

# Chemical Forensics, B.S.

## Degree Offered

- Bachelor of Science

## Nature of the Program

WVU Tech's Chemical Forensics major provides students with a robust foundation and the essential hands-on experience in forensic chemistry, analytical techniques, experimental design, and scientific data collection and interpretation. Research is a major component of our program. Students are well-positioned to pursue graduate studies or career fields in forensic science, toxicology, environmental forensics, and pharmaceutical analysis. This is a recommended major for students interested in careers in forensic science, law enforcement, and related fields.

## General Education Foundations

Please use this link to view a list of courses that meet each GEF requirement. (<http://registrar.wvu.edu/gef/>)

NOTE: Some major requirements will fulfill specific GEF requirements. Please see the curriculum requirements listed below for details on which GEFs you will need to select.

Code	Title	Hours
<b>General Education Foundations</b>		
F1 - Composition & Rhetoric		3-6
ENGL 101 & ENGL 102 or ENGL 103	Introduction to Composition and Rhetoric and Composition, Rhetoric, and Research Accelerated Academic Writing	
F2A/F2B - Science & Technology		4-6
F3 - Math & Quantitative Reasoning		3-4
F4 - Society & Connections		3
F5 - Human Inquiry & the Past		3
F6 - The Arts & Creativity		3
F7 - Global Studies & Diversity		3
F8 - Focus (may be satisfied by completion of a minor, double major, or dual degree)		9
Total Hours		31-37

Please note that not all of the GEF courses are offered at all campuses. Students should consult with their advisor or academic department regarding the GEF course offerings available at their campus.

## Curriculum Requirements

Code	Title	Hours
	University Requirements	37
	Forensic Chemistry Major Requirements	83
Total Hours		120

## University Requirements

Code	Title	Hours
	General Education Foundations (GEF) 1, 2, 3, 4, 5, 6, 7, and 8 (31-37 Credits)	
	Outstanding GEF Requirements 1, 4, 5, 6, and 7	18
FIS 191	First-Year Seminar	1
	General Electives	18
Total Hours		37

## Forensic Chemistry Major Requirements

Code	Title	Hours
BIOL 111	General Biology	4
BIOL 112	General Biology	4

BIOL 240	Microbiology	4
MATH 155	Calculus 1	4
PHYS 101 & 101L & PHYS 102 & PHYS 102L or PHYS 111 & 111L & PHYS 112 & PHYS 112L	Introductory Physics 1 and Introductory Physics 1 Laboratory and Introductory Physics 2 and Introductory Physics 2 Laboratory General Physics 1 and General Physics 1 Laboratory and General Physics 2 and General Physics 2 Laboratory	8
STAT 211	Elementary Statistical Inference	3
<b>CORE CHEMISTRY COURSES</b>		<b>20</b>
CHEM 115 & 115L	Fundamentals of Chemistry 1 and Fundamentals of Chemistry 1 Laboratory	
CHEM 116 & 116L	Fundamentals of Chemistry 2 and Fundamentals of Chemistry 2 Laboratory	
CHEM 215 & 215L	Introductory Analytical Chemistry and Introductory Analytical Chemistry Laboratory	
CHEM 233 & 233L	Organic Chemistry 1 and Organic Chemistry 1 Laboratory	
CHEM 234 & 234L	Organic Chemistry 2 and Organic Chemistry 2 Laboratory	
<b>CORE FORENSIC AND INVESTIGATIVE SCIENCE COURSES</b>		<b>25</b>
FIS 201	Introduction to Forensic Identification	
FIS 202	Crime Scene Investigation Overview	
FIS 314 & 314L	Introduction to Microscopy and Introduction to Microscopy Laboratory	
FIS 340 & 340L	Forensic Chemical Analysis and Forensic Chemical Analysis Laboratory	
FIS 385	Professional Internship Preparation	
FIS 386	Forensic Identification Internship	
FIS 404	Law and Evidence	
FIS 460 & 460L	Analysis of Seized Drugs and Analysis of Seized Drugs Laboratory	
FIS 480	Forensic Quality Assurance	
<b>UPPER-DIVISION ELECTIVES</b>		<b>8</b>
Select two of the following sequences:		
FIS 414 & 414L	Trace Evidence Examination and Trace Evidence Examination Laboratory	
FIS 451 & 451L	Arson and Explosives Analysis and Arson and Explosives Analysis Laboratory	
FIS 470 & 470L	Analytical Forensic Toxicology and Analytical Forensic Toxicology Laboratory	
<b>CAPSTONE EXPERIENCE</b>		<b>3</b>
FIS 406L	Capstone: Courtroom Testimony and Laboratory	

Total Hours 83

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STEM foundation courses are common to most STEM majors and excluded from the calculation of the percentage of upper-division courses

## Suggested Plan of Study

### First Year

Fall	Hours	Spring	Hours
FIS 191		1 ENGL 101 (GEF 1)	3
BIOL 111		4 BIOL 112	4

CHEM 115 & 115L (GEF 8)		4 CHEM 116 & 116L (GEF 8)		4	
FIS 201		3 General Electives		4	
MATH 155 (GEF 3)		4			
		16		15	
<b>Second Year</b>					
<b>Fall</b>	<b>Hours</b>	<b>Spring</b>	<b>Hours</b>		
CHEM 233 & 233L		4 CHEM 234 & 234L		4	
ENGL 102 (GEF 1)		3 FIS 202		3	
PHYS 101 or 111		4 PHYS 102 or 112		4	
STAT 211		3 BIOL 240		4	
General Elective		1			
		15		15	
<b>Third Year</b>					
<b>Fall</b>	<b>Hours</b>	<b>Spring</b>	<b>Hours</b>	<b>Summer</b>	<b>Hours</b>
CHEM 215 & 215L		4 FIS 460		3 FIS 386	3
FIS 314 & 314L		3 FIS 460L		1	
FIS 340 & 340L		4 GEF 4		3	
FIS 385		1 GEF 5		3	
FIS 480		2 General Elective		4	
General Elective		1 General Elective		1	
		15		15	3
<b>Fourth Year</b>					
<b>Fall</b>	<b>Hours</b>	<b>Spring</b>	<b>Hours</b>		
GEF 6		3 GEF 7		3	
FIS 404		2 Forensic Chemistry Elective 2		4	
FIS 406L		3 General Elective		3	
Forensic Chemistry Elective 1		4 General Elective		3	
General Elective		1			
		13		13	

Total credit hours: 120

## Major Learning Outcomes

### FORENSIC CHEMISTRY

Upon graduation from the Forensic Chemistry major, students will be able to:

1. Apply scientific methodology and evaluate techniques in the collection, processing, analysis, and evaluation of forensic evidence.
2. Assess and defend data generated during forensic investigations
3. Present scientific data in written, verbal, and visual formats.
4. Demonstrate the professionalism and high ethical standards demanded by the justice system and the forensic science community.