



FEMA



National Fire Academy

F0379 – Fire Investigation: First Responders
Version: 2nd Edition, 2nd Printing, September 2016

Quarter:

ACE Credit: Pending

IACET Continuing Education Units: Pending

Length of Course: 2 Days (16 contact hours)

Prerequisite: Yes

Curriculum: Arson

Training Specialist: Lester Rich

Instructor:

Instructor email/phone:

Classroom: J-

Meeting Time: 8 AM – 5 PM

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Course Description (Catalog)

F0379 – “Fire Investigation: First Responders.” This course is designed specifically to provide a clear definition of the role of the first responder in arson detection and provide essential knowledge to enable them to recognize the potential of intentionally set fires, preservation and protection of evidence, and proper reporting of information to appropriate officials. By strengthening the partnership between first responders and investigators, the chances for successfully solving arson-related crimes will increase. The course includes topics such as fire behavior, critical observations of the first responder, fire causes, scene security and evidence preservation, legal considerations, and documentation of findings.

Student Qualifications (Primary and Secondary Audience)

The target audience for “Fire Investigation: First Responders” (FI: FR) is first responders and their advancement in the professional development of fire, rescue and emergency service personnel, as well as the mitigation of loss of life and property from fire and other hazards. An integral part of the program is training and professional development in fire and life safety education programs/courses.

Course Scope (Goal)

The goal of this course is to enable students with the knowledge to identify and define key concepts of fire investigation specifically as they relate to the scientific method, scene preservation and the role of the first responder.

The scope of this course is to provide first responders with the fundamental understanding of the principles, processes and procedures involved in fire scene examination.

Course Objectives (Course Learning Outcomes – TLOs)

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

- Explain the fundamental principles of combustion and the influence that the fire triangle/fire tetrahedron have on fire behavior and fire scene examination.
- Conduct a systematic fire scene examination by following the scientific method.
- Discuss the roles and responsibilities of first responders and fire investigators related to fire scene examination.
- Explain the four fire cause classifications.
- Describe various common accidental and incendiary fire causes.
- Explain the basic methodology used to conduct a thorough vehicle fire examination.
- Effectively preserve and document evidence that can be used by fire investigators as part of a follow-up investigation.
- Assess a fire scene and apply proper investigative techniques and procedures in determining the origin and cause of a fire, given a scenario.

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, and tribal training partners. This classroom course is designed for the national level fire service officer from State and local fire service organizations. 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, Welcome and Administrative	Unit 3: Fire Causes
<i>Break</i>	<i>Break</i>
Unit 1: Fire Behavior	Unit 4: Vehicle Fires Activity 4.1: Vehicle Fire Examination
<i>Lunch</i>	<i>Lunch</i>
Unit 1: Fire Behavior (cont'd) Activity 1.1: Candle Experiment	Unit 5: Fire Cause Determination Activity 5.1: Fire Scene Examination
<i>Break</i>	<i>Break</i>
Unit 2: Fire Scene Examination	Unit 5: Fire Cause Determination (cont'd) Review, Class Discussion
	Student Questions, Review, Course Wrap-Up
	Exam Administration, Examination Grading, Student Exam Review

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)

Assignments/Activities

Assignments are a combination of written exercises and group activities. The purpose of these exercises and activities is for the students to demonstrate their overall understanding of the course content that includes the ability of first responders to apply key concepts and principles to conduct scientifically valid origin and cause investigations and to serve as effective witnesses in criminal or civil litigation. The instructors will read, comment and provide feedback on students' work at regular intervals throughout the course. At the end of the course, students are required to successfully pass a comprehensive written examination with a score of 70 percent or better.

Each evaluated assignment/activity receives a score. When evaluating course assignments/activities, instructors will consider the following:

- Did the student comprehensively answer the assigned questions?
- Did the student comprehensively address all issues within his or her response?

- As a professional, is the student writing at a collegiate level, analyzing, reflecting on and evaluating subject matter using appropriate grammar, punctuation and spelling?

Student Activities

The activities required throughout the course are scored as follows:

- The written and verbal responses to questions and issues raised in the activities include all of the required elements listed in the objectives for the activity in accordance with the learning outcomes.
- Instructors will document the evaluation of students' activities on the Initial Fire Investigation for First Responders Evaluation Master Sheet. Any corrective and/or diagnostic comments about the students' plans should also be written on the form.
- Instructors will record the appropriate grade for each student on the Initial Fire Investigation for First Responders Evaluation Master Sheet.
- Instructors will share grade sheets, including any comments/recommendations with the student after completion of the required activities/assignments and grading.

Note: The Fire Investigation: First Responders Evaluation Master Sheet will be used for official record-keeping of students' scores and will be turned in to the training specialist at the conclusion of the course.

Final Course Grade

The student's final grade for FI: FR will be computed as follows:

Point Distribution:

- Examination: 50 points.
- Participation in student activities is required, but no numerical grade is assigned.

The required performance to successfully complete the course is attained by completing the class with a letter grade of a “C” or higher.

Letter Grade	Point Range
A	90-100
B	80-89
C	70-79
F	69 or lower

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

Unit 1: Fire Behavior (Day 1)

Objectives

Terminal Objective

The students will be able to:

- 1.1 Explain the fundamental principles of combustion and the influence that the fire triangle/fire tetrahedron have on fire behavior and fire scene examination.

