

ENFP300 Fire Protection Fluid Mechanics

Credits: Three credits, two one-hour lectures and one one-hour recitation weekly

Instructor: Michael J. Gollner

Textbook:

Fundamentals of Fluid Mechanics, by Munson, Young, Okiishi, Huebsch, Rothmayer, 2012

Specific course information:

1. Catalog Description: This course will present students with the fundamental properties of fluids and fluid movement. Both static and dynamic fluid problems will be considered with an emphasis on fire protection systems.
2. Prerequisites: MATH246 and PHYS261 or permission of the instructor
3. Required Course

Specific goals for the course:

1. Upon completion of this course, students should be able to:
 - Demonstrate a working knowledge of static and dynamic of fluid flow
 - Estimate pressure drop in pipes and ducts
 - Evaluate a hydraulic network with application to sprinkler design
 - Describe buoyant flows associated with fire and fire plumes
2. This courses focuses on three SOs:
 - SO1 – An ability to apply knowledge of mathematics, science, and engineering.
 - SO5 – An ability to identify, formulate, and solve engineering problems.

Brief list of topics:

Statics and dynamics
Bernoulli equation
Conservation statements
Dimensional analysis
Viscous flow in pipes
Hydraulic networks
Pumps
Kinematics
Control volume analysis
Differential analysis
External flow
Boundary layer theory
Open channel flow