# NorthWest Arkansas Community College
## Division of Health Professions / Fire Science

**Course Number and Title**
FIRE 2053 Fire Service Hydraulics and Water Supply

**Catalog Description**
This course deals with the principles and formulas for fire ground hydraulics and pump operations of water systems, private, public, standpipes and sprinklers; nozzle pressures, friction losses, and effective fire streams and water supply problems. Included will also be the maintenance and operation of emergency vehicles and solutions of problems involving fire streams.

**Prerequisites**
None

**Credit Hours/ Contact Hours/ Load Hours**
3/3/3

**Target Audience/Transferability**
Designed especially for students who plan to enter, or are currently in, the fire service. This course serves as a foundation for practical applications of fire flow hydraulics and evolutions.

**Student Learning Outcomes**
- Identify types of municipal water supply systems
- Identify the various types of fire streams and appliances.
- Identify alternative water supply systems for firefighters where conventional systems are inadequate, or do not exist.
- Identify various hose line layouts, and fire attack water supply strategies for certain types and sizes of fires.
- Recall, understand and apply theoretical calculations of water flows, pressure losses, and effective nozzle pressures for safe and effective firefighting operations.
- Recall the proper uses of available water supplies for the most effective firefighting operations.
- Analyze community fire flow demand criteria
- Recognize and understand the importance of managing water supply effectively on the fire scene.

**Outline of Instruction:**
Water as an Extinguishing Agent
Water Distribution System
Field Trip Beaver Water District Lowell AR
Water Flow Analysis
Calculating Required Fire Flows
Apparatus Equipped with Fire Pumps
Fire Service Pump Design
Fire Department Pumper Testing
Types of Streams
Fire Hose Nozzles
Fire Service Pressure Loss Calculations
Determining Pump Discharge Pressure
Relay Pumping
Field Trip (labs)
Supporting Sprinkler and Stand Pipe Systems

**Forms of Assessment:**
Based upon written exams, students will demonstrate ability to recall facts and fire stream formulas, and how to manage water supplies on the fireground, with a minimum cumulative grade of 70%.