ENFP415 Fire Dynamics

Credits: Three (3)

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

Table 5-1 category: Engineering topic

Instructor: Anderson

Textbook: Quintiere J. G., *Fundamentals of Fire Phenomena,* John Wiley & Sons, Chichester, UK, 2006.

Other supplemental materials: Turns, S. R., *An Introduction to Combustion*, McGraw-Hill, New York, USA, 2012.

Catalog description:
Designed to give students a quantitative understanding of fire behavior. The fundamentals of physics and chemistry of combustion are presented and used to derive key analytical relationships that describe fire growth. Application of these relationships to the analysis of common fire scenarios is emphasized.

Prerequisites and Corequisites:
Prerequisite: ENFP312. Restriction: Permission of ENGR-Fire Protection Engineering department

Credit only granted for: ENFP415 or ENFP651.

Table 5-1 Course Type: Required

Specific outcomes of instruction:
Upon completion of this course, students should be able to:

- Demonstrate a working knowledge of basic physics and chemistry of premixed and nonpremixed flames
- Compute the time to ignition of solid surfaces in a range of thermal scenarios
- Estimate the rate of flame spread on solid objects
- Perform calculation of steady state burning rate for liquid and solid fuels.

Student outcomes assessed: SO1, SO6.2

Brief list of topics covered:

Combustion Chemistry and Thermodynamics
Premixed Flames
Nonpremixed Flames
Ignition of Liquids and Solids
Flame Spread
Burning Rate