

## **ENFP413 Advanced Life Safety Analysis**

**Credits:** Three credits, two 75 minute lectures weekly

**Instructor:** Kenneth E. Isman, P.E.

**Textbook:** SFPE Handbook of Fire Protection Engineering (5th Edition)

### **Specific course information:**

1. This course teaches students how to use fractional effective dose (FED) methods for predicting time to incapacitation and death from fires for use in fire safety engineering calculations. Physiology and toxicology of fire effluent components, decomposition chemistry of common materials, and standard experimental approaches are covered. Predictive models of material production rates are discussed with people movement characteristics related to building evacuation. Formulation and application of evacuation models are discussed with human behavior factors affecting response of people to fire situations.
2. Prerequisites: Introduction to Life Safety Analysis (ENFP 250)
3. Required Course

### **Specific goals for the course:**

1. Upon completion of this course, students should be able to:
  - Discuss the mechanisms whereby people are affected by exposure to toxic effluent and heat in fires, including toxicology of fire effluent components, common fire scenarios causing death and injury to building occupants, examination of individual incidents through fire investigation, trends in fire injury and death statistics, the decomposition chemistry of common materials, standard small and large scale experimental approaches and standards.
  - Apply the fractional effective dose (FED) methods for predicting time to incapacitation and death in fires for use in fire safety engineering calculations.
  - Discuss the formulation and application of evacuation models.
  - Discuss trends in human behavior and factors which affect the behavior of people in fire situations.
2. This course focuses on two SOs:
  - SO6 - An understanding of professional and ethical responsibility;
  - SO11 - An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

### **Brief list of topics:**

- People Movement
- Human Behavior
- Evacuation Modeling
- Wayfinding
- Toxicity
- Tenability Analysis