

University of Illinois Fire Service Institute

Course Syllabus

Course Title: Fire Investigator

Course Duration: 120 hours

Program: Investigation

Course Prerequisites: None

Course Description: This 120-hour class is designed as the foundational level of education and training for fire and arson investigators. The program meets the Job Performance Requirements of NFPA 1033 “Professional Qualifications for Fire Investigator.” The investigation program includes comprehensive courses covering multiple topics and requiring significant student participation, reading, and homework activity. The course includes the following topics: basic fire science, fire patterns, building systems, electricity and fire, fuel gas systems, fire related human behavior, legal considerations, safety, sources of information, planning the investigation, documentation of the investigation, physical evidence, origin and cause determination, analyzing the incident for cause and responsibility, failure analysis and analytical tools, explosions and incendiary fires, fire and explosion deaths and injuries, appliances, motor vehicle fires, wild fire investigations, management of complex investigations, and marine fire investigations. The textbook included with the course is “Fire Investigator: Principles and Practice.” Primary resources for the program are NFPA 921 “Guide for Fire and Explosion Investigations” and “Kirk’s Fire Investigation.” The practical requirement for the class will involve outdoor simulated scene work. Firefighting gear is not required for the class, but old clothes, gloves, and work boots are recommended for the practical activity. Students are encouraged to bring personal cameras for use in the practical activity. The textbook and NFPA 921 is provided with the program for students to keep and will be distributed the first day of class. These books are utilized for all three weeks and students should be sure to bring them to all course sessions. Students are encouraged to bring any reference material that they feel might be helpful to them.

Course Requirements and/or Recommendations:

These can be divided into three categories: those completed prior to arriving in class (Pre-Course Work), those completed during class, such as homework assignments and quizzes (Course Work), and requirements completed after class but prior to receiving a certificate of completion (Post-Course Work).

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Summary of Directions

Pre-Course Work: Students will be given access to course information in their course confirmation letters. Be sure to review the student guides for the first day of class.

Course Work: Students are expected to attend or make up all class hours in this course since it leads to a state level certification. Students are expected to attend class on time and to remain in class for the duration of the course. A student **MUST COMPLETE** all portions of this course, both classroom and practical in order to challenge the end-of-course exam.

Post-Course Work: None

Required Textbook: The textbook for this course is Fire Investigator: Principles and Practice, 6th Edition, Jones & Bartlett. The textbook is provided to the student on the first day of class.

Course Policies: Students are expected to utilize a “team” approach during course discussions and activities. Students with experience or background in fire investigation are encouraged to share their experiences and help support less experienced students. The investigation program includes comprehensive courses covering multiple topics and requiring significant student participation, reading, and homework activity.

Attendance Policy: IFSI requires students to attend (100%) or make up all course content that leads to certification. Students are expected to attend on time and to remain in class for the duration of the course. Students **MUST COMPLETE** all portions of a certification course, both classroom and practical, to be eligible to receive their certification.

If a student misses any portion of class with an accumulated absence of 20% or less of scheduled class time, it will be the student’s responsibility to arrange the make-up of the missed course content with the instructor(s) or program manager. The student must make up the specific course content that s/he missed, not just the hours. Make-ups are limited to 20% of scheduled class time. Make-ups must be documented on the class roster. If a student’s absence is greater than 20% refer to “True Emergencies” section of the IFSI Examination Policy.

Safety Policy: Students shall understand and follow all instructions pertaining to operational safety, as stated by instructors or as written in course materials. Instructors and students shall be mindful of safety at all times. Conduct judged to be unsafe shall be grounds for dismissal from the course.

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Academic Integrity Policy: IFSI has the responsibility for maintaining academic integrity so as to protect the quality of the education provided through its courses, and to protect those who depend upon our integrity. It is the responsibility of the student to refrain from infractions of academic integrity, from conduct that may lead to suspicion of such infractions, and from conduct that aids others in such infractions. Any violation of the code of conduct is grounds for immediate dismissal from the course.

Grading Policy: Decisions regarding certificates of course completion shall be made solely by the lead instructor of the course. All grading of exams shall be conducted by the Curriculum/Testing Office. All grading of practical exercises shall be based upon the standards set by the regulatory agency referenced in the course material and IFSI.

Retesting: If a student fails to pass an exam, retesting takes place on set dates at regional sites across the state. More information is provided in the course completion e-mail and on the IFSI website.

