



## National Unit Specification: general information

**UNIT** Health and Safety: Engineering (SCQF level 5)

**CODE** F5DG 11

### SUMMARY

The Unit may form part of the National Qualification Group Awards in Engineering but can also be taken as a free-standing Unit.

By undertaking this Unit candidates will gain the necessary knowledge to contribute effectively to the health and safety of self, others and the organisation through understanding and application of current Health and Safety legislation as practised in the workplace. The candidates will learn how to respond quickly and appropriately in an emergency and how to prevent accidents. They will also be introduced to risk assessment techniques and risk control measures.

### OUTCOMES

- 1 State the current Health and Safety legislation covering employers and employees.
- 2 Apply current Health and Safety legislation to workplace safety.
- 3 Perform a risk assessment exercise within a given engineering environment.

### RECOMMENDED ENTRY

Entry is at the discretion of the centre but some experience of working in an engineering environment would be advantageous.

### CREDIT VALUE

1 credit at Intermediate 2 (6 SCQF credit points at SCQF level 5).

*\*SCQF credit points are used to allocate credit to qualifications in the Scottish Credit and Qualifications Framework (SCQF). Each qualification in the Framework is allocated a number of SCQF credit points at an SCQF level. There are 12 SCQF levels, ranging from Access 1 to Doctorates.*

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### Administrative Information

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## **National Unit Specification: general information (cont)**

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### **CORE SKILLS**

There is no automatic certification of Core Skills in this Unit. This Unit provides opportunities for candidates to develop aspects of the following Core Skills:

- ◆ Problem Solving (SCQF level 5)
- ◆ Working with Others (SCQF level 5)

These opportunities are highlighted in the Support Notes of this Unit Specification.

## **National Unit Specification: statement of standards**

### **UNIT        Health and Safety: Engineering (SCQF level 5)**

Acceptable performance in this Unit will be the satisfactory achievement of the standards set out in this part of the Unit Specification. All sections of the statement of standards are mandatory and cannot be altered without reference to SQA.

#### **OUTCOME 1**

State the current Health and Safety legislation covering employers and employees.

##### **Performance Criteria**

- (a) Correctly identify the sources of current legislation.
- (b) The responsibilities of employers in relation to current legislation are correctly stated.
- (c) The responsibilities of employees in relation to current legislation are correctly stated.

#### **OUTCOME 2**

Apply current Health and Safety legislation to workplace safety.

##### **Performance Criteria**

- (a) The correct procedures in the event of a fire are applied.
- (b) The correct procedures in the event of a workplace accident are applied.
- (c) The correct procedures in the event of a workplace injury are applied.
- (d) Demonstrate and adhere to health and safety practices in working environments.

#### **OUTCOME 3**

Perform a risk assessment exercise within a given engineering environment.

##### **Performance Criteria**

- (a) A risk assessment is carried out correctly in terms of identifying hazards, risks and control measures.
- (b) The risk assessment documentation is completed correctly.

### **EVIDENCE REQUIREMENTS FOR THIS UNIT**

Evidence is required to demonstrate that the candidates have achieved all of the Outcomes and Performance Criteria.

**Outcome 1** — will be assessed by written and/or recorded oral evidence at a single assessment event under supervised conditions lasting no more than 60 minutes and must include:

- ◆ the identification of sources of current Health and Safety legislation to include any TEN of the following with any EIGHT correct responses required: PPE, Noise, Vibration, Fume and Dust, Signage, Chemicals, Accident Reporting, Dangerous Machines, Management, First Aid, Abrasive Wheels, Electricity, Manual Handling, Radiation, Explosives and Fire

## National Unit Specification: statement of standards (cont)

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- ◆ in addition to training, list ONE other responsibility of the EMPLOYER from any EIGHT of the following with any FIVE correct responses required from the list below:
  - Health and Safety at Work; COSHH; Electricity at Work; Control of Noise at Work; Management of Health and Safety at Work; Supply of Machinery; Safety Signs, Manual Handling; Fire Precautions, First Aid; Reporting of Injuries; PPE; Provision and Use of Work Equipment
- ◆ in addition to training, list ONE other responsibility of the EMPLOYEE from any EIGHT of the following with any FIVE correct responses required from the list below:
  - Health and Safety at Work; COSHH; Electricity at Work; Control of Noise at Work; Management of Health and Safety at Work; Supply of Machinery; Safety Signs, Manual Handling; Fire Precautions, First Aid; Reporting of Injuries; PPE; Provision and Use of Work Equipment

**Outcome 2** — will be assessed by performance evidence generated under supervised conditions throughout this and any other practical Unit(s) supported by assessor checklists covering the Outcome and all PCs.

