

FORENSIC SCIENCE, BS

Banner Code: SC-BS-FRSC

Academic Advising

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The Bachelor of Science in Forensic Science is a general forensic science degree that covers various fields within forensic science including field and laboratory applications. These topics include areas such as crime scene investigation, forensic DNA, forensic chemistry, trace evidence, firearms examination, questioned document, fingerprints, arson, and drug analysis.

This degree is intended to provide students with a well-rounded, hands-on forensic science education in order to prepare students for entrance into a graduate-level educational program, and/or entry-level professional careers in public and private forensic laboratories, federal, state, or local government/law enforcement, defense, homeland security and intelligence agencies.

The Forensic Science undergraduate program provides a strong scientific foundation while simultaneously enabling students to individualize their educational experience toward specific career goals or post-graduate degrees by taking specialized forensic science and natural science courses. This degree offers concentrations in Forensic Biology and Forensic Chemistry to prepare students who desire a career within these specialties.

Unique features of this program include an innovative curriculum that offers hands-on training with crime scene techniques and crime laboratory methodologies, an outdoor forensic excavation research and training facility, and courses taught by professional and distinguished faculty from various forensic agencies and laboratories.

Admissions & Policies

Admissions

University-wide admissions policies can be found in the Undergraduate Admissions Policies (<http://catalog.gmu.edu/admissions/undergraduate-policies/>) section of this catalog.

To apply for this program, please complete the George Mason University Admissions Application (<https://www2.gmu.edu/admissions-aid/apply-now/>).

Policies

Students must fulfill all Requirements for Bachelor's Degrees (<http://catalog.gmu.edu/policies/academic/undergraduate-policies/#ap-5-3-2>), including the Mason Core (<http://catalog.gmu.edu/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 (<http://catalog.gmu.edu/policies/academic/undergraduate-policies/>).

Requirements

Degree Requirements

Total credits: minimum 120

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. Students cannot declare the concentration upon admission; it can be declared once the student has earned a minimum of 60 credits.

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 should complete the following courses:

Code	Title	Credits
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 & FRSC 305	Forensic Chemistry and Forensic Chemistry Laboratory ¹	4
FRSC 401	Crime Scene Investigations	3
FRSC 405 or FRSC 406	Independent Research Methods Forensic Internship	3
FRSC 460 & FRSC 461	Forensic DNA Analysis and Forensic DNA Analysis Laboratory	4
FRSC 499	Comprehensive Examination	0
CRIM 100	Introduction to Criminal Justice (Mason Core) (http://catalog.gmu.edu/mason-core/)	3
Natural Science Core Courses		
BIOL 213	Cell Structure and Function (Mason Core) (http://catalog.gmu.edu/mason-core/)	4
BIOL 214 or STAT 250	Biostatistics for Biology Majors Introductory Statistics I (Mason Core) (http://catalog.gmu.edu/mason-core/)	3-4
BIOL 311	General Genetics	4

CHEM 211 & CHEM 213	General Chemistry I (Mason Core) (http://catalog.gmu.edu/mason-core/) and General Chemistry Laboratory I (Mason Core) (http://catalog.gmu.edu/mason-core/)	4
CHEM 212 & CHEM 214	General Chemistry II (Mason Core) (http://catalog.gmu.edu/mason-core/) and General Chemistry Laboratory II (Mason Core) (http://catalog.gmu.edu/mason-core/)	4
CHEM 313 & CHEM 315	Organic Chemistry I and Organic Chemistry Lab I	5
CHEM 314 & CHEM 318	Organic Chemistry II and Organic Chemistry Lab II	5
MATH 113	Analytic Geometry and Calculus I (Mason Core) (http://catalog.gmu.edu/mason-core/)	4-6
or MATH 123 & MATH 124	Calculus with Algebra/Trigonometry, Part A and Calculus with Algebra/Trigonometry, Part B (Mason Core) (http://catalog.gmu.edu/mason-core/)	
PHYS 243 & PHYS 244	College Physics I (Mason Core) (http://catalog.gmu.edu/mason-core/) and College Physics I Lab (Mason Core) (http://catalog.gmu.edu/mason-core/) ²	4
PHYS 245 & PHYS 246	College Physics II (Mason Core) (http://catalog.gmu.edu/mason-core/) and College Physics II Lab (Mason Core) (http://catalog.gmu.edu/mason-core/) ²	4
Total Credits		70-73

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FRSC 302 and FRSC 304 will satisfy this major's writing-intensive requirement.

