**Bachelor of Science in Chemistry (Chemical Biology)**

PLEASE NOTE: This is a SAMPLE course plan only. Please meet with your advisor to ensure completion of all requirements

|  |  |  |
| --- | --- | --- |
| **Freshman** |  | **Sophomore** |
| *Fall* | *Spring* | *Units* | *Fall* | *Spring* | *Units* |
| **CHEM 107L or CHEM 115aL****(GE-E)****4 units** | **CHEM 108L or CHEM 115bL****4 units** | **4** | **CHEM 325aL****4 units** | **CHEM 325bL****4 units** | **4** |
| **MATH 125** **(GE-F)****4 units** | **MATH 126****4 units** | **4** | **MATH 225 or MATH 226** **(GE-F)** **4 units** | **CHEM 300L****4 units** | **4** |
| **WRIT-150****4 units** | **GSEM 110, 120, 130** **4 units** | **4** | **BISC 220 L (GE D)** **4 units** | **GE-A, B, C, G, or H****4 units** | **4** |
| **Foreign Language I****4 units** | **Foreign Language II****4 units**  | **4** | **Foreign Language III****4 units** | **GE-A, B, C, G, or H** **4 units** | **4** |
| CHEM 294 (Optional) | CHEM 294 (Optional) | 1-2 | Elective (Optional) | Elective (Optional) | 2 |
|  |  |
| **Junior** | **Senior** |
| *Fall* | *Spring* | *Units* | *Fall* | *Spring* | *Units* |
| **PHYS 151L****4 units** | **PHYS 152L****4 units**  | **4** | **CHEM 430\* (fa)****4 units** | **CHEM 431 (sp)****4 units** | **4** |
| **BISC 320L (fa)****4 units** | **Advanced Chemistry Elective\*\*****4 units** | **4** | **Advanced Chemistry Elective\*\*****4 units** | **Advanced Lab Elective\*\*\*** **4 units** | **4** |
| **CHEM 467L (fa)****2 units** | **CHEM 463L (sp)****2 units**  | **2** | **CHEM 490****4 units** | **GE-A, B, C, G, or H****4 units** | **4** |
| **GE-A, B, C, G, or H** **4 units** | **WRIT 340****4 units** | **4** | **GE-A, B, C, G, or H** **4 units** | Elective (Optional) | **4** |
| **GE-A, B, C, G, or H** **4 units** | **GE-A, B, C, G, or H** **4 units** | **4** | Elective (Optional) | Elective (Optional) | 1-2 |

\*CHEM 432 (4 units, sp) is an alternative to CHEM 430

\*\*Advanced Chemistry Elective: Select 2 courses from CHEM 426 (4 units, fa), CHEM 453 (4 units, sp) and CHEM 520ab (2-2 units, fasp)

\*\*\*Advanced Laboratory Elective options; CHEM 332L (4 units, sp) or CHEM 423L (4 units, sp)

-A regular full-load is 16 units; 2 unit electives in addition to these 16 units are optional.
-The GESM and GE requirements can be fulfilled in 5 courses if courses that double count are selected.

**B.S. degree in Chemistry (Chemical Biology): Key Courses**

|  |  |
| --- | --- |
| Required Core courses, Lower division | Units |
| BISC 220L | General Biology: Cell Biology and Physiology or | 4 |
| BISC 221L | Advanced General Biology: Cell Biology and Physiology | 4 |
| CHEM 107L /108L | General Chemistry for Chemistry Majors or  | 4-4 |
| CHEM 115abL  | Advanced General Chemistry  | 4-4 |
| MATH 125  | Calculus I  | 4 |
| MATH 126  | Calculus II  | 4 |
| MATH 225  | Linear Algebra and Linear Differential Equations or | 4  |
| MATH 226  | Calculus III  | 4 |
| PHYS 151L  | Fundamentals of Physics I: Mechanics and Thermodynamics  | 4 |
| PHYS 152L  | Fundamentals of Physics II: Electricity and Magnetism  | 4 |
|    |    |   |
| Required Core courses, Upper division | Units |
| BISC 320L | Molecular Biology | 4 |
| CHEM 300L  | Analytical Chemistry  | 4 |
| CHEM 325abL  | Organic Chemistry  | 4-4 |
| CHEM 430 | Physical Chemistry: Thermodynamics and Kinetics or  | 4 |
| CHEM 432 | Physical Chemistry for the Life Science | 4 |
| CHEM 431 | Physical Chemistry: Quantum Mechanics | 4 |
| CHEM 463L | Chemical Nanotechnology Laboratory | 2 |
| CHEM 467L | Advanced Chemical Biology Laboratory | 2 |
| CHEM 490x | Directed Research | 4 |
|  |  |  |
| Advanced Laboratory Elective, Four Units From Among:  | Units |
| CHEM 332L  | Physical Chemistry Measurements  | 4 |
| CHEM 423L | Advanced Laboratory Techniques in Organic and Inorganic Chemistry | 4 |
|  |  |  |
| Advanced Chemistry Elective, Four Units From Among:  | Units |
| CHEM 426  | Advanced Organic Chemistry | 4 |
| CHEM 453 | Advanced Inorganic Chemistry | 4 |
| CHEM 520ab | Biochemistry and Molecular Biology: An Introduction for Chemists  | 2-2 |