Program Change Request

Date Submitted: 01/08/24 10:41 am

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

Last approved: 04/04/23 8:26 pm

Last edit: 01/11/24 11:11 am

Changes proposed by: jbazaz

Catalog Pages Using this Program

Forensic Science, BS

Anticipated closu

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

Yes

Requestor:

In Workflow

1. **FRSC Chair**
2. **SC Curriculum Committee**
3. SC Assistant Dean
4. Assoc Provost-Undergraduate
5. Registrar:Concentrat Code
6. Registrar-Programs

Approval Path

1. 01/08/24 12:06 pm Mary O'Toole (motoole2): Approved for FRSC Chair

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)
5. Jan 29, 2021 by Jennifer Bazaz Gettys (jbazaz)
6. Apr 13, 2021 by Tory Sarro (vsarro)
7. Apr 13, 2021 by Tory Sarro (vsarro)

8. Apr 13, 2021 by Tory Sarro (vsarro)
9. May 12, 2022 by Tory Sarro (vsarro)
10. May 25, 2022 by Tory Sarro (vsarro)
11. Apr 4, 2023 by Jennifer Bazaz Gettys (jbazaz)

Name	Extension	Email
Kimberly Rule	5338	kcarisi@gmu.edu

Effective Catalog: 2024-2025

Program Level: Undergraduate

Program Type: Bachelor's

Degree Type: Bachelor of Science

Title: Forensic Science, BS

5. Is this badge co-sponsored with

Education

Professional

Skills Tag

Badge Attributes

Issuance information and Pricing

- A Mason Digital Credentials Advisory Group may be developed

Banner Title: Forensic Science, BS

Is this a retitling of an existing

Existing Program

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):

	Associated Concentrations	Registrar's Office Use Only: Concentration Code
1	Criminalistics	FRCR
2 ~~1~~	Forensic Biology	FRBL
3 ~~2~~	Forensic Chemistry	FRCH
4	Interdisciplinary Forensic Science	FRIN

INTO Major(s):

Registrar/IRR Use Only – Concentration CIP Code

College/School: College of Science

Department / Academic Unit: Forensic Science Program

Jointly Owned Program? No

Participating

Participating

Justification

What: Changing “Degree Without Concentration” to “Criminalistics Concentration”, and requiring two lecture/laboratory pairing science courses within the concentration.
Why: The proposal of changing “Degree Without Concentration” to “Criminalistics Concentration” provides a more appealing title which aligns with the Forensic Science Accreditation (FEPAC) terminology which classify general forensic science concentrations under criminalistics. Also, to align with Forensic Science Accreditation standards two upper level lecture/laboratory pairing science courses are now required as part of this concentration.

What: Removing FRSC 499 comprehensive Examination from all three concentrations: Forensic Biology Concentration, Forensic Chemistry Concentration, Degree Without Concentration/Criminalistics Concentration.
Why: This course/examination was implemented several years to go to meet one of the Forensic Science Accreditation (FEPAC) standards. This standard no longer exists and the Forensic Science Program believes that the removal of FRSC 499 does not diminish the integrity of the degree, however it limits faculty’s ability to be innovative and creative in course design and therefore support its removal.

What: Added CHEM 424 Principles of Chemical Separation to the Forensic Chemistry Concentration Supporting Science, added BIOL 485 Cell Signaling Laboratory to the Forensic Biology and Degree Without Concentration/Criminalistics Concentrations, and removing BIOL 417 Selected Topics in Molecular and Cellular Biology (When the topic is “Illumina Sequencing”) from the Forensic Biology Concentration and Degree Without Concentration/Criminalistics Concentration Supporting Sciences.
Why: Under consultation with Chemistry Department faculty, CHEM 424 was recommended as an addition to the Forensic Chemistry Concentration as this course is beneficial for forensic science students interested in a career within Forensic Chemistry. BIOL 417 Selected Topics of “Illumina Sequencing” has not been offered for several years and therefore should be removed from the Supporting Science course option list from the Forensic Biology and Degree Without Concentration/Criminalistics Concentration. BIOL 485 Cell Signaling Laboratory was added to the Forensic Biology and Degree Without Concentration/Criminalistics Concentrations to give students the option of the lab component to the already approved BIOL 484 lecture component of the Cell Signaling and Disease course.

