NEW JERSEY INSTITUTE OF TECHNOLOGY Department of Industrial Engineering IE 614 Safety Engineering Methods Spring 2025

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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:In accordance with the NJIT honor code, students are expectedCode: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 | Торіс | Readings |
|-------------|--|---------------------|
| 1C J21 | Introduction, Fundamentals and History of Safety | Chap 1, 3 |
| 2Z J28 | Safety Laws, Regulations, Agencies, and Standards, Emergency Preparedness | Chap 4, 5, 29 |
| 3C F4 | General Principles of Hazard Control, Structures and Facilities Planning and Design | Chap 9, 10, 30 |
| 4Z F11 | Workers' Compensation, Product Liability and Record Keeping | Chap 6, 7, 8 |
| 5C F18 | Personal Protective Equipment | Chap 28 |
| 6Z F25 | Tools and Machines | Chap 13 |
| 7C M4 | MIDTERM | |
| 8Z M11 | Electrical Safety | Chap 12 |
| March 16-22 | SPRING BREAK | |
| 9C M25 | Fire Prevention/Protection | Chap 16 |
| 10Z A1 | Materials Handling & Storage, Hoisting, Conveying | Chap 15 |
| 11C A8 | Ropes and Slings, Powered industrial trucks | Chap 15 |
| 12Z A15 | Risk Assessment | Chap 34 |
| 13C A22 | Automation and Safetny, Computers and Safety, Future of Safety, Process Safety | Canvas Materials |
| 14.Z A29 | Final Reports | |
| 15C M13 | Final Exam | |

C-In class meeting Z-Zoom meeting