

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:** AP SC 106 Management/Alarms/Codes/Circuits

**UNIT VALUE:** 4

**MINIMUM NUMBER OF SEMESTER HOURS:** 96

**BASIC SKILLS REQUIREMENTS:**

Appropriate language and computational skills.

**ENTRANCE REQUIREMENTS:**

**PREREQUISITE:** Apprenticeship Sound and Communication Systems  
Installer 105

**COREQUISITE:** None.

**RECOMMENDED PREPARATION:** None.

**SCOPE OF COURSE:**

Introduction to management, installation of security and fire alarm systems, the National Electrical Code as it relates to alarm installation and circuits as applied to alarm systems.

**SPECIFIC COURSE OBJECTIVES:**

The student will be able to:

1. Identify and analyze various fire alarm components and their functions.
2. Install, test, demonstrate and solve problems in the start-up and check-out phases of fire alarm installation.
3. Identify the characteristics of simple open and closed direct current circuits.
4. Define voltage, current and resistance.
5. Measure and calculate voltage, current and resistance using the appropriate meters and ohms law in series and parallel circuits.
6. Identify and use basic DC multimeters and other specialized test equipment as found in the security alarm industry.

7. Identify general safety rules and practices pertaining to the use of tools and test equipment used in the security alarm industry.
8. Differentiate between open and closed loops used in alarm systems and the advantages and disadvantages of each type.
9. Utilize a multimeter to diagnose opens and shorts in loop alarm circuits.
10. Identify power supplies and batteries as found in alarm systems.
11. Identify and utilize charging techniques to recharge an alarm battery package.
12. Identify the End of Line Resistor (EOL) and how it is correctly placed in the circuit.
13. Identify the various control systems in use in alarm systems.
14. Identify and analyze ohmmeters, milliammeters and voltmeters to troubleshoot complete alarm systems.
15. Identify the basic functions and features of a microprocessor based alarm control.
16. Diagnose defective window foil resistance tape and fasten the repair tape to the window.
17. Identify and analyze silent alarms as found in modern alarm systems.
18. Identify and analyze local bells/sirens as found in alarm systems.
19. Identify advanced intrusion alarm systems such as sound, motion, infrared, photoelectric and proximity.
20. Identify and install complete alarm systems including wiring, loops, control units and ancillary equipment.
21. Identify the characteristics of the various fire signatures and their potential to cause death or injury.
22. Describe the features and functions of a basic fire alarm system.
23. Identify various methods of fire signal initiation found in fire alarm detection systems.
24. Analyze, install and troubleshoot fire alarm initiation equipment found in present-day alarm systems.
25. Identify the methods of fire signal transmission including wire, wireless and fiber optic.
26. Analyze, install and troubleshoot the various signal transmission lines used to transmit fire alarm signals.

27. Identify the common methods of signal processing which control outputs according to input received.
28. Analyze, install and troubleshoot fire alarm control panels which control signal processing and electrical supervision.
29. Analyze, install and verify integrity of specific cabling used for fire alarm systems.
30. Identify the common methods of fire signal notification.
31. Design, layout, install and troubleshoot fire detection systems.
32. Identify and utilize ohmmeters, milliammeters, voltmeters and various special test equipment to troubleshoot fire alarm signal initiation, signal transmission, signal detection, electrical monitoring and other components of a typical fire alarm system.
33. Identify and utilize recognized safety practices and techniques that are used in fire alarm system installation and maintenance.
34. Analyze, install, evaluate and maintain household fire and smoke detection systems.

**CONTENT IN TERMS OF SPECIFIC BODY OF KNOWLEDGE:**

- I. Management
  - A. Cost awareness
  - B. Planning the work
  - C. Managing work to improve productivity
  - D. Marketing
  - E. Organizing and recruiting
  - F. NEBF
  - G. After apprenticeship
- II. Fire Alarms
  - A. Health and safety training
  - B. Basic fire alarms
  - C. Alarm initiating devices
  - D. Alarm indicating appliances
  - E. Fire alarm installation
  - F. Start-up and check-out procedures
  - G. Maintenance and troubleshooting

**REQUIRED READING:**

Code Calculations. Upper Marlboro, MD: National Joint Apprenticeship and Training Committee, 1991.

Fire Alarm Signaling Systems Handbook. Quincy, MA: National Fire Protection Association, 1994.

National Electrical Code. Quincy, MA: National Fire Protection Association, 1993.

Test Instruments for Today's Electricians. Upper Marlboro, MD: National Joint Apprenticeship and Training Committee, 1991.

Third Year Student Workbook. Upper Marlboro, MD: National Joint Apprenticeship and Training Committee, 1993.

Training Manual on Fire Alarm Systems Workbook. Washington, DC: National Electrical Manufacturers Association, 1985.

Trimmer, H. William. Understanding and Servicing Alarm Systems. Stoneham, MA: Butterworth-Heinemann, 1990.

**SUGGESTED READING:**

Trust Fund Journal.

**REQUIRED WRITING:**

Completion of written assignments in student workbook which are at least one paragraph in length.

**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.

Completion of reading assignments, student workbook applications and attendance at union and JATC meetings as required.

**INSTRUCTIONAL METHODOLOGY:**

Check all that apply:

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

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

Yes  No

If yes, check all that apply. (See guidelines for preparation for definitions.)

- telecourse
- mediated instruction
- computer assisted instruction

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

Homework/Participation	5%	100 - 90 = A
Quizzes/Workbook	30%	89 - 80 = B
Unit exams/Final exam	65%	79 - 75 = C
	<u>100%</u>	74 and below = F

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

Yes  No  Number of times course may be taken for credit: 2

If yes, identify specific provision of Title 5 Division 2 section(s)  
55761-55763 and 58161 which qualifies course as repeatable: 58161-1-C

**CONTACT PERSON:** Director, Vocational Programs, Ext. 2286