What: Creating a new concentration “Interdisciplinary Forensic Science Concentration” as part of the Bachelor of Science, Forensic Science degree. Revisualizing the core to take into consideration this new concentration.
Why: The Bachelor of Science, Forensic Science degree has experienced consistent increased growth since its implementation in 2011. In 2021, the Forensic Biology and Forensic Chemistry Concentrations were successfully implemented to provide students with relevant coursework who desired careers within these sub disciplines of forensic science. To keep up with the increasing interest and demand in forensic science, this proposal introduces a new concentration designed for students desiring a career within forensic science that are outside

of the traditional biology and chemistry- based fields. This interdisciplinary concentration brings course options from within College of Science (COS) and external to COS by offering selected minors that are relevant to forensic science. This concentration maintains the integrity of a science degree by including the current “Natural Science Core” courses to include biology, chemistry, mathematics, and physics courses providing a well-rounded science foundation while additionally satisfying the Bachelor’s degree 25% overlap required by SCHEV. Students will be required to take select Forensic Science courses and then will have several options of upper level science courses or any College of Science minor or selected non-COS minor. This concentration will be appealing to prospective students as this is not an option found at most of our peer institutions who only provide concentrations that are solely laboratory focused and not interdisciplinary as seen below. These lab-based options preclude a large population of students who desire a non-laboratory focused career in forensic science.

- VCU- Forensic Chemistry, Forensic Biology and Physical Evidence Concentrations
- Penn State- Forensic Molecular Biology and Forensic Chemistry Options
- George Washington University- Combined BS/MFS in Forensic Chemistry
- West Virginia University- Forensic Biology, Forensic Chemistry, and Forensic Examiner majors
- Towson University- Forensic Chemistry Program with General, Trace/Drug, and DNA Tracks

Forensic Science careers are not only found in scientific laboratories but also have strong relevance to numerous field-based, security-based, intelligence-based entities. Students with this type of interdisciplinary coursework may find employment opportunities in various local, state, and federal law enforcement, government, and military agencies. According to the U.S. Bureau of Labor and Statistics Occupational Outlook Handbook, the projected percent change in employment for Forensic Science Technicians from 2022 to 2032 is 13%. This percentage as compared to the average growth rate for all occupations is 3% is rated as “much faster than average”. And “about 2600 openings for forensic science technicians are projected each year, on average, over the decade. Many of those openings are expected to result form the need to replace workers who transfer to different occupations of exit the labor force, such as to retire”.1

1 US Bureau of Labor and Statistics, Occupational Outlook Handbook: https://www.bls.gov/ooh/life-physical-and-social-science/forensic-science-technicians.htm#tab-1

Catalog Published Information

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 (Mason Core) **or** ~~**and**~~ FRSC 304 Forensic Chemistry (Mason Core) 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, select one concentration, ~~courses~~ and complete Mason Core and Elective Credits. ~~choose one concentration.~~
~~Students cannot declare the concentration upon admission; it can be declared once the student has earned a minimum of 60credits.~~All major 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 must ~~should~~ complete the following courses: ~~Degree without~~

Forensic Science Core Courses

FRSC 200	Survey of Forensic Science	3
FRSC 201	Introduction to Criminalistics	3
FRSC 302	Forensic Trace Analysis (Mason Core) 1	3
~~FRSC 303~~	~~Forensic Evidence and Ethics~~	~~3~~
~~FRSC 304~~	~~Forensic Chemistry (Mason Core)~~	~~4~~
~~& FRSC 305~~	~~and 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 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		53-56

1

FRSC 302 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) & PHYS 161 University Physics I Laboratory (Mason Core) & PHYS 260 University Physics II (Mason Core) & PHYS 261 University Physics II Laboratory (Mason Core).
- Please note that PHYS 260 University Physics II (Mason Core) & PHYS 261 University Physics II Laboratory (Mason Core) require a prerequisite of MATH 213 Analytic Geometry and Calculus III.

