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# Forensic Sciences

~ 320 forensic labs in the U.S. and Canada

~ 6000 members of the American Academy of Forensic Sciences (AAFS) - Criminalistics (~ 40 %)

9 Associate Degree Programs

11 Certificate Programs

110 Baccalaureate (BA or BS)

51 Masters Degree Programs

4 Doctoral Programs

**185 Programs**

# Surveys

**Higgins, K.M. and Selavka, C.M. Do forensic science graduate programs fulfill the needs of the forensic science community? J Forensic Sci 1988;33:1015-21.**

**Siegel, J.A. The appropriate educational background for entry-level forensic scientists: a survey of practitioners. J Forensic Sci 1988;33:1065-68.**

**Furton, K.G., Hsu, Y.L. and Cole, M.D. What educational background is required by crime laboratory directors?, J. Forensic Sci. 1999; 44:128-132.**

**Almirall, J.R. and Furton, K.G., Trends in forensic science education: expansion and increased accountability, *J. of Analytical and Bioanalytical Chemistry*, 2003, 376: 1156-1159.**



Results of a **1986** survey to the membership of the American Society of Crime Laboratory Directors (ASCLD) showed the educational background most preferred for a career in forensic science would consist of a B.S. degree which has a major chemistry component and a M.S. in Forensic Science. Additional comments also suggested the need for a strong background in chemistry and a general disdain for the B.S. in Forensic Science as the terminal degree unless it has a strong hard science component (Siegel, J.A. The appropriate educational background for entry level forensic scientists: a survey of practitioners. J. Forensic Sci 1988; 33:1065-68).

Results of a **1996** survey indicate that the majority of crime lab directors responding require applicants to have B.S. degrees with a preference for chemistry/biochemistry, followed by biology and forensic science with a requirement for a substantial number of chemistry and other natural science courses (Furton, K.G., Hsu, Y.L. and Cole, M.D. What educational background is required by crime laboratory directors?, J. Forensic Sci. 1999;44:128-132).

The summary of the degree **required** for all positions combined was:

27% BA, 63% B.S., 2% M.S. and 1% Ph.D. **(1996)**

7% BA, 56% B.S., 33% M.S. and 4% Ph.D. **(2003)**

The degree specialty **required** was 41%

Chemistry (including Biochemistry), 24%

Biology (including Genetics and Molecular Biology), 22% Forensic Science, 7% Medical Laboratory Science, 3% Other, 2% Physics and 1% Criminal Justice. (1996)





# 2003 MEMBERSHIP DIRECTORY

Issued: September 2002

1999 NIJ sponsored *Review of Status and Needs* identified education standards

American Society of Crime Laboratory  
Directors advocated education standards  
within ASCLD

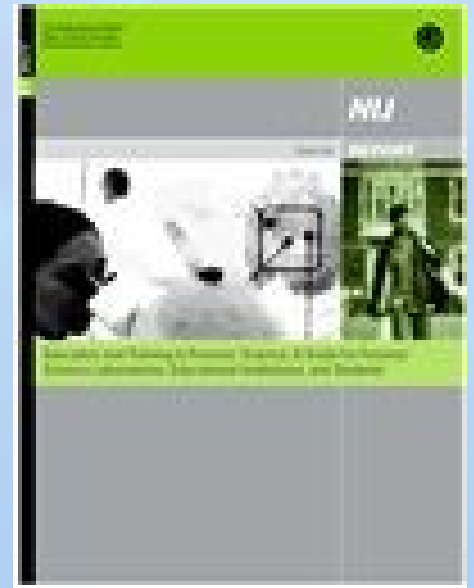
Formation of TWGED by NIJ (2001)

American Academy of Forensic Scientists  
(AAFS) created Forensic Science  
Education Programs Accreditation  
Committee (FEPAC)



# TWGED - the beginning

***“Raising the Standards for Forensic Science Education through Accreditation”***



## Mission Statement:

***The mission of the FEPAC is to maintain and enhance the quality of forensic science education through a formal evaluation and recognition of college level academic programs. The primary function of the commission is to develop and maintain standards and administer an accreditation program that recognizes and distinguishes high quality undergraduate and graduate forensic science programs.***



# **Forensic Science Education Programs Accreditation Commission**

**American Academy of Forensic Sciences (AAFS) established (ad-hoc) committee in 2001 (became a standing committee in 2004)**

**Composed of 5 lab directors, 5 forensic science educators and a public member. The commission also includes a staff member and advisors.**

