American Academy of Forensic Sciences

ACCREDITATION STANDARDS

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FORENSIC SCIENCE EDUCATION PROGRAMS
ACCREDITATION COMMISSION

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1. INTRODUCTION

1.1 Mission

The mission of the Forensic Science Education Programs Accreditation Commission (FEPAC) is to maintain and enhance the quality, diversity, and inclusion of forensic science education through a formal evaluation and accreditation system for college-level academic programs that lead to a baccalaureate or graduate degree.

1.2 Purpose

The purposes of FEPAC are:

1. To use the National Institute of Justice Technical Working Group for Education and Training in Forensic Science (TWGED) and the Technical Working Group for Education and Training in Forensic Science for Digital Evidence (TWGED-DE) curriculum guidelines to develop, to implement, to maintain, and to enhance rigorous, consensus educational standards for undergraduate and graduate forensic science programs at accredited institutions of higher education;
2. To develop and to implement a set of well-defined procedures for evaluating forensic science programs against those standards; and
3. To encourage self-evaluation and continual improvement of forensic science education programs through the accreditation process.

1.3 History

The American Academy of Forensic Sciences (AAFS) was established in 1948 to promote education for and research in the forensic sciences; to encourage the study, improve the practice, elevate the standards, and advance the cause of the forensic sciences; to promote interdisciplinary communications; and to plan, organize, and administer meetings, reports, and other projects for the stimulation and advancement of these and related purposes.

An assessment of forensic sciences published in 1999 by the National Institute of Justice (NIJ), entitled "Forensic Science: Review of Status and Needs," described the educational and training needs of the forensic science community as "immense." Among the recommendations contained in the report was the establishment of the following:

1. National standards for education in forensic sciences;
2. An independent, community-wide, consensus-building, standard-setting body such as a technical working group for education in forensic sciences; and
3. An accreditation system for forensic science education programs.

The NIJ established a Technical Working Group for Education and training in forensic sciences (TWGED) in 2001 for the purpose of recommending sample curricular guidelines for educational programs in forensic sciences. The results of TWGED's deliberations were delineated in a research report published in 2003, entitled "Education and Training in Forensic Sciences: A Guide for Forensic Science Laboratories, Educational Institutions, and Students."

Acknowledging the importance of an accreditation system for academic programs built on the foundation of TWGED, the AAFS in 2002 established an *ad hoc* committee, called Forensic Education Program

Accreditation Committee, to explore issues related to the development of such an accreditation system. In 2004, the Forensic Science Education Programs Accreditation Commission became an official standing committee of the AAFS and awarded its first accreditation in February 2004.

A second NIJ technical working group on education and training for digital evidence published its reports in 2007. In 2009, a committee composed of four FEPAC Commissioners and four representatives from academic and practitioner digital evidence programs began the process of incorporating standards for digital evidence forensic science programs into the FEPAC Standards.

1.4 Scope of Accreditation

1. FEPAC accredits forensic science education programs that lead to a bachelor's or master's degree in forensic science or in a natural science or computer science with a forensic science concentration. FEPAC also accredits undergraduate programs that lead to a bachelor's degree in crime scene investigations.
2. An eligible forensic science program must be part of a regionally accredited institution of higher education that requires state, province, or equivalent approval.
3. Forensic Science programs outside the United States are also eligible if they do not have an established forensic science education accreditation system in their jurisdiction.

FEPAC promotes academic quality through formal accreditation of forensic science programs. All programs that FEPAC accredits are located within institutions that are accredited by a regional accreditation organization. The FEPAC accreditation process and policies employ rigorous, consensus standards that quantitatively and qualitatively measure and advance academic quality at accredited institutions.

To ensure the accreditation requirements are relevant indicators of the quality of education, FEPAC reviews its Accreditation Standards and Policies & Procedures on a regular schedule. In addition, FEPAC commissioners and on-site evaluators are trained on the various aspects of the accreditation process as a measure to promote reliability in application of the standards. Education programs are also monitored through annual reports to ensure continuous compliance with quality measures.

1.5 Expansion of the Scope of Accreditation

A need may develop for FEPAC to expand the scope of forensic educational programs that it accredits to include additional disciplines. When considering an expansion, FEPAC first determines whether there is sufficient demand among laboratories and programs to sustain the growth of the new educational discipline. Such an expansion requires a new set of curricular and other standards, and very likely, the development of sub-committees (Working Groups) comprised of at least one member of the FEPAC and others with expertise in the given profession. Members of the Working Groups will offer their accreditation recommendation for consideration by FEPAC, who makes the final decision. Once completed and reviewed by FEPAC, the standards will be published for public comment and disseminated to programs with potential interest in accreditation.

2. OVERVIEW OF THE STANDARDS

FEPAC accreditation standards guide and inform all aspects of the FEPAC accreditation program. The standards are divided into three parts: general standards that all programs must meet, undergraduate program standards, and graduate program standards.

3. GENERAL STANDARDS FOR ALL PROGRAMS

Programs seeking accreditation through FEPAC should support people, organizations, and communities through collaborations, access, and engagement that fosters belonging, enriches learning and development, strengthens research, and creates equitable opportunities.

