

This course plan is a recommended sequence for this major. Courses designated as critical (!) may have a deadline for completion and/or affect time to graduation. Please see the Program Notes section for details regarding "critical courses" for this particular Program of Study.

| Critical                                  | Course Subject and Title   | Credit Hours | Min. Grade <sup>1</sup> | Major GPA <sup>2</sup> | Code             | Prerequisites   | Notes |
|---|--|--------------|-------------------------|------------------------|------------------|---|-------|
| <b>Semester One (17-18 Credit Hours)</b>  |  |              |                         |                        |                  |   |       |
| !   | ENGL 101 Critical Reading and Composition  | 3            | C                       |                        | CC-CMW           |   |       |
|   | MATH 141 Calculus 1 <sup>3</sup>   | 4            |                         |                        | CC-ARP           | Math 112/115/116 or Math placement test   |       |
|   | CHEM 111 General Chemistry I <sup>4</sup>  | 3            | C                       |                        | PR               | MATH 111/112/122/141 or higher math or Math placement test score; Coreq: CHEM 111L                            |       |
|   | CHEM 111L General Chemistry I Lab  | 1            | C                       |                        | PR               | Coreq: CHEM 111   |       |
|   | Foreign language <sup>5</sup> or other Carolina Core Requirement <sup>6</sup>                                    | 3-4          |                         |                        | CC-GFL           |   |       |
|   | UNIV 101 The Student in the University or Carolina Core Requirement <sup>6</sup>                                 | 3            |                         |                        | PR/CC            |   |       |
| <b>Semester Two (18 Credit Hours)</b>     |  |              |                         |                        |                  |   |       |
| !   | ENGL 102 Rhetoric and Composition  | 3            | C                       |                        | CC-CMW<br>CC-INF |   |       |
|   | MATH 142 Calculus II   | 4            |                         |                        | CC-ARP           | MATH 141  |       |
| !   | CHEM 112 General Chemistry II <sup>4</sup>   | 3            | C                       |                        | PR               | CHEM 111 or 141 & MATH 111, 115 or higher math; Prereq or Coreq: MATH 122, 141 or higher & CHEM 112L          |       |
|   | CHEM 112L General Chemistry II Lab   | 1            | C                       |                        | PR               | Coreq: CHEM 112   |       |
|   | PHYS 211 Essentials of Physics I   | 3            | C                       |                        | CC-SCI           | MATH 141; Coreq: PHYS 211L  |       |
|   | PHYS 211L Essentials of Physics I Lab  | 1            | C                       |                        | CC-SCI           | Coreq: PHYS 211   |       |
|   | Foreign language <sup>5</sup> or other Carolina Core Requirement <sup>6</sup>                                    | 3            |                         |                        | CC-GFL           |   |       |
| <b>Semester Three (15 Credit Hours)</b>   |  |              |                         |                        |                  |   |       |
|   | MATH 241 Vector Calculus <sup>7</sup>  | 3            |                         |                        | PR               | MATH 142  |       |
|   | CHEM 333 Organic Chemistry I   | 3            | C                       |                        | MR               | CHEM 112 or CHEM 142  |       |
|   | CHEM 333L Organic Chemistry I Lab  | 2            | C                       |                        | MR               | Prereq or Coreq: CHEM 333   |       |
|   | PHYS 212 Essentials of Physics II <sup>7</sup>   | 3            | C                       |                        | CC-SCI           | PHYS 211 & MATH 142; Coreq: PHYS 212L   |       |
|   | PHYS 212L Essentials of Physics II Lab <sup>7</sup>  | 1            |                         |                        | CC-SCI           | PHYS 212  |       |
|   | Foreign language <sup>5</sup> or Carolina Core Requirement <sup>6</sup>  | 3            |                         |                        | CR/CC            |   |       |
| <b>Semester Four (15-18 Credit Hours)</b> |  |              |                         |                        |                  |   |       |
|   | CHEM 322 Analytical Chemistry  | 3            | C                       |                        | MR               | CHEM 112/112L or CHEM 142; MATH 141; Coreq: CHEM 322L   |       |
|   | CHEM 322L Analytical Chemistry Lab   | 1            | C                       |                        | MR               | Coreq: CHEM 322   |       |
|   | CHEM 334 Organic Chemistry II  | 3            | C                       |                        | MR               | CHEM 333  |       |
|   | CHEM 334L Organic Chemistry II Lab   | 2            | C                       |                        | MR               | CHEM 333L; Prereq/Coreq: CHEM 334   |       |
|   | MATH course above MATH 241 <sup>7</sup> (242 recommended)  | 3            |                         |                        | PR               |   |       |
|   | History <sup>8</sup>   | 3            |                         |                        | CR               |   |       |
|   | Carolina Core Requirement <sup>6</sup> (only if needed to meet Core requirements)                                | 0-3          |                         |                        | CC               |   |       |
| <b>Semester Five (14-17 Credit Hours)</b> |  |              |                         |                        |                  |   |       |
|   | CHEM 550 Biochemistry (cross-listed: BIOL 541) or CHEM 555 Biochem/Mol. Bio. I (cross-listed: BIOL 545)          | 3            | C                       |                        | MR               | C or better in CHEM 334   |       |
|   | CHEM 541 or CHEM 542 Physical Chemistry  | 3            | C                       |                        | MR               | See Bulletin listing.   |       |
|   | CHEM 541L or CHEM 542L Physical Chemistry Lab  | 2            | C                       |                        | MR/CC-INT        | See Bulletin listing.   |       |
|   | STAT 509 Statistics for Engineers or STAT 515 Statistical Methods I <sup>7</sup> & <sup>9</sup> (only if needed) | 0-3          |                         |                        | CR               | MATH 142 (STAT 509 only); MATH 122 or 141 or both MATH 111 or higher and any statistics class (STAT 515 only) |       |
|   | Cognate or Minor Course <sup>7</sup> or Approved Elective <sup>10</sup>  | 3            | C (minor)               |                        | PR               |   |       |
|   | Humanities or Fine Arts  | 3            |                         |                        | CR               |   |       |
| <b>Semester Six (15 Credit Hours)</b>     |  |              |                         |                        |                  |   |       |
|   | CHEM 621 Instrumental Analysis   | 3            | C                       |                        | MR               | CHEM 322  |       |
|   | CHEM 621L Instrumental Analysis Lab  | 1            | C                       |                        | MR               | Prereq or Coreq: CHEM 621   |       |
|   | CHEM 541 or CHEM 542 Physical Chemistry  | 3            | C                       |                        | MR               | See Bulletin listing.   |       |
|   | CHEM 541L or CHEM 542L Physical Chemistry Lab  | 2            | C                       |                        | MR/CC-INT        | See Bulletin listing.   |       |
|   | Cognate or Minor Course <sup>7</sup> or Approved Elective <sup>10</sup>  | 3            | C (minor)               |                        | PR               |   |       |
|   | Carolina Core Requirement <sup>6</sup>   | 3            |                         |                        | CC               |   |       |

