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Pearson Edexcel Level 3 NVQ Diploma in Automotive Clay Modelling (QCF)

Specification

NVQ/Competence-based qualification

First registration July 2014

Edexcel, BTEC and LCCI qualifications

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

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Contents

Purpose of this specification

This specification sets out:

- the objectives of the qualification
- any other qualification that a learner must have completed before taking the qualification
- any prior knowledge, skills or understanding which the learner is required to have before taking the qualification
- the combination of units that a learner must have completed before the qualification will be awarded and any pathways
- any other requirements that a learner must have satisfied before they will be assessed or before the qualification will be awarded
- the knowledge, skills and understanding that will be assessed as part of the qualification
- the method of any assessment and any associated requirements relating to it
- the criteria against which a learner's level of attainment will be measured (such as assessment criteria)
- assessment requirements and/or evidence requirements required as specified by the relevant Sector Skills Council/Standards Setting Body
- assessment requirements/strategy as published by the relevant Sector Skills Council/Standards Setting Body
- the Apprenticeship Framework in which the qualification is included, where appropriate.

1 Introducing Pearson Edexcel NVQ/Competence-based qualifications

What are NVQ/Competence-based qualifications?

National Vocational Qualifications (NVQs) or Competence-based qualifications reflect the skills and knowledge needed to do a job effectively. They are work-based qualifications that give learners the opportunity to demonstrate their competence in the area of work or job role to which the qualification relates.

NVQs/Competence-based qualifications are outcomes-based with no fixed learning programme, allowing flexibility in their delivery to meet the individual learner's needs. The qualifications are based on the National Occupational Standards (NOS) for the sector, which define what employees, or potential employees, must be able to do and know, and how well they should undertake work tasks and work roles.

Most NVQ/Competence-based qualifications form the competence component of Apprenticeship Frameworks. 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.

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.

There are three sizes of NVQ/Competence-based qualification in the QCF:

- Award (1 to 12 credits)
- Certificate (13 to 36 credits)
- Diploma (37 credits and above).

Every unit and qualification in the QCF has a credit value.

The credit value of a unit specifies the number of credits that will be awarded to a learner who has met the learning outcomes of the unit.

The credit value of a unit is based on:

- one credit for those learning outcomes achievable in 10 hours of learning
- learning time – defined as the time taken by learners at the level of the unit, on average, to complete the learning outcomes of the unit to the standard determined by the assessment criteria.

2 Qualification summary and key information

Qualification title	Pearson Edexcel Level 3 NVQ Diploma in Automotive Clay Modelling (QCF)
QCF Qualification Number (QN)	601/3565/7
Qualification framework	Qualifications and Credit Framework (QCF)
Regulation start date	01/07/2014
Operational start date	01/07/2014
Approved age ranges	16-18 19+
Credit value	115
Assessment	Portfolio of Evidence (internal assessment)
Guided learning hours	573-588
Grading information	The qualification and units are graded pass/fail.
Entry requirements	No prior knowledge, understanding, skills or qualifications are required before learners register for this qualification. However, centres must follow the Pearson Access and Recruitment policy (see *Section 9, Access and Recruitment*).
Funding	For details on funding availability, please check the Learning Aims Reference Service (LARS), which replaces the Learning Aim Reference Application (LARA).

QCF qualification number and qualification title

Centres will need to use the QCF Qualification Number (QN) when they seek public funding for their learners. As well as a QN, each unit within a qualification has a QCF unit reference number (URN).

The qualification title, unit titles and QN will appear on each learner's final certificate. Centres should tell learners this when recruiting them and registering them with Pearson. There is more information about certification in the *Edexcel Information Manual,* available on our website: www.edexcel.com

Qualification objectives

The Pearson Edexcel Level 3 NVQ Diploma in Automotive Clay Modelling (QCF) is for learners who work in, or want to work, in the automotive industry.

It gives learners the opportunity to:

- demonstrate competence as an automotive clay modeller within the automotive industry
- develop knowledge and skills related to the specified job roles in the automotive industry
- have existing skills recognised
- achieve a nationally-recognised Level 3 qualification
- develop their own personal growth and engagement in learning.

Relationship with previous qualifications

This is a new qualification.

Apprenticeships

Semta include the Pearson Edexcel Level 3 NVQ Diploma in Automotive Clay Modelling (QCF) as the competence component for the Advanced Apprenticeship in Automotive Clay Modelling.

Progression opportunities

Learners who achieve the Pearson Edexcel Level 3 NVQ Diploma in Automotive Clay Modelling (QCF) can progress to the Pearson BTEC Level 3 Diploma in Automotive Clay Modelling (QCF).

Industry support and recognition

This qualification is supported by Semta, the Sector Skills Council for Engineering.

Relationship with National Occupational Standards

This qualification is based on the National Occupational Standards (NOS) in Engineering, which were set and designed by Semta, the Sector Skills Council for Engineering.

3 Qualification structure

Pearson Edexcel Level 3 NVQ Diploma in Automotive Clay Modelling (QCF)

The learner will need to meet the requirements outlined in the table below before the qualification can be awarded

Minimum number of credits that must be achieved	115
Minimum number of credits that must be achieved at Level 3 or above	77
Number of mandatory credits that must be achieved	79
Number of optional credits that must be achieved: A minimum of 28 credits from Optional Group A plus a minimum of 8 credits from Optional Group B	36

Unit	Unit reference number	Mandatory units Learners must achieve all 9 units from this group for a total of 79 credits	Level	Credit	Guided learning hours
1	A/601/5013	Complying with Statutory Regulations and Organisational Safety Requirements	2	5	35
2	Y/601/5102	Using and Interpreting Engineering Data and Documentation	2	5	25
3	K/601/5055	Working Efficiently and Effectively in Engineering	3	5	25
4	J/503/9949	Business Solutions through Creative Thinking	3	6	30
5	T/601/6452	Collaborate in a Creative Process	3	3	18
6	T/506/1719	Clay Armature Construction in Automotive Design	3	10	60
7	K/506/1720	Developing Surfaces in Automotive Clay Modelling	3	20	90
8	M/506/1721	Sketch Modelling in Automotive Design	3	20	90
9	T/506/1722	Rapid Prototyping in Automotive Design	3	5	30

Unit	Unit reference number	Optional Group A units Learners must achieve a minimum of 28 credits from this group	Level	Credit	Guided learning hours
10	A/506/1723	Preparing for Fabrication Work in Experimental Vehicle Engineering	3	10	50
11	F/506/1724	Producing Fabricated Structural Components for Experimental Vehicle Engineering	3	14	94
12	F/504/6348	Producing Mechanical Engineering Drawings using a CAD System	2	11	61
13	J/504/6349	Producing Components Using Hand Fitting Techniques	2	14	64
14	F/504/6379	Preparing and Proving CNC Machine Tool Programs	2	14	64
15	D/504/1013	Verify New Product Designs using a Physical Model	4	16	56
16	D/601/6459	Create 3D Models Using a Computer Aided Design System	3	4	24

Unit	Unit reference number	Optional Group B units Learners must achieve a minimum of 8 credits from this group	Level	Credit	Guided learning hours
17	F/601/6485	Research a Design Concept	3	4	24
18	F/601/6518	Write a Design Brief	3	2	12
19	T/601/6483	Interpret a Design Brief and Follow the Design Process	3	4	24
20	R/601/6507	Understand the Concept and Techniques Used in Branding	3	3	18
21	Y/601/6511	Understand Market Research	3	3	18
22	M/601/2528	Develop a Presentation	3	3	15
23	T/601/2529	Deliver a Presentation	3	3	15
24	L/503/9354	Understanding Costs and Budgets in an Organisation	3	1	7
25	T/601/6502	The History and Social Impact of Creativity and its Influence on Design	3	3	18
26	L/601/6490	Research and Evaluate the Nature of Design in a Specific Industry Context	3	3	18
27	J/601/2549	Contribute to Running a Project	3	5	30
28	T/601/6449	Articulate, Present and Debate Ideas in a Creative Environment	3	3	18
29	T/505/1160	Manage Own Time and Efficiency	3	3	24

4 Assessment

This qualification is assessed through an externally verified Portfolio of Evidence that consists of evidence gathered during the course of the learner's work.

To achieve a pass for the full qualification, the learner must achieve all the required units in the stated qualification structure. Each unit has specified learning outcomes and assessment criteria. To pass each unit the learner must:

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

The learner must have an assessment record that identifies the assessment criteria that have been met, and it should be cross-referenced to the evidence provided. The assessment record should include details of the type of evidence and the date of assessment. The unit specification or suitable centre documentation can be used to form an assessment record.

It is important that the evidence provided to meet the assessment criteria of the unit and learning outcomes 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.

Learners can provide evidence of occupational competence 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 programme, whether at or away from the workplace. The evidence provided must meet the requirements of Semta's, the Sector Skills Council, assessment requirements/strategy.
- 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 development. They must submit sufficient, reliable, authentic and valid evidence for assessment. Evidence submitted based on RPL should provide confidence that the same level of skill/understanding/knowledge exists at the time of claim as existed at the time the evidence was produced. RPL is acceptable for accrediting a unit, several units, or a whole qualification.
- Further guidance is available in the policy document *Recognition of Prior Learning Policy*, available on the Edexcel website.
- a **combination** of these.

Assessment requirements/strategy

The assessment requirements/strategy for this qualification has been included in *Annexe B*. It sets out the overarching assessment principles and the framework for assessing the qualification to ensure that it remains valid and reliable. It has been developed by Semta in partnership with employers, training providers, awarding organisations and the regulatory authorities.

Types of evidence

To achieve a unit, the learner must gather evidence that shows that they have met the required standard specified in the assessment criteria as well as the requirements of the Semta assessment requirements/strategy. As stated in the assessment strategy, the evidence for this qualification can take a variety of forms as indicated below:

- direct observation of the learner's performance by their assessor (O)
- outcomes from oral or written questioning (Q&A)
- products of the learner's work (P)
- personal statements and/or reflective accounts (RA)
- outcomes from simulation (S)
- professional discussion (PD)
- assignment, project/case studies (A)
- authentic statements/witness testimony (WT)
- expert witness testimony (EWT)
- evidence of Recognition of Prior Learning (RPL).

Learners can use the abbreviations for cross-referencing purposes in their portfolios.

Learners can also use one piece of evidence to prove their knowledge, skills and understanding across different assessment criteria and/or across different units. It is not necessary for learners to have each assessment criterion assessed separately. They should be encouraged to reference evidence to the relevant assessment criteria. Evidence must be available to the assessor, internal verifier and Pearson standards verifier.

Any specific evidence requirements for individual units are stated in the unit introduction for the units in *Section 11*.

There is further guidance about assessment on our website. Please see *Section 12* for details.

Credit transfer

Credit transfer describes the process of using a credit or credits awarded in the context of a different qualification or awarded by a different awarding organisation towards the achievement requirements of another qualification. All awarding organisations recognise the credits awarded by all other awarding organisations that operate within the QCF.

If learners achieve credits with other awarding organisations, they do not need to retake any assessment for the same units. The centre must keep evidence of unit achievement.

5 Centre resource requirements

As part of the approval process, centres must make sure that the resource requirements below are in place before offering the qualification.

General resource requirements

- Centres must have the appropriate physical resources to support both the delivery and assessment of the qualification. For example, a workplace in line with industry standards, or a Realistic Working Environment (RWE), where permitted, as specified in the assessment requirements/strategy for the sector, equipment, IT, learning materials, teaching rooms.
- Where permitted, RWE must offer the same conditions as the normal day-to-day working environment, with a similar range of demands, pressures and requirements for cost-effective working.
- Centres must meet any specific human and physical resource requirements outlined in the assessment requirements/strategy in *Annexe A*. Staff assessing learners must meet the occupational competence requirements within the overarching assessment requirements/strategy for the sector. There must be systems in place to ensure the continuing professional development for staff delivering the qualification.
- Centres must have appropriate health and safety policies, procedures and practices in place for the delivery of the qualification.
- Centres must deliver the qualification in accordance with current equality legislation. For further details on Pearson's commitment to the Equality Act 2010, please see *Section 9, Access and recruitment* and *Section 10, Access to qualifications for learners with disabilities or specific needs*. For full details on the Equality Act 2010, please go to the Home Office website, www.gov.uk/government/organisations/home-office

Specific resource requirements

Many units have specific resource requirements that centres must meet. See the details in the *Essential Resources* section of the unit.

6 Centre recognition and approval

Centre recognition

Centres that have not previously offered Pearson Edexcel accredited vocational qualifications need to apply for, and be granted, centre recognition and approval as part of the process for approval to offer individual qualifications.

Existing centres will be given 'automatic approval' for a new qualification if they are already approved for a qualification that is being replaced by a new qualification and the conditions for automatic approval are met.

Guidance on seeking approval to deliver Pearson Edexcel vocational qualifications is available at www.pearsonwbl.edexcel.com/qualifications-approval.

Approvals agreement

All centres are required to enter into an approval agreement, which is a formal commitment by the head or principal of a centre, to meet all the requirements of the specification and any associated codes, Conditions 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.

7 Quality assurance of centres

Quality assurance is at the heart of vocational qualifications. Centres will internally assess NVQs/Competence-based qualifications using internal quality assurance procedures to ensure standardisation of assessment across all learners. Pearson uses external quality assurance procedures to check that all centres are working to national standards. It gives us the opportunity to identify and provide support, if needed, to safeguard certification. It also allows us to recognise and support good practice.

For the qualifications in this specification, the Pearson quality assurance model is as described below.

Centres offering Pearson Edexcel NVQs/Competence-based qualifications will usually receive two standards verification visits per year (a total of two days per year). The exact frequency and duration of standards verifier visits must reflect the centre's performance, taking account of the number:

- of assessment sites
- and throughput of learners
- and turnover of assessors
- and turnover of internal verifiers.

For centres offering a full Pearson BTEC Apprenticeship (i.e. all elements of the Apprenticeship are delivered with Pearson through registration of learners on a Pearson BTEC Apprenticeship framework) a single standards verifier will be allocated to verify all elements of the Pearson BTEC Apprenticeship programme. If a centre is also offering stand-alone NVQs/Competence-based qualifications in the same sector as a full Pearson BTEC Apprenticeship, the same standards verifier will be allocated.

In order for certification to be released, confirmation is required that the National Occupational Standards (NOS) for assessment, verification and for the specific occupational sector are being consistently met.

Centres are required to declare their commitment to ensuring quality and to providing appropriate opportunities for learners that lead to valid and accurate assessment outcomes.

For further details, please go to the UK NVQ Quality Assurance Centre Handbook and the *Edexcel NVQs, SVQs and competence-based qualifications – Delivery Requirements and Quality Assurance Guidance* on our website, at www.pearsonwbl.edexcel.com/NVQ-competence-based.

8 Programme delivery

Centres are free to offer the qualifications using any mode of delivery (for example full-time, part-time, evening only, distance learning,) that meets learners' needs. However, centres must make sure that learners have access to the resources identified in the specification and to the sector specialists delivering and assessing the units. Centres must have due regard to Pearson's policies that may apply to different modes of delivery.

