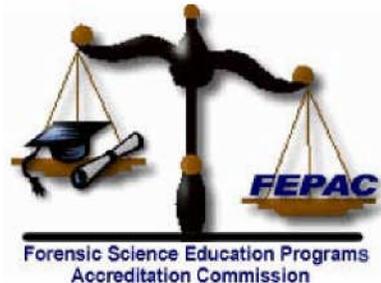


# American Academy of Forensic Sciences



1948

## Forensic Science Education Programs Accreditation Commission (FEPAC)



## ACCREDITATION STANDARDS

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# FORENSIC SCIENCE EDUCATION PROGRAMS ACCREDITATION COMMISSION

## ACCREDITATION STANDARDS

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# FORENSIC SCIENCE EDUCATION PROGRAMS ACCREDITATION COMMISSION

## ACCREDITATION STANDARDS

### 1.0 INTRODUCTION

#### 1.1 Mission

The mission of the Forensic Science Education Programs Accreditation Commission (FEPAC) is to maintain and enhance the quality 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:

- To use the National Institute of Justice Technical Working Group for Education and Training in Forensic Science (TWGED) 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;
- To develop and to implement a set of well-defined procedures for evaluating forensic science programs against those standards; and,
- 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:

- National standards for education in forensic sciences,
- An independent, community-wide, consensus-building, standard-setting body such as a technical working group for education in forensic sciences, and,
- 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.

## **1.4 Scope of Accreditation**

- FEPAC accredits forensic science education programs that lead to a bachelor's or master's degree in forensic science or in a natural science with a forensic science concentration.
- An eligible forensic science program must be located in a regionally accredited institution of higher education.
- Only programs in the United States are eligible for accreditation.

FEPAC promotes academic quality through formal accreditation of forensic science programs in the United States. 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 assure and advance academic quality at accredited institutions.

To ensure the accreditation requirements are valid and 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.

## **2.0 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.

## **3.0 GENERAL STANDARDS FOR ALL PROGRAMS**

### **3.1 Eligibility**

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

1. The institution offering the program is regionally accredited, and,
2. The degree awarded upon successful completion of the program is at least a bachelor's degree in either forensic science or a natural science with a concentration in forensic science at the location seeking accreditation.
3. A program seeking FEPAC accreditation shall have graduated at least two classes before the Application for Accreditation (FEPAC Form 5.1) is submitted.

### **3.2 Planning and Evaluation**

The program shall have an explicit process for evaluating and monitoring its overall efforts to fulfill its mission, goals, and objectives; for assessing its effectiveness in serving its various constituencies; for modifying the curriculum as necessary, based on the results of its evaluation activities; and for planning to achieve its mission in the future. Toward this end, the program shall conduct at regular intervals an analytical self-evaluation that responds to the FEPAC standards and includes a summary statement both of the program's strengths and weaknesses with regard to each standard and of the program's performance with respect to student achievement. The program evaluation system shall **include at least** the following elements:

1. An analysis of the results of the student's performance in a capstone experience; e.g., an evaluation of forensic science standardized test results, publications and/or reports,
2. Exit questionnaire and interview of graduates,
3. Job placement statistics, and,
4. Employer satisfaction surveys.

### **3.3 Institutional Support**

The program shall receive adequate support from the institution. As with other natural science programs, the financial resources available to the program shall be sufficient to allow the program to achieve its mission, goals, and objectives. Classrooms, laboratories, and other program facilities, including equipment and supplies, shall be adequate for the size and scope of the program. Instructional and support services for the program shall also be adequate.

### **3.4 Student Support Services**

The program shall provide adequate student support services including mentoring, academic advising, and career and placement services. The program shall also provide an environment and culture that are congruent with professional standards and behaviors.

### **3.5 Recruiting and Admissions Practices, Academic Calendars, Catalogs, Publications, Grading, and Advertising**

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. 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. All statements made about the program in any promotional advertising, catalogs, or other institutional publications shall be accurate. In addition, the student shall be advised 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).

