ENFP413 Human Response to Fire

Credits: Three (3)

Contact hours: Two lectures per week, 75 minutes each.

Table 5-1 category: Engineering topic

Instructor: Hrybyk

Textbook: SFPE Guide to Human Behavior in Fire, 2nd Edition, Springer, 2019. (Copy provided)
Other supplemental materials:
SFPE Handbook of Fire Protection Engineering, 5th Edition, M. Hurley (ed), New York: Springer, 2015. (Copy provided)

Catalog description:
This course provides an overview of human response to fire, including people movement characteristics, exposure to toxic products and heat, and human behavior. Fractional effective dose (FED) methods for predicting time to incapacitation and death of fires for use in fire safety calculations. Physiology and toxicology of the fire effluent components, decomposition chemistry of common materials, standard experimental approaches. Predictive models of material production rates. People movement characteristics related to building evacuation. Formulation and application of evacuation models.

Prerequisites and Corequisites:
Prerequisite: ENFP250. Restriction: Permission of ENGR-Fire Protection Engineering department.

Credit only granted for: ENFP413 or ENFP613.

Table 5-1 Course Type: Required

Specific outcomes of instruction:
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 or 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.

Student outcomes assessed: SO2.1, SO7

Brief list of topics covered:
- People Movement; Human Behavior; Evacuation Modeling; Wayfinding; Toxicity; Tenability Analysis