

PROGRAM REVIEW
Fairmont State Board of Governors

Program with Special Accreditation Program without Special Accreditation

Date Submitted February 18, 2013

Program B.S. in 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; *Will be monitored yearly.*
 - 2. Continuation of program with corrective action (for example, reducing the range of optional tracks or merging programs); *CL*
 - 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
- 4-18-13*

Rationale for Recommendation:

The faculty associated with the Forensic Science degree has been making curriculum improvements in an attempt to secure accreditation from the American Academy of Forensic Sciences. These changes were a result of problems associated with providing a better internship experience and the need for more specialized courses. The faculty has addressed these issues and has restructured the curriculum. The program of study provides sound content and gainful employment to graduates. The new curriculum should allow the faculty to proceed with seeking accreditation after data is collected on the outcomes acquired by students prior to and at the time of graduation.

<u>Mark Hood</u>	<u>2-18-13</u>
Signature of person preparing report:	Date
<u>Anthony J. Gilbert</u>	<u>2/18/13</u>
Signature of Dean	Date
<u>Christina Lavorata</u>	<u>4-18-13</u>
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 Forensic Science

External reviewer(s)

Calissa N. Carper, Forensic Analyst IV

Firearm/Toolmark Section; West Virginia State Police Forensic Laboratory

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

Student success in the BS in Forensic Science can be observed by an employment rate of 89% in a job that is related to science or Criminal Justice (CJ). However, based on assessment data and feedback from our Advisory Board, the curriculum needs to be more focused on Forensic Science and less on being interdisciplinary. The Forensic Science program also needs to improve retention and graduate rates, and will do this by offering more Forensic Science related courses earlier in the curriculum. Finally, 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), thus allowing students greater access to working Forensic Scientists.

Plans for program improvement, including timeline

The main approach that will be taken is to increase the number of Forensic Science related classes, and reduce the number of CJ courses offered. A program revision to implement an Intro to Forensic Science course is going through the curriculum process this academic year, and a Forensic Biology course will be added during the following academic year. Furthermore, the Forensic Science classes will be changing from an INTR (interdisciplinary) prefix to a FORS (Forensic Science) prefix. The program will meet with the Advisory Board and evaluate the assessment plan. The Forensic Science Program is expecting to seek accreditation again within the next 2 years, once the new curriculum and assessment plans are fully operational.

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

No assessment plan was in effect as of the last program review, and now an assessment plan is in effect with some data illustrating how the program is performing. The internship program was mostly students riding with police officers during the previous review period, but now more relevant science related experiences are available for our majors.

Five-year trend data on graduates and majors enrolled

The number of graduates is fairly steady during the 2008-2012 evaluation period, with an increase in graduates expected during the 2012-2013 academic year. The number of majors enrolled in Forensic Science courses has increased during the past two academic years.

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 has used Educational Testing Services (ETS) major field exams to assess the content knowledge for Biology, Chemistry, and Criminal Justice disciplines. We are working closely with the Biology and Chemistry programs to improve scores in the Analytical Chemistry and Genetics/Molecular Biology content exams. Students are evaluated on written and oral communication skills, and their success is shown by successfully making oral presentations and written reports. 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 89% of our graduates have employment where they use their science and criminal justice backgrounds. All of our graduates are 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, criminal justice, 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

The Forensics degree originally consisted of two majors: Forensic Science and Forensic Psychology. The Forensic Psychology major has since been eliminated, leaving Forensic Science as the only option. While Forensic Psychology numbers are presented in some of the tables, their significance is not discussed since the major was eliminated.

Graduate assessment data was first collected in 2006 and the data from 2006-2012 are presented in this program review. Based on the assessment data and feedback provided by our Advisory Board and accreditation site visitors, the Forensic Science Program is currently going through curriculum changes during the 2012-2013 academic year. Among significant changes that are being made include 1) dropping the Interdisciplinary prefix from the Forensic Science specific courses (and creating a new FORS prefix) and 2) offering a Forensics focused Introduction to Forensic Science course instead of Criminal Justice focused Criminalistics. The Forensic Science Program will begin offering 4 specific courses for our majors with the new FORS prefix: FORS 2201 - Introduction to Forensic Science, FORS 2225 - Microscopy and Spectroscopy, FORS 4411 - Forensic Science Internship, and FORS 4401 - Forensic Science Capstone Seminar. In addition to changes to Forensic Science courses, the Chemistry, Biology, and Criminal Justice Programs are also making curriculum changes that will impact the course offerings in the next couple of years. It is anticipated that the number of Criminal Justice offerings will decrease 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 and 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 2008 – 2012 averaged 27.6, with a standard deviation of 5.2. The minimum number (21) occurred in fall 2008 and the maximum in the fall of 2010 (39) (Refer to Table 1 below).

