### Chemistry - B.S.

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 perhaps pursue more diverse degree options, including dual and double majors. For all majors CHE 109 and CHE 110 have been defined as equivalent to CHE 105. The Department also offers the Master of Science and the Doctor of Philosophy degree.

### UK Core Requirements

See the UK Core section of the 2018-2019 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

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHE 105 General College Chemistry I</td>
<td>4</td>
</tr>
<tr>
<td>CHE 111 General Chemistry I Laboratory</td>
<td>1</td>
</tr>
</tbody>
</table>

#### 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

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### 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 2018-2019 UK Bulletin.

### College Requirements

See the Arts and Sciences section of the 2018-2019 Undergraduate Bulletin for the complete College requirements. The courses listed below are (a) recommended by the college, or (b) required courses that also fulfill College Core areas. Students should work closely with their advisor to complete the College Core requirements.

#### Premajor Requirements

**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

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHE 226 Analytical Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>CHE 230 Organic Chemistry I</td>
<td>3</td>
</tr>
<tr>
<td>CHE 231 Organic Chemistry Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>CHE 232 Organic Chemistry II</td>
<td>3</td>
</tr>
<tr>
<td>BIO 304 Principles of Genetics</td>
<td>3</td>
</tr>
<tr>
<td>BIO 308 General Microbiology</td>
<td>3</td>
</tr>
<tr>
<td>BIO 315 Introduction to Cell Biology</td>
<td>3</td>
</tr>
<tr>
<td>CHE 410G Inorganic Chemistry</td>
<td>2</td>
</tr>
<tr>
<td>CHE 412 Inorganic Chemistry Laboratory</td>
<td>2</td>
</tr>
<tr>
<td>CHE 440G Introductory Physical Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>CHE 441 Physical Chemistry Laboratory</td>
<td>2</td>
</tr>
<tr>
<td>CHE 454 Biological Chemistry Laboratory</td>
<td>3</td>
</tr>
<tr>
<td>CHE 422 Instrumental Analysis</td>
<td>2</td>
</tr>
<tr>
<td>CHE 532/533 Spectrometric Identification of Organic Molecules/ Advanced Organic Chemistry Laboratory</td>
<td>4</td>
</tr>
</tbody>
</table>

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

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

### Freshman Year

**First Semester**
- 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

**Second Semester**
- 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**
- CHE 250 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**
- *CHE 440G Introductory Physical Chemistry ......................................................... 3
- CHE 422 Instrumental Analysis ............................................................................... 4
- 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 or BIO 305 General Microbiology ................. or
- BIO 315 Introduction to Cell Biology .................................................................. 3-4
- Foreign Language** ............................................................................................... 4

**Second Semester**
- CHE 410G Inorganic Chemistry .......................................................................... 2
- CHE 412 Inorganic Chemistry Laboratory ............................................................. 2
- A&S Social Science ............................................................................................... 3
- WRD 310 Writing in the Natural Sciences ............................................................... 3
- UK Core – Citizenship - USA ............................................................................... 3
- Foreign Language** ............................................................................................... 4

### Senior Year

**First Semester**
- 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
- Electives ................................................................................................................ 6

**Second Semester**
- CHE 440G Introductory Physical Chemistry ......................................................... 3
- CHE 454 Biological 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.

2018-2019 Series