



**FORENSIC
FIRE ANALYSIS
INSTITUTE**

**Forensic Fire Analysis Institute
Certification Program Manual**



@FFAInstitute www.forensicfireinstitute.com

Introduction and Vision

The Forensic Fire Analysis Institute (FFAI) is an organization created to provide hands-on, practical training on the application of psychomotor and cognitive skills involved in forensic fire and explosion analysis. Using its Core Values as a guide, the FFAI strives to become the world's foremost institute in providing the combination of quality hands on training and education in the field of forensic fire investigation. All courses, lectures, skills and written testing shall be based upon the National Fire Protection Association's (NFPA) 921 Guide for Fire and Explosion Investigations, NFPA 1033 Standard for Professional Qualifications for Fire Investigator, other applicable standards, technology, and current research in peer-reviewed journal articles.

Mission

The mission of the FFAI is to develop skilled forensic fire investigators by providing customized scientific training through both classroom theory and hands on field experience in a peer-supervised setting.

Purpose

The FFAI combines peer supervised practical field training with classroom theory to enhance the competency and reliability of the investigator's forensic fire analytical skills. The purpose of the certification programs of the FFAI shall be to provide a certification process that assess both the knowledge and skills of practitioners in the field of forensic fire and explosion analysis. The FFAI Certification Program shall be governed under the procedures contained in this document.

Definitions

Applicant- A person who has submitted an application to be accepted into the certification process of the FFAI.

Board of Directors (FFAI)- The authority responsible for preparing/developing and adopting FFAI regulations, policies, processes, and procedures to carry out the regulation recognizing the individual (Certificant holder).

Candidate- An applicant to the FFAI certificate program who has fulfilled specified prerequisites, establishing eligibility to participate in the credentialing process.

Certificant- An individual who has earned a FFAI credential awarded through a FFAI certification program.

Certification Manager-A member of the FFAI Board of Directors who is responsible for managing the day to day policies, processes, and procedures to carry out the regulation recognizing the Certificant holder and accreditation processes.

Continuing Education- Activities, seminars, courses or other educational classes related to the fire incident analysis that FFAI Certificants attend in order to receive credit for the purpose of maintaining and renewing FFAI certification.

Examiner- An individual approved by the FFAI Board of Directors with the prescribed relevant technical and personal qualifications, competent to conduct or score, or both, an FFAI written or skills examination.

Expired-A FFAI certificate/Certificant which has passed the expiration date and grace period for submitting the required continuing education

Recertification- The process of submitting the continuing education requirements and procedures established as part of a FFAI certification program that Certificants must complete in order to ensure continuing competence or renew their certification, or both.

Termination- The result of a process to revoke a FFAI certificate from a Certificant(s). Once termination has occurred, the individual may no longer claim to hold such certificate.

Administration

The Board of Directors will serve as the Certification Board and shall have complete and final authority in all matters relating to the certification process including questions of qualifications, testing, education and appeals. All FFAI certification and certification programs will be administered by the Board of Directors.

A member of the Board of Directors will serve as the Certification Manager and shall report directly to the Board of Directors. They shall coordinate the various responsibilities, including: accreditation, recordkeeping, correspondence, test bank, skills assessment, and other program related activities as directed by the Board of Directors. All materials created within the programs shall be referenced to the applicable standard(s) or skill(s). The Certification Manager shall oversee the development of all certification materials. The certification program documents are the sole property of the FFAI. The FFAI certification processes shall be performed in a manner that is impartial, objective, and confidential.

The Certification Manager shall not directly test, grade, or assess any skills or written test session. The Certification Manager may act as a session manager in terms of other activities such as scheduling, skill station set up, verification of identification, sign in, recordkeeping, and delivering instructions/answering process related questions prior to the beginning, during, and after a written or skills testing session.

Review and updating of this Certification Manual shall occur on an as-needed basis with input from the fire incident analysis community at large, and with final approval from the Board of Directors. A full review, by a committee consisting of at least one member of the Board of Directors, shall occur every third year, FFAI certificate holders, and members of the fire incident analysis community at large. Any changes shall be reviewed, motioned, and final approval obtained by the Board of Directors. Records of all amendments shall be archived for historical

reference in the form of archived versions of this document and recorded in Appendix A, Record of Amendments.

Subcontractors involved in any FFAI process shall have no vested interest in the activities involved.

