

# 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

Code	Title	Credit Hours
University Requirements ( <a href="https://catalog.uncg.edu/academic-regulations-policies/undergraduate-requirements/undergraduate-degrees-and-degree-requirements/">https://catalog.uncg.edu/academic-regulations-policies/undergraduate-requirements/undergraduate-degrees-and-degree-requirements/</a> )		
General Education Requirements (MAC) ( <a href="https://catalog.uncg.edu/academic-regulations-policies/undergraduate-requirements/general-education-program/#generaleducationcorerequirementstext">https://catalog.uncg.edu/academic-regulations-policies/undergraduate-requirements/general-education-program/#generaleducationcorerequirementstext</a> )		
College of Arts and Sciences Additional Requirements (CIC) ( <a href="https://catalog.uncg.edu/arts-sciences/#additionalundergraduaterequirementstext">https://catalog.uncg.edu/arts-sciences/#additionalundergraduaterequirementstext</a> )		

## Major Requirements

Select one of the concentrations as detailed following the major requirements.

- Chemistry
- Chemistry Research
- Biochemistry

## 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.

### Chemistry Concentration Requirements

Code	Title	Credit Hours
<b>Required</b>		<b>47-50</b>
CHE 111 & CHE 112	General Chemistry I and General Chemistry I Laboratory	
CHE 114 & CHE 115	General Chemistry II and General Chemistry II Laboratory	
CHE 331 & CHE 333	Quantitative Analysis and Quantitative Analysis Laboratory	
CHE 342	Inorganic Chemistry I	
CHE 351	Organic Chemistry I	
CHE 352	Organic Chemistry II	
CHE 353	Organic Laboratory Techniques	
CHE 355	Intermediate Organic Chemistry Lab	
CHE 402	Chemistry Seminar	
CHE 401	Chemistry Seminar Introduction *	
CHE 420 or CHE 456 & CHE 457	Chemical Principles of Biochemistry or Biochemistry I and Biochemistry II	
CHE 431	Instrumental Analysis	
CHE 433	Instrumental Analysis Lab	
CHE 442	Inorganic Chemistry II	
CHE 461	Physical Chemistry I	
CHE 462	Physical Chemistry II	
CHE 463	Physical Chemistry I Laboratory	
CHE 464	Physical Chemistry II Laboratory	
CHE 481	Synthetic Techniques	
<b>Related Area Requirements</b>		<b>21-24</b>
PHY 291	General Physics I with Calculus	
PHY 292	General Physics II with Calculus	
MAT 196	Calculus A	
MAT 296	Calculus B	
<i>Select one of the following:</i>		
MAT 310	Elementary Linear Algebra	
MAT 396	Calculus C	
MAT 390	Ordinary Differential Equations	
<i>Select at least one of the following which was not chosen above:</i>		
CHE 427	Introduction to Medicinal Chemistry	
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	
CHE 468	Introduction to Chemical Biology	

BIO 355	Cell Biology
BIO 392	Genetics
BIO 406	Adv Topics in Genetics
BIO 479 & 479L	Neurobiology and Neurobiology Laboratory
CSC 230	Elementary Data Structures and Algorithms
CSC 330	Advanced Data Structures
CSC 339	Concepts of Programming Languages
CSC 427	Numerical Analysis and Computing
MAT 310	Elementary Linear Algebra
MAT 311	Introduction to Abstract Algebra
MAT 390	Ordinary Differential Equations
MAT 394	Calculus IV
MAT 395	Introduction to Mathematical Analysis
PHY 321	Introduction to Modern Physics
PHY 323	Mechanics
PHY 325	Electricity and Magnetism I
PHY 327	Thermal Physics
PHY 412	Electronics for Scientists
PHY 421	Quantum Mechanics
CHE 491	Senior Research **
CHE 492	Senior Research **

\* 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.

