Subject:	FTEC
Course Number:	113B
Descriptive Title:	Fire Apparatus Driver/Operator-Pumping Apparatus (Pumping)
Division:	Health Sciences and Athletics
Department:	Fire and Emergency Technology
Course Disciplines:	Fire Technology
Catalog Description:	This course provides information on pumping apparatus preventive maintenance and operations. Topics include routine tests, inspections, and servicing functions; producing hand, master, and foam fire streams, relay pump operations; and supplying water to fire sprinkler and standpipe systems. This course is based on the 2014 edition of National Fire Protection Association 1002 "Standards for Fire Apparatus Driver/Operator Professional Qualifications." *Note: Pass/no pass only.*
Prerequisite:	1. Fire Apparatus Driver/Operator 1A (2015 version) 2. Successfully completed Office of the State Fire Marshal Fire Fighter 1 3. Hold a valid Class C Firefighter Endorsed driver's license NOTE: These are State Fire Marshal requirements.
Co-requisite:	
Recommended Preparation:	Fire and Emergency Technology 1
Enrollment Limitation:	
Hours Lecture (per week):	1
Hours Laboratory (per week):	1
Outside Study Hours:	2
Total Hours:	36
Course Units:	1
Grading Method:	Pass/No Pass only
Credit Status:	Credit, degree applicable
Transfer CSU:	Yes

Effective Date:	Proposed
Transfer UC:	Yes
Effective Date:	
General Education: ECC	
Term:	
Other:	
CSU GE:	
Term:	
Other:	
IGETC:	
Term:	
Other:	
Student Learning Outcomes:	**SLO #1** Diagram the flow of water through the fire pump, from the intake port to the discharge opening. **SLO #2** Assess the four rules pertaining to friction loss, and consider how each rule affects fire flow. **SLO #3** Evaluate the advantages and disadvantages of single-stage main pumps versus two-stage main pumps.
Course Objectives:	1. Compare and contrast types of pump construction. 2. Assess the capabilities and operating characteristics of various types of fire pumps. 3. Calculate correct pump discharge pressures. 4. Examine the techniques used to perform basic pump inspections. 5. Describe the purpose and operation of the relief valve.
Major Topics	**I. Fire Pump Construction and Theory (6 hours, lecture)** A. Types of fire pumps B. Automatic pressure control devices C. Pump piping and valves D. Priming devices E. Pump panel instrumentation F. Auxiliary cooling devices

II. Hydraulics (6 hours, lecture)

A. Characteristics of water and principles of pressure

B. Nozzle theory

C. Calculating gallons per minute

D. Principles of friction loss

E. Friction loss formulas and calculations

F. Fire ground hydraulic calculations

III. Inspection, Maintenance, Troubleshooting (6 hours, lecture)

A. Inspecting the pump drive systems

B. Inspecting the pump priming systems

C. Pump service testing

D. Maintenance of pumps and control systems

E. Troubleshooting pumps and control systems

IV. Pump Practices (9 hours, lab)

A. Operating from a fire hydrant

B. Principles of drafting operations

C. Principles of relay pumping

D. Principles of foam operations

E. Sprinkler and standpipe support

V. Pumping Exercises (9 hours, lab)

A. Pumping to a single hose line

B. Pumping to multiple hose lines

C. Pumping to a master stream appliance

D. Pumping from draft

E. Calculating fire ground pumping pressures

F. Perform a pump service test

Total Lecture Hours:	18
Total Laboratory Hours:	18
Total Hours:	36
Primary Method of Evaluation	2) Problem solving demonstrations (computational or non-computational)
Typical Assignment Using Primary Method of Evaluation:	Compose a one to two-page report discussing the steps to take to provide additional water supplies to the fire pump during a pumping operation. Submit report to the instructor.
Critical Thinking Assignment 1:	Prepare a one to two-page report dealing with the four rules of friction loss, and describe each rule as it pertains to proper fire flow. Submit report to the instructor.
Critical Thinking Assignment 2:	Prepare a one to two-page report comparing the various types of priming devices. Submit report to the instructor.
Other Evaluation Methods:	Essay Exams, Fieldwork, Homework Problems, Objective Exam, Oral Exams, Performance Exams, Quizzes
Instructional Methods:	Demonstration, Discussion, Lab, Lecture, Multimedia presentations, Role play/simulation
If other:	
Work Outside of Class:	Answer questions, Problem solving activity, Required reading, Skill practice
If Other:	
Up-To-Date Representative Textbooks:	International Fire Service Training Association, Pumping and Aerial Apparatus Driver/Operator Handbook, 3rd ed., International Fire Service Training Association, 2015.
Alternative Textbooks:	
Required Supplementary Readings:	
Other Required Materials:	
Requisite:	Prerequisite
Category:	non-course
Requisite course(s): List both prerequisites and corequisites in this box.	1. Fire Apparatus Driver/Operator 1A (2015 version) 2. Successfully completed Office of the State Fire Marshal Fire Fighter 1 3. Hold a valid Class C Firefighter Endorsed driver's license NOTE: These are State Fire Marshal requirements.
Requisite and Matching skill(s):Bold the requisite skill. List the corresponding	1. Because of the pumping apparatus exercises that students will be performing, students must have Fire Apparatus Driver/Operator 1A training to be successful in this course. 2. Because of pumping apparatus exercises that students will be performing, students must have Fire Fighter 1 training to be successful in this course.

course objective under each skill(s).	3. Because of the fire apparatus that students operate in this course, they must hold a valid Class C driver's license (minimum). This is a State Fire Marshal requirement.
Requisite:	
Requisite and Matching Skill(s): Bold the requisite skill(s). If applicable	
Requisite course:	Fire and Emergency Technology 1
Requisite and Matching skill(s):Bold the requisite skill. List the corresponding course objective under each skill(s).	**Students should have a basic understanding of fire apparatus.** FTEC 1 - Discuss the types of common fire department apparatus, equipment, and personal safety equipment used for firefighting.
Requisite:	
Requisite and Matching skill(s): Bold the requisite skill. List the corresponding course objective under each skill(s). If applicable	
Enrollment Limitations and Category:	
Enrollment Limitations Impact:	
Course Created by:	Craig Neumann
Date:	09/01/2001
Original Board Approval Date:	03/18/2002
Last Reviewed and/or Revised by:	Josh Boies
Date:	05/07/2021
Last Board Approval Date:	06/21/2021