Safety, Health, and Environment I (PTAC 1408)

Credit: 4 semester credit hours (4 hours lecture)

Prerequisite/Co-requisite: None

Course Description
An overview of safety, health, and environmental issues in the performance of all job tasks.

Required Textbook and Materials
   1. *Safety, Health, and Environment*, Pearson Custom Publishing 2006
        a. ISBN number is 0-13-700401-X

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.
C. 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
   1. Biological hazards in the workplace
   2. 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. Construction, 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, etc
   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
Z. Presentations on S.H.E.
   1. Presentations of students
   2. Discussion of each presentation for content & application.

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:
   HW/Presentation 10%
   Tests 50%
   Final Exam 40%

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 and present to class a seven (7) minute safety presentation.

Attendance Policy

1. Missing more than 20% of classes will result in an automatic "F" for the course.

2. Absences are counted for unexcused, excused and coming to class late.

3. Missing more than 20% of a class period will count as an absence.

4. Being tardy 2 times equals 1 absence.

Course Policies

1. No food, drinks, or use of tobacco products in class.

2. Beepers, telephones, headphones, and other electronic devices must be turned off while in class.

3. Do not bring children to class.

4. Assignments submitted late will be reduced 10 points each day.

5. If a test is missed due to an emergency situation, the student will have one week to make it up; otherwise a grade of 0 will be assigned. Students are responsible for scheduling the make-up date.

6. 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.

7. A student who wishes to drop a course is responsible for initiating and completing the drop process. A student who stops coming to class, and fails to drop the course, will earn an "F" in the course.

Student Code of Conduct Statement

It is the responsibility of all registered Lamar Institute of Technology students to access, read, understand and abide by all published policies, regulations, and procedures listed in the LIT Catalog and Student Handbook. The LIT Catalog and Student Handbook may be accessed at www.lit.edu or obtained in print upon request at the Student Services Office.

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.

Course Schedule

Week	Topic	Reference
1	Course introductions and policies	

	Intro to Safety, Health, and Environment	Ch 1
2	Types of Hazards and their Effects	Ch 2
3	Recognizing Chemical Hazards	Ch 3
4	Recognizing Biological Hazards **TEST 1**	Ch 4
5	Equipment and Energy Hazards Fire and Explosion Hazards	Ch 5 Ch 6
6	Pressure, Temperature and Radiation Hazards Hazardous Atmospheres and Respiration Hazards **TEST 2**	Ch 7 Ch 8
7	Working Area and Height Hazards Hearing and Noise Hazards	Ch 9 Ch 10
8	Construction, Maintenance, and Tool Hazards Vehicle and Transportation Hazards **TEST 3**	Ch 11 Ch 12
9	Natural Disasters and Inclement Weather Physical Security and Cybersecurity	Ch 13 Ch 14
10	Recognizing Ergonomic Hazards Recognizing Environmental Hazards	Ch 15 Ch 16
11	**TEST 4** Introduction to Hazard Control Engineering Controls: Alarms and Indicators	Ch 17 Ch 18
12	Engineering Controls: Containment and Upset Administrative Controls	Ch 19 Ch 20
13	**TEST 5** Permitting Systems PPE and First Aid	Ch 21 Ch 22
14	Monitoring Equipment Fire, Rescue, and Emergency Response	Ch 23 Ch 24
15	**TEST 6** Student Presentations	
16	Student Presentations	

	FINAL	