3.1 Eligibility

To be eligible for FEPAC accreditation or re-accreditation, a forensic science program shall document that:

a) The institution offering the program is regionally accredited; and

b) The degree awarded upon successful completion of the program is at least a bachelor's degree in one of the following:

1) Forensic Science

2) Digital Forensics

3) A degree in one of the following disciplines with a concentration in forensic science or digital forensics:

(i) Computer Science

(ii) Computer/Electrical Engineering

(iii) Information Systems

(iv) Information Technology

(v) A natural science

(vi) Crime Scene Investigation

c) The program has graduated at least two classes before the Application for Accreditation (FEPAC Form 5.1) is submitted.

3.2 Mission, Goals, and Objectives

3.2.1 The forensic science program shall have a documented and clearly formulated mission that is:

a) A succinct representation of the program's purpose for existence, philosophies, goals, and objectives;

b) Appropriate to the institution; and

c) Consistent with the needs of the forensic science community for a technically skilled and educated workforce.

3.2.2 Supporting goals and educational objectives shall be:

a) Clearly specified;

b) Consistent with the mission; and

c) Appropriate in light of the degree(s) awarded

3.2.3 The mission, goals, and objectives shall be readily available on the program's website.

3.3 Planning and Evaluation

3.3.1 The program shall have an explicit written process for planning and evaluation activities. The evaluation activities shall include and have records to support:

a) Evaluating and monitoring of the efforts made to fulfill the program's mission, goals, and objectives;

b) Evaluation of the program's efforts to support its various constituencies;

c) Evaluation of the curriculum and documentation of changes made;

d) Future planning related to the program's goals and objectives; and

e) Evaluation of activities designed to support continuous improvement.

3.3.2 The program shall conduct an annual analytical self-evaluation that responds to the FEPAC standards.

3.3.3 Documentation of the annual self-evaluation shall include:

a) A summary statement about the program's compliance with each standard that identifies both successful practices that meet the standard and areas that need improvement.

b) An evaluation of the success of the program with regard to student achievement. The program shall provide documentation of how collected information is used in the evaluation

and development of the program to meet its stated mission, goals, and objectives.

1) The evaluation system shall include:
   (i) Data on student and program performance as outlined in Section 3.3.4; and
   (ii) Exit questionnaire or interview of graduates.
2) Documentation of the evaluation system shall be retained for at least 5 years.

c) An operational strategy that includes:
1) At least one long-term initiative or goal designed to promote reflection and ongoing improvement of the program. The program shall demonstrate progress toward this initiative or goal annually; and,
2) Any remediation conducted that addresses weaknesses or areas needing improvement with any FEPAC Standards.

3.3.4 The program shall provide current, readily accessible, and accurate data to the public on its website regarding student and program performance.

a) These data shall be updated by the time of submission of the annual report.
b) The data provided shall encompass at least the past three years and at least the following measures of student performance, program performance, and academic quality:
1) T he number of full-time students enrolled in each degree program;
2) The number of students enrolled in each concentration where applicable;
3) The number of graduates in each year reported and the results of an employment survey sent 180 days post-graduation to capture[1]:
   (i) Number of graduates with job offers;
   (ii) Number of graduates admitted into an advanced degree program;
   (iii) Number of graduates who were unreachable or did not respond; and
   (iv) Other (if applicable); and
4) A list of all internship locations, research project titles or topics, and/or capstone course titles.

3.4 Institutional Support

It is imperative for the program to receive adequate support from the institution commensurate with other natural or computer science programs, sufficient to allow the program to achieve its mission, goals, and objectives.

3.4.1 The program shall demonstrate the following are sufficient to allow the program to achieve its mission, goals, and objectives:

a) The financial resources the institution makes available to the program;
b) The financial resources available to the program are comparable to the financial resources available to other natural or computer science programs at the institution;
c) The physical facilities the institution makes available to the program, including classrooms, laboratories, and other resources such as equipment and supplies; and
d) The instructional and academic support services available to the program, including the library, learning center, computer center, and other major academic support services.

3.4.2 Institutional support shall be such that the number of part-time or adjunct faculty does not exceed the parameters described in standard 3.5.

[1] A table specifying this information with example data filled in is included on the Annual Report form to provide guidance to institutions and may be used as a template.

3.5 Faculty

Forensic science faculty members with working experience in a forensic science laboratory are preferred. Forensic science faculty includes any faculty or instructional staff member who teaches a forensic science course; these are those required for the fulfillment of sections 4.3, 4.6.4, 4.7.4, 4.8.4, 4.9.4, 4.10.3, 4.10.4, 5.4.4, or 5.4.5.