Table 1. Forensics Majors – Number by Concentration and Term

Concentration	Term	Freshman	Sophomore	Junior	Senior	Total
Psychology	Fall Semester 2007	2	6	6	15	29
	Spring Semester 2008	1	1	8	14	24
	Summer Semester 2008		1			1
	Fall Semester 2008			5	8	13
	Spring Semester 2009				10	10
	Fall Semester 2009				5	5
	Spring Semester 2010				4	4
	Fall Semester 2010				1	1
Science	Fall Semester 2007	10	7	2	9	28
	Spring Semester 2008		7	6	8	21
	Summer Semester 2008		1		3	4
	Fall Semester 2008	10	6	5	6	27
	Spring Semester 2009	7	6	5	11	29
	Summer Semester 2009		2	1	3	6
	Fall Semester 2009	17	6	2	8	33
	Spring Semester 2010	8	9	2	6	25
	Fall Semester 2010	18	8	7	6	39
	Spring Semester 2011	8	6	5	6	25
	Summer Semester 2011	2	2	1		5
	Fall Semester 2011	14	3	6	3	26
Spring Semester 2012	4	8	3	8	23	
Summer Semester 2012			4		5	9

Since 2001, there has been at least one Forensic Science graduate per year, with the largest graduating class being 2009 when there were 3 graduates. (Refer to Table 2 below). The cause of the relatively low number of graduates is unknown, but possible reasons are discussed in the Graduation/Retention section. In addition to the data in Table 2 below, the Forensic Science program anticipates having 4 graduates during the spring of 2013.

Table 2. Forensics Graduates – Number by year

Academic Year	Concentration	
	Psychology	Science
2001		1
2002		2
2003		2
2004		1
2005		2
2006		1
2007	5	1
2008	6	1
2009	2	3
2010	1	1
2011		1
2012		1
2013		4
Total	14	21

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 (89%) of our graduates are currently or have been employed in a science or criminal justice related field, while no graduates have attempted to enroll in graduate or professional school.

Table 3. Recent Forensic Science Program Graduates

Student number	Graduation Year	Current Status
1	2006	Chemist at Mylan Pharmaceuticals
2	2007	Works for Preston County Sheriff's Department
3	2008	Works as Parole Officer at Charleston Parole Office
4	2009	Chemist at Mylan Pharmaceuticals
5	2009	Works for WVU Police Department
6	2009	Aircraft electrician for US Air Force
7	2010	Worked as adjunct faculty for FSU biology department and works retail sales in Bridgeport, WV
8	2011	Chemist at Mylan Pharmaceuticals
9	2012	Water testing analyst at Reliance Laboratory

Table 4. Summary of Education and/or Employment Status of Recent Graduates of the Forensic Science Program		
Category	Graduates	
	Number	Percent
Employed in science field	5	56
Employed in criminal justice field	3	33
Employed outside of science/criminal justice fields	1	11
Graduate/professional school	0	0
Total	9	100

The Forensic Science program faculty developed an alumni survey during the spring of 2013, and the survey was sent to alumni via Survey Monkey. As of January 28, 2013, 5 alumni had responded to the survey. (The survey is still “open,” and we are expecting more responses to be collected.) Respondents to the survey reported graduation dates from 2007 – 2011. 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 Forensic Microscopy and Spectroscopy recently to the curriculum, which none of the alumni who completed the survey had the opportunity to take. In addition, we are adding a specific Intro to Forensic Science (FORS 2201) course and will be developing a Forensic Biology (FORS 3100) course .

