

# CHEMISTRY MAJOR (B.S.)

In addition to meeting the standards and requirements of the College of Arts and Sciences, a degree candidate must complete a minimum of 53 credits in chemistry and allied fields. In general, required courses will be taken in the order listed. However, each student's program is designed in consultation with the student's faculty adviser, who may modify the program in view of the student's background and objectives.

There are three distinct undergraduate programs in chemistry and biochemistry, each leading to the Bachelor of Science (B.S.) degree. The first leads to a B.S. in chemistry degree certified by the American Chemical Society (ACS). This program can also lead one of two five-year B.S.-M.S. programs. The ACS certified B.S. can be coupled with a Master of Science in Chemistry at Seton Hall. A second five-year dual degree program can lead to a Bachelor of Science in Chemistry from Seton Hall and a Master of Chemical Engineering from Stevens Institute of Technology.

The second degree is a general chemistry major that allows the student more flexibility. Since fewer chemistry courses are required, the student in the second program may also concentrate on an additional field, such as biology, computer science or business administration, or may take a greater variety of liberal arts courses. Either program can lead to further study at the graduate level in a variety of chemistry intensive areas, including chemistry, biochemistry, medicine, dentistry, forensic science, and intellectual property law.

The third degree is a B.S. in biochemistry, which is designed to prepare students for graduate study in biochemistry or related fields, for medical school or for employment in the pharmaceutical and clinical industries. The course requirements include those for the general chemistry major, with advanced biology and biochemistry courses added to the program of study. Students who intend to enter graduate school may select from a variety of advanced electives in order to meet specific admission requirements.

Link to College Core requirement (<http://catalogue.shu.edu/undergraduate/college-arts-sciences/core-curriculum/>).

| Course                   | Title   | Hours     |
|--------------------------|---|-----------|
| <b>First Year</b>        |   |           |
| CHEM 1107                | Principles of Chemistry I   | 5         |
| CHEM 1108                | Principles of Chemistry II  | 4         |
| MATH 1401                | Calculus I *  | 4         |
| MATH 1511                | Calculus II - Math - Phys Sci *                                   | 4         |
| <b>Hours</b>             |   | <b>17</b> |
| <b>Second Year</b>       |   |           |
| CHEM 2313<br>& CHEM 2314 | Organic Chemistry I<br>and Organic Chemistry II                   | 10        |
| MATH 2511                | Calculus III - Math - Phys Sci                                    | 4         |
| PHYS 1705<br>& PHYS 1706 | Principles of Physics I<br>and Principles of Physics II           | 6         |
| PHYS 1815<br>& PHYS 1816 | Physics Lab and Data Analy I<br>and Physics Lab and Data Analy II | 3         |
| PHYS 2112                | Phys Appl of Math Techniques                                      | 4         |
| <b>Hours</b>             |   | <b>27</b> |
| <b>Third Year</b>        |   |           |
| CHEM 2215<br>& CHEM 2216 | Analytical Chemistry I<br>and Analytical Chemistry II             | 8         |
| CHEM 3415<br>& CHEM 3416 | Physical Chemistry I<br>and Physical Chemistry II                 | 8         |
| <b>Hours</b>             |   | <b>16</b> |

| <b>Fourth Year</b>                           |                          |              |
|--|--------------------------|--------------|
| CHEM 3612                                    | Inorganic Chemistry      | 5            |
| Select one of the following:                 |                          | 3-4          |
| CHEM 3512                                    | Elements of Biochemistry |              |
| CHEM 3522                                    | Elements of Biochemistry |              |
| CHEM 4501                                    | General Biochemistry I   |              |
| CHEM Elective courses in chemistry (minimum) |                          | 2-3          |
| CHEM 4891                                    | Chemistry Research **    | 2            |
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| <b>Hours</b>                                 |                          | <b>14-16</b> |
| <b>Total Hours</b>                           |                          | <b>74-76</b> |

\* Students lacking high school trigonometry or making unsatisfactory scores on the Mathematics Placement Test take MATH 1015 Pre Calc Math Alg and Trig, and MATH 1401 Calculus I in the freshman year and MATH 1411 Calculus II in the following Summer Session.

\*\* Recommended.