Concentration ~~Concentration~~ in Criminalistics (FRCR)

Forensic Science Extended Core		
FRSC 303	Forensic Evidence and Ethics	3
FRSC 304	Forensic Chemistry (Mason Core)	4
& FRSC 305	and 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	
Required Concentration Courses		
~~Select a minimum of 8 credits from the following courses:~~		~~8~~
Select two lecture and laboratory pairings for a minimum of 8 credits:		8-12
FRSC 325	Molecular Biology	
& FRSC 326	and Molecular Biology Laboratory	
BIOL 305	Biology of Microorganisms	
& BIOL 306	and Biology of Microorganisms Laboratory	
BIOL 405	Microbial Genetics	
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 483	General Biochemistry	
or CHEM 463	General Biochemistry I	
& CHEM 465	and Biochemistry Lab (Mason Core)	
BIOL 484	Cell Signaling and Disease	
& BIOL 485	and Cell Signaling Laboratory	
CHEM 321	Quantitative Chemical Analysis	
CHEM 331	Physical Chemistry I	
& CHEM 336	and Physical Chemistry Lab I (Mason Core)	
Supporting Science Electives		
Select a minimum of 7 credits (not previously taken) from the following:		7-10
FRSC 325	Molecular Biology	
FRSC 326	Molecular Biology Laboratory	
FRSC 404	Advanced Instrumentation in Forensic Chemistry	
FRSC 450	Practical Forensic Skeletal Biology	
FRSC 470	Forensic Genomics	
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 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	Immunology Laboratory	

BIOL 482	Introduction to Molecular Genetics
BIOL 483	General Biochemistry
BIOL 484	Cell Signaling and Disease
BIOL 485	Cell Signaling Laboratory
CHEM 321	Quantitative Chemical Analysis
CHEM 331	Physical Chemistry I
CHEM 336	Physical Chemistry Lab I (Mason Core)
CHEM 427	Aquatic Environmental Chemistry
CHEM 446	Bioinorganic Chemistry
CHEM 463	General Biochemistry I
CHEM 464	General Biochemistry II
CHEM 465	Biochemistry Lab (Mason Core)

Total Credits 32-39

1

FRSC 304 Forensic Chemistry (Mason Core) will satisfy this major's writing-intensive requirement.

Concentration ~~Forensic Biology (FRBL)Concentration~~ in Forensic Biology (FRBL)

Forensic Science Extended Core		
FRSC 303	Forensic Evidence and Ethics	3
FRSC 304	Forensic Chemistry (Mason Core)	4
& FRSC 305	and 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	
Required Concentration 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:		3-6
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	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	Immunology Laboratory
BIOL 482	Introduction to Molecular Genetics
BIOL 484	Cell Signaling and Disease
BIOL 485	Cell Signaling Laboratory
Total Credits	32-35

1

FRSC 304 Forensic Chemistry (Mason Core) will satisfy this major's writing-intensive requirement.

Concentration in Forensic Chemistry (FRCH)

Extended Forensic Science Core		
FRSC 303	Forensic Evidence and Ethics	3
FRSC 304	Forensic Chemistry (Mason Core)	4
& FRSC 305	and 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	
Required Concentration 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:		7-10
CHEM 331	Physical Chemistry I	
CHEM 336	Physical Chemistry Lab I (Mason Core)	
CHEM 332	Physical Chemistry II 2	
CHEM 337	Physical Chemistry Lab II	
CHEM 422	Instrumental Methods of Chemical Analysis 2	
CHEM 423	Instrumental Methods of Chemical Analysis Laboratory	
CHEM 424	Principles of Chemical Separation 2	
CHEM 427	Aquatic Environmental Chemistry	
CHEM 441	Properties and Bonding of Inorganic Compounds 2	
CHEM 446	Bioinorganic Chemistry	
CHEM 463	General Biochemistry I	
CHEM 464	General Biochemistry II	

CHEM 465 Biochemistry Lab (Mason Core)	
Total Credits	36-39

1

FRSC 304 Forensic Chemistry (Mason Core) will satisfy this major's writing-intensive requirement.

