



National Fire Academy

**N0391 – Fire Inspection Principles 2: Inspection of Structures and Systems
Version: 1st Edition, 3rd Printing, May 2023**

Quarter:

ACE Credit: In the lower division baccalaureate/associate degree category, three semester hours in fire science, fire protection, or fire engineering.

IACET Continuing Education Units: 3.6

Length of Course: 6 Days (38 hr., 5 min., contact hours, Sunday – Friday)

Prerequisite: Yes

Curriculum: Fire Protection: Technical

Training Specialist: Keith Heckler

Instructor:

Instructor email/phone:

Classroom: J-

Meeting Time: 8 AM – 5 PM

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Course Description (Catalog)

N0391 – “Fire Inspection Principles 2: Inspection of Structures and Systems.” This six-day course introduces the student to the fundamental methodology for application of the requirements for fire protection systems including detection, notification, fire control and extinguishment, and mitigation of fire-related hazards, with special emphasis on fire alarm and fire suppression systems.

Student Qualifications (Primary and Secondary Audience)

The course is designed for those individuals currently conducting fire inspection/code enforcement.

Course Scope (Goal)

The goal of the course is to provide students with a clear understanding of the different types of fire protection systems and how they impact safety inspection processes.

Course Objectives (Course Learning Outcomes – TLOs)

After successfully completing this course, you will be able to accomplish the following:

- Analyze system components and established performance requirements for water-based fire protection systems.
- Evaluate if alarm and detection systems or equipment are operational, adequate, maintained and tested.
- Analyze system components and established performance requirements for smoke management and control systems and equipment.
- Evaluate if automatic sprinkler systems and equipment are operational, adequate, maintained and tested.
- Analyze system components and established performance requirements for water mist fire protection systems and equipment.
- Analyze system components and established performance requirements for standpipe fire suppression systems and equipment.
- Evaluate if fire pump systems and equipment are operational, adequate, maintained and tested.
- Analyze system components and established performance requirements for commercial cooking ventilation and fire protection components.
- Analyze system components and established performance requirements for special agent systems and equipment.

Course Delivery Method

The National Fire Academy (NFA) offers specialized training courses and advanced management programs of national impact in an academic classroom environment [on campus at the National Emergency Training Center \(NETC\) in Emmitsburg, Maryland](#) and through their State, local, tribal, and US territories training partners. All course materials are designed for interactive classroom environments, in either paper notebook or electronic formats.

Course Schedule

The purpose of the course schedule is to give you, at a glance, the required preparation, activities, and evaluation components of your course.

DAY 1	DAY 2
Introduction	Unit 2: Fire Alarm Systems (cont'd)
<i>Break</i>	<i>Break</i>
Introduction (cont'd)	Unit 2: Fire Alarm Systems (cont'd)
<i>Break</i>	<i>Break</i>
Unit 1: Introduction to Life Safety Systems	Unit 2: Fire Alarm Systems (cont'd)
<i>Lunch</i>	<i>Lunch</i>
Unit 1: Introduction to Life Safety Systems (cont'd)	Unit 3: Smoke Management
<i>Break</i>	<i>Break</i>
Unit 2: Fire Alarm Systems	Unit 3: Smoke Management (cont'd)

Note: This schedule is subject to modification by the instructors and approved by the training specialist.

DAY 3	DAY 4
Unit 3: Smoke Management (cont'd)	Unit 4: Automatic Fire Sprinklers (cont'd)
<i>Break</i>	<i>Break</i>
Unit 4: Automatic Fire Sprinklers	Unit 4: Automatic Fire Sprinklers (cont'd)
<i>Break</i>	<i>Break</i>
Unit 4: Automatic Fire Sprinklers (cont'd)	Unit 5: Water Mist Systems
<i>Lunch</i>	<i>Lunch</i>
Unit 4: Automatic Fire Sprinklers (cont'd)	Unit 5: Water Mist Systems (cont'd)
<i>Break</i>	<i>Break</i>
Unit 4: Automatic Fire Sprinklers (cont'd)	Unit 6: Standpipe Systems

DAY 5	DAY 6
Unit 6: Standpipe Systems (cont'd)	Unit 8: Commercial Cooking: Ventilation and Fire Protection (cont'd)
<i>Break</i>	<i>Break</i>
Unit 7: Fire Pumps	Unit 9: Special Agent Systems
<i>Break</i>	<i>Break</i>
Unit 7: Fire Pumps (cont'd)	Unit 9: Special Agent Systems (cont'd)
<i>Lunch</i>	<i>Lunch</i>
Unit 8: Commercial Cooking: Ventilation and Fire Protection	Course Review Final Exam
<i>Break</i>	<i>Break</i>
Unit 8: Commercial Cooking: Ventilation and Fire Protection (cont'd)	Graduation

Course Resources (Instructional Materials)

In order to be fully prepared, obtain a copy of the required textbooks and other instructional materials prior to the first day of class.

Required Readings

The student must complete required readings during the course to be able to thoughtfully participate in discussions and activities.

None.