Program courses

Students currently majoring in Forensic Science complete four core Forensic Science courses (with INTR prefixes) in addition to a considerable number of Chemistry, Biology and Criminal Justice courses (Refer to Appendix 1 – Current B.S. Degree in Forensic Science on pages 22-23). Forensic Science students are required to complete three electives from a field of eight courses, five chemistry courses, one semester of Calculus and the University liberal studies requirements. Curriculum revisions are being made that will result in more required Forensic Science (and science) courses in the curriculum and fewer CJ courses (Refer to Appendix 2 – Proposed B.S. Degree in Forensic Science on page 24-25)

Enrollments in courses for the Forensic Science major are provided in Table 5 (on page 8). A temporary revision to the curriculum was implemented in the fall of 2012 to replace the Forensic Criminalistics (junior

level course) with an Intro to Forensic Science (offered as BIOL 1199 during the fall of 2012 and 2013 and will be officially FORS 2201 in the new curriculum), which is expected to be more of a beginning sophomore level class. 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, one can see the trend of increasing overall enrollments in Forensic Science courses during the past 2 academic years.

Table 5. Enrollments in Forensic Science Courses

Forensic Science courses	Year and semester codes												Grand Total
	2008 10	2008 20	2009 10	2009 20	2010 10	2010 20	2011 10	2011 20	2012 10	2012 20	2013 10	2013 20	
INTR 3300 Forensic Criminalistics Lab				3		2		3		n/a*		n/a*	8
INTR 4401 Capstone Seminar Forensic Science		1		3		1		1	1			4	11
INTR 4411 Forensic Science Internship	1		1		1		2		1		4		10
CHEM 2225 Forensic Microscopy		2			4					13			19
BIOL 1199 Intro to Forensic Science (replaces INTR 3300)									10		12		22
Grand Total	1	3	1	6	5	3	2	4	12	13	16	4	70

*n/a indicates that INTR 3300 course that has been replaced with Intro to Forensic Science and thus would have no enrollment during those semesters

Service courses

The Forensic Science Program does not offer any specific service courses in the general studies curriculum. Dr. Flood offers Human Biology 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 Figures 1 and 2 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.

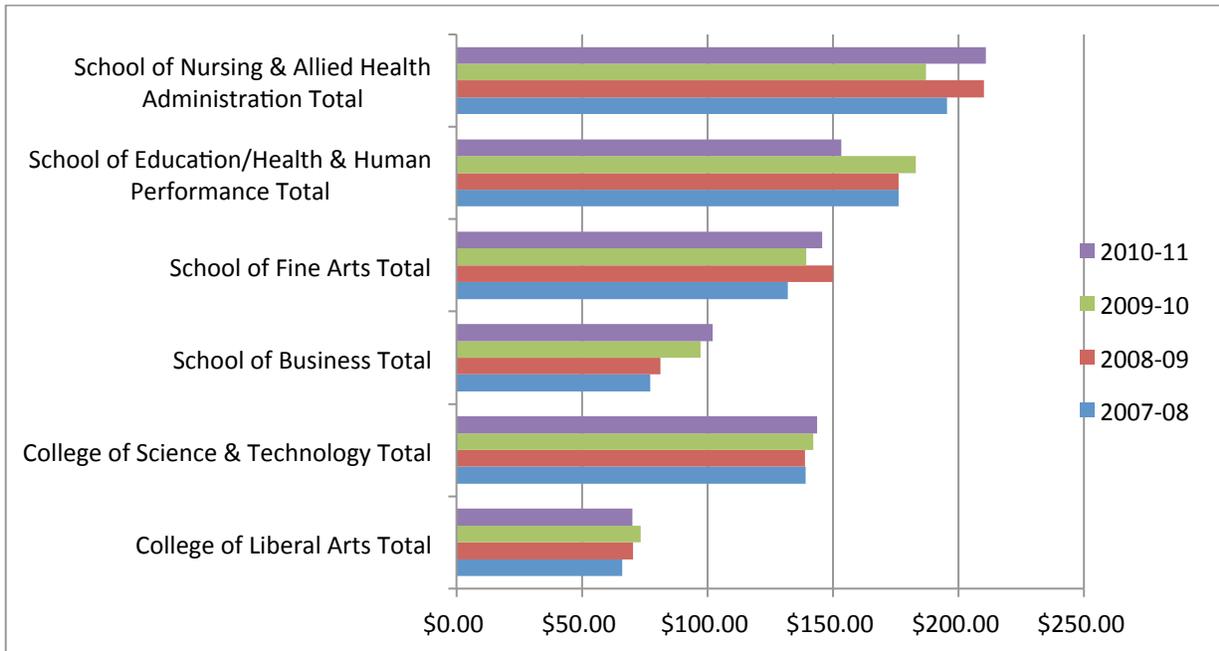


Figure 1: Direct cost per instructional credit hour by School/College for 07-08, 08-09, 09-10, and 10-11.

