

Unit 1: Understanding Health, Safety and Welfare in the Land-based Engineering Workplace

Unit code:	L/601/4271
QCF Level 3:	BTEC National
Credit value:	10
Guided learning hours:	60

● Aim and purpose

This unit aims to introduce learners to safe working skills and understanding and how these can be applied in practice. It is designed for learners in centre-based settings looking to progress into the sector or onto further/higher education.

● Unit introduction

Each working day in Great Britain at least one person is killed while at work and over 6000 are injured. Every year 750,000 people take time off work for what they consider to be a work-related illness.

The Health and Safety Executive's (HSE) mission is to 'to protect people's health and safety by ensuring risks in the changing workplace are properly controlled.'

The health, safety and welfare of everyone either working in, or coming into contact with, land-based engineering is an essential requirement of the land-based engineering workshop and those employed in it.

In this unit learners will develop the understanding and skills needed to apply health and safety in the land-based engineering workshop. Throughout the unit the responsibility of employees and employers to keep up to date with changes in relevant legislative requirements will be stressed.

● Learning outcomes

On completion of this unit a learner should:

- 1 Understand the foundations of health and safety in the workplace
- 2 Understand the organisational requirements within the workplace
- 3 Be able to assess safe working environment, policies and procedures in the workplace
- 4 Understand how to minimise hazards and risks in the workplace.

Unit content

1 Understand the foundations of health and safety in the workplace

Definitions: health; safety; welfare; occupational and work-related ill health; environmental protection; accident; near miss; dangerous occurrence; major injury; three-day injury; hazard; risk; incident; direct and indirect costs

The legal framework: common law; statute law; criminal law; civil law; duties of care; statutory liability (absolute, practicable and reasonably practicable); the role of the HSE and inspectors; relevant, current legislation eg Health and Safety at Work Act 1974 (HSWA) and subsequent related regulations; general duties of employers and employees under the HSWA; European Union (EU) influence, legislation and regulations; requirement for business insurance and recording and reporting of injuries, diseases and dangerous occurrences

Implications of workplace accidents: national land-based workplace accident statistics and trends; financial and other costs to the individual (personal, family, friends), the business and to national economy

2 Understand the organisational requirements within the workplace

The framework for the management of health and safety: policy; organising; planning and implementation; measuring performance; reviewing; auditing

Health and safety policy statement: content eg responsibilities, health and safety risks arising from work activities, consultation with employees, safe plant and equipment, safe handling and use of substances, information, instruction and supervision, competency for tasks and training, accidents, first aid and work-related ill health policy monitoring

Organising for health and safety: lines of communication; organisational responsibilities (employers, employees, health and safety and other advisers); competent person; contractor responsibilities; legal responsibilities between premises owner/controller, user, hirer and duties of suppliers, manufacturers and designers of articles and substances for use at work

Promoting a positive health and safety culture: the relationship between health and safety culture and health and safety performance eg human factors and their influence on health and safety performance, attitude, motivation, perception, competence, violation; health and safety training eg induction, job specific, specialist

3 Be able to assess safe working environment, policies and procedures in the workplace

Legislation: relevant, current legislation and codes of practice eg Health and Safety at Work Act 1974, Management of Health and Safety at Work Regulations 1999, Health and Safety (Consultation with Employees) Regulations 1996, Health and Safety (First Aid) Regulations 1981, Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995 (RIDDOR), Pressure Systems Safety Regulations 2000, Workplace (Health, Safety and Welfare) Regulations 1992, Provisions and Use of Work Equipment Regulations 1998, Lifting Operations and Lifting Equipment Regulations 1998, Supply of Machinery (Safety) Regulations 1992 as amended 1994, Control of Noise at Work Regulations 2005, Health and Safety (Display Screen Equipment) Regulations 1992, Work at Height Regulations 2005, Environment Act 1995, Control of Substances Hazardous to Health Regulations 2002 (COSHH); personal protective equipment (PPE)

Risk assessment: legal aspects; types of risk assessment (quantitative, qualitative, generic); accident categories; health risks; persons at risk; hazard and risk identification and evaluation; risk control measures; special cases eg young persons, lone workers; recording of risk assessment findings; monitoring and review

4 Understand how to minimise hazards and risks in the workplace

Risk and hazards reduction: principles of accident prevention; hierarchy of risk control; identifying and managing health risks; safe systems of work; lone workers; permits to work; emergency procedures (fire, first aid); use of barrier substances, personal protective equipment (PPE), manual handling aids and guards

Assessment and grading criteria

In order to pass this unit, the evidence that the learner presents for assessment needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria for a pass grade describe the level of achievement required to pass this unit.

