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Viewing: SC-BS-FRSC : Forensic Science, BS

Last approved: 03/26/20 11:09 am

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Changes proposed by: jbazaz

Catalog Pages Using this Program

Forensic Science, BS

Are you completing this form on someone else's behalf?

No

Effective Catalog:	2021-2022
Program Level:	Undergraduate
Program Type:	Bachelor's
Degree Type:	Bachelor of Science
Title:	Forensic Science, BS
Banner Title:	Forensic Science, BS
Registrar/OAPI Use Only – SCHEV Status	Approved
Registrar's Office Use Only – Program Start Term	
Registrar/OAPI Use Only – SCHEV Letter	
Registrar/OAPI Use Only – SACSCOC Status	
Concentration(s):	

In Workflow

1. **FRSC Chair**
2. SC Curriculum Committee
3. SC Associate Dean
4. SC CAT Editor
5. Assoc Provost-Undergraduate
6. Registrar-Programs: Duration
7. Registrar-Programs

History

1. Nov 1, 2017 by clmig-jwehrheim
2. Dec 7, 2018 by Jennifer Bazaz Gettys (jbazaz)
3. Dec 5, 2019 by Jennifer Bazaz Gettys (jbazaz)
4. Mar 26, 2020 by Tory Sarro (vsarro)

	Associated Concentrations	Registrar's Office Use Only: Concentration Code
1	Standard Concentration	
2	Forensic Biology Concentration	
3	Forensic Chemistry Concentration	

Registrar/IRR Use Only – Concentration CIP Code

College/School: College of Science

Department / Academic Unit: Forensic Science Program

Jointly Owned Program? No

Justification

1. Making a previous update retroactive to prior catalog terms: Additional courses that may apply as "Additional Courses": FRSC 415, FRSC 418

2. (What has been proposed?): The Bachelor of Science, Forensic Science degree currently does not offer any concentrations. This proposal includes two concentration options in Forensic Biology and Forensic Chemistry while retaining the current curriculum as a “Without Concentration” option with minor modifications (Supporting Sciences reduced from 12 to 8 credits and concentration courses removed to satisfy the 12 unique concentration credits and added FRSC 450 as a Supporting Science option which was approved in the October COS Curriculum Committee).

(Why is this proposal necessary?): This proposal contains two new concentrations in “Forensic Biology” and “Forensic Chemistry”, these concentrations are fundamental in propelling GMU’s Forensic Science Program as a premiere forensic science program in the Northern Virginia area. Currently, we are working towards accreditation by the American Academy of Forensic Sciences (AAFS) which is a forensic science professional organization that promotes professionalism, integrity, competency, and education. The Forensic Science Educational Programs Accreditation Commission (FEPAC) recognizes and distinguishes high quality educational programs by maintaining standards and evaluating programs.

Approximately, 23 institutions in the United States offer a comparable Bachelor of Science, Forensic Science degree and have obtained FEPAC accreditation. Of these 23 institutions, 70% of them offer similar concentrations to the proposed concentrations in Forensic Biology and/or Forensic Chemistry including: Virginia Commonwealth University, West Virginia University, Penn

State University, Towson University, Ohio University, University of New Haven, West Chester University of Pennsylvania, Indiana University Purdue University, University of Central Oklahoma, Buffalo State SUNY, Eastern Kentucky University, University of Central Florida, Fayetteville State University, University of Mississippi, and University of North Texas. 1

Additionally, employment within Forensic Biology and Forensic Chemistry positions require specific coursework. Several current job positions listed on the American Academy of Forensic Science (AAFS) and the International Association of Identification (IAI) websites outline these particular coursework eligibility requirements. 2

Forensic DNA Analyst positions within the United States must meet the following minimum education requirements as outlined by the Federal Bureau of Investigations (FBI) Quality Assurance Standards (QAS) Standard 5.4.1 which indicates that “employees shall have successfully completed coursework covering the following subject areas: biochemistry, genetics, and molecular biology, statistics and/or population genetics”3. Therefore, this concentration includes all required coursework as defined in the FBI QAS Standards.

Forensic Chemist positions amongst most local, state, and federal agencies are expected to have at least 30 hours of chemistry to include, general chemistry, organic chemistry, and exposure to analytical methodologies and instrumentation. This proposed concentration follows the recommended coursework as outline in various job descriptions.

Lastly, the U.S. Bureau of Labor and Statistics demonstrate in the Occupational Outlook Handbook that “employment of forensic science technicians is projected to grow 14 percent from 2019 to 2029, much faster than the average for all occupations”. 4 As defined in the handbook, these positions include laboratory forensic science technicians which may incorporate the forensic scientist positions within Forensic Biology and Forensic Chemistry laboratory sections.