If pursuing a career as a forensic DNA analyst, nine cumulative hours of course work in biochemistry, molecular biology, and genetics is required; course work in population genetics is desirable. Employers

will require documentation, such as a syllabus, for course work with other titles (Reference: FBI Quality Assurance Standards for Forensic DNA Testing Laboratories).

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.

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.

### **3.6 Record of Student Complaints**

The program shall have a procedure for handling student complaints. At a minimum, this procedure 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.

The program shall maintain a record of all complaints it receives, as well as the resolution of those complaints. The program shall make this record available to members of the on-site evaluation team during the on-site visit.

### **3.7 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 and expects all programs to meet the same standards for accreditation, regardless of the instructional methodology used.

FEPAC acknowledges that laboratory-based instruction is integral to any science-based discipline such as forensic science. Therefore, any program that offers at least some instruction via distance learning shall demonstrate that it includes an appropriate laboratory experience for all students.

## **4.0 UNDERGRADUATE PROGRAM STANDARDS**

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. 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 Mission, Goals, and Objectives**

The undergraduate forensic science program shall have a clearly formulated mission with well-defined supporting goals and educational objectives. The mission shall be appropriate to the institution and consistent with the goals and objectives of the forensic science community to produce a technically skilled and educated workforce. The goals and objectives shall be clearly specified, consistent with the mission, and appropriate in light of the degree(s) awarded.

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.

## **4.2 Undergraduate Admission Requirements**

At a minimum, a high school diploma or GED shall be required for admission into a forensic science undergraduate program. Additionally, a program shall be in place to assist and advise entering students to ensure that they have the requisite background in science and mathematics for success in the degree.

## **4.3 Curriculum**

No course may be used to satisfy more than one of the standards.

### **4.3.1 General Curricular Requirements**

The undergraduate program in forensic science shall offer a coherent curriculum that reflects the mission and goals of the program and provides the student with the appropriate skills requisite for the bachelor's degree.

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

1. obtain a thorough grounding in the natural sciences;
2. build upon this background by taking a series of more advanced science classes; and,
3. develop an appreciation of issues specific to forensic science through course work and laboratory-based instruction.

The program shall have clear procedures for assessing and documenting each student's progress toward fulfillment of these objectives.

### **4.3.2 Specific Curricular Requirements**

The specific curricular requirements that follow are based on the fact that most forensic scientists work in areas such as drug analysis, trace analysis, firearms and toolmarks, and forensic biology. Students seeking to work in alternative areas of forensic science, such as computer analysis, latent print recovery and comparison, or crime scene reconstruction, will require other curricula or further training.

Because certain forensic science disciplines require more rigorous coursework than the minimum described below, in particular, more biology and chemistry, the program shall ensure that its curriculum is adequate to prepare students for specialization in sub disciplines of forensic science such as forensic biology, forensic chemistry, toxicology, or pattern evidence examination

The curriculum shall include the following minimum components:

#### **4.3.2.1 Natural Science Core Courses**

Biology: at least one course, which includes an associated laboratory, in biology for science majors (4 semester hours).

Physics: at least two courses, each of which includes an associated laboratory, in physics for science majors (8 semester hours). Note: Calculus-based physics is preferred but not required.

Chemistry: at least four courses, each of which includes an associated laboratory. Two of the courses shall be in general chemistry for science majors (8 semester hours), and two shall be in organic chemistry for science majors (8 semester hours).

Mathematics: at least one course in differential and integral calculus (3 semester hours) and at least one course in statistics (3 semester hours).

#### **4.3.2.2 Specialized Science Courses**

A minimum of 12 additional semester hours in more advanced coursework in chemistry or biology. Note: These classes shall be consistent with the degree program and shall meet the needs of students specializing in sub disciplines of forensic science. At least two of the classes shall include laboratory training.