Assessment and grading criteria		
To achieve a pass grade the evidence must show that the learner is able to:	To achieve a merit grade the evidence must show that, in addition to the pass criteria, the learner is able to:	To achieve a distinction grade the evidence must show that, in addition to the pass and merit criteria, the learner is able to:
P1 explain legal health and safety responsibilities of an employer and employee	M1 explain how changes in UK health and safety legislation affects national land-based workplace accident statistics and trends	D1 discuss the influence the EU has on health, safety and welfare in the workplace in the UK
P2 explain how legislation affects the safe working practices and procedures for employee and employer in the workplace		
P3 examine implications to the individual, business and national economy of accidents in the workplace		
P4 explain the framework of health and safety management within a selected land-based engineering business	M2 explain the purpose and content of each section of the health and safety policy of a selected business	
P5 explain how a selected land-based engineering business promotes and implements health and safety policies and practices		

Assessment and grading criteria			
To achieve a pass grade the evidence must show that the learner is able to:	To achieve a merit grade the evidence must show that, in addition to the pass criteria, the learner is able to:	To achieve a distinction grade the evidence must show that, in addition to the pass and merit criteria, the learner is able to:	
<p>P6 identify potential hazards and risks to health in a selected land-based engineering situation [IE, SM, CT, TW, EP]</p>	<p>M3 discuss the importance of health and safety auditing and monitoring in a selected business</p>	<p>D2 analyse how a selected business implements risk assessments and accident prevention, and make recommendations for improvement.</p>	
<p>P7 assess risks for given land-based engineering operations [IE, SM, CT, TW]</p>			
<p>P8 report on the procedures for reporting injuries, diseases and dangerous occurrences within a selected land-based engineering business</p>			
<p>P9 justify PPE and safety equipment to be used when undertaking selected land-based engineering operations</p>			<p>M4 explain the principles of accident prevention and their implications for a given business.</p>
<p>P10 explain how selected regulations affect the working practices in the workplace.</p>			

PLTS: This summary references where applicable in the pass criteria, in the square brackets, the elements of the personal, learning and thinking skills. It identifies opportunities for learners to demonstrate effective application of the referenced elements of the skills.

Key	IE – independent enquirers CT – creative thinkers	RL – reflective learners TW – team workers	SM – self-managers EP – effective participators
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Essential guidance for tutors

Delivery

Delivery of this unit will involve practical assessments, written assessment, visits to suitable collections and will link to industrial experience placements.

Tutors delivering this unit have opportunities to use as wide a range of techniques as possible. Lectures, discussions, seminar presentations, site visits, supervised health, safety and welfare practicals, research using the internet and/or library resources and the use of personal and/or industrial experience would all be relevant. Delivery should stimulate, motivate, educate and enthuse learners.

Work placements should be monitored regularly in order to ensure the quality of the learning experience. It would be beneficial if learners and supervisors were made aware of the requirements of this unit before any work-related activities, so that naturally occurring evidence can be collected at the time. For example, learners may have the opportunity to carry out risk assessments and they should be encouraged to ask for observation records and/or witness statements to be provided as evidence of this. Guidance on the use of observation records and witness statements is provided on the Edexcel website.

Whichever delivery methods are used, it is essential that tutors stress the impact of health, safety and welfare on employers and employees.

Health and safety issues relating to working in repair workshops and in the field must be stressed and reinforced regularly and risk assessments must be undertaken before practical activities.

Tutors should consider integrating the delivery, private study and assessment for this unit with other relevant units and assessment instruments learners are taking as part of their programme of study.