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

PHYS 160 & PHYS 161 & PHYS 260 & PHYS 261

- Please note that PHYS 260/261 requires a prerequisite of MATH 213.

Degree without Concentration

Code	Title	Credits
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	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	Immunology Laboratory	
BIOL 482	Introduction to Molecular Genetics	
BIOL 484	Cell Signaling and Disease	
CHEM 331	Physical Chemistry I	
CHEM 336	Physical Chemistry Lab I	
CHEM 427	Aquatic Environmental Chemistry	
CHEM 446	Bioinorganic Chemistry	
CHEM 463	General Biochemistry I	
CHEM 464	General Biochemistry II	
CHEM 465	Biochemistry Lab	
Total Credits		12

Concentration in Forensic Biology (FRBL)

Code	Title	Credits
Required Courses		
FRSC 325 & FRSC 326	Molecular Biology and Molecular Biology Laboratory	4
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	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	
Total Credits		15

Concentration in Forensic Chemistry (FRCH)

Code	Title	Credits
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	Physical Chemistry Lab I	
CHEM 332	Physical Chemistry II ¹	
CHEM 337	Physical Chemistry Lab II	
CHEM 422	Instrumental Methods of Chemical Analysis ¹	
CHEM 423	Instrumental Methods of Chemical Analysis Laboratory	
CHEM 427	Aquatic Environmental Chemistry	
CHEM 441	Properties and Bonding of Inorganic Compounds ¹	
CHEM 446	Bioinorganic Chemistry	
CHEM 463	General Biochemistry I	
CHEM 464	General Biochemistry II	
CHEM 465	Biochemistry Lab	
Total Credits		19

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These course selections recommend the University Physics sequence.

Mason Core and Electives

In order to meet a minimum of 120 credits, this degree requires additional credits (specific credit counts by concentration are shown below), which may be applied toward any remaining Mason Core (<https://catalog.gmu.edu/mason-core/>) requirements (outlined below), Requirements for Bachelor's Degrees (<https://catalog.gmu.edu/policies/academic/undergraduate-policies/#ap-5-3-2>), and electives. Students are strongly encouraged to consult with their advisors to ensure that they fulfill all requirements.

- Standard concentration: 35-38 credits
- Forensic Biology concentration: 32-35 credits
- Forensic Chemistry concentration: 28-31 credits

Mason Core

Some Mason Core (<http://catalog.gmu.edu/mason-core/>) requirements may already be fulfilled by the major requirements listed above. Students are strongly encouraged to consult their advisors to ensure they fulfill all remaining Mason Core (<http://catalog.gmu.edu/mason-core/>) requirements.

Students who have completed the following credentials are eligible for a waiver of the Foundation and Exploration (lower level) requirement categories. The Integration category (upper level) is not waived under this policy. See Admissions (<http://catalog.gmu.edu/admissions/undergraduate-policies/#transfertext>) for more information.

- VCCS Uniform Certificate of General Studies
- VCCS or Richard Bland Associate of Science (A.S.), Associate of Arts (A.A.), Associate of Arts and Sciences (A.A.&S.), or Associate of Fine Arts (A.F.A.)