*Specialized science courses from any of the following (minimum 12 credit hours; includes minimum of 2 laboratory courses):*

- Biochemistry
- Molecular biology
- Genetics
- Population genetics
- Inorganic chemistry
- Analytical/quantitative chemistry
- Physical chemistry
- Instrumental analysis
- Cell biology
- Pharmacology
- Calculus II
- Microbiology

For programs offering a track in forensic biology/DNA, the curriculum must satisfy the minimum educational requirements for an analyst as specified in the FBI Quality Assurance Standards for Forensic DNA Testing Laboratories. Required courses must cover the subject areas of biochemistry, genetics, and molecular biology. Those subject areas must be an integral part of the courses, cover the underlying scientific principles, and total a minimum of nine cumulative semester hours (or equivalent). Course work with titles other than biochemistry, genetics, and molecular biology shall demonstrate compliance with this standard through the course *syllabi* or other documentation. In addition, course work in population genetics is desirable.

#### **4.3.2.3 Forensic Science Courses**

A minimum of 15 semester hours in forensic science coursework that covers the following topics: courtroom testimony; introduction to law; quality assurance; ethics, professional practice, background; evidence identification, collection, processing; and a survey of forensic science.

Of these 15 hours, 9 semester hours shall involve classes in forensic chemistry, forensic biology, physical methods, or microscopy and contain a laboratory component. Forensic science internships or independent study/research may be used to fulfill up to 6 hours of this requirement.

#### **4.3.2.4 Additional Courses**

A minimum of 19 additional semester hours of advanced (upper level) courses that provide greater depth in the student's area of specialization beyond an introductory level in the program are required. Students can use these additional courses to begin to specialize along a forensic science discipline track-

#### **4.4 Program Director**

The program director shall be a full-time employee of the academic institution, appropriately qualified, and provide leadership in forensic science education, research, and scholarly activities so that students are adequately prepared for forensic science practice.

#### **4.5 Faculty**

The faculty shall be able to support fully the program's mission, goals, and objectives. Specifically, faculty members and other instructional personnel shall be appropriately qualified, by education and experience, and adequate in number to implement the instructional program. In addition, the number of faculty members shall be sufficient to ensure the offering, on a regular basis, of the full range of courses needed for the degree program.

At least 50 percent of the full-time science faculty teaching in the undergraduate forensic science program shall have an appropriate doctoral degree; faculty members with working experience in a forensic science laboratory are preferred. The scientific and educational capabilities of the faculty should be distributed over the major areas of the program.

Full-time faculty members shall oversee all coursework and ensure its applicability to the program's mission, goals, and objectives.

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.

#### **4.6 Success with Respect to Student Achievement**

The program shall demonstrate that its graduates have a basic foundation in the scientific and laboratory problem-solving skills necessary for success in a modern crime laboratory. The program may do this through the use of a formal, objective tool, such as the ABC-Affiliate pre-certification process, or through other appropriate pre-graduation assessment measurements.

The program shall also document its record of student performance, as measured by degree completion rates, job placement rates, employer satisfaction, and any additional outcome measures the program may use to assess student progress and achievement. These records shall be maintained for at least five years after student graduation.

## **4.7 Professional Involvement**

The program shall 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. The purpose of this involvement is to provide opportunities for faculty and students to contribute to the advancement of the field of forensic science, and to maintain program currency and credibility with practitioners and forensic science laboratory administrators.

**4.7.1** The program shall demonstrate formal, regular interaction with at least one operational forensic science laboratory.

**4.7.2** The program shall demonstrate formal, regular interaction with at least one professional forensic science organization.

## **5.0 Graduate Program Standards**

A graduate forensic science program shall provide advanced education in the scientific and laboratory problem-solving skills necessary for success in a modern forensic laboratory. 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.

### **5.1 Mission, Goals, and Objectives**

The graduate forensic science program shall have a clearly formulated mission with well-defined supporting goals and educational objectives. The mission shall be appropriate to the institution and shall include teaching and learning, research, and service. The goals and educational objectives of the program shall be clearly specified, consistent with the mission, and appropriate in light of the degree(s) awarded.

### **5.2 Graduate Admission Requirements**

A bachelor's degree in a forensic or natural science (or its equivalent coursework in a relevant field) shall be required for entrance into a graduate forensic science program.

### **5.3 Curriculum**

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

#### **5.3.1 General Curricular Requirements**

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

1. develop an understanding of the areas of knowledge that are essential to forensic science;
2. acquire skills and experience in the application of basic forensic science concepts and of specialty knowledge to problem solving;
3. be oriented in professional values, concepts and ethics; and,
4. demonstrate integration of knowledge and skills through a capstone experience, such as a formal, objective tool, (e.g., the American Board of Criminalistics Forensic Science Aptitude Test), or other comprehensive examination, thesis, and/or research projects.

