

## **National Fire Academy Criteria for Contract Instructor Selection**

**Course: Practical Applications of Fire Dynamics and Modeling (R0204)**

**Curriculum: Fire/Arson and Explosion Investigation**

This course is designed for the experienced investigator and/or code enforcement official to provide important principles and applications of fire dynamics and computer fire modeling with the objective of understanding and describing fire phenomena and related processes associated with fire scene reconstruction. Through this course, students will become familiar with various tools that can be used to assist in supporting fire cause determination theories. Students will be able to understand the use, application and limitations of computer fire modeling and defend investigative theories/conclusions in a court of law using scientific principles learned in class and as outlined in National Fire Protection Association (NFPA) 921, *Guide for Fire and Explosion Investigations*.

Subjects covered in this course include introduction to fire dynamics and modeling; fire behavior and chemistry; scene documentation; problem-solving using common mathematical equations; and using Certified Fire Investigator (CFI) Calculator and fire dynamics spreadsheets to help solve problems related to compartment fire behavior. Students will be expected to use these tools to successfully solve various problems and scenarios based on actual case studies and practical exercises assigned throughout the course.

### **Criteria for Contract Instructor Selection**

All new contract instructors shall be evaluated in three consecutive course deliveries in accordance with the National Fire Academy's (NFA's) Contract Instructor Evaluation program. Existing contract instructors are subject to evaluation in accordance with this program.

#### **1. Academic Requirement**

- a. The candidate should possess a minimum of a bachelor's degree (preferably in professional engineering with at least one curriculum accredited by the Accreditation Board for Engineering and Technology as a professional engineering curriculum) from an institution that is a nationally or regionally accredited in fire science, fire protection engineering, mechanical engineering, fire protection and safety technology, fire safety engineering technology, electrical engineering/technology, applied mathematics/science, or course content in a related area.

**NOTE:** An equivalent combination of college-level coursework and documented experience may be considered for meeting these requirements.

- b. Documentation of successful completion of ICS-100 and ICS-200.

- c. Documentation of successful completion of the following CFI Trainer modules (TESTED):

- Introduction to Fire Dynamics and Modeling;
- Fire Dynamics Calculations;
- Postflashover Fires;
- An Analysis of the Station Nightclub Fire; and
- A Ventilation-Focused Approach to the Impact of Building Structures and Systems on the Fire Development.

**NOTE:** Documentation must be in the form of a transcript indicating successful completion of these **TESTED** modules.

- d. Course attendance and attendance as a contract instructor trainee upon preliminary approval of the application.

## **2. Instructional Experience**

- a. Documented successful completion of a recognized adult educational methodology/ fire service instructor course at the college/university, state, or International Fire Service Accreditation Congress, or National Board on Fire Service Professional Qualifications level (e.g., NFPA 1041). International Fire Service Accreditation Congress or National Board on Fire Service Professional Qualifications Fire Service Instructor II certification is recommended.

**NOTE:** Current instructor certification by the International Association of Arson Investigators (IAAI) or the National Association of Fire Investigators (NAFI) in accordance with their program criteria is sufficient to satisfy this requirement.

- b. Documented ability to instruct courses or materials similar to the course content at the community college, state or regional level, demonstrated by documentation of experience to include at least three student or supervisor evaluations of instructional ability from courses taught with similar content. Copies of the course description, objectives and syllabus must also be provided.

## **3. Documented Knowledge and Experience in the Subject Area**

- a. Current knowledge and significant experience in fire dynamics and modeling, fire scene investigation and/or fire testing demonstrated by documentation of experience or equivalent training or a combination of both experience and training. Experience must be supported by documentation and should indicate sustained and significant job experience in a formal fire service, state or local fire marshal's organization, arson task force, district attorney's/state's attorney, prosecutor's office, law enforcement agency, or private organizational setting.

- b. Current knowledge and documented ability to explain current and emerging standards and practices related to fire dynamics and modeling, including those set forth in NFPA Standard 1033, *Standard for Professional Qualifications for Fire Investigator* and NFPA 921.
- c. Documentation of experience and certification as a CFI or Certified Fire and Explosion Investigator by the IAAI, NAFI or a state-sponsored fire/arson investigator certification program recognized by the National Board on Fire Service Professional Qualifications (ProBoard).
- d. Successful completion, supported by documentation, of the U.S Fire Administration's NFA course "Practical Applications of Fire Dynamics and Modeling."
- e. Demonstrated current knowledge of the use of CFAST, FDS and PyroSim and related computer technology and related software for documentation, projects and classroom presentations.

#### **4. Additional Submittals**

- a. For one subject or course related to the course content, provide a 10- to 15-minute video or digital video disk demonstrating your instructional style. This video will be used to evaluate your teaching style in a student-centric adult learning environment, **or** attend the "Practical Applications of Fire Dynamics and Modeling" course and successfully teach a component(s) of the course that is designated and evaluated by the Training Specialist and/or Instructional Systems Specialist.
- b. Submission of a written essay not to exceed 500 words explaining current issues, trends and research that directly relates to the course content.
- c. Curriculum vitae indicating level and extent of knowledge, training, education and experience in the course subject matter.
- d. Provide three references from individuals in organizations where you have delivered training. Do not include the NFA staff as one of these organizational representatives.

#### **5. Continuing Practice or Education**

Ability to maintain currency in the field and the specific course by:

- a. teaching a similar course at the college or university level;
- b. taking a similar course within the last five years;
- c. teaching the course at the NFA or in the field within the last two years;

- d. writing and researching a paper or article related to the course topic for at least one of the fire service or related disciplines' trade journals within the last two years;
- e. registration as a professional engineer; or
- f. current certification as a fire investigator or IAAI certified instructor or NAFI CFI instructor or other associated professional certifications requiring currency.

Failure to provide approved documentation of ongoing training or instruction may result in revocation of the contract instructor status.

**Submit cover letter and documentation to:**

National Fire Academy  
Deputy Superintendent for Curriculum and Instruction  
16825 South Seton Ave.  
Emmitsburg, Maryland 21727  
[fema-nfainstructorapp@fema.dhs.gov](mailto:fema-nfainstructorapp@fema.dhs.gov)