Those planning the programme should aim to address the occupational nature of the qualification by:

- engaging with learners, initially, through planned induction, and subsequently through the involvement of learners in planning for assessment opportunities
- using naturally occurring workplace activities and products to present evidence for assessment against the requirements of the qualification
- developing a holistic approach to assessment by matching evidence to different assessment criteria, learning outcomes and units, as appropriate, thereby reducing the assessment burden on learners and assessors
- taking advantage of suitable digital methods to capture evidence.

9 Access and recruitment

Pearson's policy regarding access to its qualifications is that:

- they should be available to everyone who is capable of reaching the required standards
- they should be free from any barriers that restrict access and progression
- there should be equal opportunities for all wishing to access the qualifications.

Centres must ensure that their learner recruitment process is conducted with integrity. This includes ensuring that applicants have appropriate information and advice about the qualification to ensure that it will meet their needs.

Centres should review applicants' prior qualifications and/or experience, considering whether this profile shows that they have the potential to achieve the qualification.

For learners with disabilities and specific needs, this review will need to take account of the support available to them during the delivery and assessment of the qualification. The review must take account of the information and guidance in *Section 10, Access to qualifications for learners with disabilities or specific needs*.

10 Access to qualifications for learners with disabilities or specific needs

Equality and fairness are central to our work. Pearson's Equality Policy requires that all learners should have equal opportunity to access our qualifications and assessments and that our qualifications are awarded in a way that is fair to every learner.

We are committed to making sure that:

- learners with a protected characteristic (as defined by the Equality Act 2010) are not, when they are undertaking one of our qualifications, disadvantaged in comparison to learners who do not share that characteristic
- all learners achieve the recognition they deserve from undertaking a qualification and that this achievement can be compared fairly to the achievement of their peers.

Learners taking a qualification can be assessed in British sign language or Irish sign language where it is permitted for the purpose of reasonable adjustments.

Further information regarding Access Arrangements can be found in the Joint Council for Qualifications (JCQ) document *Access Arrangements, Reasonable Adjustments and Special Consideration for General and Vocational qualifications*. Further details on how to make adjustments for learners with protected characteristics are given in the *Supplementary Guidance for Reasonable Adjustment and Special Consideration in Vocational Internally Assessed Units*.

These documents are available on our website, at www.edexcel.com/Policies

11 Unit format

Each unit has the following sections.

Unit title

The unit title is on the QCF and this form of words will appear on the learner's Notification of Performance (NOP).

Unit reference number

Each unit is assigned a unit reference number that appears with the unit title on the Register of Regulated Qualifications.

QCF level

All units and qualifications within the QCF have a level assigned to them. There are nine levels of achievement, from Entry to Level 8. The QCF Level Descriptors inform the allocation of the level.

Credit value

All units have a credit value. When a learner achieves a unit, they gain the specified number of credits. The minimum credit value is 1 and credits can be awarded in whole numbers only.

Guided learning hours

Guided learning hours are the times when a tutor, trainer or facilitator is present to give specific guidance towards the learning aim for a programme. This definition includes workplace guidance to support the development of practical job-related skills, tutorials and supervised study in, for example, open learning centres and learning workshops. It also includes the time spent by staff assessing learners' achievements, for example in the assessment of competence for NVQs/Competence-based qualifications.

Unit aim

This gives a summary of what the unit aims to do.

Unit assessment requirements/evidence requirements

The SSC/B set the assessment/evidence requirements. Learners must provide evidence according to each of the requirements stated in this section.

Learning outcomes

The learning outcomes of a unit set out what a learner knows, understands or is able to do as the result of a process of learning.

Assessment criteria

The assessment criteria specify the standard required by the learner to achieve the learning outcome.

Unit 1: Complying with Statutory Regulations and Organisational Safety Requirements

Unit reference number: A/601/5013

QCF level: 2

Credit value: 5

Guided learning hours: 35

Unit aim

The purpose of this unit is to ensure the learner is able to comply with statutory regulations and organisational safety requirements within their own area of work.

Unit assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Common Requirements for National Vocational Qualifications (NVQ) in the QCF', which can be found in *Annexe A*.

Semta has published additional assessment requirements. Please refer to the Engineering NVQ QCF Unit Assessment Strategy in *Annexe B*.

Learning outcomes and assessment criteria

To pass this unit, the learner needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria determine the standard required to achieve the unit.

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			
		1.4	Follow organisational accident and emergency procedures			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		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			
		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			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		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			
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			
		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			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		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: Using and Interpreting Engineering Data and Documentation

Unit reference number: Y/601/5102

QCF level: 2

Credit value: 5

Guided learning hours: 25

Unit aim

The purpose of this unit is to ensure the learner is able to source engineering data and documentation and can use this information to ensure that work output meets the specification.

Unit assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Common Requirements for National Vocational Qualifications (NVQ) in the QCF', which can be found in *Annexe A*.

Semta has published additional assessment requirements. Please refer to the Engineering NVQ QCF Unit Assessment Strategy in *Annexe B*.

Learning outcomes and assessment criteria

To pass this unit, the learner needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria determine the standard required to achieve the unit.

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Use and interpret engineering data and documentation	1.1	Use the approved source to obtain the required data and documentation			
		1.2	Use the data and documentation and carry out all of the following: • check the currency and validity of the data and documentation used • exercise care and control over the documents at all times • correctly extract all necessary data in order to carry out the required tasks • seek out additional information where there are gaps or deficiencies in the information obtained • deal with or report any problems found with the data and documentation • make valid decisions based on the evaluation of the engineering information extracted from the documents • return all documents to the approved location on completion of the work • complete all necessary work-related documentation such as production documentation, installation documentation, maintenance documentation, planning documentation			
		1.3	Correctly identify, interpret and extract the required information			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		1.4	Extract information that includes three of the following: • materials or components required • dimensions • tolerances • build quality • installation requirements • customer requirements • timescales • financial information • operating parameters • surface texture requirements • location/orientation of parts • process or treatments required • dismantling/assembly sequence • inspection/testing requirements • number/volumes required • repair/service methods • method of manufacture • weld type and size • operations required			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
			• connections to be made • surface finish required • shape or profiles • fault-finding procedures • safety/risk factors • environmental controls • specific data (such as component data, maintenance data, electrical data, fluid data) • resources (such as tools, equipment, personnel) • utility supply details (such as electricity, water, gas, air) • location of services, including standby and emergency backup systems • circuit characteristics (such as pressure, flow, current, voltage, speed) • protective arrangements and equipment (such as containment, environmental controls, warning and evacuation systems and equipment) • other specific related information			
		1.5	Use the information obtained to ensure that work output meets the specification			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		1.6	Use information extracted from documents to include one from the following: • drawings (such as component drawings, assembly drawings, modification drawings, repair drawings, welding/fabrication drawings, distribution and installation drawings) • diagrams (such as schematic, fluid power diagrams, piping, wiring/circuit diagrams) • manufacturer's manuals/drawings • approved sketches • technical illustrations • photographic representations • visual display screen information • technical sales/marketing documentation • contractual documentation • other specific drawings/documents			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		1.7	Use information extracted from related documentation, to include two from the following: • instructions (such as job instructions, drawing instructions, manufacturer's instructions) • specifications (such as material, finish, process, contractual, calibration) • reference materials (such as manuals, tables, charts, guides, notes) • schedules • operation sheets • service/test information • planning documentation • quality control documents • company specific technical instructions • national, international and organisational standards • health and safety standards relating to the activity (such as COSHH) • other specific related documentation			
		1.8	Deal promptly and effectively with any problems within their control and report those which cannot be solved			
		1.9	Report any inaccuracies or discrepancies in documentation and specifications			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
2	Know how to use and interpret engineering data and documentation	2.1	Explain what information sources are used for the data and documentation that they use in their work activities			
		2.2	Explain how documents are obtained, and how to check that they are current and valid			
		2.3	Explain the basic principles of confidentiality (including what information should be available and to whom)			
		2.4	Describe the different ways/formats that data and documentation can be presented (such as such as drawings, job instructions product data sheets, manufacturers' manuals, financial spreadsheets, production schedules, inspection and calibration requirements, customer information)			
		2.5	Explain how to use other sources of information to support the data (such as electronic component pin configuration specifications, reference charts, standards, bend allowances required for material thickness, electrical conditions required for specific welding rods, mixing ratios for bonding and finishing materials, metal specifications and inspection requirements, health and safety documentation)			
		2.6	Describe the importance of differentiating fact from opinion when reviewing data and documentation			
		2.7	Describe the importance of analysing all available data and documentation before decisions are made			
		2.8	Describe the different ways of storing and organising data and documentation to ensure easy access			
		2.9	Describe the procedures for reporting discrepancies in the data or documentation, and for reporting lost or damaged documents			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		2.10	Describe the procedures for reporting discrepancies in the data or documentation, and for reporting lost or damaged documents			
		2.11	Explain the care and control procedures for the documents, and how damage or graffiti on documents can lead to scrapped work			
		2.12	Explain the importance of returning documents to the designated location on completion of the work activities			
		2.13	Explain what basic drawing conventions are used and why there needs to be different types of drawing (such as isometric and orthographic, first and third angle, assembly drawings, circuit and wiring diagrams, block and schematic diagrams)			
		2.14	Explain what types of documentation are used and how they interrelate (such as production drawings, assembly drawings, circuit and wiring diagrams, block and schematic diagrams)			
		2.15	Explain the imperial and metric systems of measurement; tolerancing and fixed reference points			
		2.16	Describe the meaning of the different symbols and abbreviations found on the documents that they use (such as surface finish, electronic components, weld symbols, linear and geometric tolerances, pressure and flow characteristics)			
		2.17	Describe the extent of their own responsibility, when to act on their own initiative to find, clarify and evaluate information, and to whom they should report if they have problems that they cannot resolve			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

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

Unit 3: Working Efficiently and Effectively in Engineering

Unit reference number: K/601/5055

QCF level: 3

Credit value: 5

Guided learning hours: 25

Unit aim

This unit is about working efficiently and effectively in the workplace and includes preparing for work carried out. This involves checking available resources, dealing with problems, working with others and contributing to the review of working practices and procedures.

Unit assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Common Requirements for National Vocational Qualifications (NVQ) in the QCF', which can be found in *Annexe A*.

Semta has published additional assessment requirements. Please refer to the Engineering NVQ QCF Unit Assessment Strategy in *Annexe B*.

Learning outcomes and assessment criteria

To pass this unit, the learner needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria determine the standard required to achieve the unit.

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Work efficiently and effectively in engineering	1.1	Work safely at all times, complying with health and safety and other relevant regulations and guidelines			
		1.2	Prepare the work area to carry out the engineering activity			
		1.3	Prepare to carry out the engineering activity, taking into consideration all of the following, as applicable to the work to be undertaken: • the work area is free from hazards and is suitably prepared for the activities to be undertaken • any required safety procedures are implemented • any necessary personal protection equipment is obtained and is in a usable condition • tools and equipment required are obtained and checked that they are in a safe and useable condition • all necessary drawings, specifications and associated documentation is obtained • job instructions are obtained and understood • the correct materials or components are obtained • storage arrangements for work are appropriate • appropriate authorisation to carry out the work is obtained			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		1.4	Check that there are sufficient supplies of materials and/or consumables and that they meet work requirements			
		1.5	Ensure that completed products or resources are stored in the appropriate location on completion of the activities			
		1.6	Complete work activities, to include all of the following: • completing all necessary documentation accurately and legibly • returning tools and equipment • returning drawings and work instructions • identifying, where appropriate, any unusable tools, equipment or components • arranging for disposal of waste materials			
		1.7	Tidy up the work area on completion of the engineering activity			
		1.8	Deal promptly and effectively with problems within their control and report those that cannot be resolved			
		1.9	Deal with problems affecting the engineering process, to include two of the following: • materials • tools and equipment • drawings • job specification • quality • people			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
			• timescales • safety • activities or procedures			
		1.10	Contribute to and communicate opportunities for improvement to working practices and procedures			
		1.11	Make recommendations for improving two of the following: • working practices • working methods • quality • safety • tools and equipment • supplier relationships • internal communication • customer service • training and development • teamwork • other			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		1.12	Maintain effective working relationships with colleagues to include two of the following: • colleagues within own working group • colleagues outside normal working group • line management • external contacts			
		1.13	Review personal training and development as appropriate to the job role			
2	Know how to work efficiently and effectively in engineering	1.14	Review personal development objectives and targets to include one of the following: • dual or multi-skilling • training on new equipment/technology • increased responsibility • understanding of company working practices, procedures, plans and policies • other specific requirements			
		2.1	Describe the safe working practices and procedures to be followed whilst preparing and tidying up their work area			
		2.2	Describe the correct use of any equipment used to protect the health and safety of themselves and their colleagues			
		2.3	Describe the procedure for ensuring that all documentation relating to the work being carried out is available and current, prior to starting the activity			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		2.4	Describe the action that should be taken if documentation received is incomplete and/or incorrect			
		2.5	Describe the procedure for ensuring that all tools and equipment are available prior to undertaking the activity			
		2.6	Describe the checks to be carried out to ensure that tools and equipment are in full working order, prior to undertaking the activity			
		2.7	Describe the action that should be taken if tools and equipment are not in full working order			
		2.8	Describe the checks to be carried out to ensure that all materials required are correct and complete, prior to undertaking the activity			
		2.9	Describe the action that should be taken if materials do not meet the requirements of the activity			
		2.10	Explain whom to inform when the work activity has been completed			
		2.11	Describe the information and/or documentation required to confirm that the activity has been completed			
		2.12	Explain what materials, equipment and tools can be reused			
		2.13	Explain how any waste materials and/or products are transferred, stored and disposed of			
		2.14	Explain where tools and equipment should be stored and located			
		2.15	Describe the importance of making recommendations for improving working practices			
		2.16	Describe the procedure and format for making suggestions for improvements			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		2.17	Describe the benefits to organisations if improvements can be identified			
		2.18	Describe the importance of maintaining effective working relationships within the workplace			
		2.19	Describe the procedures to deal with and report any problems that can affect working relationships			
		2.20	Describe the difficulties that can occur in working relationships			
		2.21	Describe the regulations that affect how they should be treated at work (such as the Equal Opportunities Act, Working Time Directive)			
		2.22	Describe the benefits of continuous personal development			
		2.23	Describe the training opportunities that are available in the workplace			
		2.24	Describe the importance of reviewing their training and development			
		2.25	Explain with whom to discuss training and development issues			
		2.26	Describe the extent of their own responsibility and to whom they should report if they have any problems that they cannot resolve			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

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

Unit 4: Business Solutions through Creative Thinking

Unit reference number: J/503/9949

QCF level: 3

Credit value: 6

Guided learning hours: 30

Unit aim

The aim of is this unit is for learners to develop an understanding of the role of creative thinking and problem solving within the business environment, and the ability to apply these skills in a workplace context.

Unit assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Common Requirements for National Vocational Qualifications (NVQ) in the QCF', which can be found in *Annexe A*.

Semta has published additional assessment requirements. Please refer to the Engineering NVQ QCF Unit Assessment Strategy in *Annexe B*.

Learning outcomes and assessment criteria

To pass this unit, the learner needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria determine the standard required to achieve the unit.