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

The program shall provide students with opportunities to practice in testimonial experiences, e.g., mock trials and moot court.

### **5.3.2 Specific Topic Requirements within the Curriculum**

The curriculum shall include the topics described in standards 5.3.2.1, 5.3.2.2, 5.3.2.3, and 5.3.2.4.

#### **5.3.2.1 Core Forensic Science Topics**

The follow topics must be part of the curriculum:

- Crime scene investigation
- Physical evidence concepts
- Law/science interface
- Ethics and professional responsibilities
- Quality assurance
- Analytical chemistry and instrumental methods of analysis
- Drug chemistry/toxicology
- Microscopy and materials analysis
- Forensic biology
- Pattern evidence

#### **5.3.2.2 Courses in Specialized Areas**

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

For a program offering a track in forensic biology/DNA, the program must ensure that graduates satisfy the minimum educational requirements for a technical leader as specified in the FBI Quality Assurance Standards for Forensic DNA Testing Laboratories. Graduates must have successfully completed required courses covering the subject areas of biochemistry, genetics, molecular biology, and statistics or population genetics; those subject areas must be an integral part of the courses, cover the underlying scientific principles, and total a minimum of 12 semester hours (or equivalent). The 12 semester hours may be from a combination of undergraduate and graduate course work; at least 3 semester hours must be at the graduate level. Course work with titles other than biochemistry, genetics, molecular biology, and statistics or population genetics shall demonstrate compliance with this standard through the course syllabi or other documentation.

#### **5.3.2.3 Graduate Seminar**

A seminar presented by experts and students on original research and other relevant topics must be offered.

#### **5.3.2.4 Research**

Each student is required to complete an independent research project. The research project shall culminate in a thesis, or written report. In addition, the results of the work shall be presented orally in a public forum for evaluation.

The research shall be conducted in an environment conducive to research and scholarly inquiry, and shall provide the opportunity for faculty and students to contribute to the knowledge base of forensic science, including research directed at improving the practice of forensic science.

#### **5.4 Program Director**

The program director shall be a full-time employee of the academic institution, appropriately qualified, and provide leadership in forensic science education, research and scholarly activities so that students are adequately prepared for professional forensic science practice.

#### **5.5 Faculty**

The faculty shall be able to fully support the program's mission, goals, and objectives. Specifically, faculty members and other instructional personnel shall be appropriately qualified, by education and experience, and adequate in number to implement the instructional program. In addition, the number of faculty members shall be sufficient to ensure the offering, on a regular basis, of the full range of courses needed for the degree program.

All full-time science faculty teaching forensic science courses in the forensic science program must have at least a Master's degree; at least 50% of the full-time faculty teaching forensic science courses in the forensic science program must have an appropriate doctoral degree. The scientific and educational capabilities of the faculty should be distributed over the major areas of the program.

Full-time faculty members shall oversee all coursework and ensure its applicability to the program's mission, goals, and objectives.

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.

#### **5.6 Success with Respect to Student Achievement**

The program shall demonstrate that its graduates have an advanced education in the scientific and laboratory problem solving skills necessary for success in a modern crime laboratory. The program may do this through the use of a formal, objective tool, such as the ABC-Affiliate pre-certification process, or other appropriate pre-graduation assessment measurements.

The program shall also document its record of student performance, as measured by degree completion rates, job placement rates, employer satisfaction, and any additional outcome measures the program may use to assess student progress and achievement. These records shall be maintained for at least five years after student graduation.

## **5.7 Professional Involvement**

The program shall 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. The purpose of this involvement is to provide opportunities for faculty and students to contribute to the advancement of the field of forensic science, and to maintain program currency and credibility with practitioners and forensic science laboratory administrators.

**5.7.1** The program shall demonstrate formal, regular interaction with at least one operational forensic science laboratory.

**5.7.2** The program shall demonstrate formal, regular interaction with at least one professional forensic science organization.