

CSFM 082B: FIRE APPARATUS DRIVER/OPERATOR 1B: PUMPING APPARATUS OPS

Date Submitted: Sat, 27 Jun 2020 00:39:39 GMT

Originator

asventura

Justification / Rationale

Periodic course review. The last time the state increased these fees was in 2008. SFT has new diploma fee increases that will go into effect on July 1, 2020.

Effective Term

Fall 2020

Credit Status

Credit - Degree Applicable

Subject

CSFM - California State Fire Marshal

Course Number

082B

Full Course Title

Fire Apparatus Driver/Operator 1B: Pumping Apparatus Ops

Short Title

DRIVER/OPERATOR 1B

Discipline**Disciplines List**

Fire Technology

Modality

Face-to-Face

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 NFPA 1002 Standard for Fire Apparatus Driver/Operator Professional Qualifications. A minimum of 40 hours is required.

The CSFM 082B course is a California State Fire Marshal (CSFM) course. Upon successful completion of the course, a CSFM diploma fee of \$140 is required for this course to cover the California State Fire Training Certificate of Completion.

Schedule 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 NFPA 1002 Standard for Fire Apparatus Driver/Operator Professional Qualifications. The CSFM 082B course is a California State Fire Marshal (CSFM) course. Upon successful completion of the course, a CSFM diploma fee of \$140 is required for this course to cover the California State Fire Training Certificate of Completion.

Prerequisite: CSFM 082A

Advisory: ENG 061 & ESYS 004

Limitation on Enrollment: Valid California Class C Firefighter Endorsed driver's license and meet the educational requirements for OSFM Firefighter I.

Lecture Units

1

Lecture Semester Hours

18

Lab Units

.5

Lab Semester Hours

27

In-class Hours

45

Out-of-class Hours

36

Total Course Units

1.5

Total Semester Hours

81

Prerequisite Course(s)

CSFM 082A

Advisory: ENG 061 & ESYS 004

Limitation on Enrollment

Valid California Class C Firefighter Endorsed driver's license and meet the educational requirements for OSFM Firefighter I.

Required Text and Other Instructional Materials**Resource Type**

Book

Author

Jones and Bartlett

Title

Pumping Apparatus Driver/Operator Handbook

Edition

Second

City

Burlington, MA

Publisher

Jones Bartlett

Year

2016

College Level

Yes

Resource Type

Web/Other

Description

California Commercial Driver Handbook. (Current Edition)

Resource Type

Web/Other

Description

Reference to the following NFPA Standards:

NFPA 13 Standard
NFPA 13D Standard
NFPA 13E Standard
NFPA 13R Standard
NFPA 14

Class Size Maximum

25

Entrance Skills

Demonstration of a competency in high school level algebra or the equivalent.

Requisite Course Objectives

ESYS 004-Demonstrate proficiency in basic number facts (addition, subtraction, multiplication, division).
ESYS 004-Apply methods of conversion between percentages, decimals, and fractions.

Entrance Skills

Read texts and respond in writing at the literate level.

Requisite Course Objectives

ENG 061-Demonstrate the ability to think critically and express ideas using various patterns of development.
ENG 061-Demonstrate the ability to read and respond in writing beyond the literal interpretation of the text.

Entrance Skills

Describe applicable laws, basic inspections, documentation, maintenance, and troubleshooting when operating fire apparatus.

Requisite Course Objectives

CSFM 082A-Demonstrate driver responsibilities, recognized standards, and related laws for fire apparatus.
CSFM 082A-Demonstrate techniques on basic inspections, documentation, maintenance, and troubleshooting fire apparatus.
CSFM 082A-Explain driver's responsibilities, recognized standards, and related laws to fire apparatus.
CSFM 082A-Perform a pre-trip inspection of fire apparatus in accordance with Department of Transportation and State of California laws and regulations.

Entrance Skills

Demonstrate techniques on safe driving and positioning fire apparatus on the fire ground.

Requisite Course Objectives

CSFM 082A-Demonstrate techniques on driving and positioning fire apparatus.
CSFM 082A-Apply driving skills during simulated driving conditions.
CSFM 082A-Explain driver's responsibilities, recognized standards, and related laws to fire apparatus.
CSFM 082A-Perform a pre-trip inspection of fire apparatus in accordance with Department of Transportation and State of California laws and regulations.

Course Content

1. Responsibilities, standards, and laws.
 - a. Orientation and administration
 - b. Fire apparatus Driver/Operator responsibilities.
2. Fire pump construction and theory.
 - a. Types of fire pumps.
 - b. Pump mounting and drive arrangements.
 - c. Pump piping and valves.

- d. Automatic pressure control devices.
 - e. Priming devices.
 - f. Pump panel instrumentation
 - g. Auxiliary cooling devices.
3. Hydraulics.
- a. Basic hydraulic terminology and symbols.
 - b. Mathematics review.
 - c. Characteristics of water and principles of pressure
 - d. Principle features of water systems.
 - e. Nozzle theory.
 - f. Calculating gallons per minute.
 - g. Principles of friction loss.
 - h. Friction loss formulas and calculations.
 - i. Pump discharge pressure
 - j. Fire-ground hydraulic calculations.
4. Inspection, maintenance, and troubleshooting.
- a. Inspecting the pump drive systems.
 - b. Inspecting the pump priming systems.
 - c. Inspecting the pump pressure control systems.
 - d. Pump service testing
 - e. Maintenance of the pump and control systems.
5. Pump practices.
- a. Making the pump operational from the tank.
 - b. Transitioning to an external water supply.
 - c. Operating from a hydrant.
 - d. Principles and practices of drafting operations.
 - e. Principles of relay pump operations.
 - f. Troubleshooting pump operations.
 - g. Principles of tandem pump operations.
 - h. Principles of dual pumping operations.
 - i. Principles and practices of foam operation
 - j. Sprinkler and standpipe support.
6. Pumping exercises.
- a. Introduction to the pumping exercises.