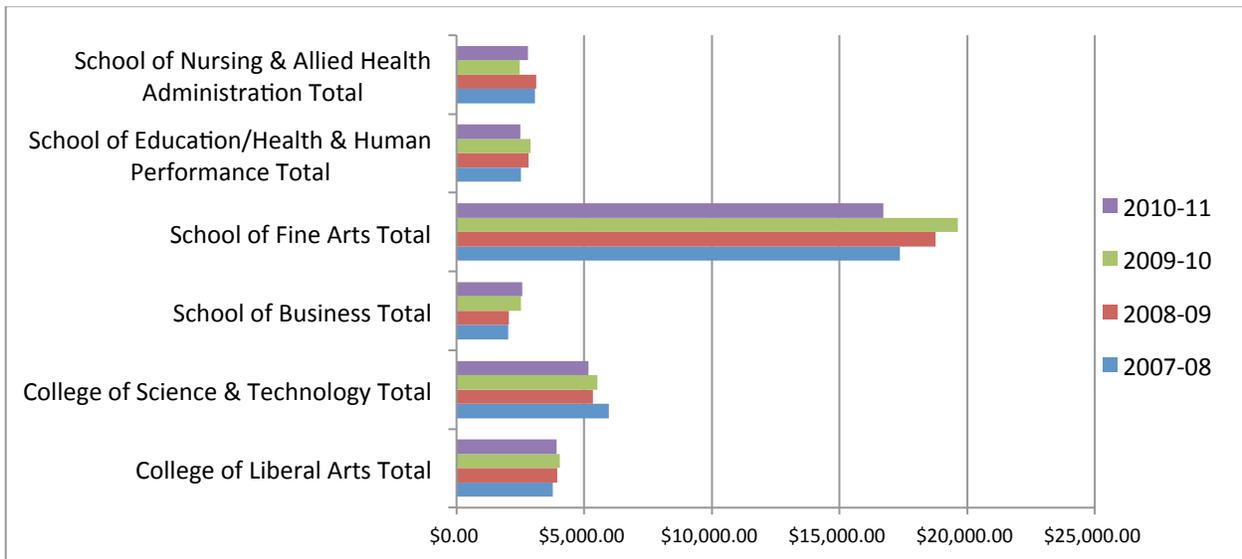


Figure 1: Direct cost per Student FTE Major by School/College for 07-08, 08-09, 09-10, and 10-11.

Liberal Studies Requirements Met

The Forensic Science program is in compliance with the Fairmont State Degree definition. (Refer to

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).

Table 6 Forensic Science Program Goals, Direct Measures and Performance Standards		
Program Outcome	Direct Measure	Satisfactory Performance Standard
Demonstrate a broad knowledge of fundamental facts and theories in biology, chemistry, and criminal justice	ETS Exam given to graduating seniors every spring.	The average score of our students during a five year period will be at or above the national average for the criminal justice overall exam AND the following subcategories: <ul style="list-style-type: none"> • Analytical Chemistry • Molecular / Genetics
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 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 on page 11 shows the ETS test data that has been collected since 2006 for the Analytical Chemistry section. The overall student average percentile for students from 2006-2012 is 19%, with the data ranging from 5% to 33%. It is possible that the low percentile numbers are due to the fact that many of the students took Analytical Chemistry at least 2 years before the ETS exams were taken. Students #4 and #8 also had a double major of Forensic Science and Chemistry, and their scores reflect this fact by them scoring higher in this section. If this data is going to be used as a part of the assessment plan, then students will need some form of refresher during their senior year to try to improve their recollection of this content.

Figure 4 (page 11) illustrates the ETS test scores for the overall Criminal Justice scores and also includes the average for all students that took the exam from 2006-2012. As can be observed the scores ranged from a low of 4% to a high of 64%. The score for student #3 are considerably higher than the rest of the students, possibly because this student had a double major of Forensic Science and Criminal Justice. Student #3 also became a parole officer after graduating (refer back to Table 3 for individual student information) and perhaps more interest in the CJ field. This data might be more useful if the subscores were available, as not all of the Forensic Science majors take courses from all the different subdisciplines of Criminal Justice (ex. law enforcement, law, and corrections). Revisions are currently being made to the curriculum to decrease the number of CJ courses that are expected of our majors. Hence, the Criminal Justice ETS will likely be dropped as one of the curriculum assessments in the near future.