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Understand how creative thinking techniques can find opportunities and solutions for business	1.1	Assess the value of creative thinking and problem solving at work			
		1.2	Identify factors which: • contribute to problems at work • influence the choice of solutions to problems			
		1.3	Evaluate a variety of creative thinking techniques for generating and exploring ideas			
		1.4	Explain an effective approach to problem solving which covers: • exploration of options • planning • implementation • review			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
2	Know how the workplace context influences creative thinking and problem solving	2.1	Identify factors which might influence the choice of problems and solutions, for example organisational structure, business strategy, policy, resources, organisational culture, legislation			
		2.2	Use creative thinking techniques to identify in own area of responsibility: • a range of problems • potential solutions • business opportunities			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
3	Be able to apply creative thinking and problem-solving skills in the business environment	3.1	Plan research into one problem or business opportunity which demonstrates understanding of circumstances including: • appreciation of the consequences of decisions • respect for beliefs and feelings			
		3.2	Explore and adapt ideas on the basis of feedback			
		3.3	Evaluate ideas on the basis of feedback and select one option to take forward to the planning stage, using reasoned arguments and evidence			
		3.4	Propose and plan the implementation of chosen option, using risk assessment to inform arrangements and justifying decision making			
		3.5	Plan methods to evaluate effectiveness of proposed business solution			
		3.6	Prepare a persuasive case for action			
		3.7	Review chosen approach including an assessment of the contribution of creative thinking techniques to the process			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

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

Unit 5: Collaborate in a Creative Process

Unit reference number: T/601/6452
QCF level: 3
Credit value: 3
Guided learning hours: 18

Unit aim

The aim of this unit is for the learner to collaborate in a creative process, and involves working with others to review, challenge, test and accept creative ideas.

Unit assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Common Requirements for National Vocational Qualifications (NVQ) in the QCF', which can be found in *Annexe A*.

Semta has published additional assessment requirements. Please refer to the Engineering NVQ QCF Unit Assessment Strategy in *Annexe B*.

Learning outcomes and assessment criteria

To pass this unit, the learner needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria determine the standard required to achieve the unit.

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to collaborate effectively in a creative process	1.1	Respect collaborative efforts by relinquishing individual ownership of ideas			
		1.2	Identify, acknowledge and respect the different ways that different people may contribute to the creative process			
		1.3	Use professional discretion and judgement in dealing with others			
		1.4	Maintain a belief in personal ideas, combined with a willingness to move on from initial positions and preconceptions to accept and embrace new and unpredictable ideas as they emerge during the creative process			
		1.5	Use language and adopt a demeanour that demonstrates respect and trust for others			
		1.6	Listen to, value, respect and trust the contributions of others as material to work with rather than positions to argue against			
		1.7	Challenge, test and share ideas in a supportive way as part of the creative process			
		1.8	Play a role that encourages the movement and shift of ideas within the group towards a well-conceived solution			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
2	Be able to sustain creative partnerships by demonstrating trustworthy and ethical behaviour	2.1	Reflect on own participation, relationships with others and personal behaviour in the collaborative process			
		2.2	Identify ways to do better and follow up on any issues that need to be resolved			
		2.3	Identify and seek opportunities to refine and expand own skills and knowledge, including learning from failure			
3	Be able to observe legal and ethical considerations	3.1	Acknowledge and work within the legal framework that applies to creative content as part of an individual commitment to an ethical approach, including issues relating to: • copyright • moral rights • intellectual property rights			

Learner name: _____ Date: _____

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(*if sampled*)

Unit 6: Clay Armature Construction in Automotive Design

Unit reference number: T/506/1719

QCF level: 3

Credit value: 10

Guided learning hours: 60

Unit aim

The aim of this unit is for learners to develop their understanding of how to interpret clay armature drawings and use this information to construct clay armatures.

Unit assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Common Requirements for National Vocational Qualifications (NVQ) in the QCF', which can be found in *Annexe A*.

Semta has published additional assessment requirements. Please refer to the Engineering NVQ QCF Unit Assessment Strategy in *Annexe B*.

Learning outcomes and assessment criteria

To pass this unit, the learner needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria determine the standard required to achieve the unit.

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Understand armature drawings	1.1	Interpret organisational technical drawing information to construct an armature for a design model			
		1.2	Produce an armature construction plan in line with the design model			
2	Be able to construct clay armatures	2.1	Construct clay armatures in line with the construction plan using each of the following materials • metal (frames) • wood (cladding) • styrofoam • automotive styling clay			
3	Understand armature drawings	3.1	Construct substrate to a defined standard			
		3.2	Prepare wood, foam and metal armatures for clay application in line with organisational requirements			
		3.3	Prepare armatures for Computer Numerically Controlled (CNC) machining to a defined organisational standard			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
4	Understand automotive styling clay	4.1	Explain the properties of automotive styling clay to include: • temperature • methods of application • cracking (fluctuation of temperature) • repair • reuse and recycling			
5	Understand clay CNC machining	5.1	Explain the CNC machining process for 5 axis and 3 axis milling machines			
		5.2	Explain the functionality of Cutterpath software (e.g. WorkNC) in the CNC machining process			
		5.3	Explain the principles of CNC machining			
		5.4	Explain the processes used in CNC machining			
		5.5	Discuss the suitability of materials that can be machined in a design studio			
		5.6	Evaluate organisational CNC machine safety			

Learner name: _____ Date: _____

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

Unit 7: Developing Surfaces in Automotive Clay Modelling

Unit reference number: K/506/1720

QCF level: 3

Credit value: 20

Guided learning hours: 90

Unit aim

The aim of this unit is for learners to develop an understanding of how to develop surfaces in clay modelling and use this information to construct, refine and finish clay surfaces.

Unit assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Common Requirements for National Vocational Qualifications (NVQ) in the QCF', which can be found in *Annexe A*.

Semta has published additional assessment requirements. Please refer to the Engineering NVQ QCF Unit Assessment Strategy in *Annexe B*.

Learning outcomes and assessment criteria

To pass this unit, the learner needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria determine the standard required to achieve the unit.

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Understand how to develop surfaces in clay modelling	1.1	Explain the use of clay tools and templates in the development of clay surfaces			
		1.2	Explain how to develop a clay surface that has been CNC machined			
		1.3	Explain how clay surfaces interact when moving from simple surfaces to more complex surfaces			
		1.4	Explain how surfaces are modelled to achieve high quality reflections and highlights			
		1.5	Interpret a designer sketch to develop surfaces for a required design			
2	Be able to develop a personal timing plan	2.1	Produce a personal timing plan for the production of a specified clay model including the following in the plan: • material procurement • machining times • model finishing times			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
3	Be able to construct clay surfaces	3.1	Create clay surfaces, using hand tools, to meet design requirements, incorporating the following: • construction lines • profile shapes • hard points • slab surfaces • intersections			
4	Be able to develop a CNC machined design	4.1	Call and conduct cross functional meetings to agree on a development process			
		4.2	From a CNC machined model, develop the required design to accommodate: • designer's 2D sketch • new engineering data • designer's specified 3D interpretation			
		4.3	Request feedback on the design within own team and other departments			
		4.4	Analyse feedback and produce a plan to demonstrate how others' opinions will be implemented			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
5	Be able to refine clay surfaces using hand tools	5.1	Refine clay surface to incorporate highlights and reflections in line with design requirements			
		5.2	Explain how highlights and reflections are achieved			
		5.3	Present fully finished model to design team with an explanation of how surfaces transform the highlights and reflections to give the desired effect			
6	Be able to finish the model	6.1	Finish the model to the specified standard by the application of the following: • di-noc film • chrome foil • design tapes • painting • other decorations (e.g. name badges, number plates)			
7	Be able to capture clay surfaces using clay 3D scanner	7.1	Explain how to set-up the 3D scanner to ensure that the surface model created is relative to established technical data			
		7.2	Produce a computer surface model with the 3D scanner useable by the digital team for further model development			
		7.3	Validate computer data ensuring it is in a format that is useable			
		7.4	Produce resulting data in a format that is not too large to be transferred			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
8	Understand how clay modelling is used to communicate ideas and meaning	8.1	Explain how the clay modelling process can influence senior executives in making a clear design selection for future production vehicles			
		8.2	Evaluate the effectiveness of own clay modelling style in conveying and communicating your ideas and meaning			

Learner name: _____ Date: _____

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

Unit 8: Sketch Modelling in Automotive Design

Unit reference number: M/506/1721
QCF level: 3
Credit value: 20
Guided learning hours: 90

Unit aim

The aim of this unit is for learners to develop an understanding of the principles of sketch modelling and use this information to create a 3D clay model.

Unit assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Common Requirements for National Vocational Qualifications (NVQ) in the QCF', which can be found in *Annexe A*.

Semta has published additional assessment requirements. Please refer to the Engineering NVQ QCF Unit Assessment Strategy in *Annexe B*.

Learning outcomes and assessment criteria

To pass this unit, the learner needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria determine the standard required to achieve the unit.

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Understand the principles of sketch modelling	1.1	Explain how to interpret a designer's 2D sketch			
		1.2	By interpreting the 2D sketch, explain how to create a quick 3D clay model achieving the designer's intentions			
		1.3	Explain clay techniques to achieve a sketch model			
		1.4	Explain the purpose of a sketch model			
		1.5	Evaluate the designer's 2D sketch			
		1.6	Explain how to add and remove clay from the model to capture the designer's intentions			
		1.7	Explain how to account for areas of high and low light, shadow and feature			
2	Be able to create 3D clay model	2.1	Create a quick 3D design in clay that achieves, in principle, the 2D designer sketch			
		2.2	Evaluate the 3D clay model with the designer to confirm that the interpretation is correct			
		2.3	Explain how the clay design model can be improved			
		2.4	Refine the design by developing higher quality surfaces where a clearer evaluation can be made, incorporating any feedback from the design team and engineering department			
		2.5	Present the clay model to the design team explaining your interpretation and how you have achieved it			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
3	Be able to capture sketch model using 3D scanner	3.1	Utilise the 3D scanning equipment to capture an early clay shape so that other departments can evaluate the data for reference			

Learner name: _____ Date: _____

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(*if sampled*)

Unit 9: Rapid Prototyping in Automotive Design

Unit reference number: T/506/1722
QCF level: 3
Credit value: 5
Guided learning hours: 30

Unit aim

The aim of this unit is for learners to develop an understanding of the principles of rapid prototyping and how to utilise rapid prototypes. Learners will use this information to create rapid prototypes.

Unit assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Common Requirements for National Vocational Qualifications (NVQ) in the QCF', which can be found in *Annexe A*.

Semta has published additional assessment requirements. Please refer to the Engineering NVQ QCF Unit Assessment Strategy in *Annexe B*.

Learning outcomes and assessment criteria

To pass this unit, the learner needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria determine the standard required to achieve the unit.

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Understand principles of rapid prototyping	1.1	Explain how and why rapid prototype models are manufactured			
		1.2	Explain how rapid prototyping is utilised to produce otherwise unmakeable models			
		1.3	Explain the purpose of these models			
		1.4	Explain why these models are a cost effective alternative in the design development process			
2	Be able to create rapid prototypes	2.1	Produce rapid prototype models from given data, using rapid prototyping machinery in line with: • health and safety standards • safe systems of work • care for the machine and equipment			
		2.2	Evaluate the extent to which your models show considerations for other models being produced			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
3	Understand how to utilise rapid prototypes	3.1	Explain when and where on clay models a rapid prototype part is required			
		3.2	Explain why it is necessary to use rapid protoyping machinery to manufacture model part			
		3.3	Explain why rapid prototyping was selected over making a clay model			

Learner name: _____ Date: _____

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Assessor signature: _____ Date: _____

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

Unit 10: Preparing for Fabrication Work in Experimental Vehicle Engineering

Unit reference number: A/506/1723

QCF level: 3

Credit value: 10

Guided learning hours: 50

Unit aim

The aim of this unit is for the learner to prepare for fabrication work in experimental vehicle engineering. This will require knowledge of safety procedures and engineering tools and an understanding of vehicle engineering drawings. This knowledge will form the basis for completing Unit 11: Producing Fabricated Structural Components for Experimental Vehicle Engineering.

Unit assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Common Requirements for National Vocational Qualifications (NVQ) in the QCF', which can be found in *Annexe A*.

Semta has published additional assessment requirements. Please refer to the Engineering NVQ QCF Unit Assessment Strategy in *Annexe B*.

Learning outcomes and assessment criteria

To pass this unit, the learner needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria determine the standard required to achieve the unit.

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Know safety procedures in a fabrication environment	1.1	Describe specific safety precautions to be taken when working with fabrication equipment and materials in a fabrication environment including: • organisational accident procedures • statutory regulations • risk assessment procedures • COSHH regulations			
		1.2	Describe the personal protective clothing and equipment to be worn including leather gloves, eye protection and safety helmets, when carrying out fabrication activities			
		1.3	Describe methods of moving or lifting materials in a fabrication environment			
		1.4	Describe the safe working practices and procedures to be observed when using manual and power-operated tools			
		1.5	Describe the hazards, and how to minimise them, associated with fabrication work, including: • using dangerous or badly maintained tools and equipment • operating guillotines • using hand and bench shears			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
2	Understand vehicle engineering drawings	2.1	Describe organisational procedures for obtaining up-to-date drawings and specifications			
		2.2	Explain how to extract and use information from engineering drawings and related specifications including symbols and conventions to appropriate BS, ISO or BSEN standards, in relation to work undertaken			
		2.3	Explain how to interpret first and third angle drawings, imperial and metric systems of measurement, work piece reference points and system of tolerancing			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
3	Know fabrication engineering tools	3.1	Describe the tools and techniques available for cutting and shaping materials including tin snips, bench shears, guillotines, portable power tools, bench drills and saws			
		3.2	Describe the use and care of fabrication tools and equipment, including: • fitness for purpose of tools (sharp and undamaged) • plugs and cables secure and free from damage • machine guards or safety devices are operating correctly			
		3.3	Describe setting and adjusting tools and equipment including the use of backstops on guillotines			
		3.4	Describe the importance of: • using tools or equipment only for the purpose intended • preserving tools or equipment between operations			

Learner name: _____ Date: _____

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

Unit 11: Producing Fabricated Structural Components for Experimental Vehicle Engineering

Unit reference number: F/506/1724

QCF level: 3

Credit value: 14

Guided learning hours: 94

Unit aim

The aim of this unit is for the learner to produce fabricated structural components with a range of features for experimental vehicle engineering. These are produced to a defined standard using a range of tools such as a band saw or bending machine using materials such as bright mild steel or aluminium.

Unit assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Common Requirements for National Vocational Qualifications (NVQ) in the QCF', which can be found in *Annexe A*.

Semta has published additional assessment requirements. Please refer to the Engineering NVQ QCF Unit Assessment Strategy in *Annexe B*.

Learning outcomes and assessment criteria

To pass this unit, the learner needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria determine the standard required to achieve the unit.

