



Physical Hazards Control (OSHT 1309)

Credit: 3 semester credit hours (2 hour lecture, 1 hour lab)

Prerequisite/Co-requisite: None.

Course Description

A study of the physical hazards in industry and the methods of workplace design and redesign to control these hazards. Emphasis on the regulation codes and standards associated with the control of physical hazards.

Required Textbook and Materials

1. Accident Prevention Manual for Business & Industry, Engineering and Technology by Philip E. Hagan, John F. Montgomery, James T. O'Reilly, 12th Edition. NSC Press.
 - a. ISBN number is: 9780879122133
2. One, 11/2 – 2 inch 3 ring binder with pockets
 - a. Notebook paper for binder
 - b. *Organization of notebook; contents should include:
 - Cover page with first and last name
 - Title of course
 - Day and time of weekly class meeting
 - Semester (example, "Fall 2009")
 - Dividers labeled, syllabus, PPT. lectures, study questions, handouts, exams

Course Objectives

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

1. Identify the common physical hazards in industry. (SCANS: C1.4, C3.3, C5.5, C7.5, C9.4, C12.4, C14.3)
2. Design a hazard free work environment. (SCANS: C15.3, C18.5, F1.5, F3.4)
3. Utilize hazard recognition techniques to implement safe control practices. (SCANS: F4.3, F6.5, F9.5)
4. Describe the hazard control measures used in workplace designs. (SCANS: F11.4, F13.5)
5. List Occupational Safety and Health Administration (OSHA) standards and other regulations. (SCANS: F16.5, F17.5)

SCANS Skills and Competencies

Beginning in the late 1980's, the U.S. Department of Labor Secretary's Commission on Achieving Necessary Skills (SCANS) conducted extensive research and interviews with

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business owners, union leaders, supervisors, and laborers in a wide variety of work settings to determine what knowledge workers needed in order to perform well on a job. In 1991 the Commission announced its findings in *What Work Requires in Schools*. In its research, the Commission determined that “workplace know-how” consists of two elements: foundation skills and workplace competencies.

Course Outline

- A. Welcome to LIT:
 - 1. Introduction of faculty and students
 - 2. Expectations
 - 3. Policies
- B. The Widget Project
 - 1. Information and guidelines for the project
 - 2. The 5 processes
 - 3. Resources
 - 4. Examples
- C. Facilities- Safety through design
 - 1. What is it?
 - 2. Integrating safety through design into the design process
 - 3. Guidelines
- D. Buildings and Facility Layout
 - 1. General considerations
 - 2. Site selection
 - 3. Outside facilities
 - 4. Facility railways
 - 5. Facility layout
 - 6. Lighting
 - 7. Use of color
 - 8. Building structures
- E. Materials Handling and Storage
 - 1. Hand tools, jacks, hand trucks
 - 2. Hazardous materials
 - 3. Guidelines for lifting
 - 4. Shipping and receiving
- F. Hoisting and Conveying Equipment
 - 1. Hoisting apparatus
 - 2. Combustible-gas indicators
 - 3. Loading and unloading tank cars
 - 4. Loading and unloading tank trucks
 - 5. Storage
- 2. Cranes
- 3. Conveyors
- 4. Manlifts
- G. Ropes, Chains, and Slings
 - 1. Fiber rope
 - 2. Wire rope
 - 3. Rigging
 - 4. Methods of attachment
 - 5. Working load
 - 6. Inspections
 - 7. Chains and chain slings
 - 8. Synthetic web slings
- H. Powered Industrial Trucks
 - 1. Safeguards
 - 2. General operating principles
 - 3. Lift trucks
 - 4. Inspection and maintenance
- I. Welding and Cutting
 - 1. Health Hazards
 - 2. Safety hazards
 - 3. Controlling hazardous exposures
 - 4. Oxyfuel welding and cutting
- J. Fire Protection
 - 1. Fire prevention activities
 - 2. The chemistry of fire
 - 3. Construction methods for fire methods
 - 4. Factors contributing to industrial fires
- K. Flammable and combustible Liquids
 - 1. General safety measures

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6. Common uses of flammable and combustible liquids
- L. Electrical Safety
 1. Definitions
 2. Electrical injuries
 3. Electrical equipment
 4. Grounding
 5. Determining hazardous locations
 6. Maintenance (LOTO)

Grade Scale

A = 90-100

B = 80-89

C = 70-79

D = 60-69

F = Less than 60

*Notebooks will be graded the evening of the final.

