

Chemistry Major, Biochemistry Specialization

Program Requirements

- **Total Units Required:** 61-62
- **Grade Requirement:** All required chemistry coursework must be taken in residence at Washington University to be applied toward the chemistry major. A minimum grade of C- must be earned in each course to count toward the chemistry major.
- **Note Regarding Double Counting Course Credits:** College of Arts & Sciences Guidelines will be followed.

Required Courses

To prepare for a major in chemistry with a specialization in biochemistry, students will take the following:

Code	Title	Units
CHEM 1701	General Chemistry I*	3
CHEM 1702	General Chemistry II*	3
CHEM 1751	General Chemistry Laboratory I	2
CHEM 1752	General Chemistry Laboratory II	2
CHEM 2561	Organic Chemistry I With Lab	4
CHEM 2562	Organic Chemistry II With Lab	4
BIOL 2960	Principles of Biology I	4
BIOL 2970	Principles of Biology II	4
PHYSICS 1740	Physics I**	3
PHYSICS 1741	Physics I Laboratory	1
PHYSICS 1742	Physics II**	3
PHYSICS 1743	Physics II Laboratory	1
MATH 1510	Calculus I***	3
MATH 1520	Calculus II***	3
MATH 2130	Calculus III***	3
Total Units		43

* Students may substitute CHEM 1601 Principles of General Chemistry I and CHEM 1602 Principles of General Chemistry II for CHEM 1701 General Chemistry I and CHEM 1702 General Chemistry II. Please consult the department's director of undergraduate studies for details.

** PHYSICS 1760 Focused Physics I may replace PHYSICS 1740 Physics I. PHYSICS 1762 Focused Physics II may replace PHYSICS 1742 Physics II.

***MATH 2801 Honors Mathematics I may replace both MATH 1510 Calculus I and MATH 1520 Calculus II. MATH 2802 Honors Mathematics II may replace MATH 2130 Calculus III.

Majors in chemistry with a specialization in biochemistry must take a minimum of 18 units of advanced courses in chemistry or biochemistry, among which the following must be included:

Code	Title	Units
CHEM 4810	General Biochemistry I	3
CHEM 4820	General Biochemistry II	3
CHEM 4010	Physical Chemistry I	3
CHEM 4020	Physical Chemistry II	3
CHEM 4610	Inorganic Chemistry	3
Total Units		15

In addition, at least one advanced lab must be chosen from the following list:

Code	Title	Units
CHEM 4035	Nuclear and Radiochemistry Lab	3
CHEM 4079	Instrumental Methods: Physical Chemistry	3
CHEM 4559	Advanced Organic Chemistry Laboratory	4
CHEM 4570	Synthetic Polymer Chemistry Laboratory	3
or CHEM 4579	Synthetic Polymer Chemistry Laboratory - Writing Intensive	
CHEM 4670	Inorganic Chemistry Laboratory	3
or CHEM 4679	Inorganic Chemistry Laboratory - Writing Intensive	
CHEM 4851	Biological Chemistry Laboratory	4

Additional Information

Study Abroad

Study Abroad programs are available both for chemistry and pre-medical studies. Details of these programs can be found on the Overseas Programs website. For chemistry programs, students may be able to receive elective/research credit for courses taken/research done abroad. It is strongly advised that students contact the Department of Chemistry Study Abroad Advisor, Prof. Richard Mabbs (mabbs@wustl.edu), as soon as possible after declaring the major to discuss study abroad plans.

Latin Honors for the Major in Chemistry With a Specialization in Biochemistry

- **Total Units Required:** 64-66

To qualify for Latin Honors, students must complete a minimum of 21 units in advanced courses, including **one** of the following courses:

Code	Title	Units
CHEM 4101	Special Topics in Physical Chemistry	3
CHEM 4631	Inorganic Biochemistry	3
CHEM 4821	Chemical Biology	3
CHEM 4830	Bioorganic Chemistry	3

CHEM 4839	Bioorganic Chemistry - Writing Intensive	3
CHEM 4831	Nucleic Acids	3
CHEM 4833	Protein Biochemistry	3
CHEM 5841	Chemical Dynamics of Biological Pathways	3
BIOL 3340	Cell Biology	3
BIOL 3490	Microbiology	4

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or a second advanced laboratory course in chemistry or biology chosen from the following list:

Code	Title	Units
CHEM 4035	Nuclear and Radiochemistry Lab	3
CHEM 4079	Instrumental Methods: Physical Chemistry	3
CHEM 4559	Advanced Organic Chemistry Laboratory	4
CHEM 4570	Synthetic Polymer Chemistry Laboratory	3
or CHEM 4579	Synthetic Polymer Chemistry Laboratory - Writing Intensive	
CHEM 4670	Inorganic Chemistry Laboratory	3
or CHEM 4679	Inorganic Chemistry Laboratory - Writing Intensive	
CHEM 4851	Biological Chemistry Laboratory	4
BIOL 4522	Laboratory in Protein Analysis, Proteomics, and Protein Structure	3
BIOL 4523	Molecular Methods in Enzyme Analysis	4

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Departmental Honors for the Major in Chemistry With a Specialization in Biochemistry

To be eligible for Departmental Honors, a student must complete the Latin Honors program in chemistry. To graduate "with distinction," a student must maintain a chemistry grade point average of 3.5 and complete the equivalent of at least 3 units of CHEM 4900 Introduction to Research. To graduate "with high distinction," a student must maintain a chemistry GPA of 3.65 and complete the equivalent of at least 3 units of CHEM 4900 Introduction to Research and one semester of CHEM 4950 Advanced Undergraduate Research in Chemistry. To graduate "with highest distinction," a student must maintain a chemistry GPA of 3.8 and complete the equivalent of at least 3 units of CHEM 4900 Introduction to Research and one semester of CHEM 4950 Advanced Undergraduate Research in Chemistry. Chemistry research is defined as a research project performed under the direction of a chemistry faculty member or a research project approved by the Chemistry Department Undergraduate Work Committee. The chemistry GPA is calculated from the grades received in chemistry courses and prerequisites for the chemistry major. The level of Departmental Honors that a student achieves will appear on the student's final transcript.