American Disabilities Act: As guaranteed in the Vocational Rehabilitation Act and in the American Disabilities Act, if any student needs special accommodations, they are to notify their instructor and provide documentation as soon as possible so arrangements can be made to provide for the student's needs. If arrangements cannot be made at the class site, the student will test at an alternative time and place where the special accommodations can be made.

Evaluation Strategy: The instructor will observe individual student participation in the classroom and group discussions. The instructor will collect and review required course material. A written exam utilizing Pro-Board testing standards will be completed by the student with at least 70% accuracy.

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Course Content:

Module: 1

Title: **Introduction to Fire Investigation**

Terminal Learning Objective:

At the conclusion of this module, the student will identify the requisite knowledge for fire investigators in National Fire Protection Association (NFPA) 1033, *Standard for Professional Qualifications for Fire Investigator*.

Module: 2

Title: **Fire Science for Fire Investigators**

Terminal Learning Objective:

At the conclusion of this module, the student will explain the basics of fire behavior as it applies to fire investigation.

Module: 3

Title: **Building Construction Systems for Fire Investigators**

Terminal Learning Objective:

At the conclusion of this module, the student will explain how building construction and installed systems apply to fire investigations.

Module: 4

Title: **Fire Effects and Patterns**

Terminal Learning Objective:

At the conclusion of this module, the student will interpret fire patterns to determine the point of origin of a fire.

Module: 5

Title: **Legal Considerations for Fire Investigators**

Terminal Learning Objective:

At the conclusion of this module, the student will describe the legal issues involved in a fire investigation.

Module: 6

Title: **Safety**

Terminal Learning Objective:

At the conclusion of this module, the student will identify issues of safety that might affect the fire investigation.

Module: 7

Title: **Building Electrical and Fuel Gas Systems**

Terminal Learning Objective:

At the conclusion of this module, the student will identify the electrical and fuel gas systems as they relate to a fire investigation.

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Module: 8

Title: **Examining the Fire Scene**

Terminal Learning Objective:

At the conclusion of this module, the student will process a fire investigation scene.

Module: 9

Title: **Identification, Collection, and Preservation of Physical Evidence**

Terminal Learning Objective:

At the conclusion of this module, the student will work with evidence from a fire scene.

Module: 10

Title: **Data Collection Outside of the Fire Scene**

Terminal Learning Objective:

At the conclusion of this module, the student will explain how to collect data outside of the fire scene.

Module: 11

Title: **Documenting the Fire Scene**

Terminal Learning Objective:

At the conclusion of this module, the student will document a fire scene.

Module: 12

Title: **Complex Investigations**

Terminal Learning Objective:

At the conclusion of this module, the student will identify the needs of a complex fire investigation.

Module: 13

Title: **Determining the Origin**

Terminal Learning Objective:

At the conclusion of this module, the student will explain methodology for the examination of a fire scene.

Module: 14

Title: **Cause Determination**

Terminal Learning Objective:

At the conclusion of this module, the student will describe fire cause determination.

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Module: 15

Title: **Analyzing the Incident**

Terminal Learning Objective:

At the conclusion of this module, the student will describe the tools used to analyze an incident in order to formulate a hypothesis.

Module: 16

Title: **Explosions**

Terminal Learning Objective:

At the conclusion of this module, the student will explain the effects of explosions as they apply to fire investigation.

Module: 17

Title: **Automobile, Marine, and Equipment Fires**

Terminal Learning Objective:

At the conclusion of this module, the student will explain how the systems of Automobile, Marine, and Equipment apply to fire investigation.

Module: 18

Title: **Wildland Fires**

Terminal Learning Objective:

At the conclusion of this module, the student will explain the principles of a wildland fire investigation.

Module: 19

Title: **Alarms and Sprinkler Systems**

Terminal Learning Objective:

At the conclusion of this module, the student will identify the operational characteristics of alarms and sprinkler systems.

Module: 20

Title: **BATS**

Terminal Learning Objective:

At the conclusion of this module, the student will explain how to use the Bomb Arson Tracking System (BATS).

Module: 21

Title: **Interviewing**

Terminal Learning Objective:

At the conclusion of this module, the student will explain how to conduct fire investigation interviews.

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Module: 22

Title: **Curriculum Vita - NFPA 1033**

Terminal Learning Objective:

At the conclusion of this module, the student will create a curriculum vita.

Module: 23

Title: **Fatal Fires**

Terminal Learning Objective:

At the conclusion of this module, the student will employ the proper procedures for the investigation of a fire scene involving a serious injury or fatality.

