying out six sigma process mapping

      Unit 19: Applying basic statistical analysis

      Unit 20: Applying failure modes and effects analysis (FMEA)

2 The diagnostic tool must be based on a multiple choice question paper (developed in line with best practice models and/or qualification regulators guidance documentation)

3 Use either the best answer or the correct answer format.

   a best answer format refers to a list of options that can all be correct in the sense that each has an advantage, but one of them is the best.

   b correct answer format refers to one and only one right answer.

4 Assessors must achieve an 80% pass mark for each of the units undertaken in the diagnostic assessment

5 The diagnostic tool should be made available electronically with an automatic marking system

6 The cycle of assess train, assess, must be continued until the assessors achieve the 80% pass mark for each unit

Organisational requirements

7 Submitting organisation must be able to demonstrate they have the capacity and capability to be able to develop and deliver training packages to train to the gaps identified following the diagnostic assessment (the training programme could be delivered through partnership working with other organisations)

8 Identify the persons responsible and accountable administering the diagnostic assessment, analysing the results and approving an assessor to carryout assessment in the workplace.

9 Demonstrate that there is a clear distinction between the roles specified above with procedures that set out how the organisation will manage any potential conflicts of interest

10 Keep secure records of the diagnostic assessments completed by assessors.

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