Chemistry B.S.

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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
General Education Foundations		
F1 - Composition & Rhetoric		3-6
ENGL 101 & ENGL 102	Introduction to Composition and Rhetoric and Composition, Rhetoric, and Research	
or ENGL 103	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.

Degree Requirements

Students must complete WVU General Education Foundations requirements, College B.S. requirements, major requirements, and electives to total a minimum of 120 hours.For complete details on these requirements,visit the B.S. Degrees tab on the Eberly College of Arts and Sciences (http://catalog.wvu.edu/undergraduate/eberlycollegeofartsandsciences/#bachelorofsciencetext) page. Students may not earn both a B.A. and a B.S. in Chemistry.

Departmental Requirements for the B.S. in Chemistry

- **Capstone Requirement**: The university requires the successful completion of a Capstone course, which for the B.S. Chemistry degree involves CHEM 402 . WVUTeach students may substitute CHEM 376L for CHEM 402 .
- **Writing Requirement**: Chemistry Bachelor of Science fulfill the Writing and Communication Skills requirement by completing ENGL 101 and ENGL 102 (or ENGL 103), and two additional SpeakWrite Certified Courses™: CHEM 348L, and CHEM 402. WVUTeach students may substitute CHEM 376L for CHEM 402 .
- **Calculation of GPA in the major:** A grade of C- is required in all courses applied to major requirements, including the STEM Foundations. If a course is repeated, all attempts will be included in the calculation of the GPA, unless the course is eligible for a D/F repeat.

Curriculum Requirements

Code	Title	Hours
University Requirements		46
ECAS B.S. Requirements		4
Chemistry Major Requirements		70
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
CHEM 191	First-Year Seminar	1
General Electives		27
Total Hours		46

ECAS Bachelor of Science Requirements

Code	Title	Hours
COLLEGE REQUIREMENT		**4**
Global Studies and Diversity Requirement		
MATHEMATICS REQUIREMENT		
MATH 153 & MATH 154 or MATH 155	Calculus 1a with Precalculus and Calculus 1b with Precalculus Calculus 1	
SCIENCE REQUIREMENT fulfilled by major requirements		
Total Hours		4

Chemistry Major Requirements

Code	Title	Hours
STEM FOUNDATIONS *		**12**
MATH 156	Calculus 2	
PHYS 111 & 111L & PHYS 112 & PHYS 112L	General Physics 1 and General Physics 1 Laboratory and General Physics 2 and General Physics 2 Laboratory	
CORE COURSES		**49**
AGBI 410	Introductory Biochemistry	
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	Organic Chemistry 1	
CHEM 233L	Organic Chemistry 1 Laboratory	
CHEM 234	Organic Chemistry 2	
CHEM 234L	Organic Chemistry 2 Laboratory	
CHEM 310	Instrumental Analysis	
CHEM 310L	Instrumental Analysis Laboratory	
CHEM 335	Methods of Structure Determination	
CHEM 346	Physical Chemistry 1	
CHEM 348	Physical Chemistry 2	
CHEM 348L	Physical Chemistry 2 Laboratory	
CHEM 422	Inorganic Chemistry 2	
CHEM 422L	Inorganic Synthesis Laboratory	
MATH 251	Multivariable Calculus	
UPPER-DIVISION ELECTIVES *		**6**
Select 2 classes:		
CHEM 312	Environmental Chemistry	
CHEM 339L	Organic Syntheses Laboratory	

CHEM 440	Quantum Chemistry	
CHEM 460	Forensic Chemistry	
CHEM 460L	Forensic Chemistry Laboratory	
CHEM 462	Biochemistry 2	
CHEM 462L	Biochemistry 2 Laboratory	
CHEM 496	Senior Thesis	
CHEM 497	Research	
CHEM 498	Honors	
CAPSTONE EXPERIENCE		**3**
CHEM 402	Chemistry Capstone: Chemical Literature	
Total Hours		70

FOOTNOTES

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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

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Only three hours of CHEM 497 may be counted toward the six-hour requirement.

Suggested Plan of Study

First Year

Fall	Hours	Spring	Hours
CHEM 191	1	ENGL 101 (GEF 1)	3
GEF 4	3	CHEM 116 & 116L (GEF 8; B.S. First Area 2)*	4
ECAS Global Studies and Diversity Requirement (GEF 7)	3	MATH 156 (GEF 8; B.S. Second Area 1)	4
CHEM 115 & 115L (GEF 2; B.S. First Area 1)*	4	General Elective	3
MATH 155 (GEF 3)	4	General Elective	1
	15		15

Second Year

Fall	Hours	Spring	Hours
CHEM 215 & 215L	4	ENGL 102 (GEF 1)	3
CHEM 233 & 233L	4	CHEM 234 & 234L	4
MATH 251 (B.S. Second Area 2)	4	GEF 5	3
PHYS 111 (GEF 8; B.S. Third Area 1)	4	PHYS 112 (B.S. Third Area 2)	4
	16		14

Third Year

Fall	Hours	Spring	Hours
GEF 6	3	CHEM 310	3
AGBI 410	3	CHEM 348	3
CHEM 335	4	General Elective	3
CHEM 346	3	General Elective	4
General Elective	3		
	16		13

Fourth Year

Fall	Hours	Spring	Hours
CHEM 310L	1	CHEM 402	3
CHEM 348L	2	CHEM 422L	2
CHEM 422	3	Chemistry Elective 2	3
Chemistry Elective 1	3	General Elective	3

General Elective	3 General Elective	3
General Elective	3 General Elective	2
	15	16

Total credit hours: 120

Major Learning Outcomes

CHEMISTRY

1. Will have sufficient knowledge of the fundamental chemical principles and an understanding of the methods of chemistry to be able to formulate solutions to problems of chemical relevance.
2. Will have acquired sufficient training to perform accurate and precise quantitative analyses, to utilize modern instrumental methods of analysis, to analyze and report the results of chemical experimentation, to work safely with chemicals, and to work effectively both as an individual and in a small group.
3. Will understand how to retrieve information from the chemical literature and be able to organize and communicate chemical information effectively in written reports and oral presentations.
4. Will possess the basic laboratory skills and chemical knowledge to qualify for entry level industrial or government laboratory positions or to be able to apply and gain admission to competitive graduate and professional schools.