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Understand how to cut and shape fabrication materials	1.1	Explain what preparations have to be carried out on the fabrication material prior to cutting			
		1.2	Explain the material characteristics to be taken into account when cutting and shaping materials			
		1.3	Explain the process considerations to be taken into account when cutting and shaping materials			
		1.4	Explain how to interpret the marking out conventions on the materials to be cut and shaped including cutting lines and centre lines			
		1.5	Explain how issues associated with cutting and shaping materials can be avoided			
2	Be able to prepare fabrication materials	2.1	Select tools and materials for the work in hand in line with given job instructions			
		2.2	Check that all tools and equipment to be used are within current calibration/certification dates			
		2.3	Check that all cables, extension leads or air supply hoses are in a safe and serviceable condition			
		2.4	Mark out the components accurately, in line with job instructions, using organisational conventions			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		2.5	Cut and prepare materials for fabrication, in line with job instructions, using at least one from each of the following: • saws, e.g.hand hacksaw, powered hacksaw, band saw • hand power tools, e.g. sander, grinder, drill • hand tools for material removal, e.g. bench shears, files, tin snips • machine applications, e.g. punch/cropping machine, nibbling machine • machine tools, e.g. off-hand grinder, pillar drill • presswork applications, e.g. guillotine, bending machine			
3	Be able to produce fabricated components	3.1	Produce fabricated components in line with development needs using at least one from each of the following material types: • ferrous type, e.g. black mild steel, bright mild steel, wrought iron, stainless steel • non-ferrous type, e.g. brass, copper, aluminium			
		3.2	Produce fabricated components in line with development needs using four of the following material forms: • section bar • hollow section • angle section • channel section • I section • sheet/plate			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		3.3	Produce fabricated components in line with development needs which contain the following features: • bends • sections, e.g. box, tray • drilled holes • and at least one profile type: e.g. square, rectangular, angled, internal, curved, irregular			
		3.4	Evaluate finished components, suggesting possible improvements, with respect to: • development needs • dimensional accuracy (to drawing or specifications) • distortion • sharp edges, slivers or burrs			
		3.5	Reinstate the work area by: • returning all tools and equipment to the correct location on completion of the activities • leaving the work area in a safe and appropriate condition on completion of the activities			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

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

Unit 12: Producing Mechanical Engineering Drawings Using a CAD System

Unit reference number: F/504/6348

QCF level: 2

Credit value: 11

Guided learning hours: 61

Unit aim

This unit is about producing mechanical drawings to a defined specification using a CAD system.

Unit assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Common Requirements for National Vocational Qualifications (NVQ) in the QCF', which can be found in *Annexe A*.

Semta has published additional assessment requirements. Please refer to the Engineering NVQ QCF Unit Assessment Strategy in *Annexe B*.

Learning outcomes and assessment criteria

To pass this unit, the learner needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria determine the standard required to achieve the unit.

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Produce mechanical engineering drawings using a CAD system	1.1	Work safely at all times, complying with health and safety legislation, regulations and other relevant guidelines			
		1.2	Prepare the CAD system for operation by carrying out all of the following: • check that all the equipment is correctly connected and in a safe and usable working condition (such as cables undamaged, correctly connected, safely routed, PAT tested) • power up the equipment and activate the appropriate drawing software • set up the drawing system to be able to produce the drawing to the appropriate scale • set up and check that all peripheral devices are connected and correctly operating (such as keyboard, mouse, light pen, digitiser/tablet, scanner, printer, plotter) • set the drawing datum at a convenient point (where applicable) • set up drawing parameters (to include layers, line types, colour, text styles) to company procedures or to suit the drawing produced • create a drawing template to the required standards, which includes all necessary detail (such as title, drawing number, scale, material, date, etc.)			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		1.3	Plan the drawing activities before they start them			
		1.4	Use appropriate sources to obtain the required information for the drawing to be created			
		1.5	Use three of the following to obtain the necessary data to produce the required drawings: • drawing brief • drawing change or modification request • manuals • calculations • sketches • specifications • regulations • sample component • existing drawings/designs • standards reference documents (such as limits and fits, tapping drill charts) • notes from meetings/discussions • other available data			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		1.6	Take into account three of the following design features, as appropriate to the drawing being produced: • function • quality • manufacturing method • ergonomics • materials • cost • life of the product • tolerances • clearance • aesthetics • physical space • operating environment • interfaces • safety			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		1.7	Carry out all of the following before producing the engineering drawing: • ensure that the data and information they have is complete and accurate • review the data and information to identify the drawing requirements • recognise and deal with problems (such as information-based and technical)			
		1.8	Access and use the correct drawing software			
		1.9	Use appropriate techniques to create drawings, in the required formats, that are sufficiently and clearly detailed			
		1.10	Interpret and produce drawings, using two of the following methods of projection: • first angle orthographic projections • isometric/oblique projections • third angle orthographic projections			
		1.11	Produce two of the following types of drawing: • detail drawings • general arrangement drawings • sub-assembly drawings • installation drawings			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		1.12	Produce mechanical drawings which include 10 of the following: • straight lines • dimensions • angled lines • text • insertion of standard components • symbols and abbreviations • curved/contour lines • circles or ellipses • geometrical tolerancing • hidden detail • sectional detail • parts lists • other specific detail			
		1.13	Use codes and other references that follow the required conventions			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		1.14	Produce drawings which comply with the following: • BS and ISO standards Plus one more from the following: • organisational guidelines • statutory regulations and codes of practice • CAD software standards • other international standards			
		1.15	Make sure that drawings are checked and approved by the appropriate person			
		1.16	Save the drawings in the appropriate medium and location to include all of the following: • ensure that their drawing has been checked and approved by their supervisor • check that the drawing is correctly titled and referenced • save the drawing to an appropriate storage medium (such as hard drive, CD/DVD, external storage device) • create a separate backup copy and place it in safe storage • produce a hard copy printout of the drawing for file purposes • register and store the drawings in the appropriate company information system (where appropriate) • record and store any changes to the drawings in the company information system (where appropriate)			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		1.17	Produce hard copies of the finished drawings			
		1.18	Deal promptly and effectively with problems within their control and seek help and guidance from the relevant people if they have problems that they cannot resolve			
		1.19	Shut down the CAD system to a safe condition on completion of the drawing activities			
2	Know how to produce mechanical engineering drawings using a CAD system	2.1	Describe the specific safety precautions to be taken when working with computer systems to include safety guidance relating to the use of visual display unit (VDU) equipment and the work station environment (such as lighting, seating, positioning of equipment), repetitive strain injury (RSI); the dangers of trailing leads and cables; how to spot faulty or dangerous electrical leads, plugs and connections			
		2.2	Describe good housekeeping arrangements (such as cleaning down work surfaces; storage devices, manuals and unwanted items of equipment into safe storage; leaving the work area in a safe and tidy condition)			
		2.3	Describe the methods and procedures used to minimise the chances of infecting a computer with a virus			
		2.4	Describe the implications if the computer they are using does become infected with a virus and who to contact if it does occur			
		2.5	Describe the relevant sources and methods for obtaining any required technical information relevant to the drawing being produced (such as drawing briefs, specification sheets, request for changes or modifications to drawings; technical information such as limits and fits, contraction allowances, bearing selection, surface finish)			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		2.6	Describe the basic principles of engineering manufacturing operations, assembly and installation methods, and limitations of the equipment/processes that are used to produce the drawn item (such as machining methods, joining processes, fabrication, casting and forging), and how these can influence the way they present the drawing			
		2.7	Describe the functionality of the component being drawn, and its interrelationship with other components and assemblies			
		2.8	Describe the correct start-up and shutdown procedures to be used for the computer systems			
		2.9	Describe the identification of the correct drawing software package from the menu or operating environment; the various techniques that are available to access and use the CAD software (such as mouse, menu or tool bar, light pens, digitisers and tablets, printers or plotters, and scanners)			
		2.10	Describe the use of software manuals and related documents to aid efficient operation of the relevant drawing system			
		2.11	Explain how to deal with system problems (such as error messages received, peripherals which do not respond as expected, obvious faults with the equipment or connecting leads)			
		2.12	Describe the types of drawings that may be produced by the software (such as first and third angle drawings, sectional elevations, isometric or oblique drawings)			
		2.13	Explain how to set up the viewing screen to show multiple views of the drawing to help with drawing creation (to include isometric front and side elevations)			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		2.14	Describe the national, international and organisational standards and conventions that are used for the drawings			
		2.15	Explain how to set up the drawing template parameters (such as layers of drawings, scale, paper size, colour setup, line types, dimension system and text styles)			
		2.16	Describe the application and use of drawing tools (such as for straight lines, curves and circles; how to create hatching and shading on drawings; how to add dimensions and text to drawings; producing layers of drawings)			
		2.17	Explain how to access, recognise and use a wide range of standard components and symbol libraries from the CAD equipment			
		2.18	Describe the need for document control (such as ensuring that completed drawings are approved, labelled and stored on a suitable storage medium)			
		2.19	Explain how to save and store drawings, (such as determining document size; how to check that there is sufficient space to save the file in their chosen destination; saving and naming the file/drawing)			
		2.20	Describe the need to create backup copies, and to file them in a separate and safe location			
		2.21	Explain how to produce hard copies of the drawings, and the advantages and disadvantages of printers and plotters			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		2.22	Explain when to act on their own initiative and when to seek help and advice from others			
		2.23	Describe the importance of leaving the work area and equipment in a safe condition on completion of the drawing activities (such as correctly isolated, removing and disposing of waste)			

Learner name: _____ Date: _____

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

Unit 13: Producing Components Using Hand Fitting Techniques

Unit reference number: J/504/6349

QCF level: 2

Credit value: 14

Guided learning hours: 64

Unit aim

The aim of this unit is for the learner to produce engineering components to a defined standard using a range of hand fitting techniques such as filing, hand sawing and offhand grinding.

Unit assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Common Requirements for National Vocational Qualifications (NVQ) in the QCF', which can be found in *Annexe A*.

Semta has published additional assessment requirements. Please refer to the Engineering NVQ QCF Unit Assessment Strategy in *Annexe B*.

Learning outcomes and assessment criteria

To pass this unit, the learner needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria determine the standard required to achieve the unit.

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Produce components using hand fitting techniques	1.1	Work safely at all times, complying with health and safety legislation, regulations and other relevant guidelines			
		1.2	Carry out all of the following during the hand fitting activities: • adhere to procedures or systems in place for risk assessment, COSHH, personal protective equipment (PPE) and other relevant safety regulations • follow job instructions, assembly drawings and procedures • ensure that all power tool cables, extension leads or air supply hoses are in a serviceable condition • check that all measuring equipment is within calibration date • ensure that the components used are free from foreign objects, dirt or other contamination • return all tools and equipment to the correct location on completion of the fitting activities			
		1.3	Plan the fitting activities before they start them			
		1.4	Obtain the appropriate tools and equipment for the hand fitting operations, and check that they are in a safe and usable condition			
		1.5	Mark out the components for the required operations, using appropriate tools and techniques			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		1.6	Mark out a range of material forms, to include two of the following: • square/rectangular (such as bar stock, sheet material, machined components) • circular/cylindrical (such as bar stock, tubes, turned components, flat discs) • sections (such as angles, channel, tee section, joists, extrusions) • irregular shapes (such as castings, forgings, odd shaped components)			
		1.7	Use marking out methods and techniques, to include: • direct marking using instruments Plus one more of the following: • use of templates • tracing/transfer methods			
		1.8	Use a range of marking out equipment, to include all of the following: • rules/tapes • dividers/trammels • scribers • punches • scribing blocks • squares • protractor • Vernier instruments			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		1.9	Mark out work pieces which include all of the following features: • datum/centre lines • square/rectangular profiles • circles • radial profiles • linear hole positions Plus one more from the following: • angles/angular profiles • radial hole positions • allowances for bending • simple pattern development			
		1.10	Cut and shape the materials to the required specification, using appropriate tools and techniques			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		1.11	Cut and shape two different types of material from the following: • low carbon/mild steel • high carbon steel • cast iron • stainless steel • aluminium/aluminium alloys • brass/brass alloys • plastic/nylon/synthetic • composite • other specific material			
		1.12	Use both of the following hand fitting activities: • filing • hand sawing Plus one more from the following: • power sawing • off hand grinding • scraping • chiselling • lapping			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		1.13	Produce components which combine different operations and have features that cover all of the following: • flat datum faces • faces which are square to each other • curved profiles • drilled through holes • reamed holes • internal threads • external threads Plus three more from the following: • faces that are parallel to each other • faces angled to each other • holes drilled to a depth • chamfers and radii • counterbore, countersink, or spot face • sliding or mating parts			
		1.14	Measure and check that all dimensional and geometrical aspects of the component are to the specification			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		1.15	Use all of the following measuring equipment during the hand fitting and checking activities: • external micrometers • Vernier calliper • surface finish equipment (such as comparison plates, machines) Plus four more of the following: • rules • squares • callipers • protractors • depth micrometers • depth Verniers • feeler gauges • bore/hole gauges • slip gauges • radius/profile gauges • thread gauges • dial test indicators (DTI) • coordinate measuring machine (CMM)			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		1.16	Carry out the necessary checks for accuracy, to include all of the following: • linear dimensions • flatness • squareness • angles • profiles • hole position • hole size/fit • depths • thread size and fit • surface finish			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		1.17	Produce components to all of the following standards, as applicable to the process: • components to be free from false tool cuts, burrs and sharp edges • general dimensional tolerance +/- 0.25mm or +/- 0.010' • there must be one or more specific dimensional tolerances within +/- 0.1mm or +/- 0.004' • flatness and squareness 0.05mm per 25mm or 0.002' per inch • angles within +/- 1 degree • screw threads to BS Medium fit • reamed and bored holes within H8 • surface finish 63 µin or 1.6 µm			
		1.18	Deal promptly and effectively with problems within their control, and seek help and guidance from the relevant people if they have problems that they cannot resolve			
		1.19	Leave the work area in a safe and tidy condition on completion of the fitting activities			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
2	Know how to produce components using hand fitting techniques	2.1	Describe the health and safety requirements and safe working practices and procedures required for the hand fitting activities undertaken			
		2.2	Describe the importance of wearing appropriate protective clothing and equipment (PPE), and of keeping the work area safe and tidy			
		2.3	Describe the hazards associated with the hand fitting activities (such as use of power tools, trailing leads or hoses, damaged or badly maintained tools and equipment, using files with damaged or poor fitting handles), and how they can be minimised			
		2.4	Describe the procedure for obtaining the required drawings, job instructions and other related specifications			
		2.5	Explain how to use and extract information from engineering drawings and related specifications (to include symbols and conventions to appropriate BS or ISO standards), in relation to work undertaken			
		2.6	Explain how to interpret first and third angle drawings, imperial and metric systems of measurement, work piece reference points and system of tolerancing			
		2.7	Explain how to prepare the materials in readiness for the marking out activities, in order to enhance clarity, accuracy and safety (such as visually checking for defects, cleaning the materials, removing burrs and sharp edges, applying a marking out medium)			
		2.8	Explain how to select and establish a suitable datum; the importance of ensuring that marking out is undertaken from the selected datum, and the possible effects of working from a different datum			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		2.9	Describe the methods of holding and supporting the work piece during the marking out activities, and equipment that can be used (such as surface plates, angle plates, vee blocks and clamps, parallel bars, screw jacks)			
		2.10	Describe the use of marking out conventions when marking out the work piece (including datum lines, cutting guidelines, square and rectangular profiles, circular and radial profiles, angles, holes which are linearly positioned, boxed and on pitch circles)			
		2.11	Describe the ways of laying out the marking out shapes or patterns to maximise use of materials			
		2.12	Describe the need for clear and dimensional accuracy in marking out to specification and drawing requirements			
		2.13	Explain how to set and adjust tools (such as squares, protractors and Verniers)			
		2.14	Describe the importance of using tools only for the purpose intended; the care that is required when using the equipment and tools; the proper way of storing tools and equipment between operations			
		2.15	Describe the cutting and shaping methods to be used, and the sequence in which the operations are to be carried out			
		2.16	Describe the various types of file that are available, and the cut of files for different applications			
		2.17	Describe the importance of ensuring that file handles are secure and free from embedded foreign bodies or splits			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		2.18	Explain how to prepare the components for the filing operations (cleaning, de-burring, marking out)			
		2.19	Describe the use of vice jaw plates to protect the work piece from damage			
		2.20	Explain how to file flat, square and curved surfaces, and how to achieve a smooth surface finish (such as by draw filing, the use of abrasive cloth, lapping using abrasive pastes)			
		2.21	Explain how to select saw blades for different materials, and how to set the saw blades for different operations (such as cutting externally and internally)			
		2.22	Explain how to cut external threads using hand dies, and the method of fixing and adjusting the dies to give the correct thread fit			
		2.23	Explain how to determine the drill size for tapped holes, and the importance of using the taps in the correct sequence			
		2.24	Explain how to prepare drilling machines for operations (such as adjustment of table height and position; mounting and securing drills, reamers, countersink and counterbore tools in chucks or Morse taper sockets; setting and adjusting spindle speeds; setting and adjusting guards/safety devices)			
		2.25	Explain how to mount the work piece (such as in a machine vice, clamped to table, clamped to angle brackets); techniques of positioning drills to marking out, use of centre drills and taking trial cuts and checking accuracy, and how to correct holes which are off centre			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		2.26	Explain how to produce a sliding or mating fit using filing, scraping and lapping techniques			
		2.27	Describe the problems that can occur with the hand fitting activities, and how these can be overcome (such as defects caused by incorrectly ground drills, inappropriate speeds, damage by workholding devices)			
		2.28	Explain when to act on their own initiative and when to seek help and advice from others			
		2.29	Describe the importance of leaving the work area in a safe and clean condition on completion of the fitting activities (such as removing and storing power leads, isolating machines, removing and returning drills, cleaning the equipment and removing and disposing of waste)			

