

# 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 three options in the B.S. program: a traditional track covering all the major areas of chemistry, an option that emphasizes biochemistry and an option in materials chemistry. The Biochemistry and Traditional Options are certified by the American Chemical Society. A Bachelor of Arts degree program is offered as well for students who want greater flexibility in the selection of courses to perhaps pursue more diverse degree options, including dual and double majors. The Department also offers the Master of Science and the Doctor of Philosophy degree.

### 128 hours

Any student earning a Bachelor of Science (BS) degree must complete a minimum of 60 hours in natural, physical, mathematical, and computer science. For a complete description of College requirements for a Bachelor of Science degree, including a specific listing of courses applicable to the 60-hour requirement, see the *Arts and Sciences* section of the 2019-2020 *UK Bulletin*.

### UK Core Requirements

See the *UK Core* section of the 2019-2020 *Undergraduate Bulletin* for the complete UK Core requirements. The courses listed below are (a) recommended by the college, or (b) required courses that also fulfill UK Core areas. Students should work closely with their advisor to complete the UK Core requirements.

#### I. Intellectual Inquiry in Arts and Creativity

Choose one course from approved list ..... 3

#### II. Intellectual Inquiry in the Humanities

Choose one course from approved list ..... 3

#### III. Intellectual Inquiry in the Social Sciences

Choose one course from approved list ..... 3

#### IV. Intellectual Inquiry in the Natural, Physical, and Mathematical Sciences

CHE 105 General College Chemistry I ..... 4  
CHE 111 General Chemistry I Laboratory ..... 1

#### V. Composition and Communication I

CIS/WRD 110 Composition and Communication I ..... 3

#### VI. Composition and Communication II

CIS/WRD 111 Composition and Communication II ..... 3

#### VII. Quantitative Foundations

MA 113 Calculus I ..... 4

#### VIII. Statistical Inferential Reasoning

Choose one course from approved list ..... 3

#### IX. Community, Culture and Citizenship in the USA

Choose one course from approved list ..... 3

#### X. Global Dynamics

Choose one course from approved list ..... 3

**UK Core hours** ..... **33**

### Graduation Composition and Communication Requirement (GCCR)

WRD 310 Writing in the Natural Sciences ..... 3

### Graduation Composition and Communication Requirement hours (GCCR)

..... **3**

### College Requirements

I. Foreign Language (*placement exam recommended*) ..... 0-14

II. Disciplinary Requirements

a. Natural Science (*completed by Major Requirements*)

b. Social Science ..... 3

c. Humanities ..... 3

III. Laboratory or Field Work (*completed by Premajor Requirement*)

IV. Electives ..... 6

**College Requirement hours:** ..... **12-26**

### Premajor Requirements

\*MA 113 Calculus I ..... 4

MA 114 Calculus II ..... 4

\*CHE 105 General College Chemistry I ..... 4

CHE 107 General College Chemistry II ..... 3

\*CHE 111 General Chemistry I Laboratory ..... 1

CHE 113 General Chemistry II Laboratory ..... 2

BIO 148 Introductory Biology I ..... 3

BIO 152 Principles of Biology II ..... 3

†BIO 155 Laboratory for Introductory Biology ..... 1

**Premajor hours:** ..... **25**

†BIO 155, *Laboratory for Introductory Biology I*, has replaced BIO 151 and BIO 153 as the premajor BIO lab requirement.

