

PALOMAR COLLEGE
COURSE OUTLINE OF RECORD FOR
DEGREE CREDIT COURSE

X Transfer Course X A.A. Degree applicable course
(check all that apply)

COURSE NUMBER AND TITLE: Fire 150 Fire Vehicle Maintenance

UNIT VALUE: 3

MINIMUM NUMBER OF SEMESTER HOURS: 48

BASIC SKILLS REQUIREMENTS:

Appropriate language skills.

ENTRANCE REQUIREMENTS

PREREQUISITE: None

COREQUISITE: None

RECOMMENDED PREPARATION: None

SCOPE OF COURSE:

Fundamentals of all vehicle structure. Basic construction of the vehicles, including the main powering systems (fire pumps excluded) and techniques of maintenance.

SPECIFIC COURSE OBJECTIVES:

The student will be able to:

1. Identify the fundamentals of the vehicle's components and the proper terminology.
2. Explain nomenclature, operation and purpose of all main systems to motivate vehicle.
3. Apply the principles of good maintenance and proper inspection that will help save time and costly repairs.

CONTENT IN TERMS OF SPECIFIC BODY OF KNOWLEDGE:

- I. Introduction
 - A. History of fire vehicles
 - B. The need for proper maintenance
- II. The Chassis

- A. Identification and related terminology
- B. Frame construction
- C. Springs and suspension
- D. Front and rear axles
- E. Steering systems (power and manual)
- F. Tires, tubes and wheels
- G. Shock absorbers
- III. The Engine
 - A. Engine fundamentals
 - B. Engine construction
 - C. Engine pistons and rings
 - D. Engine crankshafts and camshafts
 - E. Engine bearings and valves
 - F. Engine performance
 - G. Other engines
- IV. The Cooling Systems
 - A. Engine cooling systems
 - B. Heavy equipment cooling systems
- V. Lubrication
 - A. Engine lubrication (motor oils)
 - B. Chassis and wheel lubrication (grease)
 - C. Gear lubrication (gear oils)
 - D. Transmission lubrication (automatic)
- VI. The Fuel System
 - A. Automotive fuels
 - B. Principles of carburetion
 - C. Manual and automatic chokes
 - D. Engine manifolds
 - E. Air cleaners
 - F. Carburetor adjustment and service
 - G. Fuel supply systems
 - H. Fuel injection
 - I. Exhaust systems
 - J. Exhaust emission control
- VII. The Electrical System
 - A. Fundamentals of electricity, magnetism
 - B. Electrical generators and alternators
 - C. Generator and alternator regulators and relays
 - D. Starting motor fundamentals
 - E. Engine ignition
 - F. Lighting circuits and horn
 - G. Storage batteries
 - H. Electrical windshield wipers
- VIII. The Drive Line
 - A. Clutch assembly and linkage
 - B. Transmission fundamentals
 - C. Automatic transmission (fluid coupling)
 - D. Automatic transmission (torque converter)
 - E. Driveline, universal joints, differentials
 - F. Power take-off

- IX. The Brake System
 - A. Hydraulic brakes
 - B. Brake types
 - C. Parking brakes
 - D. Power brakes
 - E. Brake service
 - F. Air actuation
 - G. Vacuum brakes
 - H. Air over hydraulic
- X. Maintenance
 - A. Vehicle and maintenance
 - B. In-service maintenance
 - C. Monthly chassis inspection and maintenance
 - D. Electrical system
 - E. Brakes
 - F. Fire pumps, inspection, maintenance and testing
 - G. Aerial ladder and elevating platform maintenance
 - H. Quarterly and semi-annual inspections
 - I. Warranties, annual reports and schools

REQUIRED READING:

Ogdon, Ron. Daily Apparatus Inspection. San Diego, CA: Ogden, 1992.

SUGGESTED READING:

National Fire Protection Association. Fire Apparatus Maintenance. Quincy, MA: NFPA, 1991.

REQUIRED WRITING:

A term paper of 4-6 pages is required. A notebook will be required. The student will be expected to evaluate a mechanical problem and analyze its cause.

OUTSIDE ASSIGNMENTS:

Students are expected to spend a minimum of three hours per unit per week in class and on outside assignments, prorated for short-term classes.

A notebook will be required. The student will prepare for examinations.

INSTRUCTIONAL METHODOLOGY:

Check all that apply:

- lecture
- laboratory
- lecture-laboratory combination
- directed study

DISTANCE LEARNING:

This course may be offered as a distance learning course and meets Title 5 regulations 55370, 55372, 55374, 55376, 55378, and 55380.

Yes No

If yes, check all that apply:

- Television Course (Video one-way, e.g. ITV, video cassette, etc.)
- Online Course (Text one-way, e.g. newspaper, correspondence, electronic file, etc.)
- Two-Way Video Conferencing (Two-way interactive video and audio)
- One-Way Video Conferencing (One-way interactive video and two-way interactive audio)
- Computer Assisted Instruction (A specialized form of mediated instruction relying primarily on student access to information and prepared lessons or teaching materials through a computer terminal, but not under immediate supervision of a qualified instructor.)

GRADING POLICY AND STANDARDS (include methods of determining whether the stated objectives have been met by students):

Weekly Quiz	25%
Midterm	25%
Final	25%
Notebook	10%
Term project	15%

IS COURSE REPEATABLE FOR REASON(S) OTHER THAN DEFICIENT GRADE?

Yes No Number of times course may be taken for credit: _____

If yes, identify specific provision of Title 5 Division 2 section(s), 55761-55763 and 58161 which qualifies course as repeatable:

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SIGNATURES ON FILE