Process and Application

Minimum Applicant Requirements:

1. 18 years of age.
2. Must hold GED, high school diploma or equivalent as recognized in country of residence.
3. Demonstration of good moral and ethical character.
4. Documentation of active involvement with a legally established public or private fire incident analysis or industry related entity which participates in civil and /or criminal litigation in the applicant's home country or enrolment in a regionally accredited or home country's equivalent college program in a directly related field.
5. FFAI shall not require membership of any kind as a requirement for certification.

Applicants shall complete one, detailed application in its entirety upon applying for their first certification. This will serve to establish their record with the FFAI. Additional applications may be warranted by the various certification programs implemented to ensure qualifications are met for various types and levels of certifications. An application must be completed in its entirety or it will be rejected and returned to the applicant. Failure to submit the required information will prevent the applicant from reaching candidacy. Applicants will be notified of any issues including acceptance or rejection by email within 14 days of receipt.

Certification may only be achieved by the completion and passing of the applicable exams and skills sheets as listed for each certification sought.

Certification Program Topics

The Board of Directors shall identify and establish areas for the issuance of certification. These areas will be based upon NFPA 1033 Standard for Professional Qualifications for Fire Investigator, NFPA 921 Guide for Fire and Explosion Investigations, other applicable standards, technology, peer-reviewed journal articles, and also based upon other industry applicable standards. Programs will be updated as the applicable standard, technology, or research is updated. Descriptions of each certificate program shall include the source references for each certificate testing process and recommended study materials shall be published on the website and/or sent via email directly to the applicant.

Certificate Programs

Techniques for Origin Determination: This Certificate tests competencies in theory with a concentration on practical skills for determining the origin of a fire. The proper use of the scientific method will be assessed as it relates to the use of fire patterns, witness statements, arc mapping and fire dynamics. Knowledge and Skills related to data gathering techniques, including depth of char, depth of calcination, arc mapping, origin matrix, and heat and flame vector analysis will be assessed. Participants will demonstrate that they are capable of developing working origin hypotheses and illustrate how they arrived at a final origin hypothesis. Full-scale exercises will be used to test the candidate's knowledge and skills. Completion of written and skills testing is required. [NFPA 1033-14 § 1.3.7 (8); JPR's 4.2.4, 4.2.5] [NFPA 921-17 Origin Determination Chapter)

Fire Dynamics and Fire Patterns: This Certificate tests knowledge and skills related to fire dynamics in compartments and how fuels and ventilation influence fire development that produce fire effects and patterns. Testing includes proficiencies in fire and explosion dynamics as it applies to origin and cause determinations. Participants will demonstrate a working knowledge of fire science and apply this knowledge to assess possible ignition mechanisms, fire patterns, and analyze fire spread. The candidate's knowledge of ignition sequence concepts will be tested with a focus towards competencies of the heat source in the context of the first fuel ignited. Completion of written and skills testing is required. [NFPA 1033-14 § 1.3.7 (1, 2, 5, 8, 10, 11); JPR's 4.2.2, 4.2.3, 4.2.4] [NFPA 921-17 Basic Fire Science Chapter; Fire Patterns Chapter)

Electricity and Electrical Systems: This Certificate test knowledge and skills of the Fundamentals of electricity, electrical systems, and appliances in standard 120/240-Volt, single phase systems encountered in typical residential and commercial structures. A combination of electrical theory with practical skills related to the analysis of electrical systems will be tested. Participants will be able to demonstrate how to document and analyze electrical systems and potential failures with standard equipment and tools. Completion of written and skills testing is required. [NFPA 1033-14 § 1.3.7 (16)] [NFPA 921-17 Electricity and Fire

Testing

Testing and certifications shall consist of skills and/or written testing based upon NFPA 921 and NFPA 1033.

The Board of Directors shall be authorized to deliver testing of all written and skills examinations. They shall identify and approve examiners as necessary. Examiners shall at a minimum:

- Possess five years of experience in the fire and explosion analysis or related industry
- Hold NAFI CFEI, IAAI-CFI or a degree in the related field
- Approval by the Board of Directors
- Meet all other requirements of an applicant to the certification process as listed above
- Shall show proof of completion of an acceptable course on confidentiality of recordkeeping

- Examiners that were involved directly with the training of the individual shall not act as examiner for those skills taught for a period of two year.