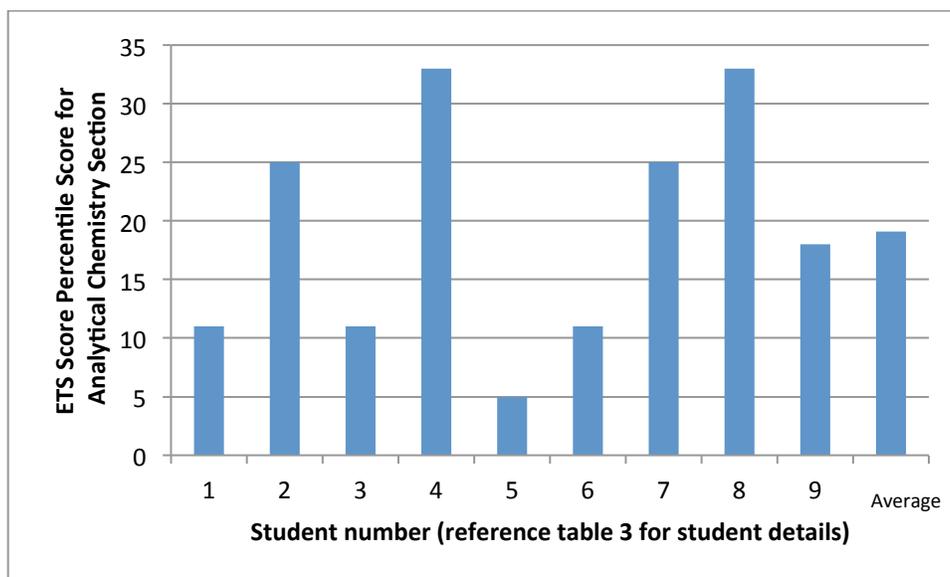


Figure 3. ETS test score data for Analytical Chemistry section

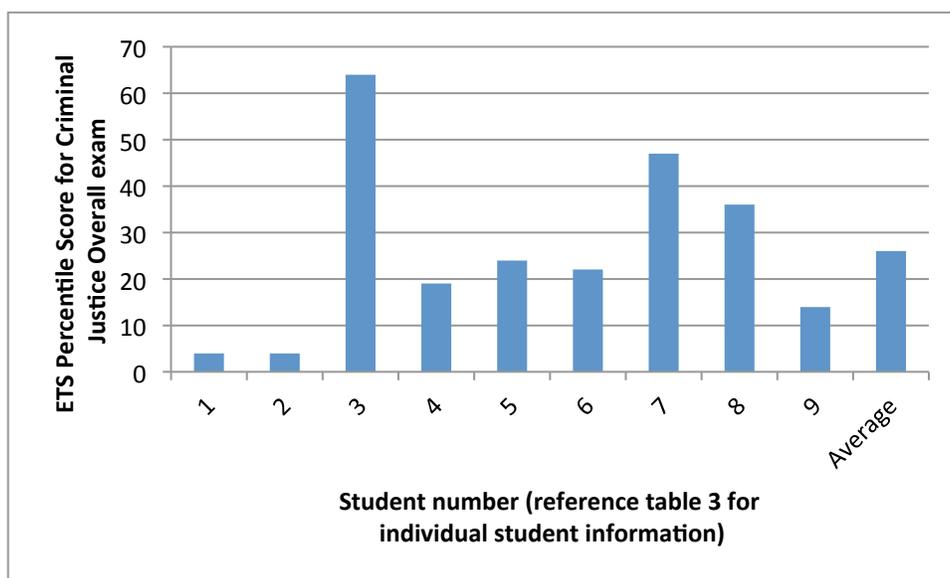


Figure 4. ETS test score data for Criminal Justice overall

Figure 5 (page 12) shows the data for the Genetics/Molecular Biology ETS test results from 2006-2011. The percentile scores are higher for this section versus all other sections. The scores might be higher because the majority of the Forensic Science students take Genetics and Molecular Biotechnology during their senior year, and thus the content is more recent in their academic studies. Two of the 9 students who took this exam achieved the 50% or higher percentile desired outcome for the Forensic Science majors. The Forensic Science program will be making adjustments to strengthen the curriculum by adding genetics/molecular biology sections to the new Intro to Forensic Science and the Forensic Biology course that will be developed. It is believed that having the students be exposed to the content a couple more times in their program of study will allow for deeper understanding of the content concepts.