**Outcome 3** — will be assessed by written and/or recorded oral and performance evidence at a single assessment event lasting no more than 30 minutes conducted under supervised conditions in which the candidate will:

- ◆ for a given item of plant, working environment or process identify a minimum of FOUR hazards, FOUR risks and relevant control measures and record these on pro-forma documentation

The Assessment Support Pack (ASP) for this Unit provides samples of assessor observation checklists and details of the questions which exemplify the national standard. Centres wishing to develop their own assessments should refer to the ASP to ensure a comparable standard.

## **National Unit Specification: support notes**

### **UNIT      Health and Safety: Engineering (SCQF level 5)**

This part of the Unit Specification is offered as guidance. The support notes are not mandatory.

While the exact time allocated to this Unit is at the discretion of the centre, the notional design length is 40 hours.

#### **GUIDANCE ON THE CONTENT AND CONTEXT FOR THIS UNIT**

This Unit forms part of the National Qualification Group Awards in Fabrication and Welding, Manufacturing and Mechanical Maintenance Engineering.

The content of this Unit is designed to allow the candidate to work safely within an engineering workplace. This is underpinned by the candidate gaining knowledge of the relevant legislation, roles and responsibilities and the requirements of Common Law in the interpretation of current legislation. Candidates will also be required to carry out a risk assessment and complete pro-forma documentation.

The study of legislation should include an awareness of the purpose and application of: the Health and Safety at Work Act 1974, the Management of Health and Safety at Work Regulations 1999, the Workplace (Health, Safety and Welfare) Regulations 1992, the Health and Safety (Safety Signs and Signals) regulations 1996, the Control of Substances Hazardous to Health Regulations 2002 (as amended 2004), the Control of Noise at Work Regulations 2005, the Manual Handling Operations Regulations 1992, the Electricity at Work Regulations 1989, the Fire (Scotland) Act 2005, the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995, the Health and Safety (First Aid) Regulations 1981, the Provision and Use of Work Equipment Regulations 1998, the Personal Protective Equipment Regulations 1992.

The duties of employers to take reasonable care in their work towards employees and third parties with regard to: safe systems of work; safe plant and equipment; information, instruction and training of employees; provision and maintenance of a healthy and safe working environment. The duties of employees to take reasonable care in their work with regard to: themselves and others who may be affected by their acts or omissions; cooperating with their employers where safe systems of work and plant and equipment are used; not misusing anything provided in the interests of health, safety and welfare.

General fire procedures should include raising the alarm; turning off all machinery and power; closing all doors and windows; when to deal with the fire if safe and how to do so safely; evacuation using emergency exits; going to the assembly point.

Nature of fire: fuel, heat, oxygen. Extinguishing fire: starving, smothering, cooling. Combustible materials, oil soaked materials; paint and spirits, wood, paper, rags etc. Flashpoints of different materials.

Preventing fire: good housekeeping, combustible materials stored correctly, flammable liquids and gases stored in designated areas.

## National Unit Specification: support notes (cont)

### UNIT Health and Safety: Engineering (SCQF level 5)

Causes of electrical fires: overloaded circuits, over heated fuses; damaged equipment; worn cables and flexes; heating appliances.

Types of fire extinguishers: water; foam; dry powder; CO<sub>2</sub>; BCF and fire blanket. Colour coding of extinguishers. Methods of extinguishing fires involving wood, paper, cloth etc; flammable liquids and gases; electrical equipment; burning clothing. Use of fire reports.

Accidents: the responsibilities of the employer and employee when an accident occurs, the correct procedures on the result of an accident and the correct procedures for reporting the accident.

Injuries: procedures, location of First Aiders and First Aid equipment, electric shock, immediate response situations.