Learner name: _____ Date: _____

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(*if sampled*)

Unit 14: Preparing and Proving CNC Machine Tool Programs

Unit reference number: F/504/6379
QCF level: 2
Credit value: 14
Guided learning hours: 64

Unit aim

The aim of this unit is for the learner to prepare and prove programs to a defined standard using, for example, a two axis machine. This will involve developing programs to produce components with a range of features such as parallel or stepped diameters using a range of materials.

Unit assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Common Requirements for National Vocational Qualifications (NVQ) in the QCF', which can be found in *Annexe A*.

Semta has published additional assessment requirements. Please refer to the Engineering NVQ QCF Unit Assessment Strategy in *Annexe B*.

Learning outcomes and assessment criteria

To pass this unit, the learner needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria determine the standard required to achieve the unit.

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Prepare and prove CNC machine tool programs	1.1	Work safely at all times, complying with health and safety legislation, regulations and other relevant guidelines			
		1.2	Ensure that they apply all of the following checks and practices at all times during the programming activities: • adhere to procedures or systems in place for risk assessment, COSHH, personal protective equipment (PPE) and other relevant safety regulations • the correct component drawings are obtained and checked for currency and validity • the appropriate reference manuals and programming codes are used to suit the machine controller • the machine controller is prepared ready to accept the operating program • the prepared program is input/loaded into the controller safely and correctly • programs are stored safely and correctly in the appropriate format • program media is stored safely and correctly, away from contaminants and corruption			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		1.3	Prepare and prove programs for one of the following types of CNC machine tool: • two axis machine • three axis machine • multiple axis machines (5 or more) • machining centres			
		1.4	Plan the programming activities before they start them			
		1.5	Determine an operational sequence that avoids wasted tool/cutter movements and tool changes			
		1.6	Develop component programs using appropriate programming codes and techniques			
		1.7	Produce CNC programs using one of the following methods: • entered directly into the machine controller • using computer software			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		1.8	Develop part programs which contain all of the following, as applicable to the machine type: • all necessary positional information • appropriate codes • machine management commands (preparatory/auxiliary functions) • repetitions within programs (using features such as subroutines, canned cycles, labels) • absolute or incremental coordinates • tool/cutter change positions • tool information (such as lengths, offsets, radius compensation)			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		1.9	Develop programs to produce components which cover eight of the following features: • parallel diameters • stepped diameters • tapered diameters • flat faces • internal undercuts • external undercuts • steps/shoulders • parallel faces • faces that are square to each other • angular faces • internal profiles • external profiles • reamed holes • tapped holes • drilled holes • holes on pitched circles • holes linearly pitched • parting-off • enclosed slots/recesses • open ended slots			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
			• eccentric diameters • external screw threads • internal screw threads • chamfers and radii • bored holes • special forms (such as concave, convex)			
		1.10	Develop part programs to machine components made from two of the following types of material: • low carbon/mild steel • high carbon steel • aluminium/aluminium alloys • cast iron • brass/brass alloys • plastic/nylon/composite • other specific material			
		1.11	Specify positional information and machine axes that are consistent with the requirements of each stage/operation			
		1.12	Load/input the program to the machine controller, and check/prove the program for errors using approved procedures			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		1.13	Prove the part program using six of the following: • single block mode • graphic displays/modelling • data input facilities • full dry run (in air) • search facilities • edit facilities • program override controls (spindle speed, feed rate, tool data) • program save/store facilities			
		1.14	Confirm that the program operates safely and correctly, by checking all of the following: • datums for each machine axis are set in relation to all equipment and tooling used • all operations are carried out to the program coordinates • tool change positions are safe and clear of the work piece and machine equipment • the correct tools are selected at the appropriate points in the program • tool offsets are correctly entered into the machine controller • tool cutter paths are executed safely and correctly • auxiliary functions operate at the correct point in the program (cutter start/stop, coolant flow) • programs have been saved in the appropriate format			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		1.15	Save and store the program in line with organisational procedures			
		1.16	Deal promptly and effectively with problems within their control, and seek help and guidance from the relevant people if they have problems that they cannot resolve			
		1.17	Shut down the equipment to a safe condition on completion of the programming activities			
2	Know how to prepare and prove CNC machine tool programs	2.1	Describe the safe working practices and procedures to be followed when developing and proving CNC machine tool programs			
		2.2	Describe the hazards associated with using CNC machine tools (such as automatic machine operations, power operated chucks, revolving/moving parts of machinery, airborne and hot metal particles, sharp cutting tools and burrs and sharp edges on component), and how they can be minimised			
		2.3	Describe the importance of wearing the appropriate protective clothing and equipment (PPE), and of keeping the work area clean and tidy			
		2.4	Describe the safety mechanisms on the machine (such as emergency stop buttons, emergency brakes), and the procedure for checking that they function correctly			
		2.5	Describe the correct operation of the various hand and automatic modes of machine control (such as program operating and control buttons)			
		2.6	Explain how to stop the machine in both normal and emergency situations, and the procedure for restarting after an emergency			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		2.7	Explain how to use and extract information from engineering drawings or data and related specifications (to include symbols and conventions to appropriate BS or ISO standards) in relation to work undertaken			
		2.8	Explain how to interpret first and third angle drawings, imperial and metric systems of measurement, absolute and incremental systems, work piece zero/reference points and system of tolerancing			
		2.9	Describe the computer coding language used in CNC programs (with regard to machine axes, positional information, machine management and auxiliary functions)			
		2.10	Explain how to prepare part programs (using operational sequences and machining techniques that avoid unnecessary tool/cutter movements or tool changes)			
		2.11	Describe the use of features that enable reductions in program size and input time (such as canned cycles, subroutines and labels)			
		2.12	Describe the function keys and operating system of the machine computer control system being operated			
		2.13	Explain how to set machine datums for each of the machine axes being used			
		2.14	Explain how to set the machine control system in the programming and editing mode, download (input) and upload (output) modes			
		2.15	Explain how to deal with error messages and faults on the program or equipment			
		2.16	Explain how to access the program edit facility in order to enter tooling data (such as tool datums, positions, lengths, offsets and radius compensation)			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		2.17	Describe the use of tool posts, magazines, carousels and turrets, and how to identify the tools in relationship to the operating program			
		2.18	Explain how to conduct trial runs (using single block run, dry run and feed and spindle speed override controls)			
		2.19	Describe the factors that may affect the feeds and spindle speeds being used, and why they may need to be adjusted from the programmed values (such as condition of material, workholding method, tooling used, tolerance and finish to be achieved)			
		2.20	Describe the checks to be made before allowing the CNC machine to operate in full program run mode			
		2.21	Explain how to save the completed programs in the appropriate format, and the need to store programs and storage devices safely and correctly, away from contaminants and possible corruption			
		2.22	Describe the typical problems that can occur with the programming, loading and editing activities, and what to do if they occur			
		2.23	Describe the methods and procedures used to minimise the chances of infecting a computer with a virus			
		2.24	Describe the implications if the computer they are using does become infected with a virus and who to contact if it does occur			
		2.25	Explain when to act on their own initiative and when to seek help and advice from others			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		2.26	Describe the importance of leaving the work area and machine in a safe condition on completion of the activities (such as correctly isolated, operating programs closed or removed, cleaning the machine and removing and disposing of waste)			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

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

Unit 15: Verify New Product Designs Using a Physical Model

Unit reference number: D/504/1013
QCF level: 4
Credit value: 16
Guided learning hours: 56

Unit aim

In this unit learners produce a physical model and evaluate the model against the design data requirements.

Unit assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Common Requirements for National Vocational Qualifications (NVQ) in the QCF', which can be found in *Annexe A*.

Semta has published additional assessment requirements. Please refer to the Engineering NVQ QCF Unit Assessment Strategy in *Annexe B*.

Learning outcomes and assessment criteria

To pass this unit, the learner needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria determine the standard required to achieve the unit.

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Verify new product designs using a physical model	1.1	Obtain the design data against which the physical model is to be verified			
		1.2	Carry out all of the following activities in preparation for verifying the conceptual designs: • obtain all relevant design documentation for the physical model (such as design drawings, specifications, customer brief/requirements) • determine the resources required to produce the physical model (such as modelling method, materials required, people with the required skills, access to specialised equipment such as wind tunnels) • plan the methods to be used in constructing and evaluating the physical model • establish key criteria for verification of the physical model against the design data • establish methods of collecting the required design data from the physical model • determine how the results of the verification exercise will be recorded in company systems			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		1.3	Consider the various ways of producing the physical model and establish the most appropriate method to include one of the following: • rapid prototyping • soft tool • handmade • other specific process			
		1.4	Determine and obtain the appropriate resources, including three of the following: • equipment • facilities • finance • plant • components • materials • people • services • other specific			
		1.5	Identify any potential design limits and constraints from the physical modelling exercise			
		1.6	Arrange construction of the physical model			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		1.7	Monitor the modelling process, to ensure that it meets the design characteristic and that all of the following are achieved: • correct implementation of the agreed plan • effective use of resources • the model produced accurately reflects the design data • identification and solving of any problems that occur			
		1.8	Collect design data from the physical model using the appropriate equipment, materials and people to include four of the following: • geometry • aesthetics • materials • weight • durability • interfacing • performance • assembly/manufacturability • aerodynamics • safety • other (specify)			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		1.9	Establish a plan to evaluate the physical model against requirements, to include three of the following: • timing plan • identification of authorisation channels • environmental requirements • configuring process • preparation of the model • preparation of the process • testing and/or trials • handover process			
		1.10	Ensure that the modelling and evaluation process complies with relevant regulations and guidelines, including one of the following: • international • national • manufacturing specific • company policy and procedures • industry specific • statutory bodies			
		1.11	Evaluate the data taken from the physical model against the design data requirements			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		1.12	Make valid decisions about the design based on the data taken from the physical model			
		1.13	Record and present the results of the verification exercise to the appropriate people, according to agreed procedures			
		1.14	Record the outcomes of the evaluation process in the appropriate company information system, and communicate the outcomes to the relevant people, using the following: • a verbal report Plus one more of the following methods: • electronic mail • computer-based presentation • report • specific company form			
2	Know how to verify new product designs using a physical model	2.1	Describe the importance of working safely at all times, and of complying with health and safety and other relevant regulations, directives and guidelines, in the department/organisation where the new product development and introduction (NPDI) work is being undertaken			
		2.2	Explain how to identify, manage and minimise potential risks to health and safety that could occur during implementation of the NPDI programme			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		2.3	Describe the health, safety and environmental requirements applicable to the modelling process activities, location and process/facility being used			
		2.4	Explain how to obtain design data for the modelling and evaluation process			
		2.5	Explain how to use the design data to determine the most suitable method of producing the physical model			
		2.6	Describe the various technologies that can be used in the creation of physical models, such as rapid prototyping, soft tool, handmade			
		2.7	Describe the benefits, constraints and physical limitations of the various modelling processes			
		2.8	Describe the organisational procedures and information systems for verifying designs using physical models			
		2.9	Describe the equipment and methods used to evaluate the physical model (such as tolerance measurement using a coordinate measuring machine (CMM), aerodynamics using wind tunnels)			
		2.10	Explain how the results of the design verification are to be presented: such as a printed report, electronically (data or design file), exceptions only, a red/yellow/green light or some other type of go/no-go indicators			
		2.11	Describe the principles to be used for the modelling and evaluation process			
		2.12	Describe the factors that should be taken into account for disseminating information			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		2.13	Describe the types of problem that could occur during the modelling process			
		2.14	Describe the methods and techniques used to evaluate design models			
		2.15	Explain how to determine and obtain the resources necessary for the modelling exercise			
		2.16	Describe the regulations and guidelines that are relevant			
		2.17	Describe the company's systems for recording and communicating information			
		2.18	Describe the hazards associated with the various technologies and how to deal with them			
		2.19	Explain how to obtain and interpret information on regulations and guidelines			
		2.20	Describe the limits of their own authority, and to whom they should report if they have problems that they cannot resolve			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

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

Unit 16: Create 3D Models Using a Computer Aided Design System

Unit reference number: D/601/6459

QCF level: 3

Credit value: 4

Guided learning hours: 24

Unit aim

In this unit learners will start by preparing the 3D CAD environment and then create and modify 3D models.

Unit assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Common Requirements for National Vocational Qualifications (NVQ) in the QCF', which can be found in *Annexe A*.

Semta has published additional assessment requirements. Please refer to the Engineering NVQ QCF Unit Assessment Strategy in *Annexe B*.

Learning outcomes and assessment criteria

To pass this unit, the learner needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria determine the standard required to achieve the unit.