A test bank consisting of written and skills assessment documents shall be developed and managed by a committee consisting of the Certification Manager, and at least one additional Director. Test question justification and source reference shall be kept on file. All testing content shall be kept confidential.

Written examinations for FFAI certifications shall only consist of those approved by the Board of Directors. These shall consist of true/false and multiple-choice. Skills shall be assessed by use of a skills assessment sheet approved by the Board of Directors. Skills that require the candidate to produce a written, printed, sketched or other demonstrative product shall be provided to the skills evaluator in a format suitable for assessment. All examinations are closed book and will be without notes or reference materials.

Written and testing skills shall occur:

- During FFAI Sponsored Seminars.
- During Seminars provided to entities.
- By request at specified locations provided sufficient support is provided in terms of facilities, lab space, and a sufficient number of applicants.
- Professionally proctored site such as a University testing center at the expense of the applicant. This option is only open to written examinations.
- Through a FFAI Board of Directors approved online mechanism.

Candidates with documented disabilities should contact FFAI at least two weeks in advance to discuss accommodations prior to attending a testing or skills session.

Candidate Preparation

Once applicants have been accepted to attend a FFAI seminar with written and/or skills testing, candidates shall be notified of their completion of the registration process. Study materials, skill sheets, and a list of references will be made available to the candidate in order to allow them to prepare to challenge the certification process they are seeking.

Test Preparation:

The following process shall occur in order to successfully deliver written and/or practical skills testing. For written exams, the examiner shall, no later than one month prior, identify a suitable location to hold the written test session. This shall include sufficient chairs and tables/desks for the expected number of test takers. It should also have access to restrooms, be environmentally controlled, and be easily secured to allow for a quiet testing environment. A sufficient number of exams shall be obtained no later than one week prior to the testing session by an approved examiner. This shall consist of three versions of the test produced from the approved test bank for

the topic being tested. One or more sets of each test version shall be included as extras to replace any damaged copies.

For practical skills testing, the examiner shall, no later than one month prior, obtain or arrange for the lab space, supplies, props, burns or other demonstrative items necessary to meet all of the skills testing requirements. They shall additionally arrange for a staging area for candidates to gather prior to the skills. Skills assessment sheets shall be printed based upon the number of applicants with three spare copies of each assessment sheet to replace damaged copies. A safety assessment shall be made of the site and any possible safety concerns shall be mitigated in advance and all necessary PPE shall be identified per OSHA and NFPA standards of care. Any necessary PPE/weather related gear required of the applicant shall be communicated in advance.

Written Test Session:

The area that will host the test shall be completely cleared to allow for accountability. Access to each entry point shall be controlled by an approved examiner and Identification and proof of submission and acceptance of all necessary forms and any other prerequisites shall be verified. A sign in sheet shall be utilized to document each candidate's presence, and upon confirmation of receipt of all prerequisites and confirmation of identity by official identification, the applicant shall print and sign their name on the session sign in sheet and may then enter the testing room.

Once all examinees are confirmed and seated, the examiner shall ensure that all electronic devices are put away, and that the test surface is clear of any materials other than writing utensils. Examiners reserve the right to inspect materials in and around the examinee. Test instructions shall be given and the test shall be distributed in alternating sequence (Test Form A, Test Form B). Both the test and the answer sheet shall have the date, signature and printed name of the applicant. Test time shall be two minutes per question plus a 15-minute supplemental time to allow for anomalies. ADA accommodations will be addressed on a case by case method. During the test, candidates should be prepared to stay in the testing area until complete. It is recommended that any personal comforts be addressed prior to entry in to the testing area.

Upon completion of a written exam the candidate shall quietly gather their test and personal property and move to the appointed location for submission of the exam. Applicants taking more than one exam in a session should then take the next exam. Once a candidate leaves they will not be allowed to re-enter the testing area.

Approved examiners shall grade completed tests in a setting outside of the testing area with the examinee present. Candidates will be notified of their score as pass or fail once the exam (s) are graded. A passing score shall be considered a score of 75% or higher. No notes, photographs or any types of recording or note taking will be allowed during this time. Candidates wishing to appeal or request a regrade should do so at that time. Any candidate who does not pass a written exam may retake the exam after 30 days.

Skills Testing Session:

The area that will host the skills testing shall be completely cleared to allow for accountability. Access to the staging area shall be controlled by an approved lead examiner and identification and proof of submission and acceptance of all necessary forms and any other prerequisites shall be verified. A sign in sheet shall be utilized to document each candidate's presence, and upon confirmation of receipt of all prerequisites and confirmation of identity by official identification, the applicant shall be allowed to print and sign their name and then enter.