The learning outcomes are directly linked and are likely to be delivered through formal lectures, discussion, site visits and independent learner research. Tutors could focus their delivery on certain land-based technology businesses or facilities, for example a college's own engineering workshops. The HSE is an excellent source of case study materials and legislative information and this should be the tutor's primary source of information. Visiting expert speakers could add to the relevance of the subject for learners. For example, health and safety advisers or workshop managers could talk about their work, the situations they face and the methods they use.

Outline learning plan

The outline learning plan has been included in this unit as guidance and can be used in conjunction with the programme of suggested assignments.

The outline learning plan gives **an indication of the volume of learning it would take the average learner** to achieve the learning outcomes. It is **indicative and is one way of achieving the credit value**.

Learning time should address all learning (including assessment) relevant to the learning outcomes, regardless of where, when and how the learning has taken place.

Topic and suggested assignments/activities and/assessment

Introduction and overview of the unit.

Assignment 1: Health and Safety Legislation, Regulation and Implications (P1, P2, P3, M1, M2, P10)

Tutor introduces the assignment brief.

Topic and suggested assignments/activities and/assessment
Legal health and safety responsibilities of an employer and employee.
Safe working practices and procedures for employee and employer.
Individual, business and national economy of accidents.
Assignment 2: Health and Safety Management (P4, P5, M4, D1)
Tutor introduces the assignment brief.
Framework of health and safety management.
Promotion and implementation of health and safety policies and practices.
UK and European legislation, accident prevention statistics.
Assignment 3: Risk assessment (P6, P7, P8, P9, M3, D2)
Tutor introduces the assignment brief.
Hazards and risks to health in a selected land-based engineering situation and operation.
Risk assessments and reporting procedures: introduce risk assessments Produce a risk assessment for a land-based engineering workshop activity.
PPE and safety equipment to be used in a workshop.
Monitoring and auditing process.
Unit review.

Assessment

For P1 and P2, learners must explain the responsibilities that the employee and employer have under the Health and Safety at Work Act 1974 and how other relevant legislation also affects safe working practices for both parties. Learners could include examples of situations that they have seen whilst studying this unit in their evidence.

P3 learners must explain the affect accidents have on an individual, businesses and the national economy. Evidence can be taken from national statistics provided by the HSE, or through examples given whilst delivering this unit. Learners should also comment on the fact that accidents not only affect the economy through individual/business down time, but also through the implications of stricter health and safety legislation.

P4 requires learners to explain the key elements of the framework for health and safety management within a selected land-based engineering business. Learners are expected to include how each element interrelates. Tutors should identify the business or agree it through discussion with learners. The business may be the same as that used to provide evidence for other grading criteria. Where possible, to ensure fairness of assessment the size of and complexity of the tasks should be the same for all learners.

P5 requires learners to explain how a selected business promotes and implements health and safety policies and practices. Learners are expected to show their knowledge of 'toolbox talks', posters, leaflets and staff rewards for safe working practices. Tutors should identify the business or agree it through discussion with learners. The business may be the same as that used to provide evidence for other grading criteria. Where possible, to ensure fairness of assessment the size and complexity of the tasks should be the same for all learners.

For P6 and P7 learners, are required to produce a risk assessment for a given operation within a land-based engineering workshop as discussed and agreed with the tutor. Learners are expected to work in groups to produce a comprehensive list of risks and hazards for an agreed land-based engineering situation (for example jacking up and supporting a tractor). Tutors should identify the situation and operation or agree it with

learners. Where possible, to ensure fairness of assessment the size and complexity of the tasks should be the same for all learners.

P8 requires learners to explain the requirements for reporting injuries, diseases and dangerous occurrences within the workplace. Learners are expected to include reference to relevant legislation in their evidence.

For P9, learners must justify the use of PPE in selected land-based engineering activities. Tutors should identify the activities or agree them in discussion with learners. The activities may be the same as those used to provide evidence for other grading criteria. Where possible, to ensure fairness of assessment the size and complexity of the tasks should be the same for all learners.

