

Fall 2019

# IE 685-101: System Safety Engineering

George Olsen

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## Recommended Citation

Olsen, George, "IE 685-101: System Safety Engineering" (2019). *Mechanical and Industrial Engineering Syllabi*. 49.  
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**NEW JERSEY INSTITUTE OF TECHNOLOGY**

**Department of Industrial Engineering**

**IE 685**

**System Safety Engineering**

**Fall 2019**

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**Textbook:** None – Readings in Canvas

**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 - 35%  
Project – 20%  
Assignments – 20%

**Academic Integrity:** In accordance with the NJIT academic integrity 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://www.njit.edu/policies/sites/policies/files/academic-integrity-code.pdf> for more information on NJIT's academic integrity code.

## CLASS SCHEDULE

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

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