

CHEMISTRY, BA

Roosevelt University offers three chemistry-related degrees: a Bachelor of Arts (BA) in Chemistry, a Bachelor of Science (BS) in Chemistry, and a BS in Biochemistry. All three programs provide sound training in fundamental principles and experimental techniques for understanding and manipulating the interactions of matter. Course requirements differ for each degree. Regardless of the degree selected, chemistry or biochemistry majors interested in teaching science at the elementary or secondary level should meet with an advisor early in their program to plan an appropriate course sequence. Chemistry or biochemistry majors with strong academic backgrounds are encouraged to apply to the Roosevelt Scholars Program.

The BA Chemistry degree provides training in four major chemistry sub-disciplines, as well as advanced coursework and laboratory experience in a sub-discipline of the student's choice. At 42 to 45 credit hours of Chemistry, the BA allows room for non-chemistry electives and is appropriate for students who wish to combine a strong background in chemistry with substantial coursework in another discipline. The BA is a popular choice for students who intend further study or work in a chemistry-related area such as pharmacy, dentistry, medicine, veterinary medicine, government, business, environmental science or policy, education, or law.

Standards

- Chemistry, Biochemistry, Mathematics and Physics courses may not be taken pass/fail and must be passed with a letter grade of C- or higher and a minimum cumulative math and science GPA of 2.0.
- At least 27 credit hours of Chemistry courses must be completed at Roosevelt University.
- All Chemistry and supporting Math and Physics courses must be taken within eight years of graduation to be accepted for credit without examination.
- Entering students with a score of at least 4 on the AP chemistry exam receive 3 credit hours of CHEM 1xx AP Chemistry credit and are waived for CHEM 201 GENERAL CHEMISTRY I. Students with a 3 on the AP chemistry exam receive 3 credit hours of CHEM 1xx AP Chemistry credit and satisfy the physical science general education lecture requirement.

Requirements

Chemistry Core Requirements 25

CHEM 201	GENERAL CHEMISTRY I (3 credit hour lecture, 2 credit hour lab)
CHEM 202	GENERAL CHEMISTRY II (3 credit hour lecture, 2 credit hour lab)
CHEM 211	ORGANIC CHEMISTRY I (3 credit hour lecture, 2 credit hour lab)
CHEM 212	ORGANIC CHEMISTRY II (3 credit hour lecture, 2 credit hour lab)
CHEM 237	QUANTITATIVE ENVIRONMENTAL ANALYSIS (3 credit hour lecture, 2 credit hour lab)

Introductory Physical Chemistry Requirement. Select one of the following courses for 3 credit hours 3

BCHM 320	PHYSICAL CHEMISTRY FOR BIOSCIENCE (3 credit hour lecture)
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CHEM 321	PHYSICAL CHEMISTRY: THERMODYNAMICS (3 credit hour lecture. Optional 2 credit hour lab may also be taken in partial fulfillment of Advanced Lab Elective)
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Advanced Physical Chemistry Requirement. Select one of the following courses for 3 credit hours. 3

CHEM 322	PHYSICAL CHEMISTRY: QUANTUM MECHANICS (3 credit hour lecture. Optional 2 credit hour lab may also be taken in partial fulfillment of Advanced Lab Elective)
CHEM 323	ATOMIC AND MOLECULAR SPECTROSCOPY (3 credit hour lecture. Optional 2 credit hour lab may be taken in partial fulfillment of Advanced Lab Elective)

Inorganic Chemistry Requirement. Select one of the following courses for 3 credit hours. 3

CHEM 341	INORGANIC CHEMISTRY (3 credit hour lecture)
BCHM 344	BIOINORGANIC CHEMISTRY (3 credit hour lecture)

Advanced Chemistry Laboratory Elective. Select one of the following options for 4-5 credit hours. 4-5

CHEM 313	ADVANCED ORGANIC CHEMISTRY LAB (3 credit hour lecture, 2 credit hour lab)
CHEM 337	INSTRUMENTAL ANALYSIS (3 credit hour lecture, 2 credit hour lab)
CHEM 347	ADVANCED INORGANIC CHEMISTRY LAB (3 credit hour lecture, 2 credit hour lab)

CHEM 321 Thermodynamics lab (2 credit hours) AND either CHEM 322 Quantum Mechanics lab (2 credit hours) or CHEM 323 Spectroscopy lab (2 credit hours)
 CHEM 321 Thermodynamics Lab (2 credit hours) OR CHEM 322 Quantum Mechanics Lab (2 credit hours) OR CHEM 323 Spectroscopy lab (2 credit hours), AND one additional CHEM 3xx lecture elective (3 credit hours)

Additional Chemistry Elective 3-5

Choose any 300-level CHEM or BCHM elective for at least 3 credit hours, which has not been used to satisfy other BA Chem requirements.¹

Chemistry seminary and exit assessment 1

Select one of the following for 1 credit hour. Seminar includes a comprehensive exit assessment and should be taken in the last or second-to-last semester

CHEM 393	CHEMISTRY SEMINAR
BCHM 393	BIOCHEMISTRY SEMINAR

Required Supporting Sequence 20

MATH 231	CALCULUS I (5 credit hours)
MATH 232	CALCULUS II (5 credit hours)
PHYS 201	INTRODUCTION TO NON-CALCULUS BASED PHYSICS I (4 credit hours)
PHYS 202	INTRO TO NON-CALCULUS PHYSICS II (4 credit hours)

PHYS 233	CALCULUS-BASED PHYSICS I DISCUSSION (1 credit hours)	
PHYS 234	CALCULUS-BASED PHYSICS II DISCUSSION (1 credit hours)	
General Education Requirements including University Writing Requirement ^{2,3,4,5}		36-42
See College of Arts & Sciences General Education requirements below, as well as B.A. Chemistry major footnotes 2-5		
Minor or free elective courses to total 120		22
Total Credit Hours		120-129

¹ May be lecture only or lecture plus laboratory. With permission of the chemistry program chair, the chemistry elective can be substituted for 3 credit hours of approved CHEM 392 Chemistry Research. To apply to the major, chemistry research should be a substantive laboratory or computational project, performed under the direction of a faculty sponsor, resulting in a report, paper, poster or presentation, and completed with a minimum acceptable grade of C. Each credit hour of CHEM 392 requires the equivalent of 3 hours of active research per week over a 15 week semester.