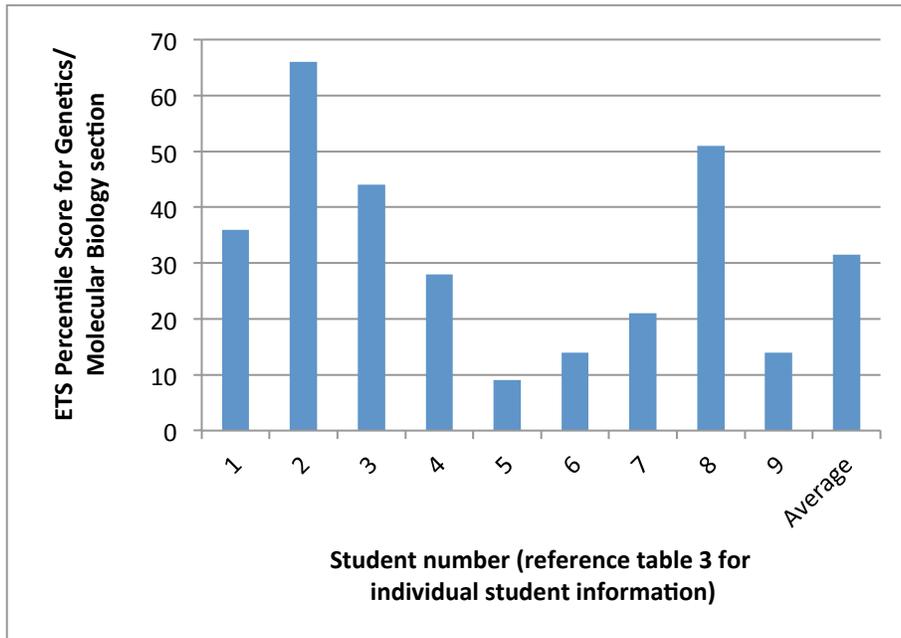


Figure 5. ETS test score data for Genetics/Molecular section

Since 2006, ETS has been administered on the FSU campus in an online format. We have noticed that some students spend significantly less time taking the exam in the online format, as compared to the standard scantron form exam that was used previous to that time. Therefore, it is possible that the some component of low ETS scores might be due to students not taking the exam as seriously as we would like. The Forensic Science program is discussing the implementation of using the student's ETS test results as part of their final grade in Forensic Science Capstone Seminar in order to get them to take the exams more seriously.

In terms of the second program outcome, the Forensic Science program has met the satisfactory performance level when looking at recent graduates. All of the graduates have employment, with 89% being employed in some fashion to use their science or CJ backgrounds obtained at FSU. No data is available on graduates in term of the graduate/professional school, since none have applied for these advanced degrees.

All the Forensic Science graduates during the 2008-2012 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 2. 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 1 (page 2) we could track the freshman cohort from the fall of 2008 to get an estimation of our graduation and retention rates. There are 10 freshmen in the fall of 2008, and by the fall of 2009 we see 6 sophomores who have declared Forensic Science as their major. By the fall of 2010 there are 7 juniors (part of the problem with the data, as discussed earlier), and in the fall of 2011 there are 3 seniors. In the 2011-2012 academic year there was 1 Forensic Science graduate. When looking at these numbers it would look like we retained 60-70% of our students for years 2-3 and only 30% into their senior year, with only a 10% graduation rate. 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. If this factor is kept in mind, then the 4 graduating seniors during the spring of 2013 would mean that our graduation rate is 40%. However, we know that one of those graduating seniors transferred to FSU during the beginning of their junior year. 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. 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. We have formed stronger ties with the WV State Police Forensic Laboratory, obtained new contacts for internship experiences, and added Forensic Microscopy and Intro to Forensic Science to our curriculum. We expect to also add Forensic Biology to our course offerings in the next academic year.

ADEQUACY (§ 4.2.4.2)

Program Requirements:			
	Allowed Range 2008-2012	Forensic Science Program In Current Catalog	120 Hour Proposal: awaiting approval.
General Studies	32 – 42 hours	45 hours	36 hours
Major	32 – 65 hours	65 hours	64 hours
Electives	Minimum 21 hours	18 hours	20 hours
TOTAL		128 hours	120 hours
Programs not meeting the above requirements must request a continuation of their exception with a justification below:			

At all times during the review period, the biology program was in compliance with the degree definition requirements. Additionally, we have proposed a plan to meet the new 120 hour HEPC requirements beginning Fall 2013. This plan is currently under review and is included as Appendix 2.

