

**PROGRAM REVIEW**  
**Fairmont State Board of Governors**

Program with Special Accreditation    Program without Special Accreditation

Date Submitted 3/1/18

Program BS in Forensics (Forensic Science)  
Degree and Title

**INSTITUTIONAL RECOMMENDATION**

The institution is obligated to recommend continuance or discontinuance of a program and to provide a brief rationale for its recommendation:

- \_\_\_\_ 1. Continuation of the program at the current level of activity;
- \_\_\_\_ 2. Continuation of program with corrective action (for example, reducing the range of optional tracks or merging programs);
- \_\_\_\_ 3. Identification of the program for further development (for example, providing additional institutional commitment);
- \_\_\_\_ 4. Development of a cooperative program with another institution, or sharing courses, facilities, faculty, and the like;
- \_\_\_\_ 5. Discontinuation of the Program

**Rationale for Recommendation:**

\_\_\_\_\_  
Signature of person preparing report:

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature of Dean

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature of Provost and Vice President for Academic Affairs:

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature of President:

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature of Chair, Board of Governors:

\_\_\_\_\_  
Date

# Executive Summary for Program Review

(not to be more than 2-3 pages)

## **Name and degree level of program**

BS in Forensics (Forensic Science)

## **External reviewer(s)**

Barbara Flowers, instructor of forensics, Seton Hill University

Barbara is also a member of our Forensics Advisory Board

## **Synopses of significant findings, including findings of external reviewer(s)**

Student success in the BS in Forensic Science can be observed by a full time employment rate of 93% in jobs related to science. The Forensic Science program was also recognized in January 2018 as the 11<sup>th</sup> best BS in Forensic Science program in the USA by College Choice (<https://www.collegechoice.net/rankings/best-forensic-science-degrees/>). The Forensic Science program still needs to improve retention and graduate rates, and will do this by offering more peer mentoring opportunities. The program needs to continue to improve the internship possibilities available to the students. The program has strengthened the contacts with the WV State Police Forensic Laboratory (including the Intro to Forensic Science students getting behind-the-scenes tours), and members of the advisory board helping with mock interviews and teaching specific content they are strong in, thus allowing students greater access to working Forensic Scientists.

## **Plans for program improvement, including timeline**

The program met with the Advisory Board in the spring of 2017, and evaluated the assessment plan that included the use of a new forensic-specific assessment exam. The Forensic Science Program is expecting to seek accreditation again within the next 2 years, once the new assessment plans are fully operational.

We need to work in the coming five years to strengthen our infrastructure by our collaboration with the chemistry program and develop a new FACT (Forensic and Analytical Chemistry Technology) center. Our forensic and chemistry programs are committed to develop a Fast Track to Research model for our top students in order for them to get more hands-on, open ended investigative approaches to science. We will continue to write and receive grants to replace and update instrumentation, and ensure continued access to forensics-specified journals. We also plan to continue work on recruitment and retention of qualified students as forensics majors. One goal is to work towards having students choose an actual major when they enter the institution (as opposed to being listed as pre-medical, for example, for most of the time they spend at the institution.) Recruitment and retention are also top priorities, and we will continue working closely with the STEM coordinator, our peer mentors, and first generation student success programs.

## **Identification of weaknesses or deficiencies from the previous review and the status of improvements implemented or accomplished**

A minimal assessment plan was in effect as of the last program review, and now a stronger assessment plan is in effect. The newly added FSAT (Forensic Science Aptitude Test)

standardized exam will allow the program to collect more relevant data on graduates to show the program how it is performing. The internship program continues to be strengthened with more relevant science related experiences being available for our majors.

#### **Five-year trend data on graduates and majors enrolled**

The number of graduates during the 2008-2012 evaluation period was 7, while the number of graduates during the 2012-2017 evaluation period was 15 (a 114% increase in graduation rate). The number of majors enrolled in Forensic Science courses has increased during this evaluation period as well. Forensic Science majors during the fall and spring semesters of the academic years of 2012 – 2017 averaged 30.9, while the average during the 2008-2012 evaluation period was 26.7, so this represents a 15.7% increase in forensics majors. Total course enrollments in forensics course went from 70 in the 2008-12 period to 121 during the current 2012-17 period, which shows an increase of 72.9%.

#### **Summary of assessment model and how results are used for program improvement**

Student placement into graduate/professional school or in jobs related to their field is a key component to our assessment plan. Our data collected to date shows that students use their degrees in their work environment. The Forensic Science program used the Educational Testing Services (ETS) major field exams to assess the content knowledge for Biology, Chemistry and Criminal Justice disciplines. However, during the last 2 academic years the Forensic Science program has initiated the use of the FSAT (Forensic Science Aptitude Test), where our program is compared to other undergraduate institutions based on specific forensics content knowledge. Our undergraduate program appears to be improving as we went from ranking 8<sup>th</sup> out of 11 schools in 2016 to 4<sup>th</sup> out of 13 institutions in 2017. Our program has made some minor revisions recently to add more ethics to our forensic biology and senior seminar to address our ranking on this exam, and we went from last place in 2016 to first place in 2017. Our Advisory Board continues to advise us to make sure that students can communicate effectively if they want to succeed in the future.

#### **Data on student placement (for example, number of students employed in positions related to the field of study or pursuing advanced degrees)**

Recent data collected by the Forensic Science program (Table 4 in the main body of the report) shows that 93% of our graduates have employment or placement in professional school where they use their science backgrounds. Only one of our recent graduates is not currently employed full time.