1 Forensic Education Programs Accreditation Commission Accredited Universities: https://www.fepac-edu.org/accredited-universities
2 American Academy of Forensic Science Job Postings: https://webdata.aafs.org/public/jobs/postings.aspx
International Association of Identification Job Postings: https://www.theiai.org/job_listings.php
3 “Quality Assurance Standards for Forensic DNA Testing Laboratories” Approved by the Director of the Federal Bureau of Investigation to take effect July 1 2020
4 US Bureau of Labor and Statistics, Occupational Outlook Handbook: https://www.bls.gov/ooh/life-physical-and-social-science/forensic-science-technicians.htm

Total Credits Required: Total credits: minimum 120

Registrar's Office Use Only - Program Code:

SC-BS-FRSC

Registrar/IRR Use Only – Program CIP Code

Admission Requirements:

Admissions

University-wide admissions policies can be found in the Undergraduate Admissions Policies section of this catalog. To apply for this program, please complete the George Mason University Admissions Application.

Program-Specific Policies:

Policies

Students must fulfill all Requirements for Bachelor's Degrees, including the Mason Core.
FRSC 302 Forensic Trace Analysis **and** FRSC 304 Forensic Chemistry will satisfy the writing intensive requirement.
For policies governing all undergraduate programs, see AP.5 Undergraduate Policies.

Degree Requirements:

Students should refer to the Admissions & Policies tab for specific policies related to this program.
Students majoring in forensic science must complete **the core courses and choose one concentration.** ~~their coursework with a minimum GPA of 2.30.~~ **Students can not declare the concentration upon admission; it can be declared once the student has earned a minimum of 60 credits.**
All coursework must be completed with a minimum GPA of 2.30. No more than three courses with a grade of 'D' (1.00) may be applied to the major.
Students are advised to be aware of **any** prerequisites that may be required for each course in the curriculum.
Students are only permitted three attempts for all major courses; following a third unsuccessful attempt the student will no longer be able to pursue the major.

Forensic Science Core Courses

Students in each concentration should complete the following courses: ~~Natural Science Core Courses~~ ~~Additional Courses~~

~~Select 12 credits from the following:~~ ~~12~~

~~FRSC 415~~	~~Selected Topics in Forensic Science~~
~~FRSC 418~~	~~Analytical Thinking and Violent Crime Profiling~~
~~BINF 401~~	~~Bioinformatics and Computational Biology I~~
~~BINF 402~~	~~Bioinformatics and Computational Biology II~~

BIOL 305	Biology of Microorganisms	
BIOL 306	Biology of Microorganisms Laboratory	
BIOL 404	Medical Microbiology	
BIOL 405	Microbial Genetics	
BIOL 431	Advanced Human Anatomy and Physiology II	
BIOL 452	Immunology	
BIOL 453	Immunology Laboratory	
BIOL 482	Introduction to Molecular Genetics	
BIOL 484	Cell Signaling and Disease	
CHEM 321	Quantitative Chemical Analysis	
CHEM 331	Physical Chemistry I	
CHEM 332	Physical Chemistry II	
CHEM 336	Physical Chemistry Lab I	
CHEM 337	Physical Chemistry Lab II	
CHEM 422	Instrumental Methods of Chemical Analysis	
CHEM 423	Instrumental Methods of Chemical Analysis Laboratory	
CHEM 427	Aquatic Environmental Chemistry	
CHEM 441	Properties and Bonding of Inorganic Compounds	
CHEM 446	Bioinorganic Chemistry	
CHEM 463	General Biochemistry I	
CHEM 464	General Biochemistry II	
CHEM 465	Biochemistry Lab	
Total Credits		0
BIOL 213	Cell Structure and Function (Mason Core)	4
BIOL 214	Biostatistics for Biology Majors	3-4
or STAT 250	Introductory Statistics I (Mason Core)	
BIOL 311	General Genetics	4
BIOL 430	Advanced Human Anatomy and Physiology I	4
CHEM 211	General Chemistry I (Mason Core)	4
& CHEM 213	and General Chemistry Laboratory I (Mason Core)	
CHEM 212	General Chemistry II (Mason Core)	4
& CHEM 214	and General Chemistry Laboratory II (Mason Core)	
CHEM 313	Organic Chemistry I	3
CHEM 314	Organic Chemistry II	3
CHEM 315	Organic Chemistry Lab I	2
CHEM 318	Organic Chemistry Lab II	2
MATH 113	Analytic Geometry and Calculus I (Mason Core)	4-6
or MATH 123	Calculus with Algebra/Trigonometry, Part A	
& MATH 124	and Calculus with Algebra/Trigonometry, Part B (Mason Core)	
PHYS 243	College Physics I (Mason Core)	3
PHYS 244	College Physics I Lab (Mason Core)	1

