**Bachelor of Science in Chemistry (Research)**

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

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| --- | --- | --- |
| **Freshman** |  | **Sophomore** |
| *Fall* | *Spring* | *Units* | *Fall* | *Spring* | *Units* |
| **CHEM 107 or CHEM 115aL****(GE-E)****4 units** | **CHEM 108 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****4 units** | **PHYS 152L****4 units** | **4** |
| **WRIT-150****4 units** | **GSEM 110, 120, 130, or 140****4 units** | **4** | **PHYS 151L****4 units** | **GE-A, B, C, D, 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, D, G, or H** **4 units** | **4** |
| **CHEM 294****(1 unit)** | **CHEM 292****(2 unit)** | **1-2** | Elective (Optional) | Elective (Optional) | 2 |
|  |  |
| **Junior** | **Senior** |
| *Fall* | *Spring* | *Units* | *Fall* | *Spring* | *Units* |
| **CHEM 426 (fa)****4 units** | **CHEM 453 (sp)****4 units** | **4** | **CHEM 430 (fa)****4 units** | **CHEM 431 (sp)****4 units** | **4** |
| **CHEM 490****4 units** | **CHEM 300L****4 units** | **4** | **CHEM 494****4 units** | **Advanced Lab Elective\*****4 units** | **4** |
| **PHYS 153L****4 units**  | **GE-A, B, C, D, G, or H** **4 units** | **4** | **GE-A, B, C, D, G, or H** **4 units** | **GE-A, B, C, D, G, or H** **4 units** | **4** |
| **GE-A, B, C, D, G, or H** **4 units** | **WRIT 340****4 units** | **4** | **GE-A, B, C, D, G, or H** **4 units** | **GE-A, B, C, D, G, or H** **4 units** | **4** |
| Elective (Optional) | Elective (Optional) | 1-2 | Elective (Optional) | Elective (Optional) | 1-2 |

\* Advanced Lab Elective Options (4 Units from): CHEM 332 (4 units, sp), CHEM 423L (4 units, sp), or CHEM 463L (2 units, sp) and CHEM 467L (2 units, fa)

-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 6 courses if courses that double count are selected.

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

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| --- | --- |
| Required Core courses, Lower division | Units |
| 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 |
| PHYS 153L  | Fundamentals of Physics III: Optics and Modern Physics  | 4 |
|    |    |   |
| Required Core courses, Upper division | Units |
| CHEM 300L  | Analytical Chemistry  | 4 |
| CHEM 325abL  | Organic Chemistry  | 4-4 |
| CHEM 426  | Advanced Organic Chemistry  | 4 |
| CHEM 430 | Physical Chemistry: Thermodynamics and Kinetics | 4 |
| CHEM 431 | Physical Chemistry: Quantum Mechanics | 4 |
| CHEM 453  | Advanced Inorganic Chemistry  | 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 |
| CHEM 463L | Chemical Nanotechnology Laboratory, and | 2 |
| CHEM 467L | Advanced Chemical Biology Laboratory | 2 |
|  |  |  |
| Required Research Courses  | Units |
| CHEM 292 | Supervised Research | 2 |
| CHEM 294 | Undergraduate Research Seminar | 1 |
| CHEM 490x | Directed Research | 4 |
| CHEM 494x | Advanced Research Experience | 4 |
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