Lab Content

1. Fire pump. (SLO: Demonstrate knowledge of fire pumps including function and operations.)
- (a) Demonstrate how to engage and disengage the fire pump.
 - (b) Demonstrate how to pump water from the tank.
 - (c) Demonstrate how to pump water from a pressurized source. (Fire hydrant).
 - (d) Demonstrate how to fill the tank from a pressurized source.
 - (e) Demonstrate how to fill the tank from a pressurized source while pumping.
 - (f) Demonstrate how to switch over the pump from tank to hydrant.
 - (g) Demonstrate how to set and operate the pressure control valve.
 - (h) Demonstrate how to set-up a water supply line from the hydrant to the tank.
 - (i) Demonstrate how to pump water to attack hoselines.
 - (j) Demonstrate how to set-up a monitor.
 - (k) Demonstrate how to pump water to a monitor.
 - (l) Demonstrate how to set-up a portable tank.
 - (m) Demonstrate how to set-up a suction hose.
 - (n) Demonstrate how to draft water from a static source.
2. Hydraulics. (SLO: Perform basic hydraulics calculations.)
- (a) Demonstrate how to calculate nozzle reaction.
 - (b) Demonstrate how to calculate nozzle gallons per minute.

- (c) Demonstrate how to calculate hydrant gallons per minute.
- (d) Demonstrate how to calculate friction loss in various size fire hose and hose lays.
- (e) Demonstrate how to calculate pump discharge pressure under live pump operations.
- (f) Demonstrate how to perform fireground hydraulics.

Course Objectives

Objectives	
Objective 1	Demonstrate safe operation of fire apparatus.
Objective 2	Perform and document routine tests, inspections, and servicing functions on the components unique to a pumping apparatus to verify their operational status.
Objective 3	Engage pump and set all pressure control and apparatus safety devices for hand or master streams.
Objective 4	Demonstrate relay pumping operations from one fire apparatus to another.
Objective 5	Demonstrate pumping handlines with various diameter hose sizes and nozzles.
Objective 6	Perform drafting operations from a static water supply.
Objective 7	Calculate field hydraulic formulas for pumping handlines, ground monitors, standpipes and sprinkler systems.
Objective 8	Describe various types of pumps used in fire apparatus.

Student Learning Outcomes

Upon satisfactory completion of this course, students will be able to:	
Outcome 1	Describe basic inspections, documentation, maintenance, and troubleshooting of fire pumps.
Outcome 2	Demonstrate knowledge of fire pumps including hydraulic calculations, and operations for handlines and master stream applications.

Methods of Instruction

Method	Please provide a description or examples of how each instructional method will be used in this course.
Discussion	discussion
Demonstration, Repetition/Practice	demonstration
Activity	activity
Supplemental/External Activity	supplemental/external activity
Participation	participation
Lecture	lecture
Laboratory	laboratory

Methods of Evaluation

Method	Please provide a description or examples of how each evaluation method will be used in this course.	Type of Assignment
Written homework	written homework	Out of Class Only
Self-paced testing	self-paced testing	Out of Class Only
Student participation/contribution	student participation/contribution	In and Out of Class
Mid-term and final evaluations	mid-term and final evaluations	In Class Only
Tests/Quizzes/Examinations	tests	In Class Only
Group activity participation/observation	group activity participation	In Class Only
Field/physical activity observations	field/physical activity	In Class Only

Assignments

Other In-class Assignments

1. Textbook and supplemental readings.
2. Analytical problem solving.

3. Hydraulic problem solving exercises.
4. Preparing for group presentation on fire apparatus pump design for specific uses within a jurisdiction.

Other Out-of-class Assignments

1. Supplemental readings.
2. Analytical problem solving assignments
3. Hydraulic problem solving assignments.

Grade Methods

Letter Grade Only

MIS Course Data**CIP Code**

43.0201 - Fire Prevention and Safety Technology/Technician.

TOP Code

213300 - Fire Technology

SAM Code

C - Clearly Occupational

Basic Skills Status

Not Basic Skills

Prior College Level

Not applicable

Cooperative Work Experience

Not a Coop Course

Course Classification Status

Credit Course

Approved Special Class

Not special class

Noncredit Category

Not Applicable, Credit Course

Funding Agency Category

Not Applicable

Program Status

Program Applicable

Transfer Status

Not transferable

General Education Status

Not applicable

Support Course Status

Course is not a support course

Allow Audit

No

Repeatability

No

Materials Fee

Yes

Per Education Code section 76365 and Title 5 regulations, please describe how the required material(s) meets the following.

Additional Fees?

Yes

Additional Fee Amount

\$140.00

Additional Fees Description

State Fire Training Diploma Fee

Approvals**Curriculum Committee Approval Date**

5/05/2020

Academic Senate Approval Date

5/14/2020

Board of Trustees Approval Date

6/18/2020

Chancellor's Office Approval Date

6/26/2020

Course Control Number

CCC000588594