**Has met 2-3 times a year since Feb. 2002**

**Funded by a grant from the NIJ and through the AAFS (dues)**

**Aims – 1) to adopt the TWGED guidelines and construct an accreditation mechanism for forensic science education programs at the undergraduate and graduate levels and 2) implement an accreditation program.**

**Liaison appointments from FEPAC to the Council of Forensic Science Educators (COFSE), the American Board of Criminalistics (ABC) , and ASCLD have been established.**

**The FEPAC standards (based on TWGED) and policies and procedures manuals were completed and adopted by the commission during the May 2003 meeting and approved by the AAFS Board of Directors during their semi-annual BOD meeting in Dallas on August 9, 2003.**

**The commission received a grant from the NIJ to fund the commission activities, including a budget to train on-site inspectors on the standards and the accreditation process and to cover part of the administrative costs of the accreditation program. The award period was from Oct. 1 2003 to Sept. 30, 2005.**

● *Designed to give a student an understanding of the application of scientific analysis to the legal system (minimum 9 credit hours)*

- Forensic Chemistry **and** lab (3)
- Forensic Biology **and** lab (3)
- Physical methods in forensic science **and** lab (3)
- Internship (up to 6) or Independent study/research (up to 6)
- Microscopy **and** lab (3)



● *The following topics must be included within the forensic science curriculum:*

- Courtroom testimony
- Introduction to law/criminal justice system.
- Quality assurance
- Ethics/professional practice/background
- Evidence identification, collection and processing
- Forensic science specialty overview (survey course)

# University General Education and Science Core

|                          | Biology                           | Chemistry/Trace<br>/ Controlled<br>Substances | Toxicology                              | Firearms/QD/Prints    |
|--------------------------|-----------------------------------|---|---|-----------------------|
| <b>General Science</b>   | Biochemistry <sup>†</sup>         | Analytical Chemistry<br>Quantitative          | Analytical<br>Chemistry<br>Quantitative | Inorganic Chemistry   |
| <b>Electives(12 hrs)</b> | Genetics <sup>†</sup>             | Inorganic Chemistry                           | Biochemistry                            | Instrumental Analysis |
|                          | Instrumental<br>Analysis          | Instrumental<br>Analysis                      | Instrumental<br>Analysis                | Optics/Lasers         |
|                          | Immunology                        | Physical Chemistry                            | Physical<br>Chemistry                   | Physical Chemistry    |
|                          | Molecular<br>Biology <sup>†</sup> |   |   |                       |

|  |                                  |                                  |                                  |                                  |
|--|----------------------------------|----------------------------------|----------------------------------|----------------------------------|
| <b>Forensic Science</b><br><br><b>Core (6 hrs)</b> | Forensic Science Survey          | Forensic Science Survey          | Forensic Science Survey          | Forensic Science Survey          |
|  | Forensic Professional Practice   | Forensic Professional Practice   | Forensic Professional Practice   | Forensic Professional Practice   |
| <b>Forensic Laboratory Science (9 hrs)</b>         | Forensic Biology                 | Forensic Chemistry               | Forensic Chemistry               | Internship                       |
|  | Internship                       | Internship                       | Internship                       | Microscopy                       |
|  | Microscopy                       | Microscopy                       | Microscopy                       | Physical Methods                 |
|  | Physical Methods                 | Physical Methods                 | Physical Methods                 |                                  |
| <b>Electives</b><br><br><b>(19 hrs)</b>            | Cell Biology                     | Advanced Instrumental Analysis   | Advanced Instrumental Analysis   | Crime Scene                      |
|  | Introduction to Criminal Justice | Drugs                            | Drugs                            | Image Analysis                   |
|  | Legal Evidence                   | Introduction to Criminal Justice | Introduction to Criminal Justice | Introduction to Criminal Justice |
|  | Microbiology                     | Legal Evidence                   | Legal Evidence                   | Legal Evidence                   |
|  | Population Genetics              | Analytical Toxicology            | Analytical Toxicology            | Materials Science                |
|  | Immunology                       | Materials Science                | Pharmacology                     | Public Speaking                  |
|  | Public Speaking                  | Pharmacology                     | Public Speaking                  |                                  |
|  |                                  | Public Speaking                  |                                  |                                  |
|  |                                  |                                  |                                  |                                  |
|  |                                  |                                  |                                  |                                  |



