

NEW JERSEY INSTITUTE OF TECHNOLOGY

Department of Industrial Engineering

IE 685

System Safety Engineering

Fall 2011

Instructor: George Olsen, Ph.D, CSP, PE.
College of Computing Sciences
New Jersey Institute of Technology
University Heights
Newark, NJ 07102

Contact: 973-596-3389 [office]
Office – 4414 GITC Building

E-mail: golsen@njit.edu

Textbook: Vincoli, Jeffrey, Basic Guide to System Safety, Wiley-Interscience, 2006.

ISBN-13: 978-0-471-72241-0

Description: The course will focus on systems safety engineering and design safety. The various topics include developing and implementing system safety programs, system safety planning, decision making using statistical tools, and system safety engineering analysis techniques and methods.

- Objectives:**
1. Be able to identify and analyze hazards and risks using system safety techniques such preliminary hazard analysis, subsystem hazard analysis, and fault tree analysis.
 2. Use statistical tools and methods to understand safety and health decision making..
 3. Understand prevention through design techniques to minimize safety, health and environmental risk during system design, redesign, operations, and maintenance.
- Evaluation:**
- Midterm Exam - 25%
- Final Exam - 30%
- Project – 20%
- Assignments – 20%
- Oral Presentation – 5%
- 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 <http://www.njit.edu/academics/honorcode.php> for more information on NJIT's honor code.

CLASS SCHEDULE

Week	Topic	Readings
1	Introduction, Background and History of System Safety	Chap 1, 2
2	Connecting System Safety and Industrial and Construction Safety Risk and Safety Engineering	Chap 4
3	Prevention through Design	
4	Quantitative Tools for System Safety Decision Making	Chap 5
5	Quantitative Tools for System Safety Decision Making Continued	Chap 5
6	System Safety Analysis Introduction Preliminary Hazard Analysis	Chap 6
7	Preliminary Hazard Analysis [continued] Project Introduction	
8	Midterm	
9	Subsystem and System Hazard Analysis	Chap 7
10	Other System Safety Analysis Techniques	Chap 8-11

11	Fault Tree Analysis	Chap 12
12	Fault Tree Analysis	Chap 12
	Continued	
13	MORT, HAZOP, Human Reliability, and Software Safety	Chap 13, 14
14	Final Project Reports	
15	Final Exam	