3.5.1 All faculty members shall be appropriately qualified, by education and experience, to implement the instructional program. The following faculty education requirements apply separately to each degree program (e.g., B.S., M.S.):

a) In the Forensic Biology, Forensic Chemistry, and Criminalistics programs, 100% of the full-time forensic science faculty shall have at least an appropriate master's degree or equivalent and at least 50% of the full-time forensic science faculty shall have an appropriate doctoral degree or equivalent;

b) In the Crime Scene Investigations and Digital Evidence programs, 100% of the full-time forensic science faculty shall have at least an appropriate master's degree; and

c) All full-time forensic science faculty who have a master's degree, but not an appropriate doctoral degree, shall have at least 3 years of full-time or equivalent relevant work experience.

d) Full-time forensic science faculty who were previously approved by FEPAC through initial or re-accreditation prior to the release of of these standards shall be allowed to keep their current positions, even if they do not meet the terms of the new standards.

3.5.2 The scientific and educational capabilities of the faculty shall be distributed over the major areas of the program.

3.5.3 The number of faculty members shall be sufficient to ensure regular offerings of all courses needed for the degree program. Students shall not experience delays in graduating because of a lack of course offerings.

3.5.4 At least 50% of the credit hours in forensic science courses in a program shall be taught by full-time faculty.

3.5.5 Undergraduate capstone research projects shall be overseen by a forensic science faculty with previous or current research activity appropriate to their institution's mission.

3.5.6 Only full-time forensic science faculty teaching in graduate programs may serve as the chair of a forensic graduate student's capstone committee. This faculty member shall have current or previous demonstrated research activity appropriate to their institution's mission.

3.5.7 Oversight of the forensic science curriculum to ensure its applicability to the program's missions, goals, and objectives shall be the responsibility of the program director or their designee(s). Designees, if used, shall be documented and shall be full-time forensic science faculty.

3.5.8 The program shall have well-defined policies and procedures to recruit, appoint, and promote qualified faculty, to evaluate the competence and performance of faculty, and to support the professional development and advancement of faculty.

3.5.9 The program's faculty recruitment practices shall demonstrate equitable opportunities in accordance with the institution's hiring policies.

3.6 Recruiting and Admissions Practices, Academic Calendars, Catalogs, Publications, Grading, and Advertising

3.6.1 The program shall have policies and procedures for student recruitment and admissions that locate and select qualified individuals who have the educational prerequisites and the interest and motivation to pursue careers in forensic science.

3.6.2 These policies and procedures shall identify the scientific background necessary and clearly define the expectations for admission to, continuation in, and completion of the program.

3.6.3 All statements made about the program in any promotional advertising, catalogs, or other institutional publications shall be accurate.

3.6.4 During the recruitment and admissions process, the student shall be advised and informed of the typical suitability requirements particular to employment in the field. Specifically, students should be advised that background checks similar to those required for law enforcement officers are likely to be a condition of employment (Reference: NIJ Report NCJ 203099 – "Qualifications for a Career in Forensic Science," pp.7-10).

3.6.5 The program shall ensure that all students receive timely and accurate information about the academic calendar, required coursework and degree requirements, grading policies and satisfactory academic progress, and other relevant academic policies.

3.6.6 All application, admission, and degree-granting requirements and regulations shall be applied equitably to individual applicants and students, regardless of age, sex, race, disability, religion, or national origin.

3.7 Student Support Services

3.7.1 The program shall provide adequate student support services, including mentoring, academic advising, and career and placement services.

3.7.2 The program shall also provide an environment and culture that are congruent with professional standards and behaviors.

3.7.3 Students shall be advised of specific curricular requirements of individual disciplines. For example, if pursuing a career as a forensic DNA analyst, the student must have completed specific coursework, as laid out in the FBI's Quality Assurance Standards (QAS)[2]. In addition, students should be made aware of local or regional licensure requirements.

3.8 Record of Student Complaints

3.8.1 The program shall have a procedure for handling student complaints, which, at a minimum, shall include informing students of their right to file a complaint with the college or university and providing students with the institution's procedures for filing such a complaint.

3.8.2 If a student's complaint is not resolved by university recourse, student shall be informed that they have the right to contact FEPAC with a complaint and notified of the process to do so.

3.8.3 The program shall maintain a record of all complaints it receives, as well as the resolution of those complaints.

3.8.4 The program shall make this record available to members of the on-site evaluation team during the on-site visit.

3.9 Distance Learning and Other Alternative Delivery Mechanisms

FEPAC considers distance learning to be one of several acceptable forms of instructional methodology. Therefore, FEPAC does not maintain separate standards for distance learning or other alternative delivery mechanisms.

3.9.1 All programs shall meet the same standards for accreditation, regardless of the instructional methodology used.

3.9.2 Any program that offers at least some instruction via distance learning shall demonstrate that it includes appropriate on-site, in-person, hands-on laboratory experiences for all students.

[2] https://le.fbi.gov/file-repository/forensic-qas-070120.pdf/view

3.10 Professional Involvement

The purpose of this standard is to provide opportunities for faculty and students to contribute to the advancement of the field of forensic science, to maintain program currency and credibility with practitioners and forensic science laboratory administrators, and to provide service to the forensic science profession and to the community through some combination of communication, collaboration, consultation, technical assistance, continuing education programs, and any other means it may have for sharing the program's professional knowledge and competence.

3.10.1 The activities meeting these standards shall be directly related to the forensic science community and represent contributions to the field.

