BIOCHEMISTRY, B.S.

The Biochemistry Major (B.S.) is designed to prepare students for graduate education in the biochemical sciences, for medical, dental, or pharmaceutical professions, or for employment in biotechnology, pharmaceutical, and chemical industries. Students who complete the Bachelor of Science in Biochemistry will meet all or most of the academic requirements for admission to medical, dental, veterinary, or pharmacy schools.

The curriculum involves a solid foundation of Chemistry and Biology courses, along with core and advanced elective courses in Biochemistry. Undergraduate research is encouraged, and students may collaborate with participating faculty from a variety of departments (Chemistry, Biology, Nutrition, Physics, and Kinesiology).

This program follows the biochemistry curriculum recommendations of the American Society of Biochemists and Molecular Biologists.

Overall Requirements

- 120 credit hours, to include at least 36 credits at or above the 300 course level
- Only major requirement and related area requirement courses at or below the 300-level in which grades of C- or better are earned will be counted toward the major. Students must earn a C- or better in prerequisite major requirement and related area requirement courses before advancing to subsequent courses. Students must have an overall GPA of at least 2.0 in CHE courses at UNC Greensboro.

Degree Program Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</table>

University Requirements (https://catalog.uncg.edu/academic-regulations-policies/undergraduate-policies/)

General Education Requirements (MAC) (https://catalog.uncg.edu/academic-regulations-policies/undergraduate-policies/general-education-program/#generaleducationcorerequirements)

College of Arts and Sciences Additional Requirements (CIC) (https://catalog.uncg.edu/arts-sciences/#additionalundergraduaterequirements)

Major Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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Required

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHE 111 &amp; CHE 112</td>
<td>General Chemistry I and General Chemistry I Laboratory</td>
<td>38</td>
</tr>
<tr>
<td>CHE 114 &amp; CHE 115</td>
<td>General Chemistry II and General Chemistry II Laboratory</td>
<td></td>
</tr>
<tr>
<td>CHE 331 &amp; CHE 333</td>
<td>Quantitative Analysis and Quantitative Analysis Laboratory</td>
<td></td>
</tr>
<tr>
<td>CHE 342</td>
<td>Inorganic Chemistry</td>
<td></td>
</tr>
<tr>
<td>CHE 351</td>
<td>Organic Chemistry I</td>
<td></td>
</tr>
<tr>
<td>CHE 352</td>
<td>Organic Chemistry II</td>
<td></td>
</tr>
<tr>
<td>CHE 353</td>
<td>Organic Laboratory Techniques</td>
<td></td>
</tr>
<tr>
<td>CHE 355</td>
<td>Intermediate Organic Chemistry Lab</td>
<td></td>
</tr>
<tr>
<td>CHE 402</td>
<td>Chemistry Seminar</td>
<td></td>
</tr>
<tr>
<td>CHE 406 &amp; CHE 407</td>
<td>Introductory Physical Chemistry and Introductory Physical Chemistry Laboratory</td>
<td></td>
</tr>
<tr>
<td>CHE 456</td>
<td>Biochemistry I</td>
<td></td>
</tr>
<tr>
<td>CHE 457</td>
<td>Biochemistry II</td>
<td></td>
</tr>
<tr>
<td>CHE 458</td>
<td>Biochemistry Laboratory</td>
<td></td>
</tr>
<tr>
<td>CHE 401</td>
<td>Chemistry Seminar Introduction</td>
<td></td>
</tr>
<tr>
<td>BIO 111 &amp; 111L</td>
<td>Principles of Biology I and Principles of Biology I Laboratory</td>
<td></td>
</tr>
<tr>
<td>BIO 112 &amp; 112L</td>
<td>Principles of Biology II and Principles of Biology II Laboratory</td>
<td></td>
</tr>
<tr>
<td>MAT 196</td>
<td>Calculus A</td>
<td></td>
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<tr>
<td>MAT 296</td>
<td>Calculus B</td>
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<tr>
<td>Select one of the following:</td>
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<tr>
<td>BIO 392 &amp; BIO 375</td>
<td>Genetics and Cell Biology and Genetics Laboratory</td>
<td></td>
</tr>
<tr>
<td>BIO 355 &amp; BIO 375</td>
<td>Cell Biology and Cell Biology and Genetics Laboratory</td>
<td></td>
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<tr>
<td>Select one of the following:</td>
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<tr>
<td>PHY 211 &amp; PHY 212</td>
<td>General Physics I and General Physics II</td>
<td></td>
</tr>
<tr>
<td>PHY 291 &amp; PHY 292</td>
<td>General Physics I with Calculus and General Physics II with Calculus</td>
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Advanced Biochemistry Elective or Independent Study 3-4