Enabling Objectives

The students will be able to:

- 1.1 Identify and describe the major principles of combustion that affect the ignition, growth, development, spread and extinguishment of fire.

- 1.2 Explain the significance of the fire tetrahedron on fire behavior and its impact on fire causes.
- 1.3 Identify and describe three methods of heat transfer and their relationship to fire development.
- 1.4 Identify the differences between the five types of building construction.
- 1.5 Explain the link between building construction principles related to fire growth, development and spread.
- 1.6 Differentiate between flashover and backdraft.

Unit 2: Fire Scene Examination (Day 1)

Objectives

Terminal Objectives

The students will be able to:

- 2.1 Conduct a systematic fire scene examination by following the scientific method.
- 2.2 Discuss the roles and responsibilities of first responders and fire investigators related to fire scene examination.

Enabling Objectives

The students will be able to:

- 2.1 Examine a structure from the exterior to interior in a systematic manner to identify indicators that may be helpful during the course of a fire scene examination.
- 2.2 Explain the significance of various fire patterns and fire spread issues.
- 2.3 Name and define the seven steps of the scientific method.
- 2.4 Apply the scientific method to a fire scene examination.
- 2.5 Understand the difference between the roles of first responders and fire investigators.

Unit 3: Fire Causes (Day 1)

Objectives

Terminal Objectives

The students will be able to:

- 3.1 Explain the four fire cause classifications.
- 3.2 Describe various common accidental and incendiary fire causes.

Enabling Objectives

The students will be able to:

- 3.1 Define fire causes and identify four classifications of cause.
- 3.2 Describe various accidental and incendiary fire causes.
- 3.3 Understand failure points in a common residential electrical system.
- 3.4 List various indicators of incendiary fires.

Unit 4: Vehicle Fires (Day 2)

Objectives

Terminal Objectives

The students will be able to:

- 4.1 Explain the basic methodology used to conduct a thorough vehicle fire examination.
- 4.2 Effectively preserve and document evidence that can be used by fire investigators as part of a follow-up investigation.

Enabling Objectives

The students will be able to:

- 4.1 Identify and understand basic vehicle components and construction.
- 4.2 Recognize and understand potential ignition sources and materials capable of being ignited.
- 4.3 Preserve the scene and document information that is important to investigators.

Unit 5: Fire Cause Determination (Day 2)

Objectives

Terminal Objective

The students will be able to:

- 5.1 Assess a fire scene and apply proper investigative techniques and procedures in determining the origin and cause of a fire, given a scenario.

Enabling Objectives

The students will be able to:

- 5.1 Determine the area or point of origin and the cause of a fire, given a scenario.
- 5.2 Defend the conclusions reached regarding the fire origin-and-cause determination, given a scenario.

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, and your stipend may be denied.
- If you need to depart campus early and miss any portion of the course and/or graduation, you must make the request in writing to the NFA training specialist. The training specialist, in collaboration with the superintendent, may waive the attendance requirement in order to accommodate you with extraordinary circumstances as long as you complete all course requirements. If you receive approval for departing early, you must forward the approval to the Admissions Office so your stipend reimbursement is not limited.

Student Substitutions

Substitutions for NFA courses are made from waiting lists; your fire department can't send someone in your place.

Cancellations or No-Shows

NFA's mission for delivery of courses is impaired significantly by cancellations and no-shows. It is very difficult and costly to recruit students at the last minute. Currently there is a two-year ban on student attendance for students who are no-shows or cancel within 30 days of the course start date without a valid reason. If you receive such a restriction, your supervisor needs to send a letter to our Admissions Office explaining the cancellation/no-show.

Course Failure

If you fail an on-campus course, you will not be issued a stipend for that course. 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 and may result in removal from campus and denial of stipends.

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

Students are expected to submit classroom assignments by the posted due date (11:59 p.m. EDT/EST) and to complete the course according to the published class schedule. As adults, students, and working professionals, you must manage competing demands on your time. Discussion board postings submitted within 3 days after the submission deadline will receive up

to a 20% deduction. Those that do not submit their discussion board postings within this timeline will receive a “0” grade for the week. Final assignment papers will not be accepted after the deadline. Any paper submitted after the deadline will receive a “0” grade for that assignment.

Netiquette

Online learning promotes the advancement of knowledge through positive and constructive debate – both inside and outside the classroom. Forums on the Internet, however, can occasionally degenerate into needless insults and “flaming.” Such activity and the loss of good manners are not acceptable in a professional learning setting – basic academic rules of good behavior and proper “Netiquette” must persist. Remember that you are in a place for the rewards and excitement of learning which does not include descent to personal attacks or student attempts to stifle the forum of others.

- **Technology Limitations.** While you should feel free to explore the full-range of creative composition in your formal papers, keep e-mail layouts simple. The NFA Online classroom may not fully support MIME or HTML encoded messages, which means that bold face, italics, underlining, and a variety of color-coding or other visual effects will not translate in your e-mail messages.
- **Humor Note.** Despite the best of intentions, jokes and especially satire can easily get lost or taken seriously. If you feel the need for humor, you may wish to add “emoticons” to help alert your readers: ;-), :), ☺ .

Disclaimer Statement

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

Grading

Please review the above grading methodology that explains 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.

If you fail an on-campus course, you will not be issued a stipend for that course. 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.

http://www.usfa.fema.gov/training/nfa/admissions/student_policies_campus_information.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 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,
- withholding of stipend or forfeiture of stipend paid,
- 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.