Code	Title	Credits
Foundation Requirements		
Written Communication (ENGH 101) (http://catalog.gmu.edu/mason-core/#written)		3
Oral Communication (http://catalog.gmu.edu/mason-core/#oral)		3
Quantitative Reasoning (http://catalog.gmu.edu/mason-core/#quantitative)		3
Information Technology and Computing (http://catalog.gmu.edu/mason-core/#information-technology)		3
Exploration Requirements		
Arts (http://catalog.gmu.edu/mason-core/#arts)		3
Global History (http://catalog.gmu.edu/mason-core/#global-history)		3
Global Understanding (http://catalog.gmu.edu/mason-core/#global)		3
Literature (http://catalog.gmu.edu/mason-core/#literature)		3
Natural Science (http://catalog.gmu.edu/mason-core/#natural-science)		7
Social and Behavioral Sciences (http://catalog.gmu.edu/mason-core/#social-behavioral-science)		3
Integration Requirements		
Written Communications (ENGH 302) (http://catalog.gmu.edu/mason-core/#written)		3
Writing-Intensive (http://catalog.gmu.edu/mason-core/#wi) ¹		3
Synthesis/Capstone (http://catalog.gmu.edu/mason-core/#synthesis-capstone) ²		3
Total Credits		40

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Most programs include the writing-intensive course designated for the major as part of the major requirements; this course is therefore not counted towards the total required for Mason Core.

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Minimum 3 credits required.

Accelerated Master's

Forensic Science, BS/Forensic Science, Accelerated MS Overview

This bachelor's/accelerated master's degree program allows academically strong undergraduates with a commitment to advance their education to obtain both the Forensic (<https://catalog.gmu.edu/colleges-schools/science/chemistry-biochemistry/chemistry-bs/>) Science, BS (<https://catalog.gmu.edu/colleges-schools/science/forensic-program/forensic-science-bs/>) and the Forensic Science, MS (<https://catalog.gmu.edu/colleges-schools/science/forensic-program/forensic-science-ms/>) degrees within an accelerated timeframe. Upon completion of this 144 credit accelerated program, students will be exceptionally well prepared for entry into their careers or into a doctoral program in the field or in a related discipline.

Students are eligible to apply for this accelerated program once they have earned at least 60 undergraduate credits and can enroll in up to 18 credits of graduate coursework after successfully completing 75 undergraduate credits. This flexibility makes it possible for students to complete a bachelor's and a master's in an accelerated timeframe.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees (<http://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7>). For policies governing all graduate degrees, see AP.6 Graduate Policies (<http://catalog.gmu.edu/policies/academic/graduate-policies/>). For more information on undergraduates enrolling in graduate courses, see AP.1.4.4 Graduate Course Enrollment by Undergraduates (<https://catalog.gmu.edu/policies/academic/registration-attendance/#text>)

Concentration Declaration

Students must declare their intended concentration upon application. In the event that a student wishes to change their concentration, students may request to change their concentration by submitting a letter to the Forensic Science Program Director detailing the request and providing justification. These requests and possible substitutions/waivers will be considered on a case-by-case basis and only when the appropriate admissions requirements are met.

Application Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in the Graduate Admission Policies (<http://catalog.gmu.edu/admissions/graduate-policies/>) section of this catalog.

Important application information and processes for this accelerated master's program can be found here (<https://www2.gmu.edu/admissions-aid/how-apply/accelerated-masters/>).

Students should seek out the graduate program's advisor who will aid in choosing the appropriate graduate courses and help prepare the student for graduate studies.

Application requirements for this accelerated master's program include one letter of recommendation from a Forensic Science Program faculty member. Additionally, a detailed goal statement is required to include why you are interested in the MS in forensic science degree, career goals and professional aspirations, and proposed area of interest of your final Research Project.

The GRE and a resume are not required for admission into this program.

Successful applicants will have an overall GPA of at least 3.00. Additionally, they will have completed each of the following courses or equivalent with a minimum grade of B or higher:

Code	Title	Credits
FRSC 200	Survey of Forensic Science	3
FRSC 201	Introduction to Criminalistics	3
FRSC 302	Forensic Trace Analysis	3
FRSC 303	Forensic Evidence and Ethics	3
BIOL 213	Cell Structure and Function	4
CHEM 211 & CHEM 213	General Chemistry I (Mason Core) (http://catalog.gmu.edu/mason-core/) and General Chemistry Laboratory I (Mason Core) (http://catalog.gmu.edu/mason-core/)	4

CHEM 212 & CHEM 214	General Chemistry II (Mason Core) (http://catalog.gmu.edu/mason-core/) and General Chemistry Laboratory II (Mason Core) (http://catalog.gmu.edu/mason-core/)	4
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Forensic Biology Analysis Concentration Applicants:

In order to obtain a career as a DNA Analyst, the student should have undergraduate coursework in Statistics, Molecular Biology, Genetics, and Biochemistry.