Select 3-4 credits of the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHE 431</td>
<td>Instrumental Analysis</td>
<td></td>
</tr>
<tr>
<td>CHE 436</td>
<td>Computational Chemistry</td>
<td></td>
</tr>
<tr>
<td>CHE 442</td>
<td>Advanced Inorganic Chemistry I</td>
<td></td>
</tr>
<tr>
<td>CHE 453</td>
<td>Advanced Organic Chemistry I</td>
<td></td>
</tr>
<tr>
<td>CHE 455</td>
<td>Organometallic Chemistry</td>
<td></td>
</tr>
<tr>
<td>CHE 470B</td>
<td>Special Topics in Chemistry: Biochemistry</td>
<td></td>
</tr>
<tr>
<td>CHE 481</td>
<td>Synthetic Techniques</td>
<td></td>
</tr>
<tr>
<td>CHE 491</td>
<td>Senior Research</td>
<td></td>
</tr>
<tr>
<td>CHE 492</td>
<td>Senior Research</td>
<td></td>
</tr>
<tr>
<td>BIO 494</td>
<td>Introduction to Biotechnology</td>
<td></td>
</tr>
<tr>
<td>BIO 499</td>
<td>Undergraduate Research</td>
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</tr>
<tr>
<td>KIN 475</td>
<td>Independent Study</td>
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</tr>
<tr>
<td>NTR 427</td>
<td>Undergraduate Research</td>
<td></td>
</tr>
<tr>
<td>PHY 495</td>
<td>Research Experience in Physics</td>
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</table>

Advanced Biological Science Elective 3-4

Select one or more courses from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIO 277 &amp; 277L</td>
<td>Human Physiology and Human Physiology Laboratory</td>
<td></td>
</tr>
<tr>
<td>BIO 424 &amp; 424L</td>
<td>Plant Physiology and Biotechnology and Developmental Biology Laboratory</td>
<td></td>
</tr>
<tr>
<td>BIO 443</td>
<td>Biophysics</td>
<td></td>
</tr>
<tr>
<td>BIO 464 &amp; 464L</td>
<td>Developmental Biology and Developmental Biology Laboratory</td>
<td></td>
</tr>
<tr>
<td>BIO 478</td>
<td>Hormones in Action</td>
<td></td>
</tr>
<tr>
<td>BIO 479 &amp; 479L</td>
<td>Neurobiology and Neurobiology Laboratory</td>
<td></td>
</tr>
<tr>
<td>BIO 481 &amp; 481L</td>
<td>General Microbiology and General Microbiology Laboratory</td>
<td></td>
</tr>
<tr>
<td>BIO 482</td>
<td>Molecular Biological Approaches in Research</td>
<td></td>
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<tr>
<td>BIO 485</td>
<td>Virology</td>
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</tbody>
</table>
Biochemistry, B.S.

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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIO 494</td>
<td>Introduction to Biotechnology</td>
<td></td>
</tr>
<tr>
<td>BIO 495</td>
<td>Advanced Genetics</td>
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</tbody>
</table>

* The course is taken as an audit.
** This course is strongly recommended if not use as Advanced Biochemistry elective.

**Electives**

Electives should be sufficient to complete the 120 credit hours required for the degree. Additional advanced courses in Chemistry and Biology are recommended.

**Disciplinary Honors in Chemistry and Biochemistry**

**Requirements**

- A minimum of 12 credit hours as defined below.
- UNC Greensboro cumulative GPA of 3.30 or better or, for transfer students, cumulative GPA of 3.30 or better from all prior institutions.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>HSS 490</td>
<td>Senior Honors Project</td>
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</tr>
<tr>
<td>6 credits of Honors course work in the major</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>3 credits of Honors course work in the major or another area</td>
<td>3</td>
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</table>

**Recognition**

Receive a Certificate of Disciplinary Honors in Chemistry and Biochemistry; have that accomplishment, along with the title of the Senior Honors Project, noted on the official transcript; and be recognized at a banquet held at the end of the spring semester.

**Honors Advisor**

Contact Liam Duffy at liam_duffy@uncg.edu for further information and guidance about Honors in Chemistry and Biochemistry. To apply: http://honorscollege.uncg.edu/forms/disc-application.pdf