#### **Final recommendations approved by governing board**

# PROGRAM REVIEW

FAIRMONT STATE UNIVERSITY OR PIERPONT COMMUNITY AND TECHNICAL COLLEGE	
Program:	Forensic Science
School:	College of Science and Technology
Date:	

## Program Catalog Description:

The Forensics degree consists of a Forensic Science major that includes biology, chemistry, mathematics, physics and interdisciplinary courses, and prepares students for graduate school and/or employment in scientific laboratories. In addition, an emphasis in biotechnology is available. Candidates for the degree must complete the General Studies requirements as described in the Degree Requirements chapter of this catalog. Students completing the requirements for the Forensic Science major will automatically earn a minor in chemistry.

For forensic science majors, the required science courses satisfy the General Studies scientific discovery requirement and the required math course satisfies the General Studies math requirement. Students interested in graduate school will need to complete additional upper-level science courses. ACT prerequisites for required science and math courses are listed in the catalog under the course description for each course. Students entering with an ACT science reasoning score of 21 or better, ACT Math score of 24 or higher, two units of high school algebra, one unit of high school geometry and one unit of high school trigonometry will be prepared for all courses. Students not meeting this list of prerequisites will need to take specific additional courses and should consult with the forensic science advisor immediately.

## NOTES ABOUT THE PROGRAM DESCRIPTION AND CHANGES THAT HAVE BEEN MADE DURING THIS REVIEW PERIOD

Graduate assessment data was first collected in 2006 and based on the assessment data and feedback provided by our Advisory Board and accreditation site visitors, the Forensic Science Program went through curriculum changes during the 2012-2017 evaluation period. Among significant changes that were made included 1) dropping the Interdisciplinary prefix from the Forensic Science specific courses (and creating a new FORS prefix) and 2) offering 6 forensics specific courses for our majors with the new FORS prefix: FORS 2201 - Introduction to Forensic Science, FORS 3201 – Forensic Biology, FORS 2225 - Microscopy and Spectroscopy, FORS 3385 – Research in Forensic Science, FORS 4411 - Forensic Science Internship, and FORS 4401 - Forensic Science Capstone Seminar. The number of Criminal Justice offerings decreased within the Forensic Science degree, with more science electives being offered in their place.

## VIABILITY (§ 4.1.3.1)

### Enrollments

#### Applicants, graduates

There are no specific program requirements for students to declare a major in Forensic Science. Any student admitted to the university can declare a major in Forensic Science. Enrollment in the first year biology course requires an ACT science reasoning score of 21 or better (or equivalent), first year chemistry course requires an ACT math score of 20 or better (or equivalent), and calculus requires an ACT math score of 25 or better (or equivalent). Students who do not meet this requirement can still declare their major as Forensic Science but need to complete remedial courses before beginning the curriculum.

Forensic Science majors during the fall and spring semesters of the academic years of 2012 – 2017 averaged 30.9, with a standard deviation of 4.6. The average during the 2008-2012 evaluation period was 26.7, so this represents a 15.7% increase in forensics majors. The minimum number (20) occurred in spring 2014 and the maximum in the falls of 2013 and 2015 (34) (Refer to Table 1 below).

Since 2012, there is an average of 3 Forensic Science graduates per year (Refer to Table 2). The low number of graduates is unknown, but possible reasons are discussed in the Graduation/Retention section. In addition to the data in Table 2, the Forensic Science program anticipates having 3 graduates during the spring of 2018.

Primary Major	Term	Total
Forensics	Fall Semester 2012	32
	Spring Semester 2013	30
	Fall Semester 2013	34
	Spring Semester 2014	20
	Fall Semester 2014	37
	Spring Semester 2015	33
	Fall Semester 2015	34
	Spring Semester 2016	28
	Fall Semester 2016	31
	Spring Semester 2017	30

Table 2 Forensics Graduates	
Academic Year	Forensics
2007-08	1
2008-09	3
2009-10	1
2010-11	1
2011-12	1
Total	7
2012-13	4
2013-14	1
2014-15	4
2015-16	4
2016-17	2
Grand Total	15

We have compiled a list of all recent graduates and their current employment or continuing education status (Refer to Table 3 below). The Forensic Science program and Fairmont State University has no formal mechanism for tracking graduates so the information in this table is obtained from faculty contacts that exist with former students. A summary of what recent graduates are doing is given below in Table 4. The large majority (93%) of our graduates are currently are employed in a science related field or have been accepted into professional school (pharmacy).

Table 3. Recent Forensic Science Program Graduates		
Student name	Grad Year	Current Status
Corwin Russell	2013	vibration analyst and thermographer at Massey Technical Services in Bridgeport
Dustin Mayle	2013	R&D engineer at Stockmeier Urethanes USA in Clarksburg, WV
Katelyn Kaminiski	2013	Works as fingerprint analyst in Jacksonville, FL
Jacey Evenson	2013	trader for AMSOIL, Inc
Marissa Biller Wilmer	2014	works at Falcon center weight room
Brittany Aragon double major (chem)	2015	works at the Chemours company
Jackie Turner	2015	works at Bode Cellmark as DNA analyst
Mitchell Haines double major (chem)	2015	Peace Corps teaching English
Jenn Clymer	2015	works at LabCorp
Brittany Sheppard	2016	currently in Pharmacy school at WVU
Marley Snider	2016	works at Mylan Pharmaceutical
Kristen Akers	2016	works at FBI center in Bridgeport, WV
Khrysten Stolins	2016	works part time in her hometown in Maryland
Megan Collins	2017	works at FBI center in Bridgeport, WV
Kayla Coleman	2017	works at Valspar paints manufacturing plant as quality control specialist