Suggested Reading/Resources

Suggested readings and resources are not evaluated, but may enhance the student's understanding, serve as additional sources for citation and promote discussion of course material.

None.

Required Resources (Course Textbook)

Student Manual.

Supplemental Resources (Supplemental Course Textbook)

None.

Grading Methodology (Evaluation Procedures)

Course Grade

The required performance to successfully complete the course is attained by completing the class with at least a "C" or higher.

The following course grading plan should be used to determine the assigned course grade for each student in the class.

Final Numerical Score	Letter Grade
100 – 90	A
89 - 80	B
79 – 70	C
69 or below	F

EXAMINATION ADMINISTRATION PROCEDURES

Students will be given exams at the end of the class, and only the instructor will grade the exams. While the exams are being graded by the instructor, students will be asked to complete end-of-course evaluations.

Exams are to be completed individually and not as a group or a group activity, unless specifically directed within the instructor guide for the specific course. Students should use pencils to complete answer sheets if bubble sheets and a scoring key overlay are being used.

There should only be one answer for any given question marked by the student. A question with multiple answers is considered incorrect. Please mark number of incorrect answers on completed exam sheets, record score (percentage), and mark the appropriate letter grade.

Transfer the letter grades to the corresponding student name on the course roster.

If a student does not obtain a passing grade on the first attempt, the instructor will provide remediation¹ prior to a retest. Students who do not pass the first exam will be allowed to take one retest of a new exam before departing from the class. A second failure will result in a grade of “F” being recorded on the grade roster.

Once all exams have been graded, instructors should review the exam as a group.

In the event of unusual events (storm, fire response, family emergency) or early departure, the host agency or state representative may be asked to proctor the exam at a later date. The instructor is responsible to notify the Training Specialist as soon as practical of the situation and name of person responsible for the exams and testing process.

Required Reading Assignments

Student completion of reading assignments will be done via evaluation of their class participation and will not be a separately graded activity.

Suggested Readings

Suggested readings are not evaluated, but may enhance the student’s understanding and promote discussion of course material.

Course Outline

Introduction (Day 1)

Objectives

None.

Unit 1: Introduction to Life Safety Systems (Day 1)

Objectives

Terminal Objectives

The students will be able to:

- 1.1 Analyze system components and established performance requirements for water-based fire protection systems.

Enabling Objectives

The students will be able to:

- 1.1 Identify the applicable standards for water-based fire protection systems.
- 1.2 Explain the functions of water-based fire protection systems and equipment.
- 1.3 Explain the in-service testing process for water-based fire protection systems.
- 1.4 Explain the annual inspection and maintenance processes for water-based fire protection systems.

Unit 2: Fire Alarm Systems (Day 1)

Objectives

Terminal Objective

The students will be able to:

- 2.1 Evaluate if alarm and detection systems or equipment are operational, adequate, maintained and tested.

Enabling Objectives

The students will be able to:

- 2.1 Identify the applicable standards for alarm and notification systems.
- 2.2 Explain the functions of alarm and notification systems and equipment.
- 2.3 Explain the in-service testing process for alarm and notification systems.
- 2.4 Explain the annual inspection and maintenance processes for alarm and notification systems.
- 2.5 Determine operational capabilities of alarm and notification systems.
- 2.6 Analyze alarm and notification system test documentation for accuracy, completeness and code compliance.

Unit 3: Smoke Management (Day 2)

Objectives

Terminal Objective

The students will be able to:

- 3.1 Analyze system components and established performance requirements for smoke management and control systems and equipment.

Enabling Objectives

The students will be able to:

- 3.1 Identify the applicable standards for smoke management and control systems.
- 3.2 Explain the functions of smoke management and control systems and equipment.
- 3.3 Explain the in-service testing process for smoke management and control systems.
- 3.4 Explain the annual inspection and maintenance processes for smoke management and control systems.

Unit 4: Automatic Fire Sprinklers (Day 3)

Objectives

Terminal Objective

The students will be able to:

- 4.1 Evaluate if automatic sprinkler systems and equipment are operational, adequate, maintained and tested.

Enabling Objectives

The students will be able to:

- 4.1 Identify the applicable standards for automatic sprinkler systems.
- 4.2 Explain the functions of automatic sprinkler systems and equipment.
- 4.3 Explain the in-service testing process for automatic sprinkler systems.
- 4.4 Explain the annual inspection and maintenance processes for automatic sprinkler systems.
- 4.5 Analyze automatic sprinkler systems test documentation for accuracy, completeness and code compliance.

Unit 5: Water Mist Systems (Day 4)

Objectives

Terminal Objective

The students will be able to:

- 5.1 Analyze system components and established performance requirements for water mist fire protection systems and equipment.

Enabling Objectives

The students will be able to:

- 5.1 Identify the applicable standards for water mist fire protection systems.
- 5.2 Explain the functions of water mist fire protection systems and equipment.
- 5.3 Explain the in-service testing process for water mist fire protection systems.
- 5.4 Explain the annual inspection and maintenance processes for water mist fire protection systems.

