



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

### Sophomore Year

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