For P10, learners must explain how selected regulations affect working practices in a given land-based engineering workplace. Tutors should identify the workplace and the regulations, or agree them through discussions with learners. The workplace may be the same as that used for other grading criteria. Where possible, to ensure fairness of assessment the size and complexity of the tasks should be the same for all learners.

For M1, learners must explain how the introduction and updating of health and safety legislation has led to a reduction in accidents in UK workplaces. Learners must identify the link of between the introduction of legislation and the reduction of accidents through national accident statistic and trends.

For M2, learners must break down and explain the purpose and function of each section of a Health and Safety Policy for a land-based engineering company. Learners must understand the importance of each section of the policy and how it affects the daily working environment.

M3 requires learners to discuss the importance of health and safety auditing and monitoring in creating a safe working environment. Learners must discuss how monitoring creates an effective, safe system of work, and that auditing is vital in ensuring health and safety paperwork within the company is current and effective (for example risk assessments, Health and Safety Policy).

For M4, learners must explain the principles of accident prevention and their implications for a given business. Tutors should identify the business or agree it through discussion with learners. The business may be the same as that used to provide evidence for other grading criteria. Where possible, to ensure fairness of assessment the size and complexity of the tasks should be the same for all learners.

D1 requires learners to discuss the impact the EU has on health, safety and welfare legislation in the UK. Learners must identify key EU directives which have been integrated into UK law, and also explain the concept that member states should harmonise standards.

For D2, learners must analyse how a selected business in the land-based engineering sector implements risk assessments and accident prevention in their daily operations. Learners must analyse how effective these risk assessments are and how useful they are in reducing accidents. Learners must also suggest recommendations for improvement. Tutors should identify the business or agree it through discussion with learners. The business may be the same as that used to provide evidence for other grading criteria. Where possible, to ensure fairness of assessment the size and complexity of the tasks should be the same for all learners.

Programme of suggested assignments

The following table shows a programme of suggested assignments that cover the pass, merit and distinction criteria in the grading grid. This is for guidance and it is recommended that centres either write their own assignments or adapt any Edexcel assignments to meet local needs and resources.

Criteria covered	Assignment title	Scenario	Assessment method
P1, P2, P3, P10, M1, M2	Health and Safety Legislation, Regulation and Implications	You have started a new position as an engineering fitter in a land-based engineering organisation. One of the first tasks you have to undertake is to familiarise yourself with the company's health and safety policies and regulations. Your boss asks you to complete a short questionnaire covering the roles and responsibilities of employers and employees, how legislation affects your daily activities in the workplace, the affect accidents have on the individual business and the national and economy and the purpose and content of each section of the company's health and safety policy.	Questionnaire.
P4, P5, M4, D1	Health and Safety Management	<p>Produce a poster showing the health and safety management structure for a land-based engineering business and how the company promotes health and safety policies and practices.</p> <p>Produce an A4 leaflet explaining the principles of accident prevention and how they affect a land-based engineering company.</p> <p>Produce a report showing how changes in UK health and safety legislation have affected workplace accident statistics and trends, and discuss how the EU influences health, safety and welfare in UK land-based engineering workplaces.</p>	Poster. Report.
P6, P7, P8, P9, M3, D2	Risk Assessment	<p>In groups, you are required to complete a risk assessment for an activity which takes place in the workshop. Identify potential hazards, assess the risks and explain what safety equipment or PPE must be used whilst undertaking this activity.</p> <p>Explain the process of reporting injuries, disease and dangerous occurrences and the principles of accident prevention and the implications for the workshop.</p> <p>Analyse the risk assessments in place for the workshop, discuss how they are implemented and make recommendations or improvements which could be made. Discuss how important monitoring and auditing are to the health and safety process.</p>	Risk assessment sheet. Report. Group work.

