

STATE UNIVERSITY OF NEW YORK
COLLEGE OF TECHNOLOGY
CANTON, NEW YORK

COURSE OUTLINE

SOET 348 – Engineering Safety

Prepared By: Stephen E. Frempong

SCHOOL OF ENGINEERING TECHNOLOGY
ENGINEERING SCIENCE & ELECTRICAL ENGINEERING
TECHNOLOGY DEPARTMENT
SPRING 2012

SOET 348 Engineering Safety

- A. TITLE: Engineering Safety
- B. COURSE NUMBER: SOET 348
- C. CREDIT HOURS: 1
- D. WRITING INTENSIVE COURSE: NO
- E. WEEKS PER SEMESTER: 15
- F. SEMESTER OFFERED: SPRING
- G. HOURS OF LECTURE, LABORATORY, RECITATION, TUTORIAL, ACTIVITY: 1 hour lecture per week
- H. CATALOG DESCRIPTION: This course covers topics such as: The basic hazards and preventative measures from falls, mechanical injuries, heat and temperature, pressure, electricity, fires, explosions, toxic materials, radiation, vibration, noise, and computer safety.
- I. PRE-REQUISITES/CO-COURSES: Student should be in his/her second year, or permission of instructor.
- J. GOALS (STUDENT LEARNING OUTCOMES)

By the end of this course, the student will be able to:

- a. Discuss about OSHA standards
- b. Discuss acceleration, falls, falling objects, and other impacts
- c. Assess mechanical hazards
- d. Evaluate different types of electrical hazards
- e. Elaborate on fire and fire suppression
- f. Explain about explosions and explosives
- g. Evaluate hazards of toxic materials
- h. Identify industrial hazards condition

Institutional Student Learning Objectives (SLO)

- (1) Communication (2) Critical Thinking (3) Professional Competence
- (4) Inter-Intrapersonal Skills

Course Objectives	Institutional SLO
a. Discuss about OSHA standards	1. Communication
b. Discuss acceleration, falls, falling objects, and other impacts	1. Communication
c. Assess mechanical hazards	2. Critical Thinking 3. Professional Competence
d. Evaluate different types of electrical hazards	2. Critical Thinking 3. Professional Competence
e. Elaborate on fire and fire suppression	1. Communication
f. Explain about explosions and explosives	1. Communication
g. Evaluate hazards of toxic materials	2. Critical Thinking
h. Identify industrial hazards condition	3. Professional Competence

K. TEXTS:

Willie Hammer and Dennis Price, Occupational Safety Management and Engineering, 5th Edition, Upper Saddle River, New Jersey 07458: Prentice Hall, 2001. OR, as determined by instructor.

REFERENCES:

Arthur R. Bergen and Vijay Vittal, Power Systems Analysis, 2nd Edition, Upper Saddle River, New Jersey 07458: Prentice Hall, 2000.

L. EQUIPMENT: None

M. GRADING METHOD: A-F

N. MEASUREMENT CRITERIA/METHODS: Examination performance and Assignments.

O. DETAILED TOPICAL OUTLINE:

1. Occupational Safety and Health Administration (OSHA)

- a. Enactment of the Occupational Safety and Health Act
- b. State Industrial Safety Programs
- c. Responsibilities of Employers and Employees
- d. The new OSHA

2. Acceleration, Falls, Falling Objects, and other Impacts

- a. Preventative Measures Against Falls
- b. Impacting Objects
- c. Other Acceleration Effects

3. Heat and Temperature

- a. Effects on Personnel
- b. High Temperatures
- c. Classification of Burns

4. Pressure Hazards

- a. Unfired Pressure Vessels
- b. Discharges from Safety Valves
- c. Dynamic Pressure Hazards
- d. Water Hammer
- e. Effects of Leaks
- f. Dysbarism and Decompression Sickness
- g. Compresses-Gas Cylinder

5. Electrical Hazards

- a. Shock and Causes
- b. Electrical Insulation Failures
- c. Equipment Failures
- d. Static Electricity
- e. Lightning
- f. Ignition of Combustible Materials
- g. Containment of Discharges
- h. Heating and Overheating
- i. Circuit and Equipment Protection
- j. Unit Protection
- k. Why an Open Circuit

6. Fires and Fire Suppression

- a. Fuels
- b. Oxidizers
- c. Gases
- d. Flammable and Combustible Liquids
- e. Flammable Solids
- f. Ignition and Sources
- g. Ignition Delay
- h. Effects of Fire on Personnel
- i. Fire Detection Systems
- j. Fire Classifications

- k. Fire Suppression
- l. Extinguishing Systems

7. Explosions and Explosives

- a. Explosive Materials
- b. Explosive Effects
- c. Preventing Explosion Damage

8. Hazards of Toxic Materials

- a. Toxic Materials
- b. Routes to Injury Sites
- c. Hypoxia
- d. Hypoxic Hypoxia
- e. Mechanisms of Toxic Agents
- f. Measurement of Toxicity
- g. Detection of Toxic Agents
- h. Respiratory Protective Equipment