3.10.2 The program shall demonstrate formal interaction with one operational forensic science laboratories.

a) This relationship shall take the form of two or more of the following:

1) Student internships;

2) Training opportunities in which the program provides instruction to laboratory personnel;

3) Faculty serving on laboratory advisory committees;

4) Coordinated research initiatives between the laboratory and academic program;

5) Professional activities coordinated between the laboratory and the academic program; and

6) Laboratory personnel serving in an advisory capacity to the academic program.

b) This interaction shall be on-going and documented.

c) Activity in support of the relationship shall occur at least biennially.

d) Documentation of the established interaction shall be available for the assessment team to review. Examples of documentation may include, but are not limited to: letters of support/commitment; a memorandum of understanding between the program and agency; letters of intent for internship acceptance each year with corresponding records of internships completed; records of appointments to, or meeting minutes from, advisory boards; coordinated research proposals with each agency's role articulated; and training program materials or seminar syllabi.

3.10.3 The program shall demonstrate annual interaction with one or more professional forensic science organizations.

a) Interactions shall take the form of two or more activities from among the following. The two activities may take place within the same category (e.g., performing two or more distinct service activities for one or more professional organizations within a year). However, a single paper co-authored by a faculty and a student does not count as both a 1) and 2) activity at the same time.

1) Faculty participation at a local, regional, national, or international forensic science conference. Participation is not met by attendance alone (including attendance at workshops) and shall include activities such as co-authoring, moderating, abstract reviews, volunteering, or other activities in support of the conference;

2) Student attendance or participation at local, regional, national, or international forensic science conferences;

3) Service activities to or for a professional organization; and

4) Hosting an educational, training, or outreach program with an external professional organization.

4. UNDERGRADUATE PROGRAM STANDARDS

The undergraduate forensic science degree should not necessarily be viewed as a terminal degree but as a preparation for a variety of graduate and professional degrees including clinical and analytical chemistry, medicine, law, and biomedical research and advanced degrees in forensic science.

4.1 Curriculum

4.1.1 An undergraduate forensic science program shall provide a basic foundation in the scientific and laboratory problem-solving skills necessary for success in a modern forensic laboratory.

4.1.2 Such a program shall combine rigorous scientific and laboratory training with exposure to the breadth of forensic science disciplines, including forensic science practice, law enforcement, and ethics.

4.1.3 The undergraduate program in forensic science shall offer a coherent curriculum that reflects the mission and goals of the program.

4.1.4 The curriculum shall provide the student with the appropriate skills requisite for the bachelor's degree.

4.1.5 The curriculum shall, at a minimum, ensure that each student:

a) Obtains a thorough grounding in the natural or computer sciences;
b) Builds upon this background by taking a series of more advanced science classes; and
c) Develops an appreciation of issues specific to forensic science through coursework and laboratory-based instruction.

4.2 Forensic Science Professional Practice Topics

4.2.1 The following topics shall be covered in the curriculum:

a) Courtroom testimony
b) Introduction to law
c) Quality assurance
d) Ethics
e) Evidence identification, collection, processing, and chain of custody
f) Report writing and case review
g) Cognitive bias and human factors

4.2.2 Coverage of a topic listed in Section 4.2.1 shall involve multiple class meetings and may involve multiple learning modalities, such as lectures, laboratories, and demonstrations. Evaluation of student learning of each topic may be done through a number of modalities, but the topic material shall be specifically documented in relevant syllabi.

4.3 Forensic Science Courses

4.3.1 The following forensic courses shall be covered in the curriculum:

a) Forensic science survey coursework – All tracks shall have at least three semester hours for a survey of forensic science class designed to ensure students are exposed to the full breadth of forensic science disciplines in a full-service crime laboratory.
b) Forensic science coursework – Each track shall have at least six semester hours in forensic science coursework that introduce students to methods, instrumentation, and concepts that are commonly associated with the professional practice of forensic science.
c) At least one of the forensic science courses fulfilling Section 4.3.1(b) shall have a full semester or equivalent of associated laboratory training.
d) Courses that fulfill Sections 4.3.1(a) and 4.3.1(b) may be used to cover the topics listed in

Standard 4.2. However, these same courses shall not be used to fulfill any of the 4.5 Specific Emphasis Track Curricular Requirements.

4.4 Forensic Science Capstone Experience

4.4.1 A minimum of a three-semester-hour course hall be required that results in a capstone presentation, publication, or similar scholarly product. This requirement could be met in the following ways:

a) Capstone course;
b) Internship; or
c) Independent research.

4.5 Specific Emphasis Curricular Requirements

FEPAC currently accredits five programs (Criminalistics, Biology, Chemistry, Digital Evidence, and Crime Scene Investigations) in forensic science.

4.5.1 Curricula without a specific concentration, track, or emphasis shall conform to the 4.6 Criminalistics Standards.

4.5.2 Curricula that have a specific concentration, track, or emphasis (e.g., Biology, Chemistry, Digital Evidence, Crime Scene Investigations) shall conform to those curricula in Standards 4.7 through 4.10, respectively.

