**Biochemistry vs. Molecular and Cellular Biology.** Biochemistry is closely related to the field of molecular biology. Both are interdisciplinary, with foundations in chemistry and biology, but there are critical distinctions in what are considered their respective goals. In terms, the biochemist wants to understand the chemical basis of biological systems. He or she uses physical and chemical methods to investigate questions about how electrons, atoms and molecules behave in biological systems. The molecular biologist, in contrast, is more interested in identifying the molecules involved in various processes and understanding how these molecules interact with one another as they perform cellular tasks. A convenient way to express this idea is that a biochemist looks at interactions from the molecular level and smaller whereas the molecular biologist looks at interactions from the molecular level and larger.

**Bachelor of Science Degree in Chemistry**

1) PHYS 121, 122;  
2) MATH 121, 122, 221;  
3) CHEM 110, 230, 250, 251, 330, 340, 341, 342, 420, 490 (full unit);  
4) One-half unit Chemistry elective at the 300 or 400 level;  
5) Participation in CHEM 493, Seminar.

**Bachelor of Science Degree in Biochemistry**

1) PHYS 121, 122  
2) MATH 121, 122, 221  
3) CHEM 110, 230, 250, 251, 340, 460, 461  
4) BIO 111, 212, 311  
5) One of CHEM 330, 341 or 420  
6) One unit of a 300- or 400-level CHEM or BIO elective (BIOL 361 may not be used to satisfy this requirement)

**Requirements for major degrees**

**Requirements for the Bachelor of Science in Biology**

Completion of a minimum of 16 units of Biology and supporting courses to include:
1. Biology core courses: 111, 112, 211, 212, 311 and one unit from the following: 332 or 334;  
2. Biology electives: Three additional units in biology courses numbered at 312 or above. One unit may count toward the major from the research or independent study courses: 390, 392, 399, 490, 491, 495, 496;  
3. Three units in chemistry: 110, 111 or 230, 250;  
4. One unit of mathematics: 121 or 122;  
5. Three additional units from the following: One unit from BIOL 312 or higher; CHEM 251 or higher; Geology; MATH 122 or higher; CSCI 161 or higher; PHYS 111/112, 121/122.

**Requirements for the Bachelor of Science in Molecular and Cellular Biology**

Completion of a minimum of 16 units of Biology and supporting courses to include:  
1) Four units in Biology: 111, 212, 311, 404  
2) Six units in Chemistry: 110, 230, 250, 251, 460, 461;  
3) Two units of mathematics: 121, 122;  
4) Two units of Physics: 121, 122  
5) Two additional units in Biology, one of which must be at the 300 or 400 level, and which can include one unit of research credit (Bio 390, 490, or 491). Students with an interest in evolutionary, environmental, or ecological applications of molecular biology should strongly consider BIOL 112 and 360 as their electives. Students may not use BIOL 361 to satisfy this requirement.