### Major Requirements

#### Major Core Requirements

CHE 226 Analytical Chemistry ..... 3

CHE 230 Organic Chemistry I ..... 3

CHE 231 Organic Chemistry Laboratory I ..... 1

CHE 232 Organic Chemistry II ..... 3

BIO 304 Principles of Genetics

or

BIO 308 General Microbiology

or

BIO 315 Introduction to Cell Biology ..... 3-4

CHE 410G Inorganic Chemistry ..... 2

CHE 412 Inorganic Chemistry Laboratory ..... 2

CHE 440G Introductory Physical Chemistry ..... 3

CHE 441 Physical Chemistry Laboratory ..... 2

CHE 454 Biological Chemistry Laboratory ..... 2

CHE 422 Instrumental Analysis

or

CHE 532/533 Spectrometric Identification of Organic Molecules/

Advanced Organic Chemistry Laboratory ..... 4

–CONTINUED–

University of Kentucky is accredited by the Southern Association of Colleges and Schools Commission on Colleges to award associate, baccalaureate, masters, and doctorate degrees. Contact the Commission on Colleges at 1866 Southern Lane, Decatur, Georgia 30033-4097, call 404-679-4500, or online at [www.sacscoc.org](http://www.sacscoc.org) for questions about the accreditation of University of Kentucky.

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

CHE 550 Biological Chemistry I .....	3
CHE 552 Biological Chemistry II .....	3

**Major Core hours:** ..... **34-35**

## 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 128 hours required for graduation.

### Total Minimum Hours

**Required for Degree** ..... **128**

*\*Course used towards completion of a UK Core Requirement.*

## Curriculum for B.S. in Chemistry Biochemistry Option

### Freshman Year

First Semester	Hours
CHE 105 General College Chemistry I .....	4
CHE 111 General Chemistry I Laboratory .....	1
MA 113 Calculus I .....	4
CIS/WRD 110 Composition and Communication I .....	3
UK Core – Arts and Creativity .....	3
<b>Second Semester</b>	
CHE 107 General College Chemistry II .....	3
CHE 113 General Chemistry II Laboratory .....	2
MA 114 Calculus II .....	4
BIO 148 Introductory Biology I .....	3
BIO 155 Laboratory for Introductory Biology I .....	1
CIS/WRD 111 Composition and Communication II .....	3

### Sophomore Year

First Semester	Hours
CHE 230 Organic Chemistry I .....	3
BIO 152 Principles of Biology II .....	3
MA 213 Calculus III .....	4
PHY 231 General University Physics .....	4
PHY 241 General University Physics Laboratory .....	1
STA 210 Making Sense of Uncertainty: An Introduction to Statistical Reasoning .....	3

### Second Semester

CHE 226 Analytical Chemistry .....	3
CHE 231 Organic Chemistry Laboratory I .....	1
CHE 232 Organic Chemistry II .....	3
PHY 232 General University Physics .....	4
PHY 242 General University Physics Laboratory .....	1
UK Core – Humanities .....	3

### Junior Year

#### First Semester

	Hours
*CHE 440G Introductory Physical Chemistry .....	3
CHE 422 Instrumental Analysis .....	4
<b>or</b>	
CHE 532 Spectrometric Identification of Organic Molecules .....	2
CHE 550 Biological Chemistry I .....	3
A&S Humanities .....	3
UK Core – Social Sciences .....	3

#### Second Semester

CHE 410G Inorganic Chemistry .....	2
CHE 454 Biological Chemistry Laboratory .....	2
CHE 533 Advanced Organic Chemistry Laboratory (if CHE 532 taken) .....	2
CHE 552 Biological Chemistry II .....	3
BIO 304 Principles of Genetics	
<b>or</b>	
BIO 308 General Microbiology	
<b>or</b>	
BIO 315 Introduction to Cell Biology .....	3-4
Foreign Language** .....	4

### Senior Year

#### First Semester

	Hours
CHE 412 Inorganic Chemistry Laboratory .....	2
Major Field Option .....	2
A&S Social Science .....	3
WRD 310 Writing in the Natural Sciences .....	3
UK Core – Citizenship - USA .....	3
Foreign Language** .....	4

#### Second Semester

CHE 441 Physical Chemistry Laboratory .....	2
Major Field Option .....	2
Foreign Language** .....	3
UK Core – Global Dynamics .....	3
Electives .....	6

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

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

### Certification Requirements

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