<b>Table 4. Summary of Education and/or Employment Status of Recent Graduates of the Forensic Science Program</b>		
Category	Graduates	
	Number	Percent
Employed in science field	13	86
Employed outside of science/criminal justice fields part time	1	7
Graduate/professional school	1	7
<b>Total</b>	<b>15</b>	<b>100</b>

The Forensic Science program faculty developed an alumni survey during the spring of 2018, and the survey was sent to alumni via Survey Monkey. As of January 28, 2018, 9 alumni had responded to the survey. (The survey is still “open,” and we are hoping more responses to be collected.) Respondents to the survey reported graduation dates from 2002 – 2017. As a result of the survey, the following points were noted:

**Positive aspects of the Forensic Science Program:**

- Student-centered faculty members that allow students to get more personal attention
- Small class size
- Program is focused on lab work

There were some areas that the survey respondents indicated that they could see as areas that could be strengthened. Below are a listing of those points and our action plan of how we will plan or are currently addressing those points.

**Suggested areas that will strengthen our Forensic Science Program:**

- Improve Forensic Internship experience
  - The Forensic Science Program has strengthened ties with the WV State Police Crime Lab in the past couple of years and now can offer students the opportunity to intern at a working crime lab in Charleston. In addition, the opportunities exist to work with pathologists, with forensic psychologists, as chemists, or work alongside police officers. Obviously, the diversity of our student population within Forensic Science discipline requires us to have several options for appropriate internship experiences.
- Offer more specific Forensic Science courses
  - The Forensic Science Program has added an Intro to Forensic Science (FORS 2201) course and a Forensic Biology (FORS 3100) course that most of the respondents to the survey did not have an opportunity to take. The program will also be developing a new Toxicology course that will provide another forensics-relevant upper level elective.

**Program courses**

Students currently majoring in Forensic Science complete six core Forensic Science courses (with FORS prefixes) (Refer to Appendix 1 – Current B.S. Degree in Forensic Science). Forensic Science students are also required to complete three biology courses, six chemistry courses, two semesters of physics, one semester of Calculus, two upper level science electives, and the University liberal studies requirements. Curriculum revisions are being made that will result in adding Toxicology to our list of elective courses

Enrollments in courses for the Forensic Science major are provided in Table 3 (on page 8). Based on changes during the last evaluation period the hope is that the students get exposure to several aspects of Forensic Science earlier in their academic career in order to help retain students in the program. Based on

offering Forensic Science courses earlier in our curriculum, you can see the trend of increasing overall enrollments in Forensic Science courses during the past 5 academic years. Total course enrollments in forensics course went from 70 in the 2008-12 period to 121 during the current 2012-17 period, which shows an increase of 72.9%.

**Table 5**  
**Forensic Program Total Course Enrollments**

Course	2012-13		2013 - 14		2014 - 15		2015 - 16		2016 - 17		Total
	Fal l	Sprin g	Fall	Sprin g	Fall	Sprin g	Fall	Spring	Fall	Sprin g	
FORS 2201 Intro to Forensic Science	12		10		9		12		8		51
FORS 2225 Forensic Microscopy/Spectroscopy				6				10			16
FORS 3201 Forensic Biology					6		7			5	18
FORS 3385 Research in Forensic Science								1	2		3
FORS 3385 Research in Forensic Sci-Honor								1			1
FORS 4401 Capstone Sem Forensic Science		4		1		5		3		2	15
FORS 4401 Capstone Sem Forensic Sci-Hono								1			1
FORS 4411 Fncs Sci Intrn (prv INTR 4411)	4		4				6		1		15
FORS 4411 Fncs Sci Intrn(INTR 4411)-Hon				1							1
Grand Total	16	4	14	8	15	5	25	16	11	7	121

### Service courses

The Forensic Science Program does not offer any specific service courses in the general studies curriculum. Dr. Flood offers Human Biology and Biosphere and Mr. Weekley offers Introductory Chemistry courses that will count toward the general studies hours for Fairmont State University students.

### Success rates Service Courses

This section is not applicable since the Forensic Science Program does not offer any specific service courses.

### Extended education / off campus Courses

None of the science courses for Forensic Science majors are taught off of the main campus.

### Cost/student credit hour



We don't have access to specific cost for the Forensic Science program. Alternatively, presented below are the costs for our College of Science and Technology compared to other Schools and Colleges at FSU. As Figure 1 illustrate, our cost per credit hour are at the average for the institution and the costs per Student FTE Major are second highest, but far below the School of Fine Arts and the School of Nursing.