2

These course selections recommend the University Physics sequence: PHYS 160 University Physics I (Mason Core), PHYS 161 University Physics I Laboratory (Mason Core), PHYS 260 University Physics II (Mason Core), PHYS 261 University Physics II Laboratory (Mason Core)

Concentration in Interdisciplinary Forensic Science (FRIN)

Extended Forensic Science Core	
Select 6 credits (not previously taken) of any 300-400 level FRSC courses	6
Required Concentration Courses or Minor	
Select a minimum of 15 credits (not previously taken) from the following courses or one of the following minors:	15

Any 300-400 level FRSC courses

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 412	Phage Genomics
BIOL 430	Advanced Human Anatomy and Physiology I
BIOL 431	Advanced Human Anatomy and Physiology II
BIOL 452	Immunology
BIOL 453	Immunology Laboratory
BIOL 482	Introduction to Molecular Genetics
BIOL 483	General Biochemistry
BIOL 484	Cell Signaling and Disease
BIOL 485	Cell Signaling Laboratory
CHEM 321	Quantitative Chemical Analysis
CHEM 331	Physical Chemistry I
CHEM 336	Physical Chemistry Lab I (Mason Core)
CHEM 427	Aquatic Environmental Chemistry
CHEM 446	Bioinorganic Chemistry
CHEM 463	General Biochemistry I
CHEM 464	General Biochemistry II
CHEM 465	Biochemistry Lab (Mason Core)

Any minor offered by the College of Science

Anthropology Minor

- Bioengineering Minor
- Computer Science Minor
- Data Analysis Minor
- Criminology, Law, and Society Minor
- Forensic Psychology Minor
- Information Technology Minor
- Intelligence Studies Minor
- International Security Minor
- Legal Studies Minor
- Photography Minor
- Psychology Minor
- Statistics Minor

Total Credits	21

Retroactive Requirements Updates:

~~Effective Catalogyears:2021-2022, 2022-2023Previous requirement as stated in thecatalog:Under the Supporting Science course electives, lectures AND labs had to be completed ifchosen.Updatedrequirement: Under Supporting Science course electives, lectures and labs CAN be completed, but the labs are notrequired.~~

Plan of Study:

Honors Information:

Accelerated Description/Dual Degree

INTO-Mason Requirements:

College Requirements & Policies:

Department / Academic Unit Requirements & Policies:

Program Outcomes

Additional Program Information

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

Courses offered via distance (if applicable):

Indicate whether students are able

What is the primary delivery format for the program? Face-to-Face Only

Does any portion of this program occur off-campus?

No

Off-campus details:

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

No

Please explain:

Related Departments

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

No

Please explain:

Are you adding or removing a licensure component?

No

Please explain:

Additional SCHEV & SACSCOC Information

Is the content of the new program closely related to that of an existing approved program at the same instructional level (i.e., baccalaureate, master's, doctoral)?

Which existing approved program(s)?

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

Which existing approved program(s)?

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

Which existing approved program(s)?

Is this a re-opening of a program that was closed to admission within the last five years?

Date of Program Closure

What are the methods of delivery for the program?

Does this program include a course/credit-based competency-based education delivery option?

Is this change a simple retitling of an existing program, with no other changes, to any existing program content, curriculum requirements, etc?

No

Does this change represent a repackaging of content in an existing approved degree/certificate program at the same instructional level (i.e., baccalaureate, master's, or doctoral)?

No

Which existing approved program(s)?

Percentage of total credits containing new course content. ("New course content" is defined by SACSCOC as content that is not currently included in an existing approved degree/certificate program at the same instructiona level. Do not exclude gen ed credits in calculations for undergraduate programs.)

0%-24%

Does this change include the addition of a distance education or face-to-face method of delivery for this program?

No

What is the new method of delivery?

Does this change include the addition of a course/credit-based competency-based education delivery option?

No

Will any additional equipment/facilities be needed?

No

Description of institutional impact:

Will any additional faculty be required?

No

Description of institutional impact:

Will any additional financial resources be needed?

No

Description of institutional impact:

Additional library/learning resources needed?

No

Description of institutional impact:

OAPI Use Only – Determination of SACSCOC Impact

Comments or Notes

Green Leaf Program Designation

Is this a Green Leaf program? No

Green Leaf Designation

Sustainability-focused academic programs require at least one green leaf course. Either that course is itself sustainability-focused or else the program requires a set of sustainability-related courses with aggregated

Relationship to Existing Courses

Relationship to Existing Programs

List sustainability-focused courses

currently required

Sustainability-related academic programs either require at least one sustainability-related course or else offer any green leaf course as an option or elective. *

List sustainability-related courses currently required in the degree

Does this program cover material which crosses into another department?

No

Impacted Departments

Additional Attachments

SCHEV Proposal

Executive Summary

Reviewer Comments

Additional Comments

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

%wi_required.eschtml%

Attached Document

Key: 145