4.6 Criminalistics

4.6.1 These classes shall be consistent with the degree program and meet the needs of students following a general forensic science program or a program with no specified concentrations, tracks, or emphases.

4.6.2 The following are the requirements for natural science courses:

a) **Biology:** at least two courses, which include the co-requisite laboratory, in biology for science majors (minimum 7 semester hours);
b) **Physics:** at least two courses, which include the co-requisite laboratory, in physics for science majors (minimum 7 semester hours);
c) **Chemistry:** at least four courses, which include the co-requisite laboratory;
    1) Two of the courses shall be in general chemistry for science majors (minimum 7 semester hours); and
    2) Two of the courses shall be in organic chemistry for science majors (minimum 7 semester hours).
d) **Mathematics:** at least two courses
    1) One course shall be in differential and integral calculus (minimum 3 semester hours); and
    2) One course shall be in statistics (minimum 3 semester hours).

4.6.3 A program shall include specialized science courses consisting of a minimum of 15 additional semester hours in more advanced coursework in chemistry and/or biology.

a) These classes shall be consistent with the degree program and meet the needs of students specializing in sub-disciplines of forensic science;
b) Introductory level courses shall not be used to fulfill this requirement; and
c) At least two of the classes shall be semester-long, or equivalent, laboratory courses (minimum 7 semester hours).

4.6.4 A program shall include a minimum of six additional semester hours in advanced, upper-level forensic science courses that provide greater depth in forensic science beyond an introductory level Biology or Chemistry courses that have a few forensically themed assignments are not sufficient to meet this standard. These courses do not need to have a Forensic Science prefix,

but they must have forensic-specific content as the main purpose of the course. These shall include:

a) A semester-long, or equivalent, accompanying laboratory component; and
b) Courses designed for the forensic science program that predominantly cover forensic-specific topics.

4.7 Biology

4.7.1 These classes shall be consistent with the degree program and meet the needs of students specializing in the biology sub-discipline of forensic science.

4.7.2 The following are the requirements for natural science courses:

a) **Biology:** at least two courses, which include the co-requisite laboratory, in biology for science majors (minimum 7 semester hours);
b) **Physics:** at least two courses, which include the co-requisite laboratory, in physics for science majors (minimum 7 semester hours);
c) **Chemistry:** at least four courses, which include the co-requisite laboratory;
    1) Two of the courses shall be in general chemistry for science majors (minimum 7 semester hours); and
    2) Two of the courses shall be in organic chemistry for science majors (minimum 7 semester hours).
d) **Mathematics:** at least two courses
    1) One course shall be in differential and integral calculus (minimum 3 semester hours); and
    2) One course shall be in statistics (minimum 3 semester hours).

4.7.3 A program shall include specialized science courses consisting of a minimum of 15 additional semester hours in more advanced coursework in chemistry and/or biology that provide greater depth or breadth and are consistent with the biology concentration specialization.

a) These shall, at a minimum, meet current FBI QAS requirements[3];
b) Introductory level courses shall not be used to fulfill this requirement; and
c) At least two of the courses shall include a semester-long, or equivalent, accompanying laboratory component (minimum 7 semester hours).

4.7.4 A program shall include a minimum of six additional semester hours in advanced, upper-level forensic science courses that provide greater depth in forensic applications of biology beyond an introductory level. Biology courses that have a few forensically themed assignments are not sufficient to meet this standard. These courses do not need to have a Forensic Science prefix, but they must have forensic-specific content as the main purpose of the course. These shall include:

a) A semester-long, or equivalent, accompanying laboratory component; and
b) Courses designed for the forensic science program that predominantly cover forensic-specific topics.

4.8 Chemistry

4.8.1 These classes shall be consistent with the degree program and meet the needs of students specializing in the chemistry sub-discipline of forensic science.

4.8.2 The following are the requirements for natural science courses:

a) **Biology**: at least two courses, which include a semester-long, or equivalent, laboratory component, in biology for science majors (minimum 7 semester hours);
b) **Physics:** at least two courses which include semester-long, or equivalent, laboratory component, in physics for science majors (minimum 7 semester hours);

[3] https://le.fbi.gov/file-repository/forensic-qas-070120.pdf/view

c) **Chemistry:** at least four courses, which include a semester-long, or equivalent, accompanying laboratory component;
   1) Two of the courses shall be in general chemistry for science majors (minimum 7 semester hours); and
   2) Two of the courses shall be in organic chemistry for science majors (minimum 7 semester hours).

d) **Mathematics:** at least two courses
   1) One course shall be in differential and integral calculus (minimum 3 semester hours); and
   2) One course shall be in statistics (minimum 3 semester hours).

4.8.3 A program shall include specialized science courses consisting of a minimum of 15 additional semester hours in more advanced coursework in chemistry or biology that provide greater depth or breadth and are consistent with the chemistry concentration specialization.
   a) These classes shall be consistent with the degree program and meet the needs of students specializing in chemistry sub-disciplines of forensic science;
   b) Introductory level courses shall not be used to fulfill this requirement; and
   c) At least two of the courses shall include a semester-long, or equivalent, accompanying laboratory component (minimum 7 semester hours).