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to prepare the 3D computer aided design environment	1.1	Identify the purpose and work requirements for developing a 3D model			
		1.2	Establish an appropriate coordinate system to meet the work requirements, justifying the choice			
		1.3	Establish the orientation of the model with respect to the coordinate system to meet the work requirements			
		1.4	Establish the number of views to best meet the work requirements			
2	Be able to create and modify 3D models	2.1	Create and manipulate entities in 3D space to meet work requirements, using the correct procedures			
		2.2	Create ruled and revolved surfaces in 3D space to meet work requirements, using the correct procedures			
		2.3	Modify existing 3D model to meet work requirements, using the correct procedures			
		2.4	Apply basic rendering techniques to the 3D model to meet work requirements, using the correct procedures			
		2.5	Save the file in various formats for retrieval as per standard operating procedures			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
3	Be able to produce output from the 3D model	3.1	Extract physical properties using the correct procedures and to meet work requirements including: volume mass centre of gravity			
4	Be able to observe safe working practices and procedures	4.1	Observe all hazard and control measures associated with using computer aided design systems, including housekeeping			
		4.2	Conform to specified safe work practices and procedures			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

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

Unit 17: Research a Design Concept

Unit reference number: F/601/6485
QCF level: 3
Credit value: 4
Guided learning hours: 24

Unit aim

The aim of this unit is for learners to establish client design needs, and then research develop and present the preferred design solution.

Unit assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Common Requirements for National Vocational Qualifications (NVQ) in the QCF', which can be found in *Annexe A*.

Semta has published additional assessment requirements. Please refer to the Engineering NVQ QCF Unit Assessment Strategy in *Annexe B*.

Learning outcomes and assessment criteria

To pass this unit, the learner needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria determine the standard required to achieve the unit.

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Establish client needs and design requirements	1.1	Determine and evaluate user/client needs			
		1.2	Clarify specifications, parameters and constraints of the design challenge in consultation with relevant stakeholders			
		1.3	Articulate the essence of the design challenge in an appropriate format			
		1.4	Establish and develop working relationships with key stakeholders and keep them informed throughout the design process			
2	Carry out research to inform design solutions	2.1	Research, evaluate and acknowledge information from relevant sources, which may assist in responding to the design challenge, including: • historical, current and future perspectives and trends • social, economical, environmental, sustainable, ethical and cultural issues • other designs and the work of design practitioners			
		2.2	Analyse, extract and collate information to inform the development of the design solution			
		2.3	Seek and integrate input and ideas from others during the design process			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
3	Develop design options based on research and other information	3.1	Develop and use a range of criteria, which can be used to evaluate different options and ideas			
		3.2	Use a range of creative thinking techniques to generate different options and ideas			
		3.3	Apply relevant principles of functionality, ergonomics, aesthetics and sustainability to the development of different options			
		3.4	Seek and integrate input and ideas from others			
		3.5	Negotiate and agree any changed requirements or modifications			
4	Select and present preferred design solution	4.1	Select a preferred solution against agreed criteria and in consultation with relevant key stakeholders			
		4.2	Adjust and refine proposed design solution based on research testing and reflection			
		4.3	Present proposed design solution with appropriate supporting documentation according to project requirements			
5	Understand copyright, moral rights and intellectual property issues	5.1	Explain the relevant legislation that impacts on design, including: • copyright • moral rights • intellectual property			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

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

Unit 18: Write a Design Brief

Unit reference number: F/601/6518
QCF level: 3
Credit value: 2
Guided learning hours: 12

Unit aim

The aim of this unit is for learners to define the requirements for a design project, then prepare a written design brief.

Unit assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Common Requirements for National Vocational Qualifications (NVQ) in the QCF', which can be found in *Annexe A*.

Semta has published additional assessment requirements. Please refer to the Engineering NVQ QCF Unit Assessment Strategy in *Annexe B*.

Learning outcomes and assessment criteria

To pass this unit, the learner needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria determine the standard required to achieve the unit.

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to define the requirements for a design project	1.1	Define the aims and objectives of the design project in terms of: • results of design • outcomes of design • business objectives of design project			
		1.2	Define the target audience for the design project by reference to demographics such as: • age • gender • income • occupation • geographic location			
		1.3	Identify the main competitors and review their products in relation to design project objectives			
		1.4	Agree the budget and timescale for completing the design project			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
2	Be able to prepare a written design brief	2.1	Prepare a clear, concise and well constructed written design brief, in the appropriate format, which incorporates information about: • profile and values of the organisation • aims and objectives of the design project • target audience • competitors • budget and timescale			

Learner name: _____ Date: _____

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

Unit 19: Interpret a Design Brief and Follow the Design Process

Unit reference number: T/601/6483

QCF level: 3

Credit value: 4

Guided learning hours: 24

Unit aim

This unit will enable learners to generate ideas from a design brief and produce a model, prototype or artwork. They will then produce the product themselves or monitor the production of the product and obtain client approval.

Unit assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Common Requirements for National Vocational Qualifications (NVQ) in the QCF', which can be found in *Annexe A*.

Semta has published additional assessment requirements. Please refer to the Engineering NVQ QCF Unit Assessment Strategy in *Annexe B*.

Learning outcomes and assessment criteria

To pass this unit, the learner needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria determine the standard required to achieve the unit.

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Confirm the nature and scope of the design brief with stakeholders	1.1	Establish and clarify the user or client for the proposed product/service to inform design decisions			
		1.2	Identify specifications, parameters or constraints of the design brief with relevant client and relevant colleagues			
		1.3	Identify factors that may determine or affect visual design concepts, including the design techniques.			
2	Generate a range of ideas to respond to the design brief and agree the design concept	2.1	Source and evaluate products, designs, images, artwork and other creative work to inspire design ideas			
		2.2	Generate a range of ideas for the design concept through research, exploration and experimentation			
		2.3	Develop an initial design concept in line with design brief parameters and present this in an appropriate format			
		2.4	Evaluate and explore different options and creative ideas for refining the concept, working closely with the client and seeking feedback at each step of the process			
		2.5	Agree the concept for work which complies with the design brief			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
3	Produce models/prototypes/ artwork and finalise production specification	3.1	Assess specific design production risks			
		3.2	Identify all components required to produce a model, prototype or artwork			
		3.3	Identify and consult with supporting services required for production			
		3.4	Produce a model, prototype or artwork and evaluate this against the design brief requirements			
		3.5	Analyse the model, prototype or artwork and determine if any further adjustments need to be made to production requirements			
		3.6	Finalise production specifications supported by accurate and complete documentation			
4	Be able to produce, or monitor production of product/service and obtain client approval	4.1	Collect and/or organise required components for the work			
		4.2	Produce or monitor the production of the work ensuring all parameters of the design brief are met			
		4.3	Document work progress accurately and in a format appropriate to the nature of the design and requirements of the design brief			
		4.4	Obtain client approval and signature for the work when appropriate			

Learner name: _____ Date: _____

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

Unit 20: Understand the Concept and Techniques Used in Branding

Unit reference number: R/601/6507
QCF level: 3
Credit value: 3
Guided learning hours: 18

Unit aim

In this unit learners will gain an understanding of the drivers, trends and issues involved in branding and how to integrate design and innovation in brand strategy.

Unit assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Common Requirements for National Vocational Qualifications (NVQ) in the QCF', which can be found in *Annexe A*.

Semta has published additional assessment requirements. Please refer to the Engineering NVQ QCF Unit Assessment Strategy in *Annexe B*.

Learning outcomes and assessment criteria

To pass this unit, the learner needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria determine the standard required to achieve the unit.

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Understand the definition of brand and the role of brands for business performance	1.1	Identify a range of brand and branding models			
		1.2	Explain the difference between business plans and brand plans			
		1.3	Describe the types of market drivers, trends and issues involved in branding			
2	Understand different tools and techniques used in branding	2.1	Identify the range of audit tools and methods used for: • branding • design			
		2.2	Explain positioning, competitor's analysis, benchmarks and segmentation			
		2.3	Describe how user and market research information can be used to support brand strategy decision-making frameworks			
		2.4	Identify typical examples of success and failure in branding and the reasons for this			
		2.5	Identify a range of storytelling techniques that are used in branding			
		2.6	Explain the role of design management and the management design process			
		2.7	Describe how communications, products and services should be coordinated			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
3	Understand the impact of social responsibility, sustainability and innovation in branding	3.1	Describe the policy, aims and impact on brand strategy of: • corporate social responsibility • sustainability			
		3.2	Explain the importance of innovation as a strategic competence and how to integrate design and innovation in brand strategy for business and brand competitiveness			

Learner name: _____ Date: _____

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(*if sampled*)

Unit 21: Understand Market Research

Unit reference number: Y/601/6511

QCF level: 3

Credit value: 3

Guided learning hours: 18

Unit aim

In this unit learners will learn about different types of market research information and how to analyse this information to inform business decisions.

Unit assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Common Requirements for National Vocational Qualifications (NVQ) in the QCF', which can be found in *Annexe A*.

Semta has published additional assessment requirements. Please refer to the Engineering NVQ QCF Unit Assessment Strategy in *Annexe B*.

Learning outcomes and assessment criteria

To pass this unit, the learner needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria determine the standard required to achieve the unit.

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Know the types of market research and how information can be gathered	1.1	Describe the different types of market research and the methods of gathering this, including: • use of surveys • qualitative and quantitative research • use and application of hypotheses			
		1.2	Describe how to locate and interrogate information about: • competitors • economic, social and industry trends and practices			
		1.3	Explain the circumstances in which a market research consultancy might be appointed			
2	Know how to analyse market information to inform business decisions	2.1	Explain data processing methods and data analysis techniques			
		2.2	Explain the purpose of written and graphical forms of statistical data and demonstrate how these should be interpreted as part of market research activities			
		2.3	Explain how market research affects the development of products and services and how it can be taken into consideration as part of the company's business plan			
		2.4	Explain the role of market research in enterprise development			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
3	Understand legal requirements for market research activities	3.1	Explain the relevant legislation applicable to market research activity, including: • the Privacy Act • any other act that applies to the collection, and storage, of confidential information			

Learner name: _____ Date: _____

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(*if sampled*)

Unit 22: Develop a Presentation

Unit reference number: M/601/2528
QCF level: 3
Credit value: 3
Guided learning hours: 15

Unit aim

In this unit learners will gain an understanding of how to deliver and develop a presentation.

Unit assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Common Requirements for National Vocational Qualifications (NVQ) in the QCF', which can be found in *Annexe A*.

Semta has published additional assessment requirements. Please refer to the Engineering NVQ QCF Unit Assessment Strategy in *Annexe B*.

Learning outcomes and assessment criteria

To pass this unit, the learner needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria determine the standard required to achieve the unit.

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Understand the purpose of preparing for and evaluating a presentation	1.1	Explain the purpose of using different types of presentation and equipment to provide information			
		1.2	Explain the procedures to be followed when preparing a presentation, including planning, preparation of content, materials, and contingencies			
		1.3	Explain the benefits of preparing for giving a presentation			
		1.4	Explain and illustrate how presentations may be enhanced by materials and equipment			
		1.5	Explain the purpose and benefits of reflecting on the feedback obtained of the written presentation			
2	Be able to develop a presentation	2.1	Agree and confirm audience, purpose, content, style and timing of a presentation			
		2.2	Research and plan a presentation			
		2.3	Select any equipment needed for the presentation			
		2.4	Prepare content, shape and structure of a presentation to achieve its purpose and suit needs of audience			
		2.5	Obtain feedback on planned presentation and make adjustments, if required			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		2.6	Produce presentation handouts			
		2.7	Collect feedback on the written presentation			
		2.8	Reflect on the feedback obtained of the written presentation and identify learning points			
		2.9	Identify changes that will improve future written presentations			

Learner name: _____ Date: _____

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Assessor signature: _____ Date: _____

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

Unit 23: Deliver a Presentation

Unit reference number: T/601/2529
QCF level: 3
Credit value: 3
Guided learning hours: 15

Unit aim

The aim of is this unit is for learners to develop an understanding of the purpose of preparing for and evaluating a presentation, including the techniques that enhance a presentation. Learners will have the opportunity to deliver and evaluate a presentation.

Unit assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Common Requirements for National Vocational Qualifications (NVQ) in the QCF', which can be found in *Annexe A*.

Semta has published additional assessment requirements. Please refer to the Engineering NVQ QCF Unit Assessment Strategy in *Annexe B*.

Learning outcomes and assessment criteria

To pass this unit, the learner needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria determine the standard required to achieve the unit.

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Understand the purpose of preparing for and evaluating a presentation	1.1	Explain the purpose of using different types of presentation and equipment			
		1.2	Explain different ways of delivering presentations and their features			
		1.3	Explain the procedures to be followed when preparing a presentation			
		1.4	Explain the benefits of preparing for giving a presentation			
		1.5	Describe the types of problems that may occur with equipment and how to deal with them			
		1.6	Explain the purpose and benefits of contingency planning			
		1.7	Explain the purpose and benefits of collecting feedback from the audience on the presentation			
		1.8	Explain the purpose and benefits of evaluating presentations and own performance			
2	Understand the techniques used in enhancing a presentation	2.1	Explain and illustrate how presentations may be enhanced by materials and equipment			
		2.2	Explain and illustrate how presentations may be enhanced by use of communication and interpersonal skills			
		2.3	Describe how to gauge audience reaction to the presentation			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		2.4	Explain the purpose and benefits of summarising important features of the presentation			
		2.5	Describe the purpose and benefits of giving the audience opportunities to ask questions			
3	Be able to prepare for delivery of a presentation	3.1	Select any equipment needed and plan how to use it to best effect			
		3.2	Make contingency plans in case of equipment failure or other problems, if required			
		3.3	Practise the presentation and its timing			
		3.4	Obtain feedback on planned presentation and make adjustments, if required			
4	Be able to deliver a presentation	4.1	Check equipment and resources			
		4.2	Circulate presentation materials			
		4.3	Introduce self to audience and state aims of the presentation			
		4.4	Address the audience, speaking clearly and confidently, using language to suit the topic and audience			
		4.5	Vary tone, pace and volume to emphasise key points			
		4.6	Gauge audience reaction during the presentation and adapt if required			
		4.7	Summarise throughout the presentation to emphasise key points and help to maintain audience interest			
		4.8	Use body language in a way that reinforces presented information			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		4.9	Use equipment, where appropriate, to enhance the presentation, and deal with any problems that may occur			
		4.10	Provide the audience with opportunities to ask questions			
		4.11	Listen carefully to questions and respond in a way that meets the audience's needs			
5	Be able to evaluate a presentation	5.1	Collect feedback on the presentation			
		5.2	Reflect on own performance and identify learning points			
		5.3	Evaluate the presentation and own performance and identify changes that will improve future presentations			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

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

Unit 24: Understanding Costs and Budgets in an Organisation

Unit reference number: L/503/9354

QCF level: 3

Credit value: 1

Guided learning hours: 7

Unit aim

The aim of this unit is to develop learner understanding of how to gather information to create a budget within an organisation and how to maintain the control of costs.

Unit assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Common Requirements for National Vocational Qualifications (NVQ) in the QCF', which can be found in *Annexe A*.

Semta has published additional assessment requirements. Please refer to the Engineering NVQ QCF Unit Assessment Strategy in *Annexe B*.

Learning outcomes and assessment criteria

To pass this unit, the learner needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria determine the standard required to achieve the unit.

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Understand budgets within an organisation	1.1	Explain the importance of agreeing to a budget and operating within it			
		1.2	Describe the process by which a budget is agreed in an organisation			
		1.3	Explain the process of gathering information to be used for the determination and/or revision of budgets			
		1.4	Describe a method to monitor variance between actual and budgeted performance			
2	Understand costs within an organisation	2.1	Explain fixed and variable costs in relation to the organisation			
		2.2	Explain the concept of break even in relation to the organisation			
		23	Explain the purpose and nature of basic cost statements			
		2.4	Explain the value of standard costing and its role as a control mechanism			
		2.5	Describe mechanisms in the organisation to maintain control of costs			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

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

Unit 25: The History and Social Impact of Creativity and its Influence on Design

Unit reference number: T/601/6502

QCF level: 3

Credit value: 3

Guided learning hours: 18

Unit aim

The aim of this unit is to give learners an understanding of the links between the history of creativity and current individuals and communities, and the way in which different factors impact on creativity.

