

# ITSC 123: FIRE ALARM ESSENTIALS

## Foothill College Course Outline of Record

Heading	Value
<b>Units:</b>	0.5
<b>Hours:</b>	6 lecture, 15 laboratory per quarter (21 total per quarter)
<b>Prerequisite:</b>	Completion of recognized sound and communication apprenticeship or equivalent and recent employment as an installer/technician in the sound and communication industry.
<b>Degree &amp; Credit Status:</b>	Degree-Applicable Credit Course
<b>Foothill GE:</b>	Non-GE
<b>Transferable:</b>	None
<b>Grade Type:</b>	Letter Grade (Request for Pass/No Pass)
<b>Repeatability:</b>	Not Repeatable

## Description

Covers the essentials of fire alarm systems, including fundamentals, general requirements, fire alarm circuits, and wiring.

## Course Objectives

The student will be able to:

- Explain the basic types of fire alarm systems
- Explain circuit types
- Locate and refer to codes and standards relevant to fire alarm systems
- Explain the various signal types
- Describe the methods of monitoring system integrity
- Describe requirements for primary and secondary power supplies
- Describe the installation requirements for smoke detectors
- Describe the installation requirements for heat detectors
- Describe the installation requirements for waterflow initiating devices
- Describe the installation requirements for manual fire alarm boxes
- Describe the installation requirements for supervisory initiating devices
- Explain the general requirements of notification appliances

## Course Content

- Introduction (Lec)
  - History of fire alarm systems
- Fundamentals (Lec)
  - Basic types of fire alarm systems
  - Circuit types
  - Codes and standards
- General Requirements (Lec)
  - Qualifications
  - Listed equipment
  - Wiring
  - Documentation
  - Signals and signal types
  - Monitoring for integrity
  - Power supplies

- Initiating Devices (Lec)
  - Alarm signal initiating devices
  - Supervisory signal initiating devices
  - Device operating theory
  - Installation and spacing requirements
- Notification Appliances (Lec)
  - Mounting
  - Audible signaling
  - Visible signaling
- Wiring and Wiring Methods (Lec)
  - Workmanship
  - Non-powered-limited and power-limited fire alarm circuits
  - Circuit integrity cable
  - Class A circuits
  - Class B circuits
  - Class X circuits
- System Interfaces and Safety Control Features (Lec)
  - Combination systems
  - Sprinkler system attachments
  - Elevator safety functions
  - Smoke control
  - HVAC shutdown
- Fire Alarm Lab (Lab)
  - Construct a small fire alarm system in a lab environment

## Lab Content

- Work individually and in teams with basic tools of the trade, test instruments and tool safety.
- Included will be the installation of sound and/or communication devices using shielded, and unshielded twisted pair cables.
- Equipment safety and safe handling practices are reviewed and applied.

## Special Facilities and/or Equipment

- Fire alarm system panel and components for hands-on lab.
- When taught via Foothill Global Access, on-going access to email software and hardware; email address.

## Method(s) of Evaluation

- Results of assessments
- Results of quizzes and tests
- Discussion participation

## Method(s) of Instruction

- Lecture
- Group discussion
- Demonstration
- Lab

## Representative Text(s) and Other Materials

National Joint Apprenticeship and Training Committee (NJATC). Fire Alarm Systems. MD: NJATC Publishers, 2017.

National Fire Protection Association, Inc. (NFPA 70). National Electrical Code 2017. MA: NFPA Publishers, 2017.

National Fire Protection Association, Inc. (NFPA 72). National Fire Alarm & Signaling Code. MA: NFPA Publishers, 2016.

NOTE: These are the standard Sound & Communications textbooks/workbooks used for this course. Although one or more may not be within 5 years of the required published date, they are the most current books used when teaching this course. We will adopt the next edition of each text, as it is published.

## **Types and/or Examples of Required Reading, Writing, and Outside of Class Assignments**

A. Reading assignments:

1. Read Fire Alarm Systems pp. 18-19: Circuit Types
2. Read Fire Alarm Systems pp. 40-46: Monitoring for Integrity

B. Writing assignments:

1. Describe the difference between an signaling line circuit (SLC) and an initiating device circuit (IDC). Use examples of when you would use an SLC instead of an IDC and vice versa
2. Describe how monitoring of an SLC is different from the monitoring of an IDC or NAC. Explain which circuit requires an end of line resistor and why or why not

## **Discipline(s)**

Telecommunication Technology