

14:440:403 (Spring, 2017) Safety Engineering in Packaging and General Industry  
 Packaging Engineering Program, School of Engineering  
 Rutgers University – New Brunswick, New Jersey

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Instructor: Alejandro Ruiz  
 E-mail: [ruiz@rutgers.edu](mailto:ruiz@rutgers.edu)  
 Office: Rutgers Environmental Health and Safety  
 Course Time: Monday, 6:40-9:30PM  
 Office Hour: By Appointment  
 Class Location: SERC 208  
 Course Website: Sakai

Course Descriptions: An introduction to the principles in safety engineering to design, maintain, and manage a workplace free from hazard for general and packaging engineering. The course will cover mechanical hazards, fall and lifting hazards, climatic and environmental hazards, electrical hazards, fire and explosive hazards, pressure hazard, ventilation hazards and the design of specialty building/facilities. Problems and solutions in designing and constructing hazard-free environment are presented including OSHA requirements and consensus standards.

Course Schedule:

<u>Week</u>	<u>Topic</u>	<u>Chapter</u>	<u>Homework</u>
1	Introduction The Safety Profession	1 2	C-1-RQ: 5,8 C-2-RQ: 6
2	Engineering Disasters Fundamental Concepts	Video 3	C-3-RQ: 1,6,7,10,12,18,19
3	Laws & Regulations	4, 5, 8	C-4-RQ: 2, C-5-RQ: 4,6
4	Laws & Regulations Workers' Compensation	4, 5, 8 6	C-8-RQ:1,7,8 C-6-RQ:1,3
5	Hazard Control Principles Mechanics & Structures	9 10	C-9-RQ:2,3,6,12,18,19 C-10-RQ:1,6,7
6	Walking & Working Surfaces Personal Protective Equipment	11 28	C-11-RQ: 11,12,13,14 C-28-RQ: 1,2,3
7	Materials Handling Mid-Term Exam	12	C-12-RQ: 7,8,9,11,12,14,15, 18,19,22,24
8	No Class		
9	Electrical Safety Fire Protection	15 16, 17	C-16-RQ: 6,8,13,25,29 C-17-RQ: 1,2,3,5

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10	Pressure Tools & Machines	19 13	C-13-RQ: 1,4,12,13,16,17,21
11	Chemicals Ventilation	24 25	C-24-RQ: 4,5,6,7,9,10,13,14, 15,17,18,19,20,21 C-25-RQ: 4,5,7
12	Risk Management & Assessment Job Safety Analysis	35	C-35-RQ: 1 Supplements
13	Safety Management	34, 37, 38	C-34-RQ: 2,3,4,5, C-37-RQ: 9, 12, C-38-RQ: 2
14	System Safety	36	
15	Presentations		
16	Final Exam		

Grading Policy:

Grading:      55%    Exams / Quizzes  
                   35%    Homework, Projects, Safety Audits, Tours, Research, Papers  
                   10%    Attendance

A: 90-100;  
 B: 80-89;  
 C: 70-79;  
 D: 60-69;  
 F: <60

\*\*\* During the semester, there might be some adjustments of assignments, grades, extra credits, etc. Those will be announced on the course website. The "Reference score" in the above table will be adjusted accordingly.

Homework Policy:

A homework must be completed and uploaded to the students Sakai account for the course.

Workshop (Site Tour)

Site tour with class will be scheduled and attendance will be required. The site tour is intended to provide the students an experience of how safety engineering is applied in industry.

Exam & Quiz Policy:

Quizzes maybe given for each prior class session. Each quiz will have a maximum of 10 questions consisting of true or false questions; multiple choice questions, and/or fill in the blank questions.

A final exam will be given at the end of the course. The final exam will have questions that will focus on material covered from each class sessions. The final exam will consist of true or false questions, multiple choice questions, and/or fill in the blank questions.

Project Policy:

As a group of not more than six students,

1. Contact a local employer and identify yourself as a safety engineering student at Rutgers 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 will condense 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. The instructor can provide contacts if needed.

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.