Safety, Health, and Environment I (PTAC 1408)

Credit: 4 semester credit hours (4 hours lecture)

Prerequisite/Co-requisite: None

Course Description

This course provides an overview of safety, health, and environmental issues in the performance of all job tasks. *This course is time-bound, structured, and completed mostly online. A proctored comprehensive final exam is required.*

Required Textbook and Materials

1. *Safety, Health, and Environment*, Pearson Custom Publishing 2006
    a. ISBN 13: 978-0-13-700401-0

Course Objectives

Upon completion of this course, the student will be able to:

1. Describe the components of a typical plant safety and environmental program and the role of a process technician in relation to safety, health, and the environment.
2. List the safety, health, and environmental equipment used.
3. Demonstrate appropriate response to emergency situations.
4. Recognize hazardous situations for personnel, environment, and community.
5. Apply team skills in response to emergency situations.

Course Outline

A. Introduction
    1. Introduction of faculty and students
    2. Review Syllabus
    3. Review Class Policies

B. Safety, Health, & Environment-
    1. Overview
    2. Different government agencies & regulations.
    3. Industry organizations that develop S.H.E. standards.
    4. Role of the operator in S.H.E. matters.

A. Hazards and Their Effects
    1. Hazards found in work place.
    2. Effects of hazards on health.
    3. Effects of hazards on environment.

D. Chemical Hazards
    1. Organic and inorganic chemical hazards.
    2. Introduction to MSDS

E. Biological Hazards
    3. Biological hazards in the workplace
    4. Role of government relating to biological hazards.

F. Equipment and Energy Hazards
    1. Hazards of process equipment.
    2. Hazards caused by energy sources; i.e. electricity, steam, etc.

G. Fire and Explosive Hazards
    1. The fire triangle
    2. Government regulations relating to fire & explosives.

H. Pressure, Temperature and Radiation Hazards
    1. "Process variable Hazards"
    2. Government regulations dealing with process variable hazards.

I. Atmospheric and Respiration Hazards
    1. Respiratory hazards.
    2. "Confined space" hazard.
    3. Government regulations dealing with atmospheric & respiratory hazards.

J. Work Area and Height Hazards

1. "Work area" hazard
2. Fall protection and confined space entry.
3. Government regulations dealing with "work area, fall and confined space hazards

K. Hearing and Noise Hazards
1. Noise & how it affects hearing.
2. Types of hearing protection
3. Government regulations regulating noise hazards

L. Const., Maintenance, & Tool Hazards
1. Hazards associated with construction in the process area.
2. Hazards of tools used by process operators
3. Appropriate government regulations.

M. Vehicle and Transportation Hazards
1. Forklift, power truck, and other forms of transportation.
2. Appropriate government regulations.

N. Natural disasters
1. Hurricanes and storms
2. Emergency plans
3. Governmental agencies

O. Physical and Cyber-Security
1. Terrorists and insiders
2. Workplace violence
3. Government regulations

P. Ergonomic Hazards
1. Ergonomic stress
2. Lifting and working at heights
3. Government and industry guidelines

Q. Environmental hazards
1. Hazardous chemical classifications
2. EPA regulations

R. Hazard Controls
1. Engineering, Administrative and PPE
2. Why, When and How controls are applied

S. Alarms and Indicator systems
1. Fire alarms and detection systems
2. Interlocks and shutdowns

T. Process Containment and Process Upset Controls
1. Containment and control systems
2. Flares and relief valves

U. Administrative Controls
1. Policies and procedures
2. Training and HAZOPS

V. Permitting Systems
1. Lockout devices
2. Types of permits: hot work, confined space, safe work
3. Government regulations and industry guidelines

W. PPE and First Aid
1. Respiratory and hearing
2. Eye and face
3. Foot and legwear

X. Monitoring Equipment

Y. Emergency Response

Grade Scale

90 – 100	A
80 – 89	B
70 – 79	C
60 – 69	D
0 – 59	F

Course Evaluation

Final grades will be calculated according to the following criteria:

- Discussion 10%
- Assignments 20%

- Tests 50%
- Final Exam 20%

Course Requirements

1. Answer questions on chapter(s) assigned.
2. Identify safety equipment shown in class associated with subject matter.
3. Demonstrate proper procedures for handling safety hazards
4. Recognize hazardous situations
5. Use permitting systems and correct personal protective equipment
6. Use tools and procedures to respond to emergencies.
7. Prepare research paper.