<b>Direct Cost per Instructional Credit Hour</b>					
College or School	2016-17	2015-16	2014-15	2013-14	2012-13
College of Liberal Arts	\$94	na	\$79	\$81	\$94
College of Science & Technology	\$165	na	\$153	\$153	\$164
School of Business	\$147	na	\$107	\$123	\$156
School of Fine Arts	\$189	na	\$156	\$160	\$164
School of Education/Health & Human Performance	\$232	na	\$155	\$156	\$205
School of Nursing & Allied Health Administration	\$221	na	\$181	\$182	\$196
<b>Total Institution</b>	<b>\$150</b>				
<b>Direct Cost per Student FTE Major</b>					
College or School	2016-17	2015-16	2014-15	2013-14	2012-13
College of Liberal Arts	\$4,703	na	\$4,964	\$5,030	\$4,795
College of Science & Technology	\$4,894	na	\$5,026	\$4,841	\$4,946
School of Business	\$3,815	na	\$4,364	\$4,101	\$3,867
School of Fine Arts	\$19,563	na	\$21,710	\$17,366	\$17,025
School of Education/Health & Human Performance	\$4,047	na	\$3,487	\$3,593	\$3,121
School of Nursing & Allied Health Administration	\$6,257	na	\$5,719	\$13,015	\$5,993
<b>Total Institution</b>	<b>\$5,038</b>				
Note: The 2012 - 2015 data was obtained from a program review posted on the webpage of the board of governors; the 2016-17 data was obtained from Andy Raisovich; the 2015-16 data could not be located (no program reviews were posted in 2017).					

Figure 1: Direct cost per instructional credit hour and per Student FTE by School/College for 12-13, 13-14, 14-15, and 16-17.

### Liberal Studies Requirements Met

The Forensic Science program is in compliance with the Fairmont State Degree definition. (Refer to Appendix 1 – B.S. Degree in Forensic Science – Compliance with Degree Definition Policy on page 45.)

### Assessment Requirements

The Forensic Science program has given the Educational Testing Service Major Field Tests in 1) Biology, 2) Chemistry, and 3) Criminal Justice to graduating seniors since 2006. Detailed analysis of this data was

not begun until this year with the revisions made to the Forensic Science program outcomes, direct measures, and satisfactory performance standards (Refer to Table 6 below).

<b>Table 6 Forensic Science Program Goals, Direct Measures and Performance Standards</b>		
Program Outcome	Direct Measure	Satisfactory Performance Standard
Demonstrate a broad knowledge of fundamental facts and theories in biology, chemistry, and criminal justice	FSAT Exam given to graduating seniors every spring.	The average score of our students will be above average of cohorts taking the exam
Graduates are competitive for application to professional schools, graduate programs, or are competitive for employment in a field that uses their degree.	Success rate for application to grad or professional school, and ability to obtain employment that uses their degree	>90% of students who apply are accepted into grad/professional school >90% of students are able to obtain employment that uses their science degree
Organize and critically evaluate scientific information and present it clearly in written form.	Last report in Intro to Forensic Science	All students will score of 80% or higher on specified rubric.
Organize and critically evaluate scientific information and present it clearly in an oral form.	Final presentation in Forensic Science Capstone Seminar	All students will score 80% or higher on specified rubric for their second presentation.

Figure 3 Shows the FSAT exam results for 2016 and 2017 graduates (page 11), which shows overall ranking out of 11 schools tested in 2016 and 13 schools tested in 2017. The results illustrates the FSAT test scores for the History and Toxicology scores are strong for both years. Significant improvements were observed in Ethics, Latent prints, Firearms/Toolmarks, Trace Evidence and Fire Debris. Scores that showed a decrease in rank included Drugs, Lab Operations, and Questioned Documents. Scores that are typically below average include Crime scene and Legal, as these are not the main focus of our laboratory-based program. It should be noted that the trends that are observed are based on 5 students in 2016 and 2 in 2017, so statistically speaking the results may not be valid. The program hopes to see the trends improve in future years as the number of graduates also grow. The capstone students will be exposed to more investigative techniques through our agreement with the Harrison Rail Trails to investigate illegal trash dumps, and also a new mock trial component will be added to the senior capstone course in order to strengthen the exposure to the legal system.

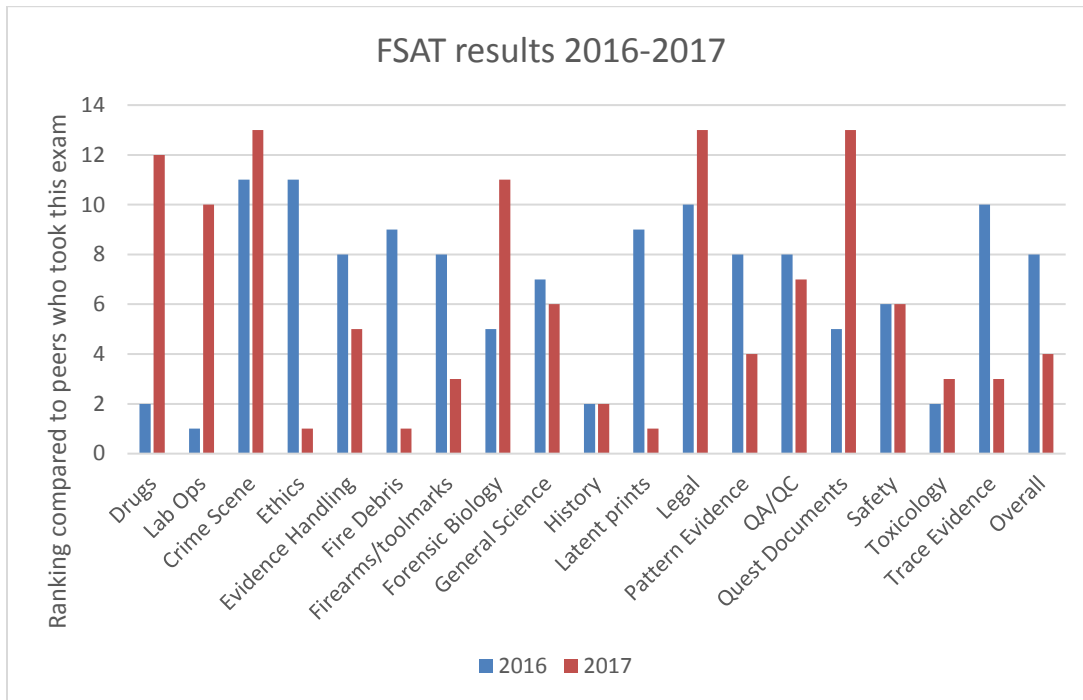


Figure 3. FSAT test score data for 2016-2017

In terms of the second program outcome, the Forensic Science program has met the satisfactory performance level when looking at recent graduates. Almost all of the graduates have employment, with 93% being employed in some fashion to use their science background obtained at FSU. One student in the 2016 graduating class is currently in the pharmacy program at WVU.

