# Bachelor of Science with a Major in Chemistry Degree 

## B.S. Plan B

Concentration in Biochemistry (ACS Certified Option)

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The B.S. Chemistry, Concentration in Biochemistry degree is certified by the American Chemical Society (ACS). This degree option is designed to allow students to study the interrelationship between structure and function in living cells at the molecular level, and explore the rapidly developing interface between chemistry and biology. Students entering this program will complete the regular requirements of a B.S. in Chemistry degree as well as biochemistry and biology courses. This curriculum prepares a student to enter graduate studies in chemistry, biochemistry or a related field, or professional school (e.g. medical school). It can be used to pursue opportunities in biotechnology, clinical chemistry, biomedical engineering, toxicology, and pharmacology to name a few examples.

This B.S. degree option is approved by the Committee on Professional Training of the American Chemical Society (ACS). This formal recognition means that this department has the faculty, curriculum, and the instrumentation necessary to meet the ACS standards of a quality chemical education for undergraduate students. As such, our graduates of this approved program are certified by the American Chemical Society

Upon completion of this degree program, the student will have acquired:

- A well-developed understanding of the major areas of chemistry including biochemistry, organic, analytical, physical, and inorganic chemistry
- The ability to integrate principles from other sub-disciplines of biology and chemistry to the study of biochemistry
- The ability to formulate significant research questions, design experiments, carry out experimental protocol, and analyze and interpret data in both chemistry and biochemistry
- The ability to communicate effectively in both oral and written presentations
- An understanding of mathematical formalism as applied to chemistry and biochemistry
- Proficiency in retrieving information from the literature
- The ability to use appropriate computer applications and information technology as applied to chemistry and biochemistry
- Adequate preparation to compete successfully in a science-related career and/or a graduate or professional program
- An understanding of the impact of chemistry and biochemistry in a global/societal context.
RequirementHoursCore Areas A, B, C, D, E on page Error! Bookmark not defined.42
Core Area A must include MATH $1113^{*}$ (*) hr moved to Area F)
Core Area D must include MATH 1634* (*1 hr moved to Area F), andPHYS 2211, PHYS 2212 is recommended.
Core Area F: Courses specific to the major ..... 18MATH 26444
CHEM 1211 and 1211L ..... 4
CHEM 1212 and 1212L ..... 4
CHEM 2411 and 2411L ..... 4
*MATH credit from Area A and D ..... 2
53-54
Concentration
Courses from the major:
CHEM 2130 ..... 1
CHEM 2422 and 2422L ..... 4
CHEM 3310K ..... 4
CHEM 4330K ..... 4
CHEM 3521 ..... 3
CHEM 3522 ..... 3
CHEM 3550L ..... 2
CHEM 4913L ..... 2
CHEM 4611 ..... 3
CHEM 4612 (or 4611) ..... 3
CHEM 4083 ..... 4
CHEM 4084** ..... 1
CHEM 4711 ..... 3
CHEM 4712 ..... 3
CHEM 4720L ..... 2
Courses from supporting disciplines:
MATH 2654 or 3303 ..... 3-4
BIOL 1107 and 1107L ..... 4
BIOL 1108 and 1108L ..... 4
BIOL 2134 and 2134L ..... 4
Electives ..... 9-10
TOTAL ..... 120
General Restrictions: Students are allowed only one $D$ in the courses used to satisfy the major. A maximum of 7 hours of research is allowed in the degree program. Six (6) hours of W courses are required.
**A senior thesis paper and oral presentation are required.
***Chemistry Electives: The following courses are not allowed: CHEM 3130, CHEM 31 40, CHEM 4083, CHEM 4084, and CHEM 4185.


## Recommended Plan of Study

This semester-wise plan is designed to ensure that students take Chemistry courses and their prerequisites and other required courses in a timely fashion to graduate in four years.

- To achieve an average load of $\mathbf{1 5}$ hours per semester, please add core courses, general electives and Chemistry electives.
- CHEM 3310K (Analytical Chemistry) should be taken no later than the fall semester of the junior year.
- A student may start working on research at any time; it is highly recommended that they start no later than their junior year.

| FRESHMAN FALL |  | FRESHMAN SPRING |  |
| :--- | :---: | :--- | :---: |
| CHEM 1211 - Principles of Chem I | 4 | CHEM 1212 - Principles of Chem II | 4 |
| MATH 1113- PreCalculus | 4 | MATH 1634-Calculus I | 4 |
| ENGL 1101- English Composition I | 3 | ENGL 1102- English Composition II | 3 |
| BIOL 1107/1107L - Principles of Biology I | 4 | BIOL 1108/1108L - Principles of Biology II | 4 |
|  |  | XIDS 2001 | 1 |
| Total | $\mathbf{1 5}$ | Total | $\mathbf{1 6}$ |


| SOPHOMORE FALL |  | SOPHOMORE SPRING |  |
| :--- | :---: | :--- | :---: |
| CHEM 2411/2411L - Organic Chem I | 4 | CHEM 2422/2422L - Organic Chem II | 4 |
| PHYS 2211- Physics I Calc based) | 4 | PHYS 2212 - Physics II (Calc based) | 4 |
| MATH 2644 - Calculus II | 4 | CHEM 2130 - Chem Sophomore Seminar | 1 |
| BIOL 2134/2134L - Molecular Cell <br> Biology | 4 | Core Area B, C or E | 3 |
|  |  | Core Area B, C or E | 3 |
| Total | $\mathbf{1 6}$ | Total | $\mathbf{1 5}$ |


| JUNIOR FALL | JUNIOR SPRING | 3 |  |
| :--- | :---: | :--- | :---: |
| CHEM 3521 - Quantum Chemistry | 3 | CHEM 3522 - Chemical Thermodynamics | 3 |
| CHEM 3310 - Analytical Chemistry | 4 | CHEM 4712 - Physical Biochemistry | 4 |
| MATH 3303 - Differential Equations | 3 | CHEM 4330K - Instrumental Analysis | 5 |
| Choose from Research/Chemistry <br> elective/Core/General elective | 5 | Choose from Research/Chemistry <br> elective/Core/General elective | $\mathbf{1 5}$ |
| Total | $\mathbf{1 5}$ |  |  |


| SENIOR FALL |  | SENIOR SPRING |  |  |
| :--- | :---: | :--- | :---: | :---: |
| Biology Elective | 3 | CHEM 4612 - Advanced Inorganic | 3 |  |
| CHEM 4711 - Biochemistry | 3 | CHEM 4913L - Advanced Synthesis Lab | 2 |  |
| CHEM 3550L - Physical Chemistry Lab | 2 | CHEM 4720L - Biochemistry Laboratory | 2 |  |
|  |  | CHEM 4084 - Senior Seminar | 1 |  |
| Choose from Research/Chemistry <br> elective/Core/General elective | $\mathbf{7}$ | Choose from Research/Chemistry <br> elective/Core/General elective | 5 |  |
| Total | $\mathbf{1 5}$ | Total | $\mathbf{1 3}$ |  |

Click on course number to link to the respective chemistry course description and prerequisites.