² B.A. Chemistry majors satisfy the general education mathematics requirement through the major (Math 231)

³ B.A. Chemistry majors satisfy the general education physical science and laboratory requirements through the major, for example via CHEM 201 with laboratory, or any higher CHEM course with laboratory

⁴ B.A. Chemistry majors do not automatically satisfy the general education biological sciences requirement through the major. BA Chemistry majors should select 3 credits of biology at the 100 level or higher to fulfill this requirement. However, if BCHM 355 is selected to complete the additional chemistry elective, it also fulfills the biology general education requirement.

⁵ B.A. Chemistry majors are highly encouraged to fill one of their social science or humanities general education electives with a course that simultaneously satisfies the nonwestern attribute. Additionally, B.A. Chemistry majors intending to pursue graduate programs in pharmacy should fulfill one social science requirement with ECON 101 or ECON 102, and should fulfill one humanities requirement with SPCH 101.

General Education Requirements

Code	Title	Credit Hours
Academic Communities of Practice		
ACP 101	FIRST YEAR SEMINAR ¹	3
ACP 110	PRIMARY TEXTS	3
ACP 250	FOUNDATIONS FOR CHANGE	3
English Composition ²		
ENG 101	COMPOSITION I: CRITICAL READING & WRITING	3
ENG 102	COMPOSITION II: INTRODUCTION TO ACADEMIC RESEARCH	3
Humanities		
Select 9 credits from the following subject areas: African-American Studies, Art History, English (excluding ENG 101 and ENG 102), History, Languages, Music, Philosophy, Theatre, Speech and Women's and Gender Studies		9

Mathematics		
MATH 110	QUANTITATIVE LITERACY (or above) ³	3
Non-Western requirement		
Non-Western course (can be used for Humanities or Social Sciences general education requirements)		3
RU mission-related course ²		
LIBS 201	WRITING SOCIAL JUSTICE	3
Science		
One biological science and one physical science required (at least one must be a four-hour lab (not applicable for science majors))		7-8
Social Sciences		
Select 9 credits from the following subject areas: African-American Studies, Anthropology, Economics, History, Journalism, Philosophy, Political Science, Psychology, Sociology and Women's and Gender Studies		9
Total Credit Hours		49-50

¹ Required for students who enter RU with fewer than 12 credit hours

² Minimum grade of C- required

³ Math, Computer Science & Technology, and Science majors have different requirements—see advisor

These quantitative requirements also apply to degrees in the College of Arts and Sciences:

- Students may apply no more than 60 credit hours of 100-level courses toward the degree.
- Students must apply no fewer than 60 credit hours of 200- and 300-level courses toward the degree.
- Students must have at least 18 credit hours (of the 60 credit hours above) at the 300 level.
- Students may transfer in no more than 66 credit hours from community colleges.
- Students must take their final 30 hours at Roosevelt University. Note that some majors have additional requirements for RU hours.
- Students must have a grade point average of 2.0 or higher to graduate. Note that some majors have additional GPA requirements.
- Students must have a minimum of 90 hours in Arts and Sciences.
- Students may apply no more than 51 hours in the major (BA) or 57 hours in the major (BS)

Your degree map is a general guide suggesting courses to complete each term on the academic pathway to your degree. It is based on the most current scheduling information from your academic program. Your program's degree map is reviewed annually and updated as schedules change (although you retain the same course requirements as long as you are continuously enrolled in your degree program).

Always work closely with your academic advisor to understand curriculum requirements and scheduling, as each student's academic plan can look slightly different.

Year 1

Fall	Credit Hours	Spring	Credit Hours
ACP 101	3	ACP 110	3
ENG 101	3	ENG 102	3
CHEM 201	5	CHEM 202	5

MATH 121	3 MATH 122	3
	14	14

Year 2

Fall	Credit Hours Spring	Credit Hours
CHEM 211	5 CHEM 212	5
MATH 231	5 MATH 232	5
Humanities #1	3 ACP 250 or LIBS 201	3
Social Science #1	3 Humanities #2	3
	16	16

Year 3

Fall	Credit Hours Spring	Credit Hours
CHEM 237 or 341	3 CHEM 3XX ³	5
PHYS 201	4 PHYS 202	4
PHYS 233	1 PHYS 234	1
Social Science #2	3 Social Science #3	3
Non-Western Studies Course ⁴	3 Humanities #3	3
	14	16

Year 4

Fall	Credit Hours Spring	Credit Hours
CHEM 321	5 CHEM 3XX ³	5
CHEM 341 or 237	5 CHEM 322	5
LIBS 201 or ACP 250	3 CHEM 393	1
General Elective ¹	3 General Elective ¹	3
	16	14

Total Credit Hours 120

¹ Or course towards an optional Minor.

² Any course at the 200 Level within the discipline

³ Any course at the 300 Level within the discipline.

⁴ This requirement can be fulfilled by other requirements.

⁵ One Natural Science course must have a lab.