All the Forensic Science graduates during the 2012-2017 timeframe have successfully met the criteria for critically evaluating and writing about science or speaking about science as mentioned in Table 6 on page 10. No modifications to the curriculum are expected based on the data collected when assessing these two program outcomes.

**Adjunct use**

The Forensic Science Program does not use any adjuncts to teach the Forensic Science specific courses. Adjuncts typically do not teach in the science classes that are required for Forensic Science majors.

## **Graduation/Retention Rates**

See Graduation numbers in the Enrollment Section on page 6. Graduation and retention rates are extremely difficult to determine with the data that has been provided to the Forensic Science Program for the purposes of completing this program review. At this point we can postulate many exit points from the program other than graduation (for example: change majors, transfer to another institution, acceptance into professional school, dropping out), and a detailed examination of the retention rate would require an analysis of each individual student's progress through the curriculum. In some cases the information is simply not available (for example we may not be able to determine if a student transferred or dropped out) and we are not certain of the reliability of the data available to our program.

For example, from the data provided in Table 5 (page 8) we could track the freshman cohort from the fall of 2012 to get an estimation of our graduation and retention rates. There are 10 sophomores in the fall of 2013 in the Intro to Forensics course. By the spring of 2016 there are 4 seniors (part of the problem is with the data, as discussed earlier). In the 2014-15 academic year there were 9 Forensic Science sophomores, and 2 graduates in the spring of 2017. When looking at these numbers it would look like we retained 31.5% from their sophomore into their senior year. However, evidence from all our science programs (Chemistry, Biology and Forensic Science) shows that many of our Forensic Science majors take 5 years to graduate. Also, based on our total number of declared Forensic Science majors of 30 per year, the retention between freshman and sophomore years also decrease. Therefore, it appears challenging at best to accurately calculate graduation and retention rates unless the program gets help with tracking individual students better during their time at FSU.

In addition, we have noticed a significant number of students beginning their educational career at Fairmont State with a Forensic Science major, and then they switch to CJ or Biology or Chemistry or something else entirely. For example, a junior in Forensic Science last spring was accepted into Pharmacy school at WVU. Situations like this negatively affects our retention and graduation rates, but as far as these particular students are concerned, their time at Fairmont State has been a success and we have helped them move toward their revised professional goal. It is not clear how to measure these students, but counting them as retention or graduation losses to the Forensic Science program does not seem reasonable.

## **Previous Program Review Results**

The Fairmont State University administration did not require the on-campus review in 2008 because the program was thoroughly reviewed during the AAFS accreditation review from 2006-2008. The program did not match completely with the AAFS accreditation guidelines, and we have been and are making curriculum revisions to prepare to seek accreditation again. The AAFS accreditation team asked us to obtain a stronger relationship with a working Forensic Science facility, to upgrade our Forensic Science Internship experience, and to develop more Forensic Science specific courses. At our 2008-2012 program review we were granted continuation with corrective action, specifically we were asked to increase enrollment in the program. We believe we have increase the quantity of majors and quality of the program simultaneously. We have formed stronger ties with the WV State Police Forensic Laboratory, obtained new contacts for internship experiences, and added Intro to Forensic Science, Research in Forensic Science, and Forensic Biology to our curriculum. We expect to also add Toxicology to our course offerings in the next academic year.

## ADEQUACY (§ 4.2.4.2)

	Allowed Range 2008-2012	Forensic Science Program In Current Catalog
General Studies	32 – 42 hours	36 hours
Major	32 – 65 hours	64 hours
Electives	Minimum 21 hours	20 hours
TOTAL		120 hours

At all times during the review period, the Forensic Science program was in compliance with the degree definition requirements.

### Faculty Data

Courses taught by full time faculty Mark Flood and Jim Weekley are summarized in Table 7 below.

Faculty Data sheets are attached, on pages 18-21.

Table 7 Courses Taught by Full Time Faculty – By Term				
Instructor	Term	Course		
		Number	Title	Enrollment
Flood, Mark	200810	4495	Problems in Biological Science	2
			Problems in Biological Sci-Hon	1
	200820	4420	Developmental Biology	11
			Developmental Biology Lab	11
		4495	Problems in Biological Science	1
		200920	3368	Animal Physiology
			Animal Physiology Lab	7
		4998	Undergraduate Research-Hon	1
		201010	1105	Biological Principles I
			Biological Principles I Lab	35
	4495		Problems in Biological Science	1
	201020	1104	Biosphere	13
		4420	Developmental Biology	14
			Developmental Biology Lab	14
	4495	Problems in Biological Science	1	
	201110	1104	Biosphere	23
		1105	Biological Principles I	72
	Biological Principles I Lab		18	
201120	1104	Biosphere	17	
		Biosphere - Honors	4	
	3368	Animal Physiology	24	