Any required equipment necessary to complete the skills test shall be provided to the candidate at the skills testing site. Students may also bring their own tools and equipment where applicable. When necessary, electronic aids shall be allowed to be brought into the skills session. For example, a candidate required to prepare a diagram of a fire scene may wish to utilize an iPad or other similar device to develop the drawing during the session. Candidates must allow the examiner access to observe that nothing that is open or accessed during the skills test aids the candidate in an unfair manner.

Applicants taking more than one skill test in a session may return to the staging area and may then take the next skills test when called. Upon completion of all skills test the candidate shall quietly check out of the staging area, gather their personal property and move to the appointed location. Once a candidate completes all of the applicable skills, they will leave the testing area and will not be allowed to re-enter the staging or skills testing area.

Skills sheets will be graded in real time. A pass-fail ratio will be identified on each skill sheet and may include a critical criterion step that if failed, will require re-taking of that entire skills test sheet. In order to pass a skills session all skills must be passed with a score of 75% or higher. Candidates will be notified at that time of their grade as pass or fail and will not be notified of the failed item. Candidates wishing to appeal a skills test result should do so at that time to the lead examiner. Candidates may reattempt a failed skill a maximum of one time per session. A candidate may request a different examiner during a retest session. Any candidate who does not pass a skills test may retake the exam after 30 days.

Documentation of Written and Skills Testing:

The test and answer sheet shall be returned together, and scores will not be recorded without both documents present and both must include the signature of the applicant and the testing date. Skill sheets shall be collect by the station examiner. All skill sheets or exams for a particular testing session shall be collected when the session is finished, sealed in an envelope or box, and delivered by hand or mailed by a traceable means to the Certification administrator for recording.

Records including applications, exams from written testing sessions and skills sheets shall be recorded in the FFAI database within 30 days as pass or fail. Testing records shall include the date of the examination, the certificate sought, and the outcome.

Issuance of certification will take place by mail. The only method for receipt of FFAI certificates are outlined in this manual. Grandfathering of any kind is not permissible. The FFAI Board of Directors shall be the sole issuer of FFAI program certificates. All certificates issued by the FFAI shall list the following:

1. FFAI as the certifying Board of Directors
2. Name of the Certificant
3. Certificate Number
4. Date issued
5. Year of expiration
6. Official name of the certificate program being conveyed

Fees

The Board of Directors will establish a fee schedule for all certification programs. This shall include fees for certification under each program and a fee for recertification. Fees shall be payable upon notification of acceptance as a candidate and must be paid prior to the testing date. Fees for recertification shall accompany the recertification application and documentation of continuing education. The current fees schedule is:

1. The fee for each certificate sought shall be \$25.00. This will include the necessary written and skills testing.
2. The fees for recertification shall be \$50.00.

Continuing Education

Upon receipt of the first certificate, the Certificant shall be responsible to maintain a minimum of 40 hours of continuing education over a five year period in the field of fire incident analysis and related topics. Documentation shall be submitted prior to the anniversary of the receipt of the first certificate. A 30 day grace period will be given. Additionally certificate holders should notify the FFAI Board of Directors of any extenuating circumstances which may warrant an extension.

Use of FFAI Logo

Certificate holders may use the logo of the FFAI on business cards, letter head, signature lines, company or agency websites, and other locations to demonstrate their achievement. The logo may not be altered, added to, or utilized in an unprofessional manner. The FFAI logo shall not be used by Certificant or any unauthorized party to produce clothing, applications or other items embossed with the logo other than those produced and sold by the FFAI.

Record Retention and Security Policy:

A Certification database shall be maintained and will contain a record of the individuals who have taken courses sponsored by the FFAI, and the pass/fail results of skill and written testing. This database shall be kept confidential and secure in accordance with the code of ethics and record keeping policy listed in this manual. It shall include the full name, mailing address, phone number, email address, pass or fail status of skills and written exams, and employer of each individual.

Records including applications, exams and skill sheets will be retained in hard copy until recorded electronically in the certification database at which time they will be shredded.

Hard copy records shall be kept secure in a secured location and in a secured storage cabinet. Electronic records shall be secured under password protection. Access to records shall be limited to only those individuals directly involved with records management and data entry process. This shall include at a minimum the Certification Manager.

