CHEMISTRY, B.S.

The Chemistry Major (B.S.) provides very thorough undergraduate training in chemistry and an excellent background for students planning to undertake graduate work or to enter the chemical industry. It differs from the B.A. in requiring additional advanced courses in chemistry and/or related sciences. Students who complete this program will be certified to the American Chemical Society upon graduation as having fulfilled the Society’s rigorous requirements for undergraduate professional training. The sequence in which the required courses are taken is important, and the student should work closely with a chemistry advisor in planning a schedule.

The concentration in Chemistry Research offers students the option to specialize in research and be exposed to three or more years of research. The concentration is designed to prepare students for graduate study in chemistry, biochemistry, medicine, and related professions or for employment in chemistry, biochemistry, or related industries. The exposure to research will build strong research, communication, and leadership skills. Such skills are in great demand.

The concentration in Biochemistry offers students the option to specialize in biochemistry within the curriculum leading to the B.S. in Chemistry. This concentration is designed to prepare students for graduate study in biochemistry, medicine and related professions, or for employment in biochemistry or biotechnology related industries. The sequence in which the required courses are taken is important, and the student should work closely with a chemistry advisor in planning a schedule.

Overall Requirements
- 120 credit hours, to include at least 36 credits at or above the 300 course level; note that licensure programs may require credits beyond the minimum listed.
- 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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<tbody>
<tr>
<td>CHE 111 &amp; CHE 112</td>
<td>General Chemistry I and General Chemistry I Laboratory</td>
<td></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 401</td>
<td>Chemistry Seminar Introduction *</td>
<td></td>
</tr>
<tr>
<td>CHE 420 or CHE 456 &amp; CHE 457</td>
<td>Chemical Principles of Biochemistry and Biochemistry I and Biochemistry II</td>
<td></td>
</tr>
<tr>
<td>CHE 431</td>
<td>Instrumental Analysis</td>
<td></td>
</tr>
<tr>
<td>CHE 433</td>
<td>Instrumental Analysis Lab</td>
<td></td>
</tr>
<tr>
<td>CHE 442</td>
<td>Advanced Inorganic Chemistry I</td>
<td></td>
</tr>
<tr>
<td>CHE 461</td>
<td>Physical Chemistry I</td>
<td></td>
</tr>
<tr>
<td>CHE 462</td>
<td>Physical Chemistry II</td>
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</tr>
<tr>
<td>CHE 463</td>
<td>Physical Chemistry I Laboratory</td>
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</tr>
<tr>
<td>CHE 464</td>
<td>Physical Chemistry II Laboratory</td>
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<tr>
<td>CHE 481</td>
<td>Synthetic Techniques</td>
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</tbody>
</table>

Related Area Requirements
- Select at least one of the following which was not chosen above:
  - CHE 490 | Internship in Chemistry and Biochemistry |  |
  - CHE 493 | Honors Work |                           |
  - CHE 436 | Computational Chemistry |            |
  - CHE 453 | Advanced Organic Chemistry I |           |
  - CHE 455 | Organometallic Chemistry |              |
  - BIO 355 | Cell Biology |                      |
  - BIO 392 | Genetics |                        |

Electives
Electives should be sufficient to complete the 120 credit hours required for the degree. Additional advanced mathematics courses are advised. Additional chemistry courses above the 100 level may be taken.
<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>BIO 406</td>
<td>Adv Topics in Genetics</td>
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</tr>
<tr>
<td>BIO 479</td>
<td>Neurobiology</td>
<td></td>
</tr>
<tr>
<td>&amp; 479L</td>
<td>and Neurobiology Laboratory</td>
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</tr>
<tr>
<td>CSC 230</td>
<td>Elementary Data Structures and Algorithms</td>
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</tr>
<tr>
<td>CSC 330</td>
<td>Advanced Data Structures</td>
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</tr>
<tr>
<td>CSC 339</td>
<td>Concepts of Programming Languages</td>
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</tr>
<tr>
<td>CSC 427</td>
<td>Numerical Analysis and Computing</td>
<td></td>
</tr>
<tr>
<td>MAT 310</td>
<td>Elementary Linear Algebra</td>
<td></td>
</tr>
<tr>
<td>MAT 311</td>
<td>Introduction to Abstract Algebra</td>
<td></td>
</tr>
<tr>
<td>MAT 390</td>
<td>Ordinary Differential Equations</td>
<td></td>
</tr>
<tr>
<td>MAT 394</td>
<td>Calculus IV</td>
<td></td>
</tr>
<tr>
<td>PHY 321</td>
<td>Introduction to Mathematical Analysis</td>
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</tr>
<tr>
<td>PHY 323</td>
<td>Mechanics</td>
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</tr>
<tr>
<td>PHY 325</td>
<td>Electricity and Magnetism I</td>
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</tr>
<tr>
<td>PHY 327</td>
<td>Thermal Physics</td>
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<tr>
<td>PHY 412</td>
<td>Electronics for Scientists</td>
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<tr>
<td>PHY 421</td>
<td>Quantum Mechanics</td>
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<tr>
<td>CHE 491</td>
<td>Senior Research **</td>
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</tr>
<tr>
<td>CHE 492</td>
<td>Senior Research **</td>
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</table>

* This course is taken as an audit.