Unit assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Common Requirements for National Vocational Qualifications (NVQ) in the QCF', which can be found in *Annexe A*.

Semta has published additional assessment requirements. Please refer to the Engineering NVQ QCF Unit Assessment Strategy in *Annexe B*.

Learning outcomes and assessment criteria

To pass this unit, the learner needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria determine the standard required to achieve the unit.

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Understand the impact of creativity at different points in history including contemporary perspectives	1.1	Review and compare different definitions of creativity and explain how these relate in an historical context			
		1.2	Describe the ways in which creativity has occurred in different fields of human endeavour			
2	Understand the potential links between the history of creativity and current individuals and communities	2.1	Extract key information and ideas from the history of creativity for possible relevance to your own work and the work of others			
		2.2	Evaluate the impact of creativity on the way that people live and work			
		2.3	Discuss and explore ideas with others			
		2.4	Describe the relationship between creativity and different cultures and relate these to current contexts			
3	Know where to find information on the history and social impact of creativity	3.1	Identify relevant sources of information on the history of creativity			
		3.2	Identify and access opportunities to build own creative thinking skills			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
4	Understand the ways in which different factors impact on creativity and how it is demonstrated in various cultural contexts	4.1	Describe how individuals and collaborative groups have demonstrated creativity			
		4.2	Identify and evaluate the factors that affect the presence or extent of creativity in a given situation			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

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

Unit 26: Research and Evaluate the Nature of Design in a Specific Industry Context

Unit reference number: L/601/6490

QCF level: 3

Credit value: 3

Guided learning hours: 18

Unit aim

The aim of this unit is to give learners an understanding of the role of designers in the engineering industry. They will also develop and understanding of the role of current and emerging technologies on design and how design trends affect the industry.

Unit assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Common Requirements for National Vocational Qualifications (NVQ) in the QCF', which can be found in *Annexe A*.

Semta has published additional assessment requirements. Please refer to the Engineering NVQ QCF Unit Assessment Strategy in *Annexe B*.

Learning outcomes and assessment criteria

To pass this unit, the learner needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria determine the standard required to achieve the unit.

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Understand the role of design and designers in the industry	1.1	Describe the nature, history, role and importance of design in the industry			
		1.2	Explain the different definitions of design and the differences and similarities between design and product development			
		1.3	Compare the roles played by current and past designers and other contributors in the design process within the industry			
		1.4	Explain the impact of design on own work			
2	Understand the impact of current and emerging technologies on design in the industry	2.1	Explain the impact of current and emerging technologies on design in the industry			
3	Understand how design trends affect the industry	3.1	Evaluate how the roles of individual workers across the industry are affecting future design directions			
		3.2	Evaluate how design trends affect the overall industry and the way it operates			
		3.3	Share information and pro-actively discuss emerging trends with work colleagues			
		3.4	Identify design trends that will impact on own work and describe opportunities that will help to develop appropriate new skills			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
4	Understand ethical issues and regulations that impact on the design industry	4.1	Describe the ethical issues and regulations that impact on the design industry			
		4.2	Explain current thinking, attitudes and approaches to key issues about professional design practice			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

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

Unit 27: Contribute to Running a Project

Unit reference number: J/601/2549
QCF level: 3
Credit value: 5
Guided learning hours: 30

Unit aim

The aim of is this unit is for learners to develop an understanding of how to contribute to agreeing a project brief and to a project, and the purpose of evaluating a project. Learners will have the opportunity to put these skills into practice.

Unit assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Common Requirements for National Vocational Qualifications (NVQ) in the QCF', which can be found in *Annexe A*.

Semta has published additional assessment requirements. Please refer to the Engineering NVQ QCF Unit Assessment Strategy in *Annexe B*.

Learning outcomes and assessment criteria

To pass this unit, the learner needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria determine the standard required to achieve the unit.

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Understand how to contribute to agree to a project brief	1.1	Describe the difference between routine work and taking part in a project			
		1.2	Explain the advantages and disadvantages of using projects and when projects are appropriate			
		1.3	Explain the project-planning methodologies appropriate to the types of projects run and the tools that can be used to assist project planning and control			
		1.4	Explain the purpose and benefits of identifying stakeholders involved in the project			
		1.5	Explain the purpose of contributing to agreeing a project's purpose, scope, timescale, costs, aims and objectives			
		1.6	Explain the purpose of agreeing a budget for a project			
		1.7	Describe how to estimate types and quantity of resources needed to run a project			
		1.8	Describe how to identify project risks and develop contingency plans, if required			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
2	Understand how to contribute to a project	2.1	Describe the types of information needed to monitor projects and the methods that can be used to give information			
		2.2	Describe how to estimate and control resources in an area of work during a project			
		2.3	Explain the purpose of reporting own progress during a project			
		2.4	Outline reasons for seeking advice in response to unexpected events			
		2.5	Explain the purpose and benefits of contributing towards achieving projects within agreed timescales			
		2.6	Explain the purpose and benefits of keeping records of all project activity within the scope of own work			
		2.7	Describe different ways of communicating with those involved in or affected by a project to make sure it runs smoothly			
3	Understand the purpose of contributing to the evaluation of a project	3.1	Describe different types of methods available to monitor projects			
		3.2	Explain the purpose of making own contributions when evaluating projects			
		3.3	Describe how to learn lessons for the future for own work			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
4	Be able to contribute to preparing and planning a project	4.1	Confirm the purpose of the project with all stakeholders			
		4.2	Confirm project scope, timescale, aims and objectives			
		4.3	Contribute to the preparation of a project specification			
		4.4	Confirm all types of resources for all stakeholders			
		4.5	Confirm with all stakeholders, the project plan and timed use of all types of resources for an area of work			
		4.6	Contribute to identifying risks and develop contingency plans for an area of work			
5	Be able to contribute to running a project	5.1	Implement a project			
		5.2	Communicate with all stakeholders involved with or affected by a project			
		5.3	Adapt project plans for stakeholders to respond to unexpected events and risks			
		5.4	Provide interim reports on project progress to relevant stakeholders			
		5.5	Achieve required outcomes for relevant stakeholders on time and to budget			
		5.6	Seek advice in response to unexpected events, if required			
		5.7	Keep records of project activity			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
6	Be able to contribute to evaluating the outcomes of a project	6.1	Evaluate project for all stakeholders			
		6.2	Report on the degree to which a project met its aims and objectives for all stakeholders			
		6.3	Report on project strengths and areas for improvement for all stakeholders			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

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

Unit 28: Articulate, Present and Debate Ideas in a Creative Environment

Unit reference number: T/601/6449

QCF level: 3

Credit value: 3

Guided learning hours: 18

Unit aim

In this unit learners start by preparing ideas for to debate in a creative environment and use a range of techniques to engage others in the process of communication and exchange.

Unit assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Common Requirements for National Vocational Qualifications (NVQ) in the QCF', which can be found in *Annexe A*.

Semta has published additional assessment requirements. Please refer to the Engineering NVQ QCF Unit Assessment Strategy in *Annexe B*.

Learning outcomes and assessment criteria

To pass this unit, the learner needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria determine the standard required to achieve the unit.

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Understand how to prepare for debating ideas in a creative environment	1.1	Identify key themes, messages and positions to aid clarity of thought and presentation			
		1.2	Compare different ways of communicating ideas for different purposes and to different audiences			
		1.3	Explore the ways that storytelling can be used to communicate ideas			
		1.4	Identify the enabling skills and attributes of individuals who can effectively participate in discussions about ideas			
2	Be able to explore and use a range of techniques to engage and involve others in the process of communication and exchange	2.1	Create innovative approaches to different communication challenges			
		2.2	Take risks in the way ideas are presented			
		2.3	Identify ways to provoke and encourage response in particular individuals or groups			
		2.4	Challenge and explore different concepts and approaches to generate new ideas			
		2.5	Present and argue substantiated positions on ideas			
		2.6	Respond to questions about ideas with confidence and relevant information			
		2.7	Be open to critical analysis of own ideas and to the ideas of others			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
3	Be able to reflect on and appraise the views of others	3.1	Reflect on and appraise the views of others			
		3.2	Use the views of others to refine ideas and embrace new ideas			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

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

Unit 29: Manage Own Time and Efficiency

Unit reference number: T/505/1160
QCF level: 3
Credit value: 3
Guided learning hours: 24

Unit aim

In this unit learners start by evaluating the effectiveness of their own work, then proceed to set targets to improve own time management skills. Finally, they monitor their own time management skills and work effectiveness.

Unit assessment requirements/evidence requirements

This unit must be assessed in a work environment and must be assessed in accordance with the 'Common Requirements for National Vocational Qualifications (NVQ) in the QCF', which can be found in *Annexe A*.

Semta has published additional assessment requirements. Please refer to the Engineering NVQ QCF Unit Assessment Strategy in *Annexe B*.

Learning outcomes and assessment criteria

To pass this unit, the learner needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria determine the standard required to achieve the unit.

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to evaluate own work effectiveness	1.1	Identify own tasks undertaken and the time spent on them during a work day			
		1.2	Review own aspirations on what work needs to be undertaken for business success			
		1.3	Compare own aspirations against tasks undertaken and time spent on them during a work day			
		1.4	Use the comparison to analyse own work effectiveness			
2	Be able to set targets to improve own time management skills	2.1	Review how own time management skills are affecting ability to work effectively			
		2.2	Develop short- and long-term measurable targets to improve own time management skills			
		2.3	Produce a set of priorities for improving own time management skills			
3	Be able to monitor time management skills and own work effectiveness	3.1	Review progress on achievement targets for own work effectiveness			
		3.2	Assess to what extent improvements have been made in own work effectiveness			
		3.3	Identify any further time management improvements that need be made			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

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

12 Further information and useful publications

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

- Pearson Edexcel: **www.edexcel.com/contactus**
- Pearson BTEC: **www.btec.co.uk/contactus**
- Pearson Work Based Learning: **www.pearsonwbl.com/contactus**
- Books, software and online resources for UK schools and colleges: **www.pearsonschools.co.uk/contactus**

Other sources of information and publications available on our website include:

- *Pearson Equality Policy*
- *Pearson Work Based Learning Centre Guide*
- *Edexcel UK Information Manual – Chapter 9* (updated annually)
- *Recognition of Prior Learning Policy.*
- *BTEC Centre Guide to Assessment*

Further information and publications on the delivery and quality assurance of NVQ/Competence-based qualifications is available on our website, at www.pearsonwbl.edexcel.com/NVQ-competence-based.

Our publications catalogue lists all the material available to support our qualifications. To access the catalogue and order publications, please go to www.edexcel.com/resources/publications.

13 Professional development and training

Pearson supports UK and international customers with training related to our qualifications. This support is available through a choice of training options and sector events, 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
- building your team and teamwork skills
- developing learner-centred learning and teaching approaches
- building Functional Skills into your programme
- building in effective and efficient quality assurance systems.

For more information on training options and upcoming events, please visit our website, www.pearsonwbl.edexcel.com//training-events. You can request customised training by completing the enquiry form on our website and we will contact you to discuss your training needs.

Support services

Face-to-face support: our team of Regional Quality Managers, based around the country, are responsible for providing quality assurance support and guidance to anyone managing and delivering NVQs/Competence-based qualifications. The Regional Quality Managers can support you at all stages of the standard verification process as well as in finding resolutions of actions and recommendations as required. A UK map showing the Regional Quality Managers' contact details can be found at www.btec.co.uk/support.

Online support: find the answers to your questions by browsing over 100 FAQs on our website or by submitting a query using our Work Based Learning Ask the Expert Service. You can search the database of commonly asked questions relating to all aspects of our qualifications in the work-based learning market. If you are unable to find the information you need, send us your query and our qualification or administrative experts will get back to you. The Ask the Expert service is available at www.pearsonwbl.edexcel.com/Our-support.

Online forum

Pearson Work Based Learning Communities is an online forum where employers, further education colleges and workplace training providers are able to seek advice and clarification about any aspect of our qualifications and services, as well as share knowledge and information with others. The forums are sector specific and cover Business Administration, Customer Service, Health and Social Care, Hospitality and Catering and Retail. The online forum is available at www.pearsonwbl.edexcel.com/Our-support.

14 Contact us

We have a dedicated Account Support team, based throughout the UK, to give you more personalised support and advice. To contact your Account Specialist you can use any of the following methods:

Email: wblcustomerservices@pearson.com
Telephone: 0844 576 0045

If you are new to Pearson and would like to become an approved centre, please contact us at:

Email: wbl@pearson.com
Telephone: 0844 576 0045

Complaints and feedback

We are working hard to provide you with excellent service. However, if any element of our service falls below your expectations, we want to understand why, so that we can prevent it from happening again. We will do all that we can to put things right.

If you would like to register a complaint with us, please email wblcomplaints@pearson.com.

We will formally acknowledge your complaint within two working days of receipt and provide a full response within seven working days.

Annexe A: Assessment requirements/strategy: Common Requirements for NVQs in the QCF

Background to NVQs

The Review of Vocational Qualifications in England and Wales (RVQ) Working Group report in April 1986 recommended the introduction of NVQ's to address weaknesses in the then current systems of vocational qualifications. Amongst the weaknesses it identified were:

- no clear, readily understandable pattern of provision as well as considerable overlap, duplication and gaps in that provision
- many barriers to accessing vocational qualifications and inadequate arrangements for progression and transfer of credit
- assessment methods biased towards testing of knowledge rather than skill or competence
- insufficient recognition of learning gained outside formal education and training
- limited take-up of vocational qualifications.

The Review also recommended that:

> *'the Government should establish a National Council for Vocational Qualifications (NCVQ').*

The purpose of the National Council for Vocational Qualifications was to establish National Vocational Qualifications. The concept of a standard of competence was fundamental to NVQs and the report further recommended that:

> *'The NCVQ should establish a clear focus for national action to secure specification of standards of competence…. by effective and appropriate industry bodies'.*

The National Council for Vocational Qualifications (NCVQ) was established in the autumn of 1986. NCVQ's NVQ Criteria and Guidance from 1995 states that.

> *'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'.*

This is the context in which this regulatory framework is developed to operate in addition to the General provisions of Regulatory arrangements for the Qualifications and Credit Framework 2008. The NVQ is not a general qualification, it is a particular type that operates in a specific context – the workplace – and relies upon specific provisions and requirements unique to a competency based qualification.

In 1993 NCVQ developed and published the Awarding Bodies Common Accord.

> *'The Common Accord was drafted …..in order to set out assessment and verification processes which would offer the necessary quality in relation to all NVQ awards. It emphasises the coherence of the NVQ framework to make it easier for users of NVQs to understand the system and seeks to improve the cost effectiveness and credibility of NVQs'.*

The Common Accord was intended to be applied flexibly within its main principles, but subsequently, following the establishment of the Qualifications and Curriculum Authority with formal regulatory powers, it was adapted to become the mandatory NVQ Code of Practice. This document reflects the principles articulated in the Code of Practice while seeking to capture the intent of the QCF for a more flexible qualifications framework and at the same time responding to the UK CES requirement for 'a new, lighter touch and fit for purpose Code of Practice' [1].