~~PHYS 245~~	~~College Physics II (Mason Core)~~	~~3~~
~~PHYS 246~~	~~College Physics II Lab (Mason Core)~~	~~1~~
~~Total Credits~~		~~0~~

Forensic Science Courses

FRSC 200	Survey of Forensic Science	3
FRSC 201	Introduction to Criminalistics	3
FRSC 302	Forensic Trace Analysis 1	3
FRSC 303	Forensic Evidence and Ethics	3
FRSC 304	Forensic Chemistry	4
& FRSC 305	and Forensic Chemistry Laboratory 1	
~~FRSC 305~~	~~Forensic Chemistry Laboratory~~	~~1~~
FRSC 401	Crime Scene Investigations	3
FRSC 405	Independent Research Methods	3
or FRSC 406	Forensic Internship	
FRSC 460	Forensic DNA Analysis	4
& FRSC 461	and Forensic DNA Analysis Laboratory	
~~FRSC 461~~	~~Forensic DNA Analysis Laboratory~~	~~1~~
FRSC 499	Comprehensive Examination	0
CRIM 100	Introduction to Criminal Justice (Mason Core)	3

Natural Science Core Courses

BIOL 213	**Cell Structure and Function (Mason Core)**	**4**
BIOL 214	**Biostatistics for Biology Majors**	**3-4**
or STAT 250	**Introductory Statistics I (Mason Core)**	
BIOL 311	**General Genetics**	**4**
CHEM 211	**General Chemistry I (Mason Core)**	**4**
& CHEM 213	**and General Chemistry Laboratory I (Mason Core)**	
CHEM 212	**General Chemistry II (Mason Core)**	**4**
& CHEM 214	**and General Chemistry Laboratory II (Mason Core)**	
CHEM 313	**Organic Chemistry I**	**5**
& CHEM 315	**and Organic Chemistry Lab I**	
CHEM 314	**Organic Chemistry II**	**5**
& CHEM 318	**and Organic Chemistry Lab II**	
MATH 113	**Analytic Geometry and Calculus I (Mason Core)**	**4-6**
or MATH 123	**Calculus with Algebra/Trigonometry, Part A**	
& MATH 124	**and Calculus with Algebra/Trigonometry, Part B (Mason Core)**	
PHYS 243	**College Physics I (Mason Core)**	**4**
& PHYS 244	**and College Physics I Lab (Mason Core) 2**	
PHYS 245	**College Physics II (Mason Core)**	**4**
& PHYS 246	**and College Physics II Lab (Mason Core) 2**	
Total Credits		70-73

1 FRSC 302 Forensic Trace Analysis **and** FRSC 304 Forensic Chemistry will satisfy this major's writing-intensive

requirement.

2 Students in the Forensic Chemistry Concentration may instead choose the following physics sequence:

PHYS 160 University Physics I (Mason Core) (3 credits) & PHYS 161 University Physics I Laboratory (Mason Core) (1 credits) & PHYS 260 University Physics II (Mason Core) (3 credits) & PHYS 261 University Physics II Laboratory (Mason Core) (1 credits)

- Please note that PHYS 260/261 requires a prerequisite of MATH 213 Analytic Geometry and Calculus III.

Standard Concentration

Required Course		
BIOL 430	Advanced Human Anatomy and Physiology I	4
Supporting Science Courses		
Select a minimum of 8 credits from the following courses:		8
FRSC 450	Practical Forensic Skeletal Biology	
BINF 401	Bioinformatics and Computational Biology I	
BINF 402	Bioinformatics and Computational Biology II	
BIOL 305	Biology of Microorganisms	
& BIOL 306	and Biology of Microorganisms Laboratory	
BIOL 404	Medical Microbiology	
BIOL 405	Microbial Genetics	
BIOL 412	Phage Genomics	
BIOL 417	Selected Topics in Molecular and Cellular Biology (When the topic is "Illumina Sequencing")	
BIOL 431	Advanced Human Anatomy and Physiology II	
BIOL 452	Immunology	
& BIOL 453	and Immunology Laboratory	
BIOL 482	Introduction to Molecular Genetics	
BIOL 484	Cell Signaling and Disease	
CHEM 331	Physical Chemistry I	
& CHEM 336	and Physical Chemistry Lab I	
CHEM 427	Aquatic Environmental Chemistry	
CHEM 446	Bioinorganic Chemistry	
CHEM 463	General Biochemistry I	
& CHEM 465	and Biochemistry Lab	
CHEM 464	General Biochemistry II	
Total Credits		12