4.8.4 A program shall include a minimum of six additional semester hours in advanced, upper-level forensic science courses that provide greater depth in forensic applications of chemistry beyond an introductory level are required. Chemistry courses that have a few forensically themed assignments are not sufficient to meet this standard. These courses do not need to have a Forensic Science prefix, but they must have forensic-specific content as the main purpose of the course. These shall include:
   a) A semester-long, or equivalent, accompanying laboratory component; and
   b) Courses designed for the forensic science program that predominantly cover forensic-specific topics.

4.9 Digital Evidence

4.9.1 These classes shall be consistent with the degree program and meet the needs of students specializing in the computer science/information systems sub-disciplines of forensic science.

4.9.2 The following are the requirements for math and natural science courses:
   a) **Mathematics**: at least two courses that include any combination of the following 3 semester hours courses:
      1) Business Calculus
      2) Calculus I
      3) Calculus II
      4) Business Statistics
      5) Statistics I
      6) Statistics II
      7) Discrete Mathematics.
   b) **Sciences:** at least two courses, which include a semester-long, or equivalent, accompanying laboratory component (minimum 7 semester hours total) from the following list:
      1) A Physical Science
      2) General Chemistry
      3) General Biology.

4.9.3 A minimum of 12 semester hours of coursework in computer science/information systems are required and shall include the following courses and topics:

a) At least one 3-semester hour course in computer programming (examples of acceptable languages include Java, Python, C++, Ruby, etc.); and
b) At least 6 semester hours in courses that cover the following topics:
    1) Computer organization and structure
    2) File systems and operating systems
    3) Computer networking
    4) Information assurance/network security
    5) Data structures/database design
    6) Web or mobile application design and development
    7) Hardware structures.

4.9.4 A minimum of 6 additional semester hours is required in specialized digital forensic science coursework that covers the following topics:
a) Acquisition of data;
b) Network/"live" forensic analysis;
c) Exploitation of mobile devices; and
d) Legal/digital evidence interface (e.g., search warrants).

4.10 Crime Scene Investigation

4.10.1 These classes shall be consistent with the degree program and meet the needs of students specializing in the Crime Scene Investigations sub-discipline of forensic science.

4.10.2 The following are requirements for math and natural science courses:
a) **Mathematics:** at least one 3 semester hour course in statistics
b) **Sciences:** at least two courses, which include a semester-long, or equivalent, laboratory component (minimum 7 semester hours total) from the following list:
    1) A Physical Science
    2) General Chemistry
    3) General Biology.

4.10.3 A minimum of 9 semester hours of crime scene coursework shall include the following topics:
a) Crime scene interface with other forensic disciplines (including recognition and collection of evidence for other disciplines and presumptive testing);
b) Legal/crime scene interface (e.g., search warrants);
c) History and theory of crime scene investigations;
d) Relevant and current crime scene investigation literature;
e) Nature and properties of evidence types;
f) Latent prints and/or other pattern evidence;
g) Bloodstain pattern analysis and interpretation;
h) Crime scene safety, firearm safety, blood borne pathogens, chemical safety, drug handling, security, interactions with police, public, media, and legal;
i) Crime scene search;
j) Crime scene equipment, instrumentation, and technologies;
k) Crime scene interpretation, analysis, and reconstruction;
l) Crime scene documentation, collection, contamination prevention (e.g., DNA), preservation, and enhancement; and
m) Crime scene and evidence photography and videography.

4.10.4 The program shall include a minimum of 15 additional semester hours in advanced, upper-level forensic science courses that provide greater depth in forensic applications of crime scene investigation.

a) At least 3 of these courses shall include accompanying laboratory components or significant hands-on experiences.

4.11 Undergraduate Program Director

4.11.1 The program director shall be a full-time forensic science faculty member at the academic institution as outlined in standard 3.5, appropriately qualified to meet the program's stated mission, goals, and objectives, and to provide leadership in forensic science education, research, and other scholarly activities so that students are adequately prepared for forensic science practice.

4.11.2 The program director shall meet the following requirements:

a) A minimum of a Master's or equivalent degree in a field appropriate for at least one forensic concentration that is offered by the program; and

b) At least 5 years full-time or equivalent relevant experience as a forensic science practitioner in that discipline; OR

c) An earned doctorate in a field appropriate for at least one forensic concentration that is offered by the program and three years full-time or equivalent experience as an academic forensic scientist that includes appropriate educational, research, and service contributions to forensic science; and

d) Management experience appropriate to the duties assigned to the position.

e) Program directors who were previously approved by FEPAC through initial or re-accreditation prior to the release of these standards shall be allowed to keep their current position, even if they do not meet the terms of the new standards.

4.12 Undergraduate Interim Program Director

At times, a program may find it necessary to appoint an interim program director while a search is being conducted for a full-time replacement or during a period of unavailability of the regular program director. However, the interim program director is not intended to be a long-term solution.