A Certificant listing shall be publish on the FFAI web site and shall contain the full name, Certificant ID, and certificates held by the individual.

Release of Student and Certificant Records

Except for the listings made public no one may release any information regarding the educational records of the FFAI without the express written consent of the individual whose name appears on the records.

Annual Record Review and Audit

The Board of Directors shall appoint an individual, other than the Certification Manager, to perform an annual audit of the certificate program records of the organization to ensure that all records are up-to-date and that the record retention and security policy is being followed. This shall be conducted by several means, including cross referencing of certification records against records generated by the seminars, written examinations, or skills testing session. This shall be verified by a second member of the Board of Directors. The results of such an audit shall be provided in writing to the Board of Directors. The report shall identify any nonconformities, their causes, and any recommended corrective actions to be implemented by the Board of Directors. Corrective actions to be taken shall be assigned to an individual to complete or coordinate. A follow up report shall occur within 60 days or upon conclusion of the corrective action.

FFAI Code of Ethics

FFAI shall promulgate and enforce a Code of Ethics. Members of the Board of Directors, Applicants, Candidates, Certificants, and all those involved directly or indirectly with the delivery of instruction or any part of the written or skills testing process shall be held to the highest standard regarding confidentiality, integrity, and professional ethics. Those listed above:

1. Shall maintain the highest level of moral and ethical professional behavior becoming of the vital importance of their respective roles and responsibility in the legal, insurance, fire, life safety, and other related fields.
2. Shall be an active participant in and supportive of the continuation of the science and education of the profession.
3. Shall perform their investigations based on science, seeking facts and truth and stand against those who do not and stand up for those who fall victim to invalid science based fire analysis.
4. Shall hold in confidence all parts of the testing process which are not publically published by the FFAI.

Additionally members of the FFAI Board of Directors, Advisory Board, as well as all those involved directly or indirectly with the delivery of instruction or any part of the written or skills testing process:

1. May not take any form of compensation from applicants, candidates or Certificant related to any part of the certification written or skills testing process.
2. May not divulge any information of any kind related to the certification process regarding attendance, outcome, score, or testing attempts without written permission unless otherwise outlined in the manual.
3. Shall recuse themselves from any and all processes where any known, actual, or perceived conflict of interest may occur.

Appeals

In case of appeals related to any testing or certificate process, the appellant shall make notice to the Board of Directors by email. All appeals shall be presented in writing and it is the appellant's responsibility to provide all necessary documentation as a single package electronically. The Board of Directors shall handle the appeals process by acknowledging the receipt of the appeal and forming a review panel consisting of an odd number of directors within 15 days. Any person(s) with conflicts of interest should recuse themselves from service. The Board of Directors shall initiate the appeals process and shall complete it within 30 days from the date of acknowledgement. The decision of the Board of Directors shall be provided in writing electronically with substantiation and shall be final.

Complaints and Disciplinary Action

Candidates should immediately report any situation which potentially threatens the ability of the Certificant to meet the code of ethics of the FFAI. Complaints regarding violations of the code of ethics shall be submitted to the Board of Directors.

The complaints process shall be as follows. Complaints shall be presented in writing, and it is the complainant's responsibility to provide all necessary documentation as a single package

electronically. The Board of Directors shall immediately acknowledge the receipt of any complaint. The Board of Directors shall then determine if the complaint relates to the FFAI process. If a determination is made that no relationship exists, the complainant shall be notified in writing by email with an electronic receipt within 15 days.

If the Board of Directors determines that the complaint is relevant to the activities of the FFAI, it shall initiate a review process and notify the complainant of its initial findings of relevance within 15 days, and shall notify the Certificant in writing within 15 days by email with electronic receipt. The Board of Directors will provide the Certificant with the body of the complaint as a whole. The Certificant will have 15 days to respond in writing, and it is their responsibility to provide all necessary documentation as a single package electronically with electronic receipt.

The decision of the Board of Directors shall be provided in writing electronically with substantiation, and shall be final. The Board of Directors shall also implement any necessary corrective actions that are identified.

Certificates may be terminated for due cause by the Board of Directors upon receipt of a complaint, an investigation as described above, and upholding a complaint. Termination of certification shall be considered a drastic action.

Appendix A

Record of Amendments

| Item Changed | Change Made | Date Approved |
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