Course Requirements

1. Post online responses to student-to-student and student-to-instructor discussions.
2. Complete the online test, quizzes and assignments by the due dates shown on the course calendar.
1. Log onto Blackboard and access the course a minimum of three times per week.
2. Final exam must be proctored. If not taken at the LIT testing center, arrangements with another approved center must be made and approved by the instructor a minimum of two weeks prior to the final.

Course Policy

1. Students are expected to use proper net etiquette while participating in course emails, assignment submissions, and online discussions. No foul or harsh language will be tolerated.
2. No Cheating of any kind will be tolerated. Students caught cheating or helping someone to cheat can and will be removed from the class for the semester. Cheating can result in expulsion from LIT.
3. If you wish to drop a course, the student is responsible for initiating and completing the drop process. If you stop coming to class and fail to drop the course, you will earn an 'F' in the course.

Disabilities Statement

The Americans with Disabilities Act of 1992 and Section 504 of the Rehabilitation Act of 1973 are federal anti-discrimination statutes that provide comprehensive civil rights for persons with disabilities. Among other things, these statutes require that all students with documented disabilities be guaranteed a learning environment that provides for reasonable accommodations for their disabilities. If you believe you have a disability requiring an accommodation, please contact the Special Populations Coordinator at (409) 880-1737 or visit the office in Student Services, Cecil Beeson Building.

Week	Topic	Reference
1 & 2	Course Introduction & Policies Introduction to Safety, Health & Environment Types of Hazards & Effects	Online: Orientation, Week 1 & 2 Text: Chapters 1 & 2
3 & 4	Recognizing Chemical Hazards	Online: Week 3 & 4

Week	Topic	Reference
	Recognizing Biological Hazards	Text: Chapters 3 & 4
	TEST 1 (Chapters 1 - 4)	Online: Week 1 & 2, Week 3 & 4 Text: Chapters 1 – 4 Assessments: Test 1
5 & 6	Equipment & Energy Hazards Fire & Explosion Hazards Pressure, Temperature, & Radiation Hazards Hazardous Atmospheres & Respiration Hazards	Online: Week 5 & 6 Text: Chapters 5, 6, 7 & 8
	TEST 2 (Chapters 5 – 8)	Online: Week 5 & 6 Text: Chapters 5, 6, 7 & 8 Assessments: Test 2
7 & 8	Working Area & Height Hazards Hearing & Noise Hazards Construction, Maintenance & Tool Hazards Vehicle & Transportation Hazards	Online: Week 7 & 8 Text: Chapters 9, 10, 11 & 12
	TEST 3 (Chapters 9 – 12)	Online: Week 7 & 8 Text: Chapters 9, 10, 11 & 12 Assessments: Test 3
9 & 10	Natural disasters & Inclement Weather Physical Security & Cyber security Recognizing Ergonomic Hazards Recognizing Environmental Hazards	Online: Week 9 & 10 Text: Chapters 13, 14, 15 & 16
	TEST 4 (Chapters 13 – 16)	Online: Week 9 & 10 Text: Chapters 13, 14, 15 & 16 Assessments: Test 4
11 & 12	Introduction to Hazard Controls Engineering Controls: Alarms & Indicators Engineering Controls: Containment & Upset Administrative Controls	Online: Week 11 & 12 Text: Chapters 17, 18, 19, & 20
	TEST 5 (Chapters 17 – 20)	Online: Week 11 & 12 Text: Chapters 17, 18, 19, & 20 Assessments: Test 5
13 & 14	Permitting Systems PPE & First Aid Monitoring Equipment Fire, Rescue and Emergency Response	Online: Week 13 & 14 Text: Chapters 21, 22, 23, & 24
	TEST 6 (Chapters 21 – 24)	Online: Week 13 & 14 Text: Chapters 21, 22, 23, & 24 Assessments: Test 6
15 & 16	**Comprehensive Final (proctored)** **Research Paper**	Online Materials Text Book Assessments: Final Certified Testing Center

Contact Information Varies By Instructor.