4.12.1 The interim program director shall meet the following requirements:

a) Be a full-time faculty member at the academic institution, appropriately qualified to meet the program's stated mission, goals, and objectives, and to provide leadership in forensic science education, research, and other scholarly activities so that students are adequately prepared for forensic science practice; and

b) Have a minimum of an earned master's or equivalent degree appropriate for a forensic discipline offered by the program.

4.12.2 Programs that are appointing an interim program director shall notify FEPAC through a Substantive Change form of the appointment, along with an estimate of the timeframe for a permanent solution.

4.12.3 A permanent program director shall be under contract within a period of one year from the date the program director position is officially vacated unless an explanation is submitted to FEPAC within this period showing good cause.

5. GRADUATE PROGRAM STANDARDS

A graduate forensic science program provides advanced education in the scientific, technical, and/or laboratory problem-solving skills necessary for success in a modern forensic laboratory. Such a program combines rigorous scientific, technical, and/or laboratory training with exposure to the breadth of forensic science disciplines, including forensic science practice, law enforcement, and ethics.

5.1 Graduate Admission Requirements

5.1.1 A bachelor's degree in forensic or natural sciences (or its equivalent coursework in a relevant field) shall be required for entrance into the graduate forensic science program in any emphasis other than digital evidence.

a) A process shall be in place to evaluate undergraduate work to determine if the applicant has sufficient scientific background to successfully complete the graduate program.

5.1.2 For forensic science programs with an emphasis in digital evidence, a bachelor's degree in a discipline related (or closely related) to Digital and Multimedia Forensics (e.g., Information Systems, Information Technology Cybersecurity, Computer Science, etc.) shall be required for entrance into the graduate forensic science program.

a) A process shall be in place to evaluate undergraduate work to determine if the applicant has sufficient technical background to successfully complete the graduate program with an emphasis in digital evidence.

5.1.3 For a bachelor's master's degree linked or contiguous program, sometimes referred to as a 4+1, 3+2, or 5-year program, the program shall have well-defined admission requirements and defined policies for dual enrollment.

a) With a linked or contiguous program, a student shall be able to complete the bachelor's degree without completing the master's degree.

5.2 Curriculum

The graduate program in forensic science shall offer a coherent curriculum that reflects the mission and goals of the program.

5.2.1 General Curricular Requirements - The curriculum shall, at a minimum, ensure that each student:

a) Develops an understanding of the areas of knowledge that are essential to forensic science;

b) Acquires skills and experience in the application of basic forensic science concepts and of specialty knowledge to problem solving;

c) Understands the importance of professional values and ethical standards as well as the potential consequences of bias and the relevance of human factors in the practice of forensic science; and

d) Demonstrates integration of knowledge and skills through a capstone experience as defined in standard 5.3.6.

5.2.2 The program shall define clear learning objectives for each discrete component of the curriculum.

5.2.3 The program shall have clear procedures for assessing and documenting each student's progress toward the fulfillment of these learning objectives and toward readiness for forensic science practice.

5.2.4 The program shall provide students with the basic knowledge necessary for effective testimony as an expert witness.

5.2.5 The program shall require that each student participate in practical experiences where they will provide expert testimony (e.g., moot court).

For forensic science programs with an emphasis in biology and/or chemistry, **standard 5.3** shall be followed. For forensic science programs with an emphasis in digital evidence, **standard 5.4** shall be followed.

5.3 Forensic Science Programs with an Emphasis in Biology and/or Chemistry:

5.3.1 The specific requirements within this curriculum shall include the following core forensic science topics:

a) Crime scene investigation
b) Law/science interface
c) Ethics and professional responsibilities
d) Quality assurance
e) Analytical chemistry and instrumental methods of analysis
f) Drug chemistry/toxicology
g) Microscopy and materials analysis
h) Forensic biology
i) Pattern evidence.

5.3.2 The emphasis on each topic should be appropriate in light of the degrees awarded. However, a minimum of nine instructional hours shall be spent on each topic.

5.3.3 Coverage of a topic listed in Section 5.3.1 shall involve multiple class meetings and may involve multiple learning modalities, such as lectures, laboratories, and demonstrations. Evaluation of student learning of each topic may be done through a number of modalities, but the topic material shall be specifically documented in relevant syllabi.

5.3.4 The curriculum shall include graduate-level science courses appropriate for specialization. For example, courses covering the topics of molecular biology and population genetics, advanced analytical chemistry, toxicology, and materials analysis may be appropriate. Specialized courses offered may be specific for a track(s) and/or concentration(s) offered by that institution, if applicable.

5.3.5 A formal graduate seminar, presented by a combination of invited experts, faculty, and/or students covering topics such as published work, original research, and other relevant topics shall be included within the curriculum of a required course.

5.3.6 Each student shall complete an independent research or capstone project.

a) The research/capstone project shall contribute to the knowledge base of forensic science and be focused on a forensically relevant topic, preferably of a nature to have practical, real-world impact on operational forensic laboratories.
b) The research/capstone project shall culminate in a thesis or written report of publishable quality.
    1) The program shall evaluate each written report against a rubric that describes the characteristics of a report of publishable quality that will be accepted.
    2) The academic program shall have written guidelines for the format of the thesis/report.
c) Each student shall have a committee of at least three individuals who are responsible for mentoring the project.