Purpose of this document

At a meeting chaired by Ofqual on the 5th May 2009, called as a component of the ongoing discussions into the place of NVQs in the QCF, that organisation placed responsibility with the community of SSCs and SSBs to develop the required guidance to underpin the NVQ brand in the QCF. Ofqual indicated that they were not prepared to sanction formal regulation at this stage in the development of the QCF, with such decisions left until a review of operations of the framework to take place later.

In conjunction with this development is the obvious necessity to gain agreement from all parties to use this document as the basis for requirements of qualifications using the term NVQ in the title, in the QCF.

Additional requirements

1. Qualification titles (links to QCF clauses 1.18 to 1.21)

1.1. Each qualification title submitted for accreditation in the QCF that purports to be of the type NVQ must be presented in a standard format that identifies clearly that it is an NVQ.

1.2. Any qualification submitted for accreditation with NVQ in the title must apply the title defined by the relevant SSC/B.

2. Relationship with NOS

2.1. Qualifications using the title NVQ are based upon National Occupational Standards (NOS). For any qualification purporting to be of the type NVQ the following standards must apply:

(a) There must be a direct relationship between NOS and all Units in the qualification.

(b) They must be based entirely and only on NOS developed by SSCs/SSBs.

(c) They must attest to competence in an occupational role (where competence is defined as the ability to apply knowledge, understanding, practical and thinking skills to be effective in work: these skills will usually include problem-solving, being flexible to meet changing demands and the ability to work with or alongside others).

(d) They should be made up of units that are shared.

3. Rules of combination (links to clauses 1.23 to 1.27)

3.1. Any qualification purporting to be an NVQ must conform to the following guidelines:

(a) Rules of combination must be that determined by SSC/Bs.

(b) Qualifications of the type NVQ covered by this requirement:

i. must consist of entirely competence based units that conform to the requirements of clause 2.1.

ii. must be based upon units recognised in the QCF.

(c) No organisation is permitted to submit a qualification under a different title that has the same units and rules of combination as an NVQ.

4. Assessment and quality assurance (links to clauses 5.5 to 5.10)

4.1. NVQs are a type of qualification that reflects the unique needs of the workplace. Over the period of their use the principles, practices and requirements surrounding the assessment and quality assurance have evolved to reflect a range of varying needs. The principles outlined in this document seek to reduce any perceived burden attached to this process and to remove any inappropriate requirements from the process.

4.2. Additionally Awarding Organisations are encouraged to make use of naturally occurring quality assurance and monitoring systems where they exist in workplace assessment environments.

4.3. Assessment methodologies of qualifications using the title NVQ must implement the assessment strategies developed in partnership by the relevant SSC/Bs and Awarding Organisations. This document will be published separately and will include requirements for assessment and verification of SVQs. The specified assessment strategies must enable the qualification to attest to competence in the workplace typically they will incorporate the following requirements:

(a) Application of the specified skills, knowledge and understanding to standards required in the workplace.

(b) Specification of the type and amount of evidence to be collected for the purpose of assessing competence.

(c) Identification of any aspects of the assessment of NOS that may be/need to be simulated.

(d) Clarification of the extent to which simulated working conditions may be used in assessment and of any required characteristics of the simulations including definitions of what might constitute realistic working environments.

(e) Specification of the occupational expertise of assessors and verifiers.

4.4. Units used in qualifications with the title NVQ may reference the requirements of Assessment Strategies in the QCF Unit specification without requiring full duplication.

5. Assessor Requirements (links to QCF clause 5.2)

5.1. The principles of assessment for qualifications using the title NVQ reflect the unique nature of a workplace competency based qualification where the accumulation of evidence towards recognition requires both a formative and summative elements and dictates the need for the application of methods suited to the individual, environment and competency being assessed. It is the application of knowledge and skills that is then assessed in the workplace that makes NVQs unique — in other qualifications the application is implied rather than visible and required. It is expected that the assessment of qualifications will be underpinned by arrangements that reflect the principles outlined below:

(a) Assessment must be carried out by competent persons who hold, or are working towards a suitable qualification. By default this is the Assessor units A1 and/or A2 (and by implication legacy D32/33 unit) but may be an appropriate equivalent as defined in the assessment strategy for that qualification or family of qualifications.

(b) Assessors must have sufficient and relevant technical/occupational competence in the Unit, at or above the level of the Unit being assessed

(c) All Assessors are expected to be fully conversant with the Unit(s) against which the assessments and verification are to be undertaken.

(d) Unqualified Assessors must have a plan to achieve the relevant assessor qualification as defined in the Assessment Strategy within the timeframe specified.

6. Verifier Requirements (links to QCF clause 5.2)

6.1. The principles of verification for qualifications using the title NVQ reflect the unique nature of a workplace based qualification. The verification process has been established to replicate the equivalent quality assurance (QA) functions that operate in academic qualifications, undertaken by examiners and moderators. It is expected that the awarding of qualifications will be underpinned by QA appropriate to workplace based delivery. At a minimum this should reflect the principles outlined below:

(a) Internal verification must be carried out by competent persons who hold, or are working towards a suitable qualification. By default this is the Internal Verifier unit V1 (and by implication legacy D34 unit) but may be an appropriate equivalent as defined in the assessment strategy for that qualification or family of qualifications (qualifications outlined in 5.1 are also highly recommended).

(b) IVs must have sufficient and relevant technical/occupational familiarity in the Unit(s) being verified.

(c) External verification must be carried out by competent persons who hold, or are working towards a suitable qualification. By default this would be the External Verifier unit V2 (and by implication legacy D35 units) but may be an appropriate equivalent as defined in the assessment strategy for that qualification or family of qualifications (meeting the requirements outlines in clause 5.1 are also highly recommended). EV's are members of an Awarding Organisations staff or agents, who must have no connections with the Centre that would risk a loss of objectivity.

(d) EVs must have sufficient and relevant technical/occupational understanding in the Unit(s) being verified.

(e) All IVs and EVs are expected to:

i. be fully conversant with the standards and units against which the assessments and verification are to be undertaken.

ii. have an appropriate level of understanding of Awarding Organisation systems.

(f) Unqualified Verifiers must have a plan to achieve the relevant verifier qualifications as defined in the Assessment Strategy within the timeframe specified.

6.2. Where the provisions of clause 4.2 are implemented, audit programmes undertaken should seek to ensure that the QA and monitoring intent of clause 6.1 and associated referenced documents is achieved in naturally occurring systems.

7. Assessment Environment

7.1. Evidence should be obtained from the real working environment. However, in certain circumstances, simulation of work activities may be acceptable. Where this is considered necessary, assessors must be confident that the environment replicates the workplace to such an extent that competencies gained will be fully transferable to the workplace. In this case assessors must clearly identify those aspects of the workplace that are critical to performance, and make sure that they have been simulated satisfactorily and in accordance with the requirements of clause 4.3.

7.2. Units that may not be assessed by simulation will be defined in the assessment strategy for the qualification or family of qualifications. Where simulation is involved, assessors must obtain agreement with their IV and EV before assessing candidates.

7.3. There must be an appropriate evidential audit trail of assessment activity that reflects the qualification being assessed. Where appropriate, guidance will be provided in the assessment strategy for the qualifications or family of qualifications.

8. Awarding Organisations

8.1. Awarding Organisations must put in place a risk management methodology for qualifications using the title NVQ. This methodology should contain as a minimum the following features:

- Risk profiles.
- Risk banding characteristics.
- Risk assessment methodologies for each risk band.
- Risk avoidance strategies and activities.
- Risk mitigation activities.
- Performance management and monitoring programme.
- Sanctions provisions.

It is expected that these arrangements will reflect the risk characteristics and mitigation requirements of sectors, families of qualifications and individual qualifications outlined in the applicable Sector Qualifications Strategies and Assessment Strategies for the sector.

8.2. As outlined in clause 4.2 where naturally occurring quality and monitoring systems can be used to achieve the intent and outcomes of these QA arrangements every effort should be made to incorporate these systems, where this supports a suitably rigorous implementation and encourages integration into organisation culture and practices.

8.3. External monitoring of centres may be undertaken either through external verifier visits to centres or suitably constituted high level audit processes designed to ensure the integrity and effectiveness of naturally occurring QA and monitoring systems.

8.4. External monitoring of centres must include systems to ensure there is no conflict of interest.

8.5. The frequency of external monitoring activities should reflect an appropriate risk management methodology for a qualification of the type NVQ. The exact frequency, duration and character of these activities will reflect the centre's performance, taking account of:

- Risk profile of the centre type.
- Risk characteristics of the centre.
- Risk banding of the centre.
- Performance management and monitoring requirements.
- Risk mitigation characteristics.

Annexe B: Assessment requirements/strategy: Engineering NVQ QCF Unit Assessment

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 NVQ units
- promote cost effective assessment plans

This document also provides definitions for:

- 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 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 Organisations.

Assessor Requirements to Demonstrate Effective Assessment Practice

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

Assessor Technical Requirements

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

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

Assessors must also be:

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

Verifier Requirements (internal and external)

Internal quality assurance (Internal Verification) must be carried out by competent Verifiers that as a minimum must hold the QCF Level 4 Award in the Internal Quality Assurance of Assessment Processes and Practices. Current and operational Internal Verifiers that hold internal verification units V1 or D34 will not be required to achieve the QCF Level 4 Award as they are still appropriate for the verification requirements set out in this Unit Assessment Strategy. Verifiers must be familiar with, and preferably hold, either the nationally recognised Assessor units D32 and/or D33 or A1 and/or A2 or the QCF Level 3 Award in Assessing Competence in the Work Environment

External quality assurance (External Verification) must be carried out by competent External Verifiers that as a minimum must hold the QCF Level 4 Award in the External Quality Assurance of Assessment Processes and Practices. Current and operational External Verifiers that hold external verification units V2 or D35 will not be required to achieve the QCF Level 4 Award as they are still appropriate for the verification requirements set out in this Unit Assessment Strategy. Verifiers must be familiar with, and preferably hold, either the nationally recognised Assessor units D32 and/or D33 or A1 and/or A2 or the QCF Level 3 Award in Assessing Competence in the Work Environment

External and Internal Verifiers will be expected to regularly review their skills, knowledge and understanding and where applicable undertake continuing professional development to ensure that they are carrying out workplace Quality Assurance (verification) of Assessment Processes and Practices to the most up to date National Occupational Standards (NOS)

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

Specific technical requirements for internal and external verifiers

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

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

Technical Requirements for Assessors and Verifiers

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

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 for this unit can only be regarded valid, reliable, sufficient and authentic if achieved and obtained in the working environment and be clearly attributable to the learner. However, in certain circumstances, simulation/replication of work activities may be acceptable.

- The use of high quality, realistic simulations/replication, which impose pressures which are consistent with workplace expectations, should only be used in relation to the assessment of the following:
    - rare or dangerous occurrences, such as those associated with health, safety and the environment issues, emergency scenarios and rare operations at work;
    - the response to faults and problems for which no opportunity has presented for the use of naturally occurring workplace evidence of learners competence;
    - aspects of working relationships and communications for which no opportunity has presented for the use of naturally occurring workplace evidence of learners competence.
- Simulations/replications will require prior approval from the specific Awarding Organisation and should be designed in relation to the following parameters: -
    - the environment in which simulations take place must be designed to match the characteristics of the working environment;
    - competencies achieved via simulation/replication must be transferable to the working environment
    - simulations which are designed to assess competence in dealing with emergencies, accidents and incidents must be verified as complying with relevant health, safety and environmental legislation by a competent health and safety/environmental control officer before being used;
    - simulated activities should place learners under the same pressures of time, access to resources and access to information as would be expected if the activity was real;
    - simulated activities should require learners to demonstrate their competence using plant and/or equipment used in the working environment;
    - simulated activities which require interaction with colleagues and contacts should require the learner to use the communication media that would be expected at the workplace;
    - for health and safety reason simulations need not involve the use of genuine substances/materials. Any simulations which require the learner to handle or otherwise deal with materials substances/should ensure that the substitute take the same form as in the workplace

Access to Assessment

There are no entry qualifications or age limits required by learners to undertake the 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 Assessments

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

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

Minimum Performance Evidence Requirements

Performance evidence must be the main form of evidence gathered. In order to demonstrate consistent, competent performance for a unit, a minimum of 3 different examples of performance must be provided, and must be sufficient to show that the assessment criteria have been achieved to the prescribed standards. It is possible that some of the bulleted items in the assessment criteria may be covered more than once. The assessor and learner need to devise an assessment plan to ensure that performance evidence is sufficient to cover all the specified assessment criteria and which maximises the opportunities to gather evidence. Where applicable, performance evidence maybe used for more than one unit.

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

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

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

Performance evidence must be:

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

together with:

- evidence of the way the learner carried out the activities such as witness testimonies, assessor observations or authenticated learner reports, records or photographs of the work/activity carried out, etc.
- Competent performance is more than just carrying out a series of individual set tasks. Many of the units contain statements that require the learner to provide evidence that proves they are capable of combining the various features and techniques. Where this is the case, separate fragments of evidence would not provide this combination of features and techniques and will not, therefore, be acceptable as demonstrating competent performance.
- If there is any doubt as to what constitutes valid, authentic and reliable evidence, the internal and/or external verifier should be consulted.

Assessing Knowledge and Understanding

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

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

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

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

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

Awarding 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.

Quality Control of Assessment

General

There are two major points where an Awarding Organisation interacts with the Centre in relation to the External Quality Control of Assessment for a qualification and these are:

- Approval — when a Centre take on new qualifications, the Awarding Organisation, normally through an External Verifier (EV) ensures that the Centre is suitably equipped and prepared to deliver the new qualification
- Monitoring — throughout the ongoing delivery of the qualification the Awarding Organisation, through EV monitoring and other mechanisms must maintain and the quality and consistency of assessment of the qualification

Approval

In granting Approval, the Awarding Organisation, normally through its External Verifiers (EV) must ensure that the prospective Centre:

- Meets any procedural requirements specified by the Awarding Organisation
- Has sufficient and appropriate physical and staff resources
- Meets relevant health and safety and/or equality and access requirements
- Has a robust plan for the delivery, assessment and QA for the qualifications

Awarding Organisation's may decide to visit the Centre to view the evidence provided.

The Awarding Body must have a clear rationale for the method(s) deployed

Monitoring

The Awarding Organisation, through EV monitoring and other mechanisms must ensure:

- that a strategy is developed and deployed for the ongoing Awarding Organisation monitoring of the Centre. This strategy must be based on an active risk assessment of the Centre. In particular the strategy must identify the learner, assessor and IV sampling strategy to be deployed and the rationale behind this
- that the Centre's internal quality assurance processes are effective in candidate assessment
- that sanctions are applied to a Centre where necessary and that corrective actions are taken
- by the Centre and monitored by the Awarding Organisation/EV
- that reviews of Awarding Organisation's external auditing arrangements are undertaken

Awarding Organisations are required to provide to SEMTA, on request, details of the strategies, rationales and reviews detailed above.

Notes:

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

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