

NEW JERSEY INSTITUTE OF TECHNOLOGY
Department of Industrial Engineering
IE 614
Safety Engineering Methods
Spring 2024

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Objectives: To apply engineering methods to identify safety hazards and to develop methods to correct and mitigate the identified hazards.

Textbook: Roger Brauer, Safety and Health for Engineers, 4th edition, 2022, Wiley

Additional Class materials will be uploaded to Canvas.

Description: The application of selected safety engineering methods to detect, correct and prevent unsafe condition and procedures in future practice are discussed. Methods selected are from safety management and programs; loss prevention; fire protection; systems safety; the design of building and other facilities; products; machines; and equipment. Engineering problems and solutions in designing and constructing hazard-free environment are presented.

Objectives:

1. Be able to identify general industry safety problems and solutions to solve the identified problems
2. Understand and be able to implement OSHA recordkeeping requirements.
3. Know basic worker compensation system and how it is implemented
4. Understand prevention through design process to solve safety problems

Class Requirements:

Students will prepare presentation on class topics. The presentations will be approximately 45 minutes and will cover material not in the textbook to give the class additional perspectives on the engineering and technology subjects.

Students will take part in a group project

Class discussion on topics for each week will be based on student prepared questions. Students writing questions should be prepared to provide some background to help the discussion move along.

Evaluation: Midterm Exam - 25%
Final Exam - 35%
Project – 10%
Assignments/Discussion Questions – 20%
Oral Presentation – 10%

Honor:
Code: In accordance with the NJIT honor code, students are expected to do their own work. If they use somebody else's work, then that fact should be documented. Individual work is to be done individually and not copied from others and it is expected that you will perform all exams without consulting others and do your own work on any assignments. Consulting with others on general approaches to take in an assignment is considered acceptable, but copying assignments from others or working the majority of the assignment together is not acceptable. Of course group work is done in a group. See <https://www5.njit.edu/policies/sites/policies/files/academic-integrity-code.pdf> for more information on NJIT's honor code.

CLASS SCHEDULE

Week	Topic	Readings
1W J16	Introduction, Fundamentals and History of Safety	Chap 1, 3
2C J23	Safety Laws, Regulations, Agencies, and Standards, Emergency Preparedness	Chap 4, 5, 29
3C J30	General Principles of Hazard Control, Structures and Facilities Planning and Design	Chap 9, 10, 30
4W F6	Workers' Compensation, Product Liability and Record Keeping	Chap 6, 7, 8
5C F13	Personal Protective Equipment	Chap 28
6W F20	Tools and Machines	Chap 13
7C F27	MIDTERM	
8W M5	Electrical Safety	Chap 12
March 10-16	SPRING BREAK	
9C M19	Fire Prevention/Protection	Chap 16
10W M26	Materials Handling & Storage, Hoisting, Conveying	Chap 15
11C A2	Ropes and Slings, Powered industrial trucks	Chap 15
12W A9	Risk Assessment	Chap 34
13C A16	Automation and Safety, Computers and Safety, Future of Safety, Process Safety	Canvas Materials
14.W A23	Final Reports	
15C M7	Final Exam	

C – In class meeting W – WebEx meeting