Accelerated Option Requirements

After the completion of 75 undergraduate credits, students may complete 3 to 12 credits of graduate coursework that can apply to both the undergraduate and graduate degrees.

In addition to applying to graduate from the undergraduate program, students in the accelerated program must submit a bachelor's/accelerated master's transition form (available from the Office of the University Registrar (<https://registrar.gmu.edu/forms/>)) to the College of Science's Office of Academic and Student Affairs (<https://cos.gmu.edu/about/contact-us/>) by the last day to add classes of their final undergraduate semester. Students shall enroll for courses in the master's program in the fall or spring semester immediately following conferral of the bachelor's degree.

Students must maintain an overall GPA of 3.00 or higher in all graduate coursework and should consult with their faculty advisor to coordinate their academic goals.

Reserve Graduate Credit

Accelerated master's students may also take up to 6 graduate credits as reserve graduate credits. These credits do not apply to the undergraduate degree, but will reduce the master's degree by up to 6 credits. With 12 graduate credits counted toward the undergraduate and graduate degrees plus the maximum 6 reserve graduate credits, the credits necessary for the graduate degree can be reduced by up to 18.

Premium Tuition

Students enrolled in this professional MS program are charged at a differential (premium) tuition rate after the bachelor's degree has been conferred. Therefore, any courses or secondary programs that they may enroll in are subject to the differential tuition rate. The Forensics Graduate Certificate (<https://catalog.gmu.edu/colleges-schools/science/forensic-program/forensics-graduate-certificate/>) has the same premium tuition rate, making it the ideal program for concurrent enrollment (if desired).

Criminal Background Check

The successful passing of a Virginia Department of Forensic Sciences background check is required prior to gaining access to FRSC 540 Advanced Forensic Chemistry, FRSC 541 Forensic Chemistry Laboratory, FRSC 560 Advanced Forensic DNA Sciences, and FRSC 561 Forensic DNA Laboratory.

Course Notes

- FRSC 560 Advanced Forensic DNA Sciences and FRSC 561 Forensic DNA Laboratory

Students shall have completed undergraduate coursework in molecular and/or cell biology, as well as genetics, or students must obtain

permission of the instructor prior to taking FRSC 560 Advanced Forensic DNA Sciences and FRSC 561 Forensic DNA Laboratory.

- FRSC 540 Advanced Forensic Chemistry **and** FRSC 541 Forensic Chemistry Laboratory.

Students shall have completed undergraduate coursework in general chemistry including polarity and acid/base chemistry. Students shall also have completed Organic Chemistry and be able to identify functional groups and other chemistry structures that make up a molecule. Exposure to instrumental techniques such as gas chromatography, mass spectrometry and infrared spectroscopy is recommended or permission of instructor.

Graduate Course Suggestions

Upon acceptance, students must meet with a master's accelerated program advisor to complete a Plan of Study form in order to approve eligible graduate coursework prior to registering for any graduate courses. Failure to do so may result in the removal of the course(s). Approval does not guarantee availability in a course. The following are suggested graduate courses:

Code	Title	Credits
FRSC 500	Introduction to Forensic Science	3
FRSC 510	Basic Crime Analysis ¹	3
FRSC 514	Survey of Forensic Chemistry, Biology, and DNA Analysis ²	3
FRSC 530	Law and Forensic Science	3
FRSC 570	Trace and Physical Evidence Concepts ³	3

¹ Can only be selected if FRSC 401 has been completed.

² Can only be selected if FRSC 304 Forensic Chemistry and FRSC 460 Forensic DNA Analysis have been completed. This course is suggested for the Forensic Biology Analysis, the Forensic Chemistry Analysis, or the Forensic/Biometric Identity Analysis concentrations.

³ Suggested for the Crime Scene Investigation, the Forensic Biology Analysis, or the Forensic Chemistry Analysis concentrations.