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	
	200920	4495	Problems in Biological Science	1	
			3368	Animal Physiology	7
				Animal Physiology Lab	7
	201010	4998	Undergraduate Research-Hon	1	
			1105	Biological Principles I	47
	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 Biological Principles I Lab	72 18	
	201120	1104	Biosphere	17	
			Biosphere - Honors	4	
		3368	Animal Physiology Animal Physiology Lab	24 24	
	201210	4495	Problems in Biological Science	1	
		1105	Biological Principles I	65	
		1199	ST: Intro to Forensic Science	10	
		3380	Genetics Genetics Lab	18 18	
	201220	4495	Problems in Biological Science	2	
		4420	Developmental Biology	15	
			Developmental Biology Lab	15	
		4485	Senior Seminar Senior Seminar-Honors	15 3	
	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 was a BS program in Forensic/Crime Scene Investigation at Mountain State University. In addition, there is a graduate degree program in Forensic Science offered at Marshall University. Mountain State University has lost University accreditation entirely, and Fairmont State is currently receiving transfer students from their program. 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.

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 a 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. Historically, the Forensic Science Program has also consistently collaborated with the Criminal Justice (CJ) Program as well, especially considering that several of the CJ courses were designed to meet the needs of both 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

414 Hunt Haught Hall, 1201 Locust Avenue, Fairmont State University, Fairmont, WV 26554
(304) 367-4309 mfflood@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
1992-1993 Embryo Consultant, HyClone Laboratories, Logan, UT
1988-1991 Graduate Research Assistant, Utah State University, Logan, UT
1987-1988 Teaching Assistant, Washington State University, Pullman, WA

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 presentations at scientific meetings (bolded authors are undergraduate student researchers)

NATALIE FOX, MARK FLOOD, and PHILLIP YEAGER, Dept. of Biology, Fairmont State University, Fairmont, WV 26554, and PAUL BAKER, Save the Tygart Watershed Association, Grafton, WV 26354. Determination of the effects of acid mine drainage remediation using microbial community assessment. West Virginia Academy of Science meeting, West Virginia State University, Institute, WV , April 21, 2012 (undergraduate student – oral presentation)

CHRISTINA SNODGRASS, MARK FLOOD, and PHILLIP YEAGER, Dept. of Biology, Fairmont State University, Fairmont, WV 26554, and PAUL BAKER, Save the Tygart Watershed Association, Grafton, WV 26354. Determination of the effects of acid mine drainage remediation in the Three Fork Creek drainage. West Virginia Academy of Science meeting, West Virginia State University, Institute, WV , April 21, 2012 (undergraduate student – oral presentation)

SETH O'NEAL and MARK FLOOD, Dept. of Biology, Fairmont State University, Fairmont, WV, 26554. Determination of the effects of Marcellus shale drilling and fracking on local stream composition.

West Virginia Academy of Science meeting, West Virginia State University, Institute, WV , April 21, 2012 (undergraduate student – oral presentation)

EMILY BOSLEY, MARK FLOOD Department of Biology, Fairmont State University, Fairmont, WV 26554, EMILY PERROTTA, and PAUL BAKER, Save the Tygart Watershed Association, Grafton, WV 26354 . Measuring the effectiveness of acid mine drainage remediation in tributaries of Three Fork Creek. Proceedings of the West Virginia Academy of Science 83:5 (undergraduate student – oral presentation at WVU-Tech on April 2, 2011)

DAVID WRAY, BONNIE POLLOCK, MARK FLOOD, Dept of Biology, Chemistry and Geoscience, Fairmont State University, Fairmont, WV 26554 and JEAN CHAPPELL, BOWIE KAHLE, GARY WRIGHT, TODD GREEN, PAULETTE WEHNER, MARK STUDNEY, and ELIZABETH MURRAY, Marshall University, Huntington, WV. Determining the effect of gene mutations on plasma homocysteine levels. West Virginia Academy of Science meeting, Fairmont State University, April 2008 (undergraduate student – poster presentation)