| Semester Seven (12-15 Credit Hours)   |     |           |  |    |   |  |
|---|-----|-----------|--|----|---|--|
| CHEM 511 Inorganic Chemistry  | 3   | C         |  | MR | CHEM 334, PHYS 212, & MATH 241  |  |
| Cognate or Minor Course <sup>7</sup> or Approved Elective <sup>10</sup>           | 3   | C (minor) |  | PR |   |  |
| Cognate or Minor Course <sup>7</sup> or Approved Elective <sup>10</sup>           | 3   | C (minor) |  | PR |   |  |
| Social Science  | 3   |           |  | CR |   |  |
| Carolina Core Requirement <sup>6</sup> (only if needed to meet Core requirements) | 0-3 |           |  | CC |   |  |
| Semester Eight (12-16 Credit Hours)   |     |           |  |    |   |  |
| CHEM 496-499 Undergraduate Research <sup>11</sup>                                 | 3   | C         |  | MR | Independent Study Contract Required   |  |
| Minor Course <sup>7</sup> or Approved Elective <sup>10</sup>                      | 3   | C (minor) |  | PR |   |  |
| Minor Course <sup>7</sup> or Approved Elective <sup>10</sup>                      | 3   | C (minor) |  | PR |   |  |
| CSCE 206 Scientific Applications Programming or CSCE 145 Algorithmic Design I     | 3-4 |           |  | CR | MATH 122 or 141 (CSCE 206 only); Prereq or Coreq: MATH 111 or 115 (CSCE 145 only) |  |
| Carolina Core Requirement <sup>6</sup> (only if needed to meet Core requirements) | 0-3 |           |  | CC |   |  |

### Graduation Requirements Summary

| Minimum Total Hours | Minimum Major Requirements Hours | College & Program Requirements Hours | Carolina Core Hours | Minimum Institutional GPA |
|---------------------|----------------------------------|--------------------------------------|---------------------|---------------------------|
| 120                 | 37                               | 44-50                                | 34-40               | 2.000                     |