- **Programs vary, precludes standard structure**
- **Curriculum includes:** Crime scene investigation, physical evidence concepts, law/science interface, ethics and professional responsibilities, quality assurance
  - Specific courses covering the following areas:
    - Analytical chemistry and instrumental methods of analysis
    - Drug chemistry/toxicology
    - Microscopy and materials analysis
    - Forensic biology
    - Pattern evidence
- **Research component**
  - Emphasize methods and statistics
  - Public presentation

**(Research is central to graduate education)**

**Knowledge, experience and talent in operational labs are an important resource to graduate programs and students.**

**In the past 12 months of JFS, ~ 15 papers on trace evidence (out of ~ 260 papers)**

***Analytical Chemistry* Review of Forensic Science publications (Jan. 2005-Dec. 2006), there were 70 trace papers out of 560 papers.**

- Admission Requirements
- Curriculum
- Program Director
- Faculty
- Success with Respect to Student Achievement
- Professional Involvement



To date, 14 academic institutions in the U.S. have completed the accreditation process successfully.

Ten undergraduate programs (BS) and six graduate programs (MS) have been accredited by the FEPAC of the AAFS.

**Albany State University**, Albany, GA: Full Accreditation (five-year term) for the Bachelor of Science Degree in Forensic Science (01/2007 - 01/2012).

**Arcadia University**, Glenside, PA: Full Accreditation (five-year term) for the Master of Science Degree in Forensic Science (01/2007 – 01/1012).

**Cedar Crest College**, Allentown, PA: Full Accreditation (five-year term) for the Bachelor of Science Degree in Chemistry, Biochemistry, Biology, and Genetic Engineering with a concentration in Forensic Science (01/2005 - 01/2010).

**Eastern Kentucky University**, Richmond, KY: Full Accreditation (five-year term) for the Bachelor of Science Degree Program in Forensic Science (01/2005 - 01/2010).

**Florida International University**, Miami, FL: Full Accreditation (five-year term) for the Certificate Programs in conjunction with the Bachelor of Science Degree in a natural science such as chemistry or biology (01/2004 - 01/2009).

**Florida International University**, Miami, FL: Full Accreditation (five-year term) for the Master of Science in Forensic Science (01/2004 – 01/2009).

**Marshall University**, Huntington, WV: Full Accreditation (five-year term) for the Master of Science Degree in Forensic Science (01/2005 - 01/2010).

**Metropolitan State College of Denver**, Denver, CO: Full Accreditation (five-year term) for the Bachelor of Science Degree Program in Chemistry with a concentration in Criminalistics (01/2004 - 01/2009).

**Michigan State University**, East Lansing, MI: Full Accreditation (five-year term) for the Master of Science Degree Program (biology and chemistry tracks) (01/2004 - 01/2009).

**University of Mississippi**, University, MS: Full Accreditation (five-year term) for the Bachelor of Science Degree in Forensic Chemistry (01/2007 - 01/2012).

**Ohio University**, Athens, OH: Full Accreditation (five-year term) for the Bachelor of Science in Forensic Chemistry Program (01/2007 - 01/2012).

**University at Albany (SUNY at Albany)**, Albany, NY: ***Conditional Accreditation*** (one year) for the Master of Science Degree in Forensic Biology (01/2007 - 01/2008).

**Virginia Commonwealth University**, (Richmond, VA): Full Accreditation (five-year term) for the Bachelor of Science Degree in Forensic Science (01/2007 - 01/2012)

**Virginia Commonwealth University**, Richmond, VA: Full Accreditation (five-year term) for the Master of Science in Forensic Science Program (01/2006 - 01/2011).

**West Chester University**, West Chester, PA: Full Accreditation (five-year term) for the Bachelor of Science Degree in Forensic and Toxicological Chemistry (01/2007 – 01/2012).

**West Virginia University**, Morgantown, WV: Full Accreditation (five year term) for the Bachelor of Science - Forensic and Investigative Science Program (01/2005 - 01/2010).



**Trend is to require advanced degrees for more positions in forensic labs**

**Research is central to graduate programs, including publication of results**

**Academic programs are moving to fill the needs of the profession at the undergraduate and graduate levels**

**Natural partnership between educational programs and the existing human resources at the operational labs, especially in trace**

**Go to: [aafs.org](http://aafs.org) to find out more information  
about the FEPAC**

**Acknowledgement goes to: NIJ, AAFS,  
COFSE, ASCLD, ABC, FSF**

**Past presidents and Boards of AAFS**

**Volunteer commissioners who decide on  
applications and reviewers that conduct  
the on-site reviews**

**Participating academic institutions**