### Chemistry Research Concentration Requirements

Code	Title	Credit Hours
<b>Required</b>		<b>52-57</b>
CHE 111 & CHE 112	General Chemistry I and General Chemistry I Laboratory	
CHE 114	General Chemistry II	
CHE 191	Introduction to Research	
CHE 331 & CHE 333	Quantitative Analysis and Quantitative Analysis Laboratory	
CHE 342	Inorganic Chemistry I	
CHE 351 & CHE 353	Organic Chemistry I and Organic Laboratory Techniques	
CHE 352 & CHE 355	Organic Chemistry II and Intermediate Organic Chemistry Lab	
CHE 402	Chemistry Seminar	
CHE 406 or CHE 461	Introductory Physical Chemistry or Physical Chemistry I	
CHE 499	Senior Thesis	
CHE 291	Sophomore Research *	
CHE 292	Sophomore Research *	
CHE 391	Junior Research *	
CHE 392	Junior Research *	
CHE 491	Senior Research *	
CHE 492	Senior Research **	
CHE 401	Chemistry Seminar Introduction <sup>1</sup>	

Select two courses of the following:

CHE 420	Chemical Principles of Biochemistry
CHE 427	Introduction to Medicinal Chemistry
CHE 456 & CHE 457	Biochemistry I and Biochemistry II
CHE 442	Inorganic Chemistry II
CHE 468	Introduction to Chemical Biology
CHE 481	Synthetic Techniques
CHE 431	Instrumental Analysis
CHE 453	Advanced Organic Chemistry I
CHE 455	Organometallic Chemistry

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MAT 196	Calculus A
MAT 296	Calculus B

Select one sequence of the following:

PHY 211 & PHY 212	General Physics I and General Physics II
or PHY 291 & PHY 292	General Physics I with Calculus and General Physics II with Calculus

\* Each of the courses are taken for 3 credits

\*\* Course is taken for 2 credits

<sup>1</sup> This course is taken as an audit.

### Biochemistry Concentration Requirements

Code	Title	Credit Hours
<b>Required</b>		<b>45</b>
CHE 111 & CHE 112	General Chemistry I and General Chemistry I Laboratory	
CHE 114 & CHE 115	General Chemistry II and General Chemistry II Laboratory	
CHE 331 & CHE 333	Quantitative Analysis and Quantitative Analysis Laboratory	
CHE 342	Inorganic Chemistry I	
CHE 351 & CHE 353	Organic Chemistry I and Organic Laboratory Techniques	
CHE 352 & CHE 355	Organic Chemistry II and Intermediate Organic Chemistry Lab	
CHE 401	Chemistry Seminar Introduction *	
CHE 402	Chemistry Seminar	
CHE 461 & CHE 463	Physical Chemistry I and Physical Chemistry I Laboratory	
CHE 462	Physical Chemistry II	
CHE 431 & CHE 433	Instrumental Analysis and Instrumental Analysis Lab	
CHE 456	Biochemistry I	
CHE 457	Biochemistry II	
CHE 458	Biochemistry Lab	
<b>Related Area Requirements</b>		<b>27</b>
BIO 111 & 111L	Principles of Biology I and Principles of Biology I Laboratory	
BIO 112 & 112L	Principles of Biology II and Principles of Biology II Laboratory	
MAT 196	Calculus A	

MAT 296	Calculus B	
PHY 291	General Physics I with Calculus	
PHY 292	General Physics II with Calculus	
<i>Select one of the following:</i>		
BIO 355	Cell Biology	
or BIO 392	Genetics	
<b>Advanced Biochemistry Electives</b>		<b>2-3</b>
<i>Select 2-3 credits from the following: **</i>		
CHE 427	Introduction to Medicinal Chemistry	
CHE 436	Computational Chemistry	
CHE 442	Inorganic Chemistry II	
CHE 453	Advanced Organic Chemistry I	
CHE 455	Organometallic Chemistry	
CHE 468	Introduction to Chemical Biology	
CHE 470B	Special Topics in Chemistry: Biochemistry	
CHE 481	Synthetic Techniques **	
CHE 491	Senior Research	
CHE 492	Senior Research	

\* This course is taken as an audit.

\*\* Requirement is 2 credits **only** when CHE 481 is selected.

## 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.

Code	Title	Credit Hours
<b>Required</b>		<b>3</b>
HSS 490	Senior Honors Project	
<b>6 credits of Honors course work in the major</b>		<b>6</b>
<b>3 credits of Honors course work in the major or another area</b>		<b>3</b>

### 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](mailto:liam_duffy@uncg.edu) for further information and guidance about Honors in Chemistry and Biochemistry.

To apply: <https://honorscollege.uncg.edu/lloyd-international-honors-college/academics/admissions-scholarships/disciplinary-honors-admissions/>.