

Program of Instruction

Course Syllabus

Course Title: Down and Dirty Hydraulics

Course Duration: 16 hours

Program: Driver/Operator

Course Prerequisites: Student must be a member of a fire department or Fire Brigade.

Course Description: This course is designed for firefighters who have experience operating fire pumps, someone who has attended IFSI's Basic Pumps course, or someone wants to review of fire service hydraulics. In this course the student will learn nozzle pressures for handlines and master stream devices, friction loss for hose and appliances, and the influence of elevation on fire service hydraulics. Students will be taught how to calculate the proper pump discharge pressures for typical fireground situations. As time allows, students will utilize local fire apparatus and equipment to practice the skills learned during the course. Upon successful completion of this course, the student will have a better understanding of fire service hydraulics.

Course Requirements and/or Recommendations: These can be divided into three categories: those completed prior to arriving in class (Pre-Course Work), those completed during class, such as homework assignments and quizzes (Course Work), and requirements completed after class sessions have ended, but prior to receiving a certificate of completion. (Post-Course Work)

Summary of Directions

Pre-Course Work: None

Course Work: Attend and participate in all lectures and practicals.

Post-Course Work: None

Course Policies:

Safety Policy: Students shall understand and follow all instructions pertaining to operational safety, as stated by instructors or as written in course materials. Instructors and students shall be mindful of safety at all times. Conduct judged to be unsafe shall be grounds for dismissal from the course.

Academic Integrity Policy: IFSI has the responsibility for maintaining academic integrity so as to protect the quality of the education provided through its courses, and to protect those who depend upon our integrity. It is the responsibility of the student to refrain from infractions of academic integrity, from conduct that may lead to suspicion of such infractions, and from conduct that aids others in such infractions. Any violation of the code of conduct is grounds for immediate dismissal from the course.

American Disabilities Act: As guaranteed in the Vocational Rehabilitation Act and in the American Disabilities Act, if any student needs special accommodations they are to notify their instructor and provide documentation as soon as possible so arrangements can be made to provide for the student's needs.

Course Content:

Module: 1

Title: Nozzles, Flows, and Single Lines

Terminal Learning Objective:

At the conclusion of this module, the student will demonstrate calculating the engine discharge pressure for single hoselines.

Module: 2

Title: Wyed and Siamesed Lines

Terminal Learning Objective:

At the conclusion of this module, the student will demonstrate calculating the engine discharge pressure for wyed and siamesed hoselines.

Module: 3

Title: Elevated Streams and Multiple Lines

Terminal Learning Objective:

At the conclusion of this module, the student will demonstrate calculating the engine discharge pressure for elevated streams.

Module: 4

Title: Multiple Lines

Terminal Learning Objective:

At the conclusion of this module, the student will demonstrate calculating the engine discharge pressure for multiple lines.

Module: 5

Title: Relay Pumping Operations

Terminal Learning Objective:

At the conclusion of this module, the student will demonstrate calculating the engine discharge pressure for relay pumping scenarios.

Module: 6

Title: Pumper Operations

Terminal Learning Objective:

At the conclusion of this module, the student will demonstrate supplying multiple hose lines.

Reference List:

IFSTA, Pumping and Aerial Apparatus Driver/Operator Handbook, 3rd Edition 2015

Jones and Bartlett Learning, Fire Apparatus Driver/Operator, 3rd Edition 2018

NFPA 1001, Standard for Professional Firefighter Qualifications, Edition 2013

NFPA 1002, Standard for Fire Apparatus Driver/Operator, Edition 2017

Pennwell, Firefighting Operations in High-Rise and Standpipe Equipped Buildings, 2007

Illinois State Fire Marshal's Office, Fire Apparatus Engineer Curriculum, Edition 2000

Pennwell, FireEngineering.com, Troubleshooting Pump Operations, Kevin Kalmus, 2-1-2008

Course Schedule

DAY ONE

<u>Event</u>	<u>Duration</u>
Module 1 - Nozzles, Flows, and Single Lines	1 hour
Module 2 - Wyed and Siamesed Lines	1 hour
Module 3 - Elevated Streams	30 minutes
Module 4 – Multiple Lines	30 minutes
Module 5 – Relay Pumping Operations	30 minutes
Module 6 - Pumper Operations	30 minutes
Drill 6.1 – Title	2 hours
Drill 6.2 – Title	2 hours

DAY TWO

<u>Event</u>	<u>Duration</u>
Additional practice of skills as necessary	8 hours