		Animal Physiology Lab	24	
	4495	Problems in Biological Science	1	
201210	1105	Biological Principles I	65	
	1199	ST: Intro to Forensic Science	10	
	3380	Genetics	18	
		Genetics Lab	18	
	4495	Problems in Biological Science	2	
201220	4420	Developmental Biology	15	
		Developmental Biology Lab	15	
	4485	Senior Seminar	15	
		Senior Seminar-Honors	3	
4495	Problems in Biological Science	2		
	4998	Undergraduate Research-Hon	1	
Weekley, James	200810	1105	Chemical Principles I	58
			Chemical Principles I Lab	50
		2201	Organic Chemistry I Lab	5
		2205	Analytical Chemistry Lab	16
	200820	1106	Chemical Principles II Lab	43
		1113	Pract Sci Stats Sprdsht-Online	52
		2225	Forensic Microscopy	2
		4401	Independent Study	1
	200830	1101	General Chemistry I	10
	200910	1105	Chemical Principles I Lab	74
	200920	1101	General Chemistry I Lab	22
		1106	Chemical Principles II Lab	52
		1113	Pract Sci Stats Sprdsht-Online	49
	200930	1102	General Chemistry II	30
	201010	1105	Chemical Principles I Lab	71
		2225	Forensic Microscopy	4
		4403	Independent Study/Research	2
	201020	1101	General Chemistry I	31
			General Chemistry I-Honors	1
		1106	Chemical Principles II Lab	56
	201030	1102	General Chemistry II	31
	201110	1105	Chemical Principles I Lab	79
		4401	Independent Study	1
		4403	Independent Study/Research	1
	201120	1106	Chemical Principles II Lab	67
	201130	1102	General Chemistry II	23
	201210	1105	Chemical Principles I Lab	73
4401		Independent Study	2	
201220	1106	Chemical Principles II Lab	31	
	2225	Forensic Microscopy	13	
	4401	Independent Study	2	
	4998	Undergraduate Research-Hon	1	
201230	1102	General Chemistry II	20	

## Accreditation / national standards

The American Academy of Forensic Sciences (AAFS) specifically accredits Forensic Science programs. We attempted accreditation in 2007 and were denied. Since that time the Forensic Science Program has been made adjustments to our curriculum based on the feedback of AAFS site visitors. The Forensic Science Program has also made an effort to strengthen the Internship program and obtain training for faculty to strengthen their background in Forensic Science. The Forensic Science Program is expecting to seek accreditation again within the next 2 years, once the new curriculum is fully operational.

### NECESSITY (§ 4.1.3.3)

#### Placement – Similar Programs in WV

In the north-central area of West Virginia, there is a B.S. degree program in Forensic and Investigative Science offered at WVU, and there is a graduate degree (M.S.) program in Forensic Science and BS in digital forensics offered at Marshall University. Compared to WVU, we offer smaller classes and full-time faculty that teach all lecture and lab sections. Many lower division courses at WVU are taught by graduate teaching assistants. Our smaller class size allows us to offer more personal attention in the lecture and more hands-on experience in the laboratory, both in the field and in the laboratory. Furthermore, WVU's program is more investigative (criminal justice based) and is does not contain the level of science, especially chemistry, that our Forensic Science program offers. With our recent accomplishment of being acknowledged as the 11<sup>th</sup> best BS in Forensics programs in the United States, we ranked ahead of WVU's program to show our relevancy in forensics education.

### CONSISTENCY WITH MISSION (§ 4.1.3.4)

Explain how this program fits into the mission of the institution. Identify the relationship of this program to other programs at the institution, especially in terms of mutual support (e.g., shared faculty, shared facilities, shared course requirements for external program accreditation).

The Forensic Science program supports the mission of Fairmont State by offering students with a comprehensive Forensic Science curriculum that provides an excellent preparation for a variety of careers, including those requiring advanced degrees. Program faculty are committed to high-quality classroom instruction and meaningful collaborations between students and faculty in performance of original research. Further support of the mission is obtained by the fostering of initiative and independence within the students thereby promoting lifelong learning while in the process of mastering the techniques and principles of Forensic Science. Reflection and synthesis of scientific concepts is encouraged to increase the students' critical understanding of the discipline and thus advance their ability to apply its concepts. Members of the program faculty also provide instruction that meets the goals of the Scientific Discovery component of Fairmont State's General (Liberal) studies curriculum.

Many of the graduates with a BS in Forensic Science have also received BS in Chemistry because of the large overlap in the courses offered within both programs. This collaboration strengthens both the Chemistry and Forensic Science programs. It is important for the Forensic Science Program to also maintain a strong collaboration with the Biology Program because the biochemistry, cell, genetics, and molecular biology concepts that are important in the Forensic Science majors are taught by the Biology faculty.