Forensic Biology Concentration

Required Courses		
FRSC 325	Molecular Biology	4
& FRSC 326	and Molecular Biology Laboratory	
FRSC 470	Forensic Genomics	4

BIOL 483	General Biochemistry	4
Supporting Science Courses		
Select a minimum of 3 credits from the following courses:		3
FRSC 450	Practical Forensic Skeletal Biology	
BINF 401	Bioinformatics and Computational Biology I	
BINF 402	Bioinformatics and Computational Biology II	
BIOL 305	Biology of Microorganisms	
& BIOL 306	and Biology of Microorganisms Laboratory	
BIOL 404	Medical Microbiology	
BIOL 405	Microbial Genetics	
BIOL 412	Phage Genomics	
BIOL 417	Selected Topics in Molecular and Cellular Biology (When the topic is "Illumina Sequencing")	
BIOL 430	Advanced Human Anatomy and Physiology I	
BIOL 431	Advanced Human Anatomy and Physiology II	
BIOL 452	Immunology	
& BIOL 453	and Immunology Laboratory	
BIOL 482	Introduction to Molecular Genetics	
BIOL 484	Cell Signaling and Disease	
Total Credits		15

Forensic Chemistry Concentration

Required Courses		
FRSC 404	Advanced Instrumentation in Forensic Chemistry	4
CHEM 321	Quantitative Chemical Analysis	4
MATH 114	Analytic Geometry and Calculus II	4
Supporting Science Courses		
Select a minimum of 7 credits from the following courses:		7
CHEM 331	Physical Chemistry I	
& CHEM 336	and Physical Chemistry Lab I	
CHEM 332	Physical Chemistry II	
& CHEM 337	and Physical Chemistry Lab II 1	
CHEM 422	Instrumental Methods of Chemical Analysis	
& CHEM 423	and Instrumental Methods of Chemical Analysis Laboratory 1	
CHEM 427	Aquatic Environmental Chemistry	
CHEM 441	Properties and Bonding of Inorganic Compounds 1	
CHEM 446	Bioinorganic Chemistry	
CHEM 463	General Biochemistry I	
& CHEM 465	and Biochemistry Lab	
CHEM 464	General Biochemistry II	
Total Credits		19

1 These course selections recommend the University Physics sequence.

Retroactive Requirements Updates:

Effective Catalog years: 2018-2019; 2019-2020

Previous requirement as stated in the catalog: did not include FRSC 415, FRSC 418 as "additional courses" options.

Additional courses that may apply to the above requirement: FRSC 415, FRSC 418.

Plan of Study:

Honors Information:

Program Outcomes

Additional Program Information

This information is required by the Office of Accreditation and Program Integrity.

Courses offered via distance (if applicable):

What is the primary delivery format for the program?

Face-to-Face Only

Does any portion of this program occur off-campus?

No

Are you working with a vendor / other collaborators to offer your program?

No

Related Departments

Could this program prepare students for any type of professional licensure, in Virginia or elsewhere?

No

Are you adding or removing a licensure component?

No

Additional SCHEV & SACSCOC Information

Are you changing the total number of credits required for this program?

No

Are you changing the delivery format in any way (e.g adding an online option)?

No

Are you adding/removing a licensure option which was approved by SCHEV?

No

Will any portion of this program be offered at an off-campus location?

No

Will this program change affect any specialized accreditation?

No

Is the content of the new program closely related to that of an existing approved program?

No

Is this new program considered to be "advancing the degree level of a currently approved program" (i.e. existing content is at lower degree level, new content is at the higher degree level)?

No

Is this new program considered to be "lowering the degree level of a currently approved program" (i.e. existing content is at higher degree level, new content is at the lower degree level)?

No

Does this change represent a repackaging of content in an existing approved degree/certificate program?

No

Percentage of total credits containing new course content, excluding gen ed courses for undergraduate programs ("New content" means content that is not currently included in an existing approved degree/certificate program.) Please choose a percentage (i.e. 0%-100%)

less than 25%

Are the total credits for the program increasing or decreasing by more than 3 credits?

No

Will any additional equipment/facilites be needed?

No

Will any additional faculty be required?

No

Will any additional financial resources be needed?

No

Will any additional library/learning resources needed?

No

OAPI Use Only – Determination of SACSCOC Impact

Comments or Notes

Green Leaf Program Designation

Is this a Green Leaf program? No

Does this program cover material which crosses into another department?

No

Additional Attachments

SCHEV Proposal

Executive Summary

Reviewer Comments

Additional Comments

Is this course required of all students in this degree program?

%wi_required.eschtml%

Key: 145