STEPHANIE ZORIO and MARK FLOOD, Dept of Biology, Chemistry and Geoscience, Fairmont State University, Fairmont, WV 26554. Determining the Role of pH on Benzo[a]pyrene Uptake During Early Embryonic Survival and Development of *Rana pipiens*. West Virginia Academy of Science meeting, Fairmont State University, April 2008 (undergraduate student – oral presentation)

Ongoing Research Support

West Virginia NASA Space Grant Consortium 10/2012-6/2013
The objective of this \$6,000 undergraduate-driven research project is to investigate the effect of Marcellus Shale well drilling and associated activities on the local streams.
Role: PI in association with undergraduate researcher Lauren Gates

Completed Research Support

NIH/NCRR (WV-INBRE Grant) 7/2004-6/2009
The objective of this project was to investigate the genetic factors involved in Familial Combined Hyperlipidemia (FCHL) in West Virginians.
Role: PI

West Virginia NASA Space Grant Consortium 10/2010-6/2011
The objective of this \$12,000 undergraduate-driven research project was to investigate the effect of remediation on acid mine drainage in the Three Fork Creek drainage.
Role: Collaborating Investigator along with Dr. Phil Yeager

I have also collaborated with at least 2 FSU undergraduate researchers for every summer during the last 2 summers dealing with water quality issues in the north central WV region.

Professional Affiliations:

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

Faculty Data

(No more than TWO pages per faculty member)

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

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 & 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. **Degree is in area of current assignment**
- (c) Identify your professional development activities during the past five years.
- (d) List awards/honors (including invitations to speak in your area of expertise) or special recognition
In last five years.
- (e) Indicate any other activities which have contributed to effective teaching.
- (f) List professional books/papers published during the last five years. **None**
- (g) List externally funded research (grants and contracts) during last five years. **None**

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

Required Major Courses		HRS
BIOL 1106	Biological Principles II	4
BIOL 3360	Biochemistry	4
BIOL 3380	Genetics	4
BIOL 3390	Molecular Biotechnology	4
BIOL 4495 or CHEM 4403	Problems in Biological Science/Independent Research	2
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
CHEM 2225	Forensic Microscopy and Spectroscopy	4
CRJU 1100	Intro to Criminal Justice	3
CRJU 2236	Criminal Investigation	3
CRJU 3300	Criminalistics	3
INTR 3300	Forensic Criminalistics Lab	1
INTR 4401	Capstone Seminar in Forensic Science	3
INTR 4411	Forensic Science Internship	2
Math 1113	Applied Statistics	4
Specialization Electives – 9 hours, but no more than 6 hours of CRJU courses		
BIOL 2224	Microbiology	4
CHEM 3301	Physical Chemistry I	4
CHEM 4412	Physical Chemistry II	4
CRJU 2226	Crime Scene Investigation	3
CRJU 2246	Criminal Evidence	3
CRJU 2256	Homicide Investigation	3
CRJU 3320	Criminology	3
TOTAL HOURS FOR MAJOR		74
Required General Studies Courses		
First Year Experience		16
ENGL	1104 Written English I	3
ENGL	1108 Written English II	3
INFO	1100 Computer Concepts and Applications	3
MATH	1185 or 1190 Applied Calculus I or Calculus I	4
COMM	2200, 2201, OR 2202 Communication	3

Scientific Discovery	8
PHYS 1101 and 1102 Introduction to Physics I and II	
Cultural / Civilization Exploration	9
Society / Human Interactions	6
Artistic / Creative Expression	6
TOTAL GENERAL STUDIES HOURS	45
TOTAL FREE ELECTIVES	9
TOTAL HOURS	128

Appendix 2 – Proposed Program
 B.S. Degree in Forensic Science
 Proposed Program

Required Major Courses		HRS
BIOL 1106	Biological Principles II	4
BIOL 3360	Biochemistry	4
BIOL 3380	Genetics	4
BIOL 3390	Molecular Biotechnology	4
BIOL 4495 or CHEM 4403	Problems in Biological Science/Independent Research	2
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
CRIM 1100	Intro to Criminal Justice	3
CRIM 2236	Criminal Investigation	3
FORS 2201	Introduction to Forensic Science	4
FORS 2225	Forensic Microscopy and Spectroscopy	3
FORS 4401	Capstone Seminar in Forensic Science	3
FORS 4411	Forensic Science Internship	2
MATH 1113	Applied Statistics	3
TOTAL Required Major Courses		64
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
		8
TOTAL HOURS FOR MAJOR		72