## Mark R. Flood, PhD

316 Hunt Haught Hall, 1201 Locust Avenue, Fairmont State University, Fairmont, WV 26554  
(304) 367-4309 mlflood@fairmontstate.edu

---

### Education:

- Utah State University, Doctor of Philosophy, Animal Science (Embryology) 1987-1992
- Washington State University, Masters of Science, Animal Science (Embryology) 1985-1987
- Purdue University, Bachelors of Science, Animal Science 1981-1985

### Positions and Employment

2002-present Professor, Fairmont State University, Fairmont, WV  
1997-2002 Associate Professor, Fairmont State College, Fairmont, WV  
1994-1997 Assistant Professor, Fairmont State College, Fairmont, WV  
1993-1994 Adjunct Instructor, Salt Lake Community College, Salt Lake City, UT  
1992-1994 Postdoctoral Fellow, University of Utah, Salt Lake City, UT

### Publications since arriving at Fairmont State University

Hurley, A.L, Maddox, M.P., Scott, T.L. Flood, M.R., and D.L. Mohler. 2001. Photoinduced DNA cleavage by cyclopentadienyl metal complexes conjugated to DNA recognition elements. Organic Letters 3:2761-2764.

Yulia Dementieva, Todd L. Green, Donald A. Primerano, Liping Wei, James Denvir, Paulette Wehner, Sarah Dodson, Mark R. Flood, Bonnie A. Pollock, Melinda Huff, Contessa Hill, Robert Kreisberg, Amanda Francis, Katie Morrison, Holly Blackwood, Mary Davis, Huey Miin Lee, and Stafford Warren. 2012. Identification of Genes Contributing to Cardiovascular Disease in Overweight and Obese Individuals from West Virginia. West Virginia Medical Journal 108:23-31.

### Selected recent forensics presentations at scientific meetings (bolded authors are undergraduate student researchers)

**BRITTANY SHEPPARD** and MARK FLOOD. 2016. Accuracy comparison of different drug test kits using over-the-counter medicines. WV Academy of Science meeting at Marshall University. Oral presentation.

**KRISTEN AKERS** and MARK FLOOD. 2016. Comparison of different fingerprinting reagents on several different surface types. WV Academy of Science meeting at Marshall University. Oral presentation.

**MARLEY SNIDER** and MARK FLOOD. 2016. Determining the effects of washing on hair dye extraction. WV Academy of Science meeting at Marshall University. Oral presentation.

**KHRYSTEN STOLINS** and MARK FLOOD. 2016. Comparison of different shoe casting materials. WV Academy of Science meeting at Marshall University. Oral presentation.

**JACKIE TURNER**. 2015. Analysis of GSR particles post firing and post laundering. WV Academy of Science meeting at West Liberty State University. Poster presentation.

**JENNIFER CLYMER**. 2015. Comparison of round nose and hollow point blood spatter analysis. WV Academy of Science meeting at West Liberty State University. Poster presentation.

### Honors



- 2004 Nominated for Boram Excellence in Teaching Award, FSU  
2016 Received Excellence in Academic Advising Award, FSU

### **Specialized forensics training:**

Participated in a hands-on, field based, two week Forensic Anthropology Internship course through Saint Mary's University in Nova Scotia. The training was actually conducted May 3-17, 2014 at the Miami-Dade Medical Examiner Department and involved observing autopsies, participating in human macerations, and analyzing different bone ID techniques to determine gender.

Workshops at American Academy of Forensic Science

- Frequency occurrence in handwriting and hand printing characteristics - 2016
- Digital image processing – 2017
- Open source digital forensics tools - 2017

Workshops at Mid-Atlantic Association of Forensic Science

- The power of Y-STR analysis on May 7, 2013.
- May 6, 2013 session entitled DNA analysis: A prosecutor's perspective.
- Current Trends in Explosives and Fire Debris on May 19, 2015
- DART Mass Spectroscopy for Forensic Analysis on May 19, 2015

Participated in a Death and Homicide Investigation course at the West Virginia State Police Professional Development Center on March 20, 2017.

Completed online course from the National Forensic Science Technology Center entitled Introduction to Forensic Biology in August 2014.

Completed several online trainings during 2013-2015 International/National Institute of Justice including:

- Falling into decay: postmortem interval and molecular autopsy – part I
- Falling into decay: postmortem interval and molecular autopsy – part III
- Bloodstain documentation and collection methods
- Straight to the bone: Advances in forensic anthropology
- How to be a good expert witness
- To Hell and Back: the ethics of stewardship and the stewardship of ethics
- Forensic Anthropology: mapping and exhumation of clandestine burials
- Fundamentals of Immunoassay testing used in toxicology
- Communication skills, report writing, and courtroom testimony for forensic analysts
- Fingerprint Identification: Reliability and Accuracy
- Kura Biotec Webinar: Approaches for Optimizing Hydrolysis of Cannabinoids, Cannabidiol (CBD) and Synthetic Cannabinoids
- Agilent Event: Use of Agilent's newly released MassHunter based designer drug GC/MS library to the identification of seized designer drugs

- Agilent Event: Confirmatory Blood Identification by Mass Spectrometry: Adapting Proteomics to Forensic Biology

### **Research Support**

Bowers grant – 2017 – Development of FACT center (equipment purchase) \$15,000

EPSCoR Instrumentation grant 2018– Purchase of Atomic Absorption instrument \$20,000

SURE (Summer Undergraduate Research Experience) – funded by Fairmont State and/or WV NASA Space Grant consortium (These are just the most recent – several others go back as early as 2007)

- Makayla Metzger and Chhoksum Bista - 2018
- Hannah Nelson and Cierra Henderson - 2017
- Tyler Groves and Jessie Feather – 2016
- Dannie Arnold and Devin Heitz and Amber Wooten – 2015
- Dustin Spencer and Zane Dennison and Tyler Murphy – 2014
- Jennifer Goggins - 2013
- Lauren Gates and Helen Darcus – 2012
- Seth O’Neal and Christina Snodgrass and Natalie Fox– 2011
- Emily Bosley and Matt Winans - 2010

West Virginia Space Grant Consortium/Fairmont State 10/2013-6/2014

The objective of this course and curriculum proposal was to develop a new Forensic Biology course that is now required within the FSU Forensic Science curriculum. Part of the funding was used to pay for expenses to participate in a Forensic Anthropology training opportunity at the Miami-Dade Forensic Laboratory from May 3-17, 2014.

