



# Chemistry - B.S.

(Biochemistry Option)

College of  
Arts and Sciences

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.

## 120 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 page 110 of the 2009-2010 UK Bulletin.

### 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 75 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 ..... 4
- MA 114 Calculus II ..... 4
- CHE 105 General College Chemistry I ..... 3
- CHE 107 General College Chemistry II ..... 3
- CHE 111 Laboratory to Accompany General Chemistry I ..... 1
- CHE 113 Laboratory to Accompany General Chemistry II ..... 2
- BIO 150 Principles of Biology I ..... 3
- BIO 151 Principles of Biology Laboratory I ..... 2
- BIO 152 Principles of Biology II ..... 3
- BIO 153 Principles of Biology Laboratory II ..... 2

**Premajor hours:** ..... 27

### Major Requirements

#### Major Core Requirements

- CHE 226 Analytical Chemistry ..... 3
  - CHE 230 Organic Chemistry I ..... 3
  - CHE 231 Organic Chemistry Laboratory I ..... 2
  - CHE 232 Organic Chemistry II ..... 3
  - BIO 308 General Microbiology  
or  
BIO 315 Introduction to Cell Biology ..... 3
  - CHE 410G Inorganic Chemistry ..... 2
  - CHE 412G Inorganic Chemistry Laboratory ..... 2
  - CHE 440G Introductory Physical Chemistry ..... 4
  - CHE 441G Physical Chemistry Laboratory ..... 2
  - 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 ..... 4

##### From the Physics Department

- PHY 231/232 General University Physics ..... 8
- PHY 241/242 General University Physics Laboratory ..... 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 .....	3
CHE 111 Laboratory to Accompany General Chemistry I .....	1
MA 113 Calculus I .....	4
ENG 104 Writing: An Accelerated Foundational Course .....	4
University Studies .....	3

### Second Semester

CHE 107 General College Chemistry II .....	3
CHE 113 Laboratory to Accompany General Chemistry II .....	2
MA 114 Calculus II .....	4
BIO 150 Principles of Biology I .....	3
BIO 151 Principles of Biology Laboratory I .....	2

### Sophomore Year

First Semester	Hours
CHE 230 Organic Chemistry I .....	3
BIO 152 Principles of Biology II .....	3
BIO 153 Principles of Biology Laboratory II .....	2
MA 213 Calculus III .....	4
PHY 231 General University Physics .....	4
PHY 241 General University Physics Laboratory .....	1

### Second Semester

CHE 231 Organic Chemistry Laboratory I .....	2
CHE 232 Organic Chemistry II .....	3
CHE 226 Analytical Chemistry .....	3
PHY 232 General University Physics .....	4
PHY 242 General University Physics Laboratory .....	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 410G Inorganic Chemistry .....	2
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 .....	3
Foreign Language*** .....	4

### Senior Year

#### First Semester

	Hours
CHE 412G Inorganic Chemistry Laboratory .....	2
Major Field Option .....	2
CHE 572 Seminar .....	1
University Studies .....	6
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.