



Chemistry - B.S.

(Biochemistry Option)

College of
Arts and Sciences

NOTE: Courses listed in parentheses after the course title are Kentucky Community and Technical College courses that have been approved to fulfill the equivalent UK requirement.

The Department of Chemistry offers the Bachelor of Science degree for students who intend to become professional chemists or do graduate work in chemistry or a closely related discipline. There are two options in the B.S. program: a traditional version covering all the major areas of chemistry, and an option that emphasizes biochemistry. Both degree options are certified by the American Chemical Society.

122 hours

Any student earning a Bachelor of Science (BS) degree must complete a minimum of 60 hours in natural, physical, mathematical, and computer science. See the complete description of College requirements for a Bachelor of Science degree, including a specific listing of courses applicable to the 60-hour requirement, on pages 103-104.

University Studies Program Requirements

- I. Math (completed by Premajor Requirement)
- II. Foreign Language[^] (placement exam recommended) 0-8
- III. Inference-Logic (completed by Premajor Requirement)
- IV. Written Communication 0-4
- VI. Natural Sciences (completed by Premajor Requirements)
- VII. Social Sciences 6
- VIII. Humanities 6
- IX. Cross-Cultural (choose a Humanities course) 3
- X. Electives (choose a Social Science course) 3

USP hours: 18-30

Graduation Writing Requirement

. After attaining sophomore status, students must complete a Graduation Writing Requirement course. See "University Writing Requirement" on page 72 of this Bulletin.

Graduation Writing Requirement Hours: 3

College Requirements

- I. Foreign Language (placement exam recommended) 0-6
- II. Disciplinary Requirements
 - a. Natural Science (completed by Major Requirements)
 - b. Social Science (completed by USP Elective Requirement)
 - c. Humanities (completed by USP Cross-Cultural Requirement)
- III. Laboratory or Field Work (completed by Premajor Requirement)
- IV. Electives 6

College Requirement hours: 6-12

Premajor Requirements

- MA 113 Calculus I (MA 113 or MT 175) 4
- MA 114 Calculus II (MA 114 or MT 185) 4
- CHE 105 General College Chemistry I (CHE 105) 3
- CHE 111 Laboratory to Accompany General Chemistry I
(CHM 105 preferred; or CHE 115 which fulfills CHE 111 and 113) 1
- CHE 113 Laboratory to Accompany General Chemistry II
(CHM 107 preferred; or CHE 115 which fulfills CHE 111 and 113) 2

- BIO 150 Principles of Biology I (BIO 150) 3
- BIO 151 Principles of Biology Laboratory I (BIO 151) 2
- BIO 152 Principles of Biology II (BIO 152) 3
- BIO 153 Principles of Biology Laboratory II (BIO 153) 2

Premajor hours: 27

Major Requirements

Major Core Requirements

- CHE 226 Analytical Chemistry (CHE 226) 3
- CHE 230 Organic Chemistry I (CHE 230) 3
- CHE 231 Organic Chemistry Laboratory I (CHE 231) 2
- CHE 232 Organic Chemistry II (CHE 232) 3
- BIO 308 General Microbiology
or
BIO 315 Introduction to Cell Biology 3
- CHE 440G Introductory Physical Chemistry 4
- CHE 441G Physical Chemistry Laboratory 2
- CHE 450G Practical Inorganic Chemistry 4

- CHE 522 Instrumental Analysis
or
CHE 532/533 Spectrometric Identification of Organic
Compounds/Qualitative Organic Analysis Laboratory 4
- CHE 550 Biological Chemistry I 3
- CHE 552 Biological Chemistry II 3
- CHE 554 Biological Chemistry Laboratory 2
- CHE 572 Communication in Chemistry
(two semesters) 2

Major Core hours: 38

Other Course Work Required for the Major

From the Major Department:

- Chemistry Major Field Options 4
- Major Field Options must be chosen from the following: CHE 395; or any CHE 500-level course except for those required. CHE 395 is strongly recommended for students having a minimum 3.0 GPA in chemistry courses.

From the Mathematics Department

- MA 213 Calculus III (MA 213) 4

From the Physics Department

- PHY 231/232 General University Physics (PHY 231/232) 8
- PHY 241/242 General University Physics Laboratory (PHY 241/242) 2

Other Major hours: 18

Electives

Choose electives to lead to the minimum total of 122 hours required for graduation.

Total Minimum Hours

Required for Degree 122

Chemistry (B.S.) – Biochemistry Option • 2

Curriculum for B.S. in Chemistry – Biochemistry Option

Freshman Year

First Semester	Hours
CHE 105 General College Chemistry I (<i>CHE 105</i>)	3
CHE 111 Laboratory to Accompany General Chemistry I (<i>CHM 105 preferred; or CHE 115 which fulfills CHE 111 and 113</i>)	1
MA 113 Calculus I (<i>MA 113 or MT 175</i>)	4
ENG 104 Writing: An Accelerated Foundational Course	4
University Studies	3
Second Semester	
CHE 107 General College Chemistry II (<i>CHE 107</i>)	3
CHE 113 Laboratory to Accompany General Chemistry II (<i>CHM 107 preferred; or CHE 115 which fulfills CHE 111 and 113</i>)	2
MA 114 Calculus II (<i>MA 114 or MT 185</i>)	4
BIO 150 Principles of Biology I (<i>BIO 150</i>)	3
BIO 151 Principles of Biology Laboratory I (<i>BIO 151</i>)	2

Sophomore Year

First Semester	Hours
CHE 230 Organic Chemistry I (<i>CHE 230</i>)	3
BIO 152 Principles of Biology II (<i>BIO 152</i>)	3
BIO 153 Principles of Biology Laboratory II (<i>BIO 153</i>)	2
MA 213 Calculus III (<i>MA 213</i>)	4
PHY 231 General University Physics (<i>PHY 231</i>)	4
PHY 241 General University Physics Laboratory (<i>PHY 241</i>)	1
Second Semester	
CHE 231 Organic Chemistry Laboratory I (<i>CHE 231</i>)	2
CHE 232 Organic Chemistry II (<i>CHE 232</i>)	3
CHE 226 Analytical Chemistry (<i>CHE 226</i>)	3
PHY 231 General University Physics (<i>PHY 231</i>)	4
PHY 241 General University Physics Laboratory (<i>PHY 241</i>)	1
ENG 2XX Writing Intensive Course	3

Junior Year

First Semester	Hours
*CHE 440G Introductory Physical Chemistry	4
CHE 522 Instrumental Analysis	4
or	
CHE 532 Spectrometric Identification of Organic Compounds	2
CHE 550 Biological Chemistry I	3
**BIO 308 General Microbiology	
or	
BIO 315 Introduction to Cell Biology	3
University Studies	3
Second Semester	
CHE 533 Qualitative Organic Analysis Laboratory (if CHE 532 taken)	2
CHE 552 Biological Chemistry II	3
CHE 554 Biological Chemistry Laboratory	2
University Studies	6
Foreign Language***	4

Senior Year

First Semester	Hours
CHE 450G Practical Inorganic Chemistry	4
Major Field Option	2
CHE 572 Seminar	1
University Studies	3
Foreign Language***	4
Second Semester	
CHE 441G Physical Chemistry Laboratory	2
Major Field Option	2
CHE 572 Seminar	1
Foreign Language***	3
Electives (A&S)	6

*CHE 442G may be substituted for CHE 440G.

**BIO 304 may replace BIO 308 or BIO 315.

***Any language may be used to satisfy the USP and College Foreign Language requirements – German is recommended.

Certification Requirements

The B.S. degree is certified by the American Chemical Society.