



Programme	Matriculation to HND in Electrical and Electronic Engineering and Mechanical Engineering
Course Title	Health and Safety in Engineering
Guided Learning Hours	48

Aims

This unit will give learners an understanding of the key features of health and safety legislation and regulations and how these are applied in engineering to ensure safe working conditions.

Learning Outcomes

On completing this course successfully learners will be able to:

1. Understand the key features of health and safety legislation and organizational requirements
2. Identify various types of hazards and methods by which they can be detected in the workplace
3. Carry out a risk assessment and identify control measures to minimize risks
4. Understand the methods used when reporting and recording accidents and incidents.

Indicative Content

1. Understand the key features of health and safety legislation and Organizational requirements

Legislation: Occupational Safety and Health Act 2004, Use of Personal Protective Equipment, Lifting Operations and Lifting Equipment, Control of Hazardous Substances, Confined Spaces, Control of noise, Fire, Ventilation, Occupational Safety and Health (Electricity), Occupational Safety and Health (Welfare), Occupational Safety and Health (Cleaning of Machinery in Motion Order) regulations, Permit to work.

Organizational Requirements: Explain the roles and responsibilities of employers in maintaining health and safety; Explain how the safety regulations should be managed within the organization, Roles and responsibilities of employees and health and safety officers and inspectors.

2. Identify various types of hazards and methods by which they can be detected in the workplace

Types of hazards: Confined spaces, inadequate ventilation, working at heights, electrical, chemical, noise, slippery and uneven surfaces, handling of volatile and toxic materials, rotating equipment, stationary equipment involving pressure and stored energy.

Methods of identifying hazards: Statements, analysis of significant risks, prediction of results or outcomes of those risks using reports showing accident data and careful consideration of existing work procedures.

3. Carry out a risk assessment and identify control measures to minimize risks

Risk assessments: Identification of items/area to be assessed e.g. machine operation, work area; Identification of principal hazards, Identification of personnel likely to be injured/harmed, Evaluation of the risks, Identification and decision on adequacy of precautions, recording of findings, Review of assessment.

Control measures: Eliminate hazard, Replace hazard with something less dangerous, Implement recognized procedures to minimize hazard, Implementation of personal protection equipment (PPE), Health and safety education and training of personnel.

4. Understand the methods used when reporting and recording accidents and incidents

Principles: Why employers keep records of serious accidents, incidents and emergencies; responsibilities of competent persons; cost of accidents e.g. direct, indirect, human consequences; trends e.g. major causes, fatal and serious injury, methods of classification, statistics

Recording and reporting procedures: regulations on accident recording and reporting e.g. Reporting of Injuries, Diseases and Dangerous Occurrences, accident book, procedures to deal with near misses or dangerous occurrences

Learning Outcomes

Candidates will be able to:

1. Understand the key features of health and safety legislation and organizational requirements

- 1.1 Explain the key features of the Occupational Safety and Health Act 2004.
- 1.2 Identify Health and safety regulations for various activities found in the workplace such as the use of personal protective equipment, lifting equipment, control of hazardous substances, confined spaces, control of noise, fire and ventilation.
- 1.3 Explain the roles and responsibilities of employers and employees as it relates to Health and Safety.
- 1.4 Explain the roles and responsibilities of employees and health and safety officers and inspectors.
- 1.5 Explain the management of safety regulations within an organization.

2. Identify various types of hazards and methods by which they can be detected in the workplace

- 2.1 Identify hazards for various activities found in the workplace such as confined spaces, inadequate ventilation, working at heights, handling of volatile and toxic materials, rotating equipment, stationary pressurized vessels and stored energy.
- 2.2 Explain various methods used for the identification of hazards.

3. Carry out a risk assessment and identify control measures to minimize risks

- 3.1 Carry out a risk assessment for a particular operation, and submit a report outlining type of risks identified and the control measures which should be undertaken to minimize the stated risk and Health Act 2004.
- 3.2 Describe various methods or procedures for the elimination of a hazard
- 3.3 Describe various recognized procedures to minimize hazards.
- 3.4 Evaluate the risks present in various work areas.

4. Understand the methods used when reporting and recording accidents and incidents

- 4.1 Describe the regulations relating to accident reporting.
- 4.2 Distinguish between an accident and an incident.
- 4.3 Explain the importance of reporting and recording of accidents and incidents.

Outline Learning Plan:

The outline learning plan has been included in this unit as guidance. It demonstrates one way of planning the delivery and assessment of this unit.

Topic and suggested assignments/Activities	Hours
Tutor led introduction to unit and programme of learning.	1.5
Tutor led discussion involving the key health and safety legislations contained in the Occupational Safety and Health Act 2004	6.5
Tutor led discussion identifying health and safety regulations for various activities found in the workplace such as the use of PPE, lifting equipment, and control of hazardous substances. Various case studies will be used to assist with the identification of various activities and their regulations.	4
Learners will be required to produce their own safety manual outlining various activities commonly found in process and manufacturing plants and the relevant legislation which must be adhered to for each activity.	4
Tutor led discussion involving the roles and responsibilities of employers and employees as it relates to health and safety.	4
Tutor led discussion involving the roles and responsibilities of health and safety officers and inspectors.	4
Tutor led discussion explaining the procedures involved in the efficient management of safety regulations within an organisation. Various case studies will be used to explore the management structures adopted by various companies.	4
Tutor led discussion identifying hazards associated with various activities found in the workplace such as confined spaces, inadequate ventilation, working with heights.	4
Tutor led discussion identifying hazards associated with various activities found in the workplace such as handling of volatile and toxic material, rotating equipment, stationary pressurized vessels and stored energy.	4
Tutor led discussion outlining various methods used for the identification of a hazard using reports showing accident data. Learners will be required to produce a report identifying any potential hazards present in or around our CF campus.	4
Tutor led discussion outlining the risks present in various work areas and the control measures which must be taken to minimize the stated risks as identified in the OSHA 2004 act. The theory covered will include the classification of the risks, safety devices and their application as well as the steps required to carry out a risk assessment. Learners will be to carry out a risk assessment for a particular operation, and submit a report outlining type of risks identified and the control measures which should be undertaken to minimize the stated risk required to produce a report identifying any potential hazards present in or around our CF campus.	6
Tutor led discussion outlining the regulations relating to accident reporting and the importance of keeps proper records of incidents and accidents.	4
TOTAL LEARNING CONTACT HOURS	48

Assessment Details

Methods of Assessment	Mid-term Examination	End of Term Examination
Grading Mode	Numeric	Numeric
Weighting %	40	60
Pass Mark%	50 overall	
Outline Details	Two hour unseen closed book examination. (5) structured questions	Three hour unseen closed book examination. (5) structured questions

Essential Learning Resources:

Learners will be given access to a wide range of publications relating to Health and Safety via our onsite library facility as well as access to the online EBSCO database. Where possible a company visit will be organised to give learners a first hand experience of the working environment however, if this is not possible a visiting speaker with responsibility and experience of health and safety in an industrial setting could be arranged.

Textbooks and Manuals

1. Health and Safety Executive – Essentials of Health and Safety at Work (HSE Books, 2006)
ISBN 9780717661794
2. Health and Safety Executive – Management of Health and Safety at Work (HSE Books, 2000)
ISBN 0717624889
3. Health and Safety Executive – Health and Safety in Engineering Workshops (HSE Books, 2004)
ISBN 9780717617173

Websites

1. <http://osha.gov.tt>
2. www.hse.gov.uk