

# Chemistry Major

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## About

The Department of Chemistry at Villanova University offers masters and bachelors degrees, including an American Chemical Society accredited degree program for undergraduates. Our faculty actively conduct research in diverse areas such as environmental chemistry, protein biochemistry, fuel cell research, and computational chemistry. We recognize that undergraduate research provides a unique opportunity to work closely alongside a faculty mentor, gaining an experience that extends far beyond typical classroom learning, and we encourage all undergraduates to participate in undergraduate research.

**Program:** [Department Chemistry and Biochemistry](#)

**Type:** Bachelor of Science

## PRIMARY MAJOR (122 credits)

## Required Major Courses (68 credits)

The Chemistry major, certified by the American Chemical Society, provides comprehensive classroom and laboratory training in all areas of chemistry. Students receive extensive training in laboratory techniques using modern chemical instrumentation.

<b>Course</b>	<b>Title</b>	<b>Credits</b>
CHM 1000	Profesl Development Sem	1
CHM 1002	First Year Prof Devlp Seminar	1
CHM 1311	Inorganic Chemistry I	3
CHM 1301	Inorganic Chemistry Lab I	2
CHM 1512	Quantitative Analysis	3
CHM 1502	Quant Anal Lab	2
CHM 3211	Organic Chemistry I	3
CHM 3201	Organic Chemistry Lab I	2
CHM 3212	Organic Chemistry II	3
CHM 3202	Organic Chemistry Lab II	2
CHM 3311	Inorganic Chem II	3
CHM 3301	Inorganic Chem Lab II	2
CHM 3413	Molecular Thermodynamics	3
CHM 3405	Physical Chem Lab II	2
CHM 3412	Quantum Chemistry	3
CHM 3404	Physical Chem Lab I	2
CHM 3511	Instrumental Analysis	3
CHM 3501	Instrumental Analysis Lab	2
	CHM 4611 or 4610: Biochemistry	3
MAT 1500	Calculus I	4
MAT 1505	Calculus II	4
PHY 2410	University Phy:Mechanics	3
PHY 2411	Lab: Mechanics	1
PHY 2412	Univ Physics:Elec & Mag	3
PHY 2413	Lab:Elec & Magnetism	1
	CHM Elective	6
	CHM Lab Elective	1

## Core Curriculum Requirements (33 credits)

Chemistry Majors meet the following core requirements in the major and therefore are omitted from the summary below:

- Core Math (3 cr)
- Natural Science (8 cr)

<b>Course</b>	<b>Title</b>	<b>Credits</b>
ACS 1000	Ancients	3
ACS 1001	Moderns	3
THL 1000	Faith, Reason, and Culture	3
PHI 1000	Knowledge, Reality, Self	3
ETH 2050	The Good Life:Eth & Cont Prob	3
	Language Requirement	
	Literature and Writing Seminar (1 course)	3
	History (1 course)	3
	Social Sciences (2 courses)	6
	Fine Arts (1 course)	3
	Upper-Level Theology (1 course)	3
	Diversity Requirement (2 courses)	

## Free Elective Requirement (21 credits)

Students with a Chemistry primary major have twenty-one (21) required free elective credits.

## Degree Credit Summary

- **Major Credits:** 68 credits
- **Core Credits:** 33 credits
- **Free Electives:** 21 credits
- **Total Credits:** 122

*Note: The above credit totals are based on the minimum number of required credits in each degree area. The minimum number of required credits in each area listed above must be met. Credits taken beyond the required minimum for one area may not be applied to another area.*

## SECONDARY MAJOR

Students who declare Chemistry as a **secondary major** must complete the Required Major Courses to achieve this major. Students are able to count any eligible course taken in their primary major, the core curriculum, minors, concentrations, or free electives toward these requirements.

## Category Descriptions

### CHM 4611 or 4610: Biochemistry

Credits: 3

Choose 1:

<b>Course</b>	<b>Title</b>	<b>Credits</b>
CHM 4611	Survey of Biochemistry	3
CHM 4610	Principles of Biochemistry	3

### CHM Elective

Credits: 6

Choose 2 Chemistry courses level 3000 or above.

### CHM Lab Elective

Credits: 1

Choose 1 Chemistry lab elective.