

San Jose State University

ISE 114: Safety for Engineers
Section 01 Code 46558

Wednesdays 18:00 to 20:45 ENG 488

Fall 2010

Instructor: Mr. David L. Krack

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Preferred Method of Contact: dlkrack@comcast.net and then by phone.

Office Location: ENG 488

Office Hours and Days: By appointment or after class.

A. Course Description

Hazards, accident prevention and engineering approaches to the design of equipment, facilities and processes. Provides familiarity with system safety, system evaluation and evaluation of alternative countermeasures. Latest safety regulations and agencies responsible for their enforcement.

B. Prerequisites

Junior standing.

C. Corequisites

None

D. Required Textbooks

Safety and Health for Engineers, Second Edition, Roger L. Brauer, John Wiley & Sons;
(December 2005) (ISBN: 0-471-29189-7).

E. Additional Materials

Other written material will be made available to supplement the text on certain topics.

F. Student Learning Objectives

The student will develop an understanding of the role and responsibility of a Safety Engineer by learning how safety standards are set and implemented in a company. Principles of safety management in a company will be examined. Government standards, laws and regulations will be examined and applied to case studies.

- Describe the history of the industrial safety movement and the role of the Safety Engineer.
- Understand Standards Development and the Regulatory Process.
- Know the potential of the World Wide Web to access safety standards and related information.
- Understand the use of computers in the analysis of accident and injury data and safety performance.
- Evaluate fire and explosion hazards and risks.
- Determine the cause of an undesirable event and how to avoid the hazardous situation.
- Learn how to identify, evaluate and then control risk.

G. Course Requirements

Course Project Presentation:

A course group project will be performed which is aimed at understanding the basics of safety management, accident prevention, safety data collection and analysis by examining the Cal/OSHA Injury and Illness Prevention Program and how it is implemented at a local company.

The group project will consist of an onsite tour and interview with the environmental health and safety officer of the company and class presentation of your findings. Each group will reduce your findings and impressions to a MS PowerPoint presentation. Conclude your presentation with your overall impressions and evaluation relative to the company's program thoroughness and effectiveness.

An alternative to the group project may be performed to research a historic fire or major incident and to discern how that incident impacted society and changed safety regulations.

Examinations:

Two 'mid-term' exams and a Final Exam are scheduled which will cover the course material covered since the previous exam and up to the time of the exam. The dates of the exams are listed in the class schedule.

- Academic dishonesty on exams, quizzes or any coursework will result in an "F" on the exam or coursework and a note to the appropriate personnel on campus. Dishonesty may result in an "F" in this course.
- If you must miss an exam due to an emergency, notify me as soon as possible and prior to the exam to have an opportunity to take a make-up. Approval will be given only under exceptional circumstances.
- If you miss an exam and have not been excused, you do not have the opportunity to take a make-up.

H. Tentative Course Calendar

See table at end of page.

I. Grading Information

Homework, Class Work, Quizzes and Projects:

Homework will be announced in class with some solutions due in class the following week. Late homework, homework not turned in at the start of class on the day it is due, will not be accepted.

- Quizzes will be unannounced and given at the start of the class.
- Class work assigned to groups of students will be collected and graded.
- Late projects will not be accepted.

Course Grade:

The final grade will be based on the following distribution:

- | | |
|-----------------------------------|-----|
| • Homework and Quizzes | 30% |
| • Exams (2) | 40% |
| • Course Project and Presentation | 10% |
| • Final Exam | 20% |

University, College, or Department Policy Information

I. Academic Integrity Statement

From the Office of Student Conduct and Ethical Development: "Your own commitment to learning, as evidenced by your enrollment at San José State University, and the University's Academic Integrity Policy requires you to be honest in all your academic course work. Faculty members are required to report all infractions to the Office of Student Conduct and Ethical Development. The policy on academic integrity can be found at http://sa.sjsu.edu/student_conduct."

II. Campus policy in compliance with the Americans with Disabilities Act

Campus policy in compliance with the Americans with Disabilities Act: "If you need course adaptations or accommodations because of a disability, or if you need special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible, or see me during office hours. Presidential Directive 97-03 requires that students with disabilities requesting accommodations must register with DRC to establish a record of their disability."