Links to National Occupational Standards, other BTEC units, other BTEC qualifications and other relevant units and qualifications

This unit forms part of the BTEC land-based sector suite. This unit links to most units in this specification and has particular links with:

Level 2	Level 3
Monitor and Maintain Health and Safety in a Land-based Engineering Work Area	LEOI Recognise and Reduce Hazards in the Land-based Engineering Work Area

Employer engagement and vocational contexts

This unit focuses on giving learners an understanding of health and safety they will need when undertaking work in the workshop and also when in full-time or part-time work. The unit will enable learners to identify workplace risks and hazards, and understand their own legal obligations regarding health and safety in the workplace. Centres are encouraged to develop links with their own health and safety department and local Environmental Health Officers. When learning about health and safety, learners should be encouraged to work in groups and discuss the implications of bad health and safety practice for their own health and wellbeing. Learners should be encouraged to apply their knowledge to create a safe working environment which is beneficial to all who work there. Learners could develop and apply their knowledge by undertaking nationally recognised qualifications in health and safety.

Indicative reading for learners

Textbooks

Health and Safety Executive – *An Introduction to Health and Safety* (HSE, 2003) ISBN 0717626857

Health and Safety Executive – *Essentials of Health and Safety at Work* (HSE, 2006) ISBN 0717661792

Health and Safety Executive – *Farmwise: Your Guide to Health and Safety* (HSE, 1995) ISBN 0717608395

Health and Safety Executive – *Managing Health and Safety: Five Steps to Success* (HSE, 2003) ISBN 0717621707

Hughes P and Ferrett E – *Introduction to Health and Safety at Work, 4th Edition* (Butterworth-Heinemann, 2009) ISBN 0750666234

Websites

www.bagma.com

British Agricultural and Garden Machinery Association

www.businesslink.gov.uk

Business Link

www.defra.gov.uk

Department for Environment, Food and Rural Affairs

www.hse.gov.uk

Health and Safety Executive

www.iagre.org

Institution of Agricultural Engineers

www.lantra.co.uk

Lantra Sector Skills Council

Delivery of personal, learning and thinking skills (PLTS)

The following table identifies the PLTS opportunities that have been included within the assessment criteria of this unit:

Skill	When learners are ...
Creative thinkers	questioning possible and potential risks in the workplace which need to be included on the risk assessment
Self-managers	organising own time to produce risk assessments, posters, leaflets and written reports
Team workers	cooperating and working with others to reach final decisions as to what needs to be included on the workshop risk assessment
Effective participators	analysing workshop risk assessments to identify improvements and recommendations.

Although PLTS opportunities are identified within this unit as an inherent part of the assessment criteria, there are further opportunities to develop a range of PLTS through various approaches to teaching and learning.

Skill	When learners are ...
Independent enquirers	exploring the implications accidents have for the individual, business and national economy
Creative thinkers	adapting/creating risk assessments for new activities in the workshop
Reflective learners	receiving feedback from peers on ideas for risk assessments and safe working practices within the land-based engineering workshop
Team workers	taking responsibility for their input into group decisions and ideas
Self-managers	working towards goals and deadlines
Effective participators	discussing and negotiating with each other as to what needs to be included in the risk assessment.

● Functional Skills – Level 2

Skill	When learners are ...
ICT – Use ICT systems	
Select, interact with and use ICT systems independently for a complex task to meet a variety of needs	researching the internet for appropriate legislation and regulations for both the UK and EU
Use ICT to effectively plan work and evaluate the effectiveness of the ICT system they have used	
Manage information storage to enable efficient retrieval	
Follow and understand the need for safety and security practices	
Troubleshoot	
Mathematics	
Understand routine and non-routine problems in a wide range of familiar and unfamiliar contexts and situations	producing results from notational analysis in a variety of appropriate forms, including tables and graphs
Identify the situation or problem and the mathematical methods needed to tackle it	
Select and apply a range of skills to find solutions	
Use appropriate checking procedures and evaluate their effectiveness at each stage	
Interpret and communicate solutions to practical problems in familiar and unfamiliar routine contexts and situations	
Draw conclusions and provide mathematical justifications	
English	
Speaking and listening – make a range of contributions to discussions and make effective presentations in a wide range of contexts	discussing workshop risk assessment presenting information in a range of formats eg written report, leaflets, posters
Reading – compare, select, read and understand texts and use them to gather information, ideas, arguments and opinions	
Writing – write documents, including extended writing pieces, communicating information, ideas and opinions, effectively and persuasively	