Use of protective equipment to include: safety helmet, eye protection, ear protection, protective footwear, aprons, respiratory protection, protective creams and gloves.

Identification of the dangers inherent in manual handling operations, awareness of assessing the risks in manual handling.

Use should be made of ICT facilities in researching the sources of information of current legislation and could be partly integrated with the Core Unit for IT on the course. The practical aspect (Outcome 2) can also be integrated into any practical units the candidate undertakes on their course.

### **GUIDANCE ON LEARNING AND TEACHING APPROACHES FOR THIS UNIT**

The legislation covered should be an overview and not an in-depth study of each piece of legislation.

The HSE and professional and craft bodies publish a useful selection of guidelines and pro-forma, as well as picture-quiz materials where access to an actual workplace is impractical. These could be made readily available to students for both delivery and assessment purposes. It is important to ensure that the documentation used is current. Candidates should have the opportunity to access and research the Internet on the current legislations and any amendments with respect to European Directives.

This Unit should be delivered by a combination of teaching and learning approaches which could include:

- ◆ lecturing
- ◆ case studies
- ◆ practical activities
- ◆ group discussions
- ◆ tutorials
- ◆ directed study
- ◆ investigation including the use of ICT
- ◆ site visits
- ◆ audio visual
- ◆ guest speaker

## **National Unit Specification: support notes (cont)**

### **UNIT        Health and Safety: Engineering (SCQF level 5)**

#### **OPPORTUNITIES FOR CORE SKILL DEVELOPMENT**

Aspects of the Core Skill of *Problem Solving*, particularly Critical Thinking and Planning, will be naturally developed in this Unit, which requires the application of knowledge to practical situations. Candidates demonstrate understanding of health and safety practices in working environments. Awareness of the importance and relevance of a range of factors is essential to efficient risk assessment. Group discussion of risk control and measures for promoting and implementing safe working practices could reinforce analytical evaluation of any proposed approaches to working practice.

Discussion of case studies during formative work would be particularly beneficial to candidates with no industrial experience and could enhance the ability to work with others. Hazardous situations could be discussed and considered and the nature and scope of team goals, roles and responsibilities in industrial safety identified. Practical elements in other Units could provide additional opportunities for applying and reinforcing skills. Candidates should be given constructive feedback to encourage review and evaluation of their potential contribution to workplace safety.

#### **GUIDANCE ON APPROACHES TO ASSESSMENT FOR THIS UNIT**

It is recommended that in this Unit the assessment evidence for Outcomes 2 and 3 should be generated as part of a programme or group of units which are practical in nature. This would help to ensure that theoretical content can be more readily related to the application of current Health and Safety legislation in the workplace.

The evidence for Outcome 3 may be recorded on a centre-devised risk assessment pro-forma.

Assessment evidence may be generated as naturally occurring in conjunction with the execution of other tasks and activities or by simulation.

The assessment for Outcome 1 will require the candidate to demonstrate knowledge of the relevant Health and Safety legislation current at the time. The assessment paper may take the form of a multi-choice question paper consisting of 26 questions.

#### **Opportunities for the use of e-assessment**

Evidence for this Unit may be suitable for generation using e-assessment.

E-assessment may be appropriate for some assessments in this Unit. By e-assessment we mean assessment which is supported by information and communications technology (ICT), such as e-testing or the use of e-portfolios or e-checklists. Centres which wish to use e-assessment must ensure that the national standard is applied to all candidate evidence and that conditions of assessment as specified in the Evidence Requirements are met, regardless of the mode of gathering evidence. Further advice is available in *SQA Guidelines on Online Assessment for Further Education (AA1641, March 2003)*, *SQA Guidelines on e-assessment for Schools (BD2625, June 2005)*.

## **National Unit Specification: support notes (cont)**

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### **CANDIDATES WITH DISABILITIES AND/OR ADDITIONAL SUPPORT NEEDS**

The additional support needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments, or considering alternative Outcomes for Units. Further advice can be found in the SQA document *Guidance on Assessment Arrangements for Candidates with Disabilities and/or Additional Support Needs* ([www.sqa.org.uk](http://www.sqa.org.uk)).