III. Additional Policies or information required by the department, or college

Last Revised: 8/28/2010 4:21:18 PM

ISE 114 Fall 2010 Class Schedule

Week	Day	Topics	Chapters	Homework
1	8/25	History of the Health and Safety Movement up to 1970 Fundamental Concepts and Terms, Prevention Strategies Professions in Occupational Health (DLK)		
2	9/1	Federal Agencies: Laws and Regulations The Occupational Safety and Health Act of 1970 Medical Access and Right to Know – 1980's AB 1127 – California Safety Reform Act – 2000 The Injury and Illness Prevention Program of 1991	Chapters 1, 2, 3, 4, 5	C-1-RQ: 5,8 C-2-RQ: 6 C-3-RQ: 1,6,7,10,12,18,19 C-4-RQ: 2 C-5-RQ: 4,6
3	9/8	*Cal/OSHA Program	Chapters 6, 8, 9	C-6-RQ:1,3 C-8-RQ:1,7,8 C-9-RQ:2,3,6,12,18,19
4	9/15	Working Surfaces Excavations and Trenching, Fall Prevention Confined Space Entry Construction Site Safety – Panoche Road	Chapters 11	C-11-RQ: 11,12,13,14
5	9/22	<u>EXAM 1</u> Ergonomics and Repetitive Motion Injury Tools and Machines, Lockout / Tag Out	Chapters 13	C-13-RQ: 1,4,12,13,16,17,21
6	9/29	*Electrical Safety	Chapters 12	C-12-RQ: 7,8,9,11,12,14,15, 18,19,22,24
7	10/6	*Fires and Explosions	Chapters 16, 17	C-16-RQ: 6,8,13,25,29 C-17-RQ: 1,2,3,5
8	10/13	*Fires and Explosions	Chapters 16, 17	
9	10/20	Industrial Hygiene	Chapters 24	C-24-RQ: 4,5,6,7,9,10,13,14, 15,17,18,19,20,21
10	10/27	Exhaust Ventilation	Chapters 25	C-25-RQ: 4,5,7
11	11/3	Asbestos in Construction Materials Bloodborne Pathogens, Biohazards	Chapter 26	C-26-RQ: 1,2,3,5,7
12	11/10	<u>EXAM 2</u>		
13	11/17	Safety Plans and Programs	Chapters 31, 32, 34, 35, 36, 37, 38	C-31-RQ: 8,12 C-32-RQ: 3,10 C-34-RQ: 2,3,4,5, C-35-RQ: 1 C-37-RQ: 9, 12 C-38-RQ: 2
14	11/24	Holiday - No Class Meeting		
15	12/1	Student Project Presentations		
16	12/8	Last Day of Instruction Student Project Presentations		
17	12/15	FINAL EXAM Project Presentations Soft Copy Due		

Course Project: Safety Standards and Programs

Mr. David Krack, Lecturer

Injury and Illness Prevention Program Project

Every California employer must establish, implement and maintain a written "Injury and Illness Prevention Program" (IIPP) and a copy must be maintained at each workplace or at a central work site if the employer has non-fixed work sites. The requirements for establishing, implementing and maintaining an effective written injury and illness prevention program are contained in Title 8 of the California Code of Regulations, Section 3203. It can be located and printed from (<http://www.dir.ca.gov/>) (<http://www.dir.ca.gov/Title8/3203.html>).

The following eight elements provide the essential framework required for an Injury and Illness Prevention Program:

- | | |
|----------------------|------------------------------------|
| 1. Responsibility | 5. Accident/Exposure Investigation |
| 2. Compliance | 6. Hazard Correction |
| 3. Communication | 7. Training and Instruction |
| 4. Hazard Assessment | 8. Recordkeeping |

The Project: As a group of not more than three students,

1. Contact a local employer and identify yourself as an occupational health student at San Jose State University and ask for an interview with the person responsible for the company's health and safety program. Further explain that as a class research project, you would like to learn how the IIPP is established and implemented at the company.
2. Ask for an in-person interview and a plant tour if possible.
3. Conduct the interview, researching how each of the eight key elements of their program was implemented and maintained. As part of the interview, ascertain some company background, e.g., products or services produced, company history, number of employees covered by the IIPP, name of company representative and telephone number, et al.
4. Each group of students will reduce their individual findings and impressions to a PowerPoint Presentation. Conclude your presentation with your overall impressions and evaluation relative to its thoroughness and effectiveness.
5. Present your findings as a group to the class in no more than a 20-minute presentation.

You may need to contact more than one employer. If you are currently working, consider to interview your company's representative.

Project Grading Criteria:

1. Genuinely experienced onsite visit.
2. Each student's original thoughts, impressions and presentation on how the company or agency is managing their program. Reference to lessons learned in the classroom and the text.
3. Presentation style and format.

If your company contacts have any questions, they may contact me at 510-209-5541 or email at dlkrack@comcast.net .

Alternative Course Project

Historic Fires Affecting Fire Prevention

Research any one of the historic fires that are listed below. Explain the conditions, what went wrong and what impact the incident had on society and on safety standards.

Present your findings in a PowerPoint Presentation to the class.

Iroquois Theater Fire (1903) Chicago

Baltimore, Maryland Conflagration (1904)

Triangle Shirtwaist Fire (1911)

New London, Texas, Gas Explosion (1937)

Winecoff Hotel, Atlanta, Georgia (1946)

Ringling Brothers and Barnum and Bailey Circus Fire, Hartford, Connecticut (1944)

S.S.General Slocum Ship Fire, New York City (1904)

Ohio State Penitentiary Fire, Columbus, Ohio (1930)

Cocoanut Grove Nightclub Fire, Boston, Massachusetts (1942)

Texas City Explosion, Texas City, Texas (1947)

Our Lady of the Angels School Fire, Chicago (1958)

Beverly Hills Supper Club, Southgate, Kentucky (1977)

The Fitchville, Ohio, Nursing Home Fire (1963)

MGM Grand Hotel Fire, Clark County, Nevada (1980)

ISE 114 Student Profile

(Voluntary)

1	Name:	
2	Email address:	
3	Telephone No.	(Cell) (Residence)
4	Degree Major:	
5	School Year (Circle):	Junior Senior Graduate Student
6	When do you expect to graduate?	Month / Year
7	Work Experience: <ul style="list-style-type: none">• What do you do?• Where?• How many hours per week?	
8	What is your career objective after graduation?	