Reference List:

Fire Investigator: Principles and Practice, Sixth Edition, Jones & Bartlett

Kirk's Fire Investigation, Eighth Edition, D. Icove & G. Haynes

NFPA 921, Guide for Fire and Explosion Investigations, 2021 Edition

NFPA 1033, Professional Qualifications for Fire Investigator, 2022 Edition

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Course Schedule

Week 1

DAY ONE

<u>Event</u>	<u>Duration</u>
Course Business & Orientation	1 hour
Introduction activity	1 hour
Module 1 – Introduction to Fire Investigation	1 hour
Module 2 – Fire Science for Fire Investigators	1 hour
Lunch	
Module 3 – Building Construction Systems for Fire Investigators	2 hours
Module 22 – Curriculum Vita - NFPA 1033	1 hour
Reading Assignment: Chapter 1 - 3	1 hour

DAY TWO

<u>Event</u>	<u>Duration</u>
Module 19 – Alarms and Sprinkler Systems	4 hours
Lunch	
Module 20 – Bomb Arson Tracking System (BATS)	2 hours
Video – Hot on the Trail Washington DC	1 hour
Reading Assignment: Chapter 4 - 5	1 hour

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DAY THREE

<u>Event</u>	<u>Duration</u>
Module 4 – Fire Effects and Patterns	3 hours
Lunch	
Module 5 – Legal Considerations for Fire Investigators	2 hours
Case Study	1 hour
Reading Assignment: Chapter 6	1 hour

DAY FOUR

<u>Event</u>	<u>Duration</u>
Module 6 – Safety	1 hour
Activity – OSFM K-9 Presentation	3 hours
Lunch	
Activity – Burn Cell Practical Activity	3 hours
Reading Assignment: Chapter 7 - 8	1 hour

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DAY FIVE

Event

Duration

Module 7 – Building Electrical and Fuel Gas Systems

3 hours

Video – Station Nightclub Fire

1 hour

Lunch

Module 8 – Examining the Fire Scene

2 hours

Case Study

1 hour

Reading Assignment: Chapter 11

1 hour

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Week 2

DAY ONE

<u>Event</u>	<u>Duration</u>
Module 11 – Documentation the Fire Scene	4 hours
Lunch	
Activity – Documentation activity	2 hours
Video – A & E Waging War on Arson	1 hour
Reading Assignment: Chapters 9 - 10	1 hour

DAY TWO

<u>Event</u>	<u>Duration</u>
Module 9 – Identification, Collection, and Preservation of Physical Evidence	4 hours
Lunch	
Activity – Evidence Activity	1 hour
Module 10 – Data Collection Outside of the Fire Scene	2 hours
Reading Assignment: Chapters 12 - 13	1 hour

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DAY THREE

<u>Event</u>	<u>Duration</u>
Module 12 – Complex Investigations	4 hours
Lunch	
Module 13 – Determining the Origin	2 hours
Case Study	1 hour
Reading Assignment: Chapter 21	1 hour

DAY FOUR

<u>Event</u>	<u>Duration</u>
Module 21 – Interviewing	4 hours
Case Study	1 hour
Lunch	
Activity – Interviewing Practical	2 hours
Case Study	1 hour
Reading Assignment: Chapter 14 - 15	1 hour

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DAY FIVE

Event

Duration

Module 14 – Cause Determination

3 hours

Lunch

Module 15 – Analyzing the Incident

2 hours

Case Study

1 hour

Reading Assignment: Chapter 17

1 hour

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Week 3

DAY ONE

<u>Event</u>	<u>Duration</u>
Module 17 – Automobile, Marine, and Equipment Fires	4 hours
Lunch	
Activity – Vehicle scene examination	4 hours

DAY TWO

<u>Event</u>	<u>Duration</u>
Group Case preparation Vehicle Fires	4 hours
Lunch	
Group presentation Vehicle Fires	3 hours
Youth Fire Setter Overview	1 hour
Reading Assignment: Chapter 16	1 hour

DAY THREE

<u>Event</u>	<u>Duration</u>
Module 16 – Explosions	4 hours
Lunch	
Module 23 – Fatal Fires	3 hours
Reading assignment: Chapter 18	1 hour

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DAY FOUR

<u>Event</u>	<u>Duration</u>
Module 18 – Wildland Fires	2 hours
Video – Paul Keller	1 hour
Case Study	1 hour
Lunch	
Evaluation – Individual Skill Fire Investigation Evaluation	2 hours
Activity – Group Fire Investigation Activity	2 hours

DAY FIVE

<u>Event</u>	<u>Duration</u>
Activity – Group Preparation activity	4 hours
Lunch	
Group Presentation and Evaluation Activity	2 hours
Exam	2 hours