Course Evaluation

Final grades will be calculated according to the following criteria:

Test 1	15%
Test 2	15%
Presentation	30%
Notebook	10%
Final	30%

Course Requirements

1. Students are required to participate in a group project called *The Widget Project*. Each student in the group will be assigned a role and topic to be presented at the end of the semester.
2. Participation in class activities and discussion is mandatory.
3. Students are required to participate in labs. You cannot make up a lab assignment or activity.

Course Policies

1. Students are expected to come to class prepared. *Being prepared is defined as having the textbook, notebook, pen/pencil, paper, calculator, and completed assignments (such as study questions).*
2. Late work is unacceptable.
3. *There are no makeup tests.*
4. No extra credit will be awarded so please don't ask.

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5. Cheating on a test will result in an “F” for the course. Please review the “Code of Conduct & Disciplinary Policy” and “Academic Dishonesty” on pages 34 through 36 of the LIT Catalog and Student Handbook.
6. Attendance. Five points will be added to the final grade average for *perfect attendance*. Perfect attendance means not missing any classes or any portion of a class. This includes not having any tardies or leaving class early. Four tardies equals one absence.
7. You are expected to be in class (in your seat on time.) If you do find yourself in the position of arriving late due to unavoidable circumstances, enter the classroom with the *least* amount of disruption possible. Some lectures are only 45 minutes in length and coming in late is unacceptable.
8. Students are expected to remain in class the entire class period unless dismissed by the instructor.
9. Drop/Add/Withdraw. *It is the student’s responsibility to make sure you are officially enrolled or dropped from this course.* If at any point, you decide to drop the class, it is your responsibility to officially drop (i.e., using proper administrative offices/paperwork.) Any student who stops attending class and does not officially drop the course will be given an “F” as the semester grade.
10. Silence all electronic devices such as cell phones, beepers, headphones and any other electronic communication devices.
11. No eating or drinking in the classroom.
12. Please do not bring children to class.
13. No tobacco products are allowed in class.
14. *In the case of disruptive behavior, the instructor reserves the right to ask you to leave the classroom. The instructor also reserves the right not to allow you back in the class.*

Disabilities Statement

The Americans with Disabilities Act of 1992 and Section 504 of the Rehabilitation Act of 1973 are federal anti-discrimination statutes that provides 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 located in the Cecil Beeson Building, room 116B.

Course Schedule

Week 1	Course Introduction and Policies
Week 2	Widget Project Guidelines and Examples
Week 3	Chapter 1: Safety Through Design

pp. 3-22

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Week 4	Chapter 2: Buildings and Facility Layout	pp. 23-54
Week 5	Buildings and Facility Layout	
Week 6	Test 1	
Week 7	Chapter 14: Materials Handling and Storage	pp.409-422, 436-441
Week 8	Chapter 15: Hoisting and Conveying Equipment	pp.444-477, 498-503
Week 9	Chapter 16: Ropes, Chains, and Slings	pp. 506-535
Week 10	Chapter 17: Powered Industrial Trucks/Traffic within the plant	pp. 538-556
Week 11	Test 2	
Week 12	Chapter 21: Welding and Cutting	pp. 649-663
Week 13	Chapter 11: Fire Protection	
Week 14	Chapter 12: Flammable and Combustible Liquids and Chapter 10: Electrical Safety	pp. 350-381 & 252-285
Week 15	Presentations	
Week 16	Final	

*The order in which topics are covered is subject to change. Tests dates are also subject to change.