** The courses count only when combined for a minimum of 2 credits and will count as one course toward fulfilling the requirement.

1 The course counts only when taken for multiple instances for a combined minimum of 2 credits and will count as one course toward fulfilling the requirement.

### Chemistry Research Concentration Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
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<tr>
<td>CHE 111</td>
<td>General Chemistry I</td>
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<td>&amp; CHE 112</td>
<td>and General Chemistry I Laboratory</td>
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<tr>
<td>CHE 114</td>
<td>General Chemistry II</td>
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<tr>
<td>CHE 191</td>
<td>Introduction to Research</td>
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<tr>
<td>CHE 331</td>
<td>Quantitative Analysis</td>
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<tr>
<td>&amp; CHE 333</td>
<td>and Quantitative Analysis Laboratory</td>
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</tr>
<tr>
<td>CHE 342</td>
<td>Inorganic Chemistry</td>
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<tr>
<td>CHE 351</td>
<td>Organic Chemistry I</td>
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<tr>
<td>&amp; CHE 353</td>
<td>and Organic Laboratory Techniques</td>
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<tr>
<td>CHE 352</td>
<td>Organic Chemistry II</td>
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<tr>
<td>&amp; CHE 355</td>
<td>and Intermediate Organic Chemistry Lab</td>
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<tr>
<td>CHE 402</td>
<td>Chemistry Seminar</td>
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</tr>
<tr>
<td>CHE 406</td>
<td>Introductory Physical Chemistry</td>
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<td>or CHE 461</td>
<td>Physical Chemistry I</td>
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<td>CHE 499</td>
<td>Senior Thesis</td>
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<td>CHE 291</td>
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<td>CHE 292</td>
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<td>CHE 391</td>
<td>Junior Research *</td>
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<td>CHE 392</td>
<td>Junior Research *</td>
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<tr>
<td>CHE 401</td>
<td>Chemistry Seminar Introduction 1</td>
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### Biochemistry Concentration Requirements

<table>
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<tr>
<td>CHE 111</td>
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<td>&amp; CHE 112</td>
<td>and General Chemistry I Laboratory</td>
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<tr>
<td>CHE 114</td>
<td>General Chemistry II</td>
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<tr>
<td>&amp; CHE 115</td>
<td>and General Chemistry II Laboratory</td>
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<tr>
<td>CHE 331</td>
<td>Quantitative Analysis</td>
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<tr>
<td>&amp; CHE 333</td>
<td>and Quantitative Analysis Laboratory</td>
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<tr>
<td>CHE 342</td>
<td>Inorganic Chemistry</td>
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<td>CHE 351</td>
<td>Organic Chemistry I</td>
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<td>&amp; CHE 353</td>
<td>and Organic Laboratory Techniques</td>
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<td>CHE 352</td>
<td>Organic Chemistry II</td>
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</tr>
<tr>
<td>&amp; CHE 355</td>
<td>and Intermediate Organic Chemistry Lab</td>
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<td>CHE 401</td>
<td>Chemistry Seminar Introduction *</td>
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<tr>
<td>CHE 402</td>
<td>Chemistry Seminar</td>
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<tr>
<td>CHE 461</td>
<td>Physical Chemistry I</td>
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<tr>
<td>&amp; CHE 463</td>
<td>and Physical Chemistry I Laboratory</td>
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<td>CHE 462</td>
<td>Physical Chemistry II</td>
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<td>CHE 431</td>
<td>Instrumental Analysis</td>
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<tr>
<td>&amp; CHE 433</td>
<td>and Instrumental Analysis Lab</td>
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<tr>
<td>CHE 456</td>
<td>Biochemistry I</td>
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<tr>
<td>CHE 457</td>
<td>Biochemistry II</td>
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<tr>
<td>CHE 458</td>
<td>Biochemistry Lab</td>
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<td>Select 3-4 credits from</td>
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<tr>
<td>CHE 491</td>
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### Related Area Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>BIO 111</td>
<td>Principles of Biology I</td>
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<tr>
<td>&amp; 111L</td>
<td>and Principles of Biology I Laboratory</td>
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<tr>
<td>BIO 112</td>
<td>Principles of Biology II</td>
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<tr>
<td>&amp; 112L</td>
<td>and Principles of Biology II Laboratory</td>
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</tbody>
</table>
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></td>
<td>Required</td>
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</tr>
<tr>
<td>HSS 490</td>
<td>Senior Honors Project</td>
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<td>6 credits of Honors course work in the major</td>
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<tr>
<td></td>
<td>3 credits of Honors course work in the major or another area</td>
<td>3</td>
</tr>
</tbody>
</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