

ENSC 403 HEALTH SAFETY AND ENVIRONMENT (THEORY) (02 Credit hrs.)

PRE-REQUISITES: F.Sc. or equivalent

LEARNING OUTCOMES:

After successful completion of this course, students will be able to:

- learn basic understanding of potential workplace safety and health hazards and determine how to mitigate the hazards through engineering controls, administrative controls, and personal protective equipment
- review the principles for developing and implementing a successful occupational health and safety program and evaluation of a work site
- develop an occupational safety and health program based on national and international standards

CONTENTS

This course is a foundation of Occupational Health & Safety covering all basic areas of this discipline, such as occupational safety, industrial hygiene, ergonomics, etc.

Unit-1: Introduction

- 1.1. Introduction of occupational health & safety
- 1.2. History of health and safety
- 1.3. Evolution of health and safety standards
- 1.4. Industrial hygiene
- 1.5. Role of national/international agencies

Unit-2: Elements of Occupational Health and Safety

- 2.1. Elements of ILO-OSH 2001, elements of OHSAS 18001
- 2.2. Elements of ISO 45001
- 2.3. Features and contents of OHS policy,

Unit-3: Health & safety culture

- 3.1. Concept and significance of Health & safety culture
- 3.2. Factors influencing safety related behavior and improving such behaviors

Unit-4: Planning and Implementation

- 4.1. Principles and practice of risk assessment
- 4.2. Hierarchy of controls
- 4.3. Electrical safety
- 4.4. Confined spaces
- 4.5. Permit to work system
- 4.6. Impact of temporary works
- 4.7. Physical and psychological health hazards and risk control
- 4.8. Emergency preparedness
- 4.9. Personal protective equipment

Unit-5: Inspection and Audit system

- 1.1. Inspection system
- 1.2. Safety audits
- 1.3. Reporting systems
- 1.4. Management review

Unit-6: Special hazards

- 6.1. Hazardous substances and health effects
- 6.2. Toxicology and importance of material safety data sheet
- 6.3. Lock out/tag out
- 6.4. Work at height
- 6.5. Fire safety

- 6.6. Ergonomics/musculoskeletal disorders and risk control
- 6.7. Occupational noise control

TEACHING – LEARNING STRATEGIES

- Lecture based examination
- Presentation/seminars
- Class discussion
- Quizzes

ASSIGNMENTS – TYPE AND NUMBER WITH CALENDAR

It is continuous assessment. The weightage of Assignments will be 25% before and after midterm assessment. It includes:

- classroom participation,
- attendance, assignments and presentation,
- homework
- attitude and behavior,
- hands-on-activities,
- short tests, quizzes etc.

ASSESSMENT AND EXAMINATIONS:

Sr. No.	Elements	Weightage	Details
1.	Mid Term Assessment	35%	It takes place at the mid-point of the semester
2.	Formative Assessment	25%	It is continuous assessment. It includes: classroom participation, attendance, assignments and presentation, homework, attitude and behavior, hands-on-activities, short tests, quizzes etc.
3.	Final Assessment	40%	It takes place at the end of the semester. It is mostly in the form of a test, but owing to the nature of the course the teacher may assess their students based on term paper, research proposal development, field work and report writing etc.

RECOMMENDED TEXT BOOKS / SUGGESTED READINGS

1. Hughes, P., & Ferrett, E. (2020). *Introduction to Health and Safety at Work: For the NEBOSH National General Certificate in Occupational Health and Safety*. Routledge.
2. Friend, Mark A., and James P. Kohn. (2018). *Fundamentals of Occupational Safety And Health*. Rowman and Littlefield.
3. David L. Geotech, (2015). *The Basics of Occupational Safety, 2nd Edition*, Pearson Education, Inc.
4. Kelloway, E. Kevin, Karina Nielsen, and Jennifer K. Dimoff, eds. (2017). *Leading to Occupational Health and Safety: How Leadership Behaviours Impact Organizational Safety and Well-Being*. John Wiley and Sons.
5. Brauer, Roger L. (2016). *Safety and health for engineers*. John Wiley and Sons.
6. N. Sesha Prakash, (2017). *Manual of Fire Safety*. CBS Publishers and Distributors.

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LEARNING OUTCOMES

- This course will provide a demonstration about the different instruments.
- The students will learn about the practical aspects of measuring and monitoring of occupational health and safety.

CONTENTS

Unit-1: Personal protective equipment

Unit-2: Monitoring

- 2.1. Noise level monitoring
- 2.2. Illumination level monitoring
- 2.3. Relative humidity and workplace temperature monitoring

Unit-3: Identification

- 3.1. Hazard identification and risk assessment techniques
- 3.2. Development of emergency response plan

Unit-4: Fire safety and development of emergency response plan

Unit-5: Biological monitoring

- 5.3. Workplace air and drinking water
- 5.4. First aid and Cardio Pulmonary Resuscitation (CPR)

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