### **Professional Affiliations:**

- West Virginia Science Teachers Association, member, 1997 – present
- Mid Atlantic Association of Forensic Scientists, 2015-present
- West Virginia Academy of Science, member, 1994 – present; president 2005-2007 and 2009-2010

Name : James Weekley Rank: Instructor

Check One: Full-time X Part-time \_\_\_\_\_ Adjunct \_\_\_\_\_ Graduate Asst.

Highest Degree Earned M.S. Date Degree Received May 2005

Conferred by University of Kentucky

Area of Specialization Pharmaceutical Sciences

Professional registration/licensure \_\_\_\_\_ Yrs. of employment at present institution  
7

Years of employment in higher education 7 Yrs. of related experience outside higher  
education 6

Non-teaching experience 6

To determine compatibility of credentials with assignment:

- (a) List courses you taught this year and those you taught last year: (If you participated in team-taught course, indicate each of them and what percent of courses you taught.) For each course include year and semester taught, course number, course title and enrollment.

<u>Year/Semester</u>	<u>Course Number &amp; Title</u>	<u>Enrollment</u>
2012 Fall	CHEM 1105 Chemistry Principles I Lab	14
2012 Fall	CHEM 1105 Chemistry Principles I Lab	15
2012 Fall	CHEM 1105 Chemistry Principles I Lab	16
2012 Fall	CHEM 1105 Chemistry Principles I Lab	15
2012 Fall	CHEM 1105 Chemistry Principles I Lab	15
2012 Fall	CHEM 4401 Independent Study	1
2012 Fall	CHEM 4998 Undergraduate Research	14
2012 Summer	CHEM 1102 General Chemistry II	21
2012 Spring	BIOL 3360 Biochemistry Lab	27
2012 Spring	CHEM 1106 Chemistry Principles II Lab	15
2012 Spring	CHEM 1106 Chemistry Principles II Lab	16
2012 Spring	CHEM 2225 Forensic Microscopy	13
2012 Spring	CHEM 4401 Independent Study	2
2012 Spring	CHEM 4998 Undergraduate Research-Hon	1
2011 Fall	CHEM 1105 Chemistry Principles I Lab	15
2011 Fall	CHEM 1105 Chemistry Principles I Lab	15
2011 Fall	CHEM 1105 Chemistry Principles I Lab	15
2011 Fall	CHEM 1105 Chemistry Principles I Lab	15
2011 Fall	CHEM 1105 Chemistry Principles I Lab	13
2011 Fall	CHEM 4401 Independent Study	2
2011 Summer	CHEM 1102 General Chemistry II	26
2011 Summer	SCIE 1010 Earth and Sky	5

2011 Spring	CHEM 1106 Chemistry Principles II Lab	15
2011 Spring	CHEM 1106 Chemistry Principles II Lab	12
2011 Spring	CHEM 1106 Chemistry Principles II Lab	13
2011 Spring	CHEM 1106 Chemistry Principles II Lab	12
2012 Spring	CHEM 1106 Chemistry Principles II Lab	15

(b) If degree is not in area of current assignment, explain.

My research in graduate school was a combination of analytical, physical and radio chemistry conducted in a College of Pharmacy and not in a chemistry department hence the Pharmaceutical Science title.

(c)

(d) Identify your professional development activities during the past five years.

Blackboard training

(e) List awards/honors (including invitations to speak in your area of expertise) or special recognition  
In last five years.

(f) Indicate any other activities which have contributed to effective teaching.

(g) List professional books/papers published during the last five years. **None**

(h) List externally funded research (grants and contracts) during last five years. **None**

**APPENDIX 1 – Current Program**  
 B.S. Degree in Forensic Science  
 Current Program

<b>Required Major Courses</b>		<b>HRS</b>
BIOL 1106	Biological Principles II	4
BIOL 3360	Biochemistry	4
BIOL 3380	Genetics	4
BIOL 3390	Molecular Biotechnology	4
CHEM 1105	Chemical Principles I	5
CHEM 2200	Foundational Biochemistry	4
CHEM 2201	Organic Chemistry I	4
CHEM 2202	Organic Chemistry II	4
CHEM 2205	Analytical Chemistry	4
CHEM 3315	Instrumental Analysis	4
FORS 2201	Introduction to Forensic Science	4
FORS 2225	Forensic Microscopy and Spectroscopy	3
FORS 3201	Forensic Biology	4
FORS 3385	Research in Forensic Science	3
FORS 4401	Capstone Seminar in Forensic Science	3
FORS 4411	Forensic Science Internship	2
MATH 1113	Applied Statistics	3
<b>TOTAL Required Major Courses</b>		<b>63</b>
Specialization Electives - 8 hours		
BIOL 2224	Microbiology	4
BIOL 4420	Developmental Biology	4
CHEM 3301	Physical Chemistry I	4
CHEM 3304	Inorganic Chemistry	4
CHEM 4404	Synthetic Methods and Materials	4
CHEM 4412	Physical Chemistry II	4
		<b>8</b>
<b>TOTAL HOURS FOR MAJOR</b>		<b>71</b>