- Regardless of individual course grades, students must maintain a minimum 2.000 cumulative GPA.
- Some colleges require a minimum GPA for major courses. Courses indicated in this column are included in the major GPA for this program of study.
- Students who do not place into MATH 141 will be required to successfully complete MATH 112, 115, or 116 before taking MATH 141.
- CHEM 141 may be taken in place of CHEM 111 and CHEM 111L, and CHEM 142 may be taken in place of CHEM 112 and CHEM 112L.
- Students in the College of Arts and Sciences are required to demonstrate proficiency in one foreign language equivalent to the 122 course through course credit or the corresponding foreign language placement score.
- The [Carolina Core](#) provides the common core of knowledge, skill and academic experience for all Carolina undergraduate students.
- The cognate is intended to support the course work in the major. The cognate must consist of twelve hours of courses at the advanced level, outside of, but related to the major. In place of a cognate, a student may choose a minor consisting of at least 18 credit hours of courses concentrated in one area that follow a structured sequence. A second major eliminates the minor/cognate requirement. Students may use MATH 241 & higher math, STAT 509/515, and PHYS 212 and 212L to fulfill the cognate requirement, but would need to complete additional electives to meet hours to graduate.
- The College of Arts and Sciences requires one U.S. History and one non-U.S. History course, both of which must be chosen from the approved Carolina Core GHS courses. Whichever is not fulfilled through the Carolina Core GHS requirement must be fulfilled through this college requirement.
- If CHEM 111, 112, 322, and 322L (or CHEM 141, 142, 322, and 322L) are all completed at USC, STAT 509 or 515 is not required. Also, if CHEM 621 and 621L are completed at USC, STAT 509 or 515 is not required. Students who exempt STAT 509 or 515 through this process will be required to take an approved elective to reach minimum hours for graduation.
- No courses of a remedial, developmental, skill-acquiring, or vocational nature may apply as credit toward degrees in the College of Arts and Sciences. The College of Arts and Sciences allows the use of the Pass-Fail option on elective courses. Further clarification on inapplicable courses can be obtained from the College of Arts and Sciences.
- Students are encouraged to start undergraduate research as early as possible to allow participation in long-term projects. Three credits of undergraduate research are required, but additional research experience is recommended. Extramural Research opportunities, such as REU's may qualify for CHEM 496-499 credit; however, a request form must be submitted and preapproved by the Department of Chemistry. If the undergraduate research is not in an approved area of biochemistry or inorganic chemistry, CHEM 550L - Biochemistry Laboratory must also be taken.

### Program Notes:

- ENGL 101 and ENGL 102 must be completed in the student's first 60 semester hours of work in order for these courses to be credited toward graduation. CHEM 112 is a prerequisite for subsequent required courses and may delay progression if not taken in a timely manner.
- The course requirements for the B.S.C. in Chemistry degree automatically meet qualifications for ACS certification.
- CHEM 401 Industrial Chemistry Capstone Experience is a recommended elective that prepares students for future roles in chemistry.
- Chemistry majors may enroll in a chemistry course a **maximum of twice** to earn the required grade of C or higher.
- A Chemistry major must receive a grade of C or higher in any chemistry course in order for it to be used to satisfy a major requirement.
- The last 30 credit hours toward your degree must be earned in residence at the University of South Carolina-Columbia.

**University Requirements:** Bachelor's degree-seeking students must meet Carolina Core (general education) requirements. For more information regarding these requirements, please visit the [Carolina Core](#) page on the University website.

| Codes:        |  |
|---------------|--|
| <b>CC</b>     | Carolina Core  |
| <b>CC-AIU</b> | Carolina Core-Aesthetic and Interpretive Understanding                             |
| <b>CC-ARP</b> | Carolina Core-Analytical Reasoning and Problem-Solving                             |
| <b>CC-CMS</b> | Carolina Core-Effective, Engaged, and Persuasive Communication: Spoken Component   |
| <b>CC-CMW</b> | Effective, Engaged, and Persuasive Communication: Written Component                |
| <b>CC-GFL</b> | Carolina Core-Global Citizenship and Multicultural Understanding: Foreign Language |
| <b>CC-GHS</b> | Carolina Core - Historical Thinking  |
| <b>CC-GSS</b> | Carolina Core - Social Sciences  |
| <b>CC-INF</b> | Carolina Core - Information Literacy   |
| <b>CC-INT</b> | Carolina Core - Integrative Course   |
| <b>CC-SCI</b> | Carolina Core - Scientific Literacy  |
| <b>CC-VSR</b> | Carolina Core - Values, Ethics, and Social Responsibility                          |
| <b>CR</b>     | College Requirement  |
| <b>MR</b>     | Major Requirement  |
| <b>PR</b>     | Program Requirement  |

Disclaimer: Major maps are only a suggested or recommended sequence of courses required in a program of study. Please contact your academic advisor for assistance in the application of specific coursework to a program of study and course selection and planning for upcoming semesters.