Unit 6: Standpipe Systems (Day 4)

Objectives

Terminal Objective

The students will be able to:

- 6.1 Analyze system components and established performance requirements for standpipe fire suppression systems and equipment.

Enabling Objectives

The students will be able to:

- 6.1 Identify the applicable standards for standpipe fire suppression systems.
- 6.2 Explain the functions of standpipe fire suppression systems and equipment.
- 6.3 Explain the in-service testing process for standpipe fire suppression systems.
- 6.4 Explain the annual inspection and maintenance processes for standpipe fire suppression systems.

Unit 7: Fire Pumps (Day 5)

Objectives

Terminal Objective

The students will be able to:

- 7.1 Evaluate if fire pump systems and equipment are operational, adequate, maintained and tested.

Enabling Objectives

The students will be able to:

- 7.1 Identify the applicable standards for fire pump systems.
- 7.2 Explain the functions of fire pump systems and equipment.
- 7.3 Explain the in-service testing process for fire pump systems.
- 7.4 Explain the annual inspection and maintenance processes for fire pump systems.
- 7.5 Analyze fire pump systems test documentation for accuracy, completeness and code compliance.

Unit 8: Commercial Cooking: Ventilation and Fire Protection (Day 5)

Objectives

Terminal Objective

The students will be able to:

- 8.1 Analyze system components and established performance requirements for commercial cooking ventilation and fire protection components.

Enabling Objectives

The students will be able to:

- 8.1 Identify the applicable standards for commercial cooking ventilation and fire protection systems.

- 8.2 Explain the functions of commercial cooking ventilation and fire protection systems and equipment.
- 8.3 Explain the in-service testing process for commercial cooking ventilation and fire protection systems.
- 8.4 Explain the annual inspection and maintenance processes for commercial cooking ventilation and fire protection systems.
- 8.5 Analyze commercial cooking ventilation and fire protection system requirements outlined in NFPA 96, Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations.

Unit 9: Special Agent Systems (Day 6)

Objectives

Terminal Objectives

The students will be able to:

- 9.1 Analyze system components and established performance requirements for special agent systems and equipment.

Enabling Objectives

The students will be able to:

- 9.1 Identify the applicable standards for special agent systems.
- 9.2 Explain the functions of special agent systems and equipment.
- 9.3 Explain the in-service testing process for special agent systems.
- 9.4 Explain the annual inspection and maintenance processes for special agent systems.

Policies

Class Attendance and Cancellation Policy

Attendance

- You are required to attend all sessions of the course. If you do not, you may not receive a certificate.

- If you need to depart the training facility early and miss any portion of the course, you must make the request in writing to the sponsoring agency (e.g., State training director, etc.). The State training director may waive the attendance requirement in order to accommodate you with extraordinary circumstances as long as you complete all course requirements.

Course Failure

You can reapply for the failed course or any other NFA course and go through the random selection process. You don't have to successfully complete the failed course before attending another NFA course.

Student Code of Conduct Policy

Students, instructors and staff are expected to treat each other with respect at all times. Inappropriate behavior will not be tolerated.

Writing Expectations

Student writing will conform to the generally accepted academic standards for college papers. Papers will reflect the original work of the student and give appropriate credit through citations for ideas belonging to other authors, publications or organizations. Student written work should be free of grammatical and syntax errors, free of profanity or obscene language or ideas, and reflect critical thinking related to the course subject matter.

Citation and Reference Style

Attention Please: Students will follow the APA, Sixth Edition as the sole citation and reference style used in written work submitted as part of coursework to NFA. Assignments completed in a narrative essay, composition format, abstract, and discussion posts must follow the citation style cited in the APA, Sixth Edition.

Late Assignments

All assignments must be turned in by the established deadline. Late submissions could result in a 10 percent decrease in grade.

Disclaimer Statement

Course content may vary from the outline to meet the needs of this particular group.

Grading

Please review the following rubrics that explain how grades will be awarded.

Students who do not complete the entire course will be awarded an Incomplete (I) grade. In accordance with National Fire Academy academic policies, an Incomplete (I) grade must be

removed by the end of the next semester following the course, or it automatically becomes a Failing (F) grade.

https://www.usfa.fema.gov/training/nfa/admissions/student_policies.html

Academic Honesty

Students are expected to exhibit exemplary ethical behavior and conduct as part of the NFA community and society as a whole. Acts of academic dishonesty including cheating, plagiarism, deliberate falsification, and other unethical behaviors will not be tolerated.

Students are expected to report academic misconduct when they witness a violation. All cases of academic misconduct shall be reported by the instructor to the State training director or host agency and to the NFA Training Specialist.

If a student is found to have engaged in misconduct and the allegations are upheld, the penalties may include, but are not limited to one or a combination of the following:

- expulsion,
- exclusion from future classes for a specified period; depending on the severity it could range from 1-10 years, and/or
- forfeiture of certificate for course(s) enrolled in at NETC.

Refer to NFA-specific Standard Operating Procedure 700.1 – *Academic Code of Conduct and Ethics* for more information.