1) All three members of the student's research committee shall have forensic science experience.
2) One member of the student's research committee shall be a full-time forensic science faculty member of the program. The other two members can include full- or part-time faculty, forensic practitioners, and others with specialized knowledge.
3) At least one member of the committee shall be external to the department sponsoring the research.

d) Each student shall present the results of the work orally, in a public forum, before the committee. Presentations at professional meetings do not meet this requirement.
1) The academic program shall have a rubric for the evaluation of the oral presentation.

e) The research shall be conducted in an environment conducive to research and scholarly inquiry.

5.4 Forensic Science Programs with an Emphasis in Digital Evidence

5.4.1 The specific requirements for this curriculum shall include the following:
a) Crime scene investigation
b) Law/science evidence
c) Ethics and professional responsibilities
d) Quality assurance
e) Pattern evidence.

5.4.2 The emphasis on each topic should be appropriate in light of the degrees awarded. However, a minimum of nine instructional hours shall be spent on each topic.

5.4.3 Normally, a topic will involve multiple class meetings and may involve multiple learning modalities, such as lectures, laboratories, and demonstrations. Evaluation of student mastery of each topic may be conducted through a number of modalities, but the topic material shall be specifically addressed in a syllabus and assessed.

5.4.4 The curriculum shall include graduate-level courses appropriate to digital forensics and should contain the following concepts or topics:
a) Hardware forensics
b) Software forensics
c) Network forensics
d) Mobile device forensics.

In addition, specialized courses may be offered, if applicable, in topics to include embedded device forensics, incident response, reverse engineering, multimedia forensics, information security, and/or operational management.

5.4.5 An advanced digital forensics course that requires a graduate course as a prerequisite shall be completed.

5.4.6 A formal seminar, presented by a combination of invited experts, faculty, and/or students covering topics such as published work, original research, and other relevant topics shall be included within the curriculum as a required course.

5.4.7 Each student shall complete an independent research or capstone project. The purpose of the research/capstone project is to provide the opportunity for faculty and students to contribute to the knowledge base of forensic science, including research/capstone projects directed at improving the practice of forensic science. Thus, it should be focused on a forensically relevant topic, preferably of a nature to have a practical, real-world impact on operational forensic laboratories.

a) The research/capstone project shall culminate in a thesis or written report of publishable quality.
   1) The program shall evaluate the written report against a rubric that describes the characteristics of a report of publishable quality that will be accepted.
   2) The academic program shall have written guidelines for the format of the report and a rubric for the evaluation of the oral presentation.

b) Each student shall have a committee of at least three individuals who are responsible for mentoring the project.
   1) All three members of the student's research committee shall have forensic science experience.
   2) One member of the student's research committee shall be a full-time forensic science faculty member of the program. The other two members can include full- or part-time faculty, forensic practitioners, and others with specialized knowledge.
   3) At least one member of the committee shall be external to the department sponsoring the research.

c) Each student shall present the results of the work orally, in a public forum, before the committee. Presentations at professional meetings do not meet this requirement.
   1) The academic program shall have a rubric for the evaluation of the oral presentation.

5.5 Graduate Program Director

5.5.1 The program director shall be a full-time forensic faculty member at the academic institution.

5.5.2 The program director shall be appropriately qualified by academic experience, research qualifications, and background in program administration to meet the program's stated mission, goals, and objectives, and to provide leadership in forensic science education, research, and other scholarly activities so students are adequately prepared for forensic science practice.

5.5.3 The program director shall meet the following requirements:

a) A minimum of an earned doctorate degree in a field appropriate for at least one forensic concentration that is offered by the program;

b) At least five years full-time or equivalent relevant experience as an academic forensic scientist that includes appropriate educational, research, and service contributions to forensic science; OR at least five years full-time or equivalent relevant experience as a forensic science practitioner, not including any training time, in an operational forensic science laboratory setting;

c) Documented previous or current research experience in a forensic science discipline or in methods and techniques adapted, validated, and implemented by the forensic science community; and

d) Documented management experience appropriate to the duties assigned to the position.

5.6 Graduate Interim Program Director

5.6.1 At times, a program may find it necessary to appoint an interim program director while a search is being conducted for a full-time replacement or during a period of unavailability of the regular program director. In those circumstances, the interim program director shall meet the following requirements:

a) Be a full-time faculty member at the academic institution appropriately qualified by academic experience, research qualifications, and background in program administration to meet the program's stated mission, goals, and objectives, and to provide leadership in forensic science education, research, and other scholarly activities so students are adequately prepared for forensic science practice; and

b) A minimum of an earned master's or equivalent degree appropriate for a forensic discipline offered by the program.

5.6.2 The interim program director is not intended to be a long-term solution. Programs that are appointing an interim program director shall notify FEPAC through a Substantive Change form of the appointment, along with an estimate of the timeframe for a permanent solution.

5.6.3 A permanent program director shall be under contract within a period of one year from the date the program director position is officially vacated unless an explanation is submitted to FEPAC within this period showing good cause.