# Bachelor of Science in Chemistry Degree 

## B.S. Plan A

## ACS Certified Option

The B.S. in Chemistry degree offers greater concentration in chemistry than the B.A. degree option and is recommended for those students planning careers in chemical industry or engineering or for those who plan to pursue graduate study. A senior research thesis and seminar is required and designed to introduce students to modern advanced techniques and approaches to chemical research in conjunction with a faculty advisor.

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:

1. A well-developed understanding of the major areas of chemistry including organic, analytical, physical, and inorganic chemistry.
2. The ability to formulate significant research questions, design experiments, carry out experimental protocol, and analyze and interpret data.
3. An understanding of mathematical formalism as applied to chemistry.
4. The ability to communicate effectively in both oral and written presentations
5. Proficiency in retrieving information from the literature.
6. The ability to use appropriate computer applications and information technology as applied to chemistry.
7. Adequate preparation to compete successfully in a science-related career and/or a graduate or professional program.
8. An understanding of the impact of chemistry in a global/societal context.
Hours
Core Areas A,B,C,D,\& E ..... 42
(see undergraduate catalogue)

- Core Area A must include MATH 1113*
- Core Area D must include MATH 1634* and PHYS 2211, PHYS 2212 is recommended (*2 hrs moved to Area F)
Core Area F: Courses specific to the major ..... 18
MATH 2644 ..... 4
CHEM 1211 K or CHEM 1230 K ..... 4
CHEM 1212K or CHEM 2422 and 2422L ..... 4
CHEM 2411 and 2411L ..... 4
MATH credit from Area A and D ..... 2
Concentration46-50

Courses from the major:
CHEM 2130
CHEM 2422 and 2422L (if not in F) 1
CHEM 3310K 0-4
CHEM 4330K 4
CHEM 3521 4
CHEM 35223
CHEM 3550L 3
CHEM 4913L 2
CHEM 4611 2
CHEM 4612 3
CHEM 4083*** 3
CHEM 4084*** 4
CHEM 47xx 1
CHEM electives** 3
Courses from supporting disciplines:

CS 1300 or MATH 2654
MATH 33034 3
Electives

TOTAL

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 WAC courses are required.
**Chemistry Electives: The following courses are not allowed: CHEM 3130, CHEM 3140 , CHEM 4083, and CHEM 4185.
***A senior thesis paper and oral presentation are required.

## Recommended Plan of Study For B.S. in Chemistry

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.

- So as 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) must be taken no later than the fall semester of the junior year; it is recommended to take it earlier.
- A student may start working on research at any time; it is highly recommended that they start no later than their junior year.

|  |  | FRESHMANMAN 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 |
| Core Area B, C or E | 3 | Core Area B, C, or E | $3 / 4$ |
| Total | 14 | Total | $14 / 15$ |


| 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 |
| Core Area B, C or E | 3 | Core Area B, C or E | 3 |
|  |  | Core Area B, C or E | 3 |
| Total | 15 | Total | 15 |


| JUNIOR FALL |  | JUNIOR SPRING |  |
| :--- | :---: | :--- | :---: |
| CHEM 3521 - Quantum Chemistry | 3 | CHEM 3522 - Chemical Thermodynamics | 3 |
| CHEM 3310 - Analytical Chemistry | 4 | CHEM 3550L - Physical Chemistry Lab | 2 |
| MATH 3303 - Diff. Equations or MATH 2654 | $3-$ <br> 4 | CHEM 4330K - Instrumental Analysis | 4 |
| Choose from Research/Chemistry <br> elective/Core/General elective/CS 1300 | 5 | Choose from Research/Chemistry <br> elective/Core/General elective/CS 1300 | 6 |
| Total | 15 |  | 15 |


| SENIOR FALL |  | SENIOR SPRING |  |
| :--- | :---: | :--- | :---: |
| CHEM 4611 - Structure \& Bonding | 3 | CHEM 4612 - Advanced Inorganic | 3 |
| CHEM 4711 - Biochemistry (or 4712 in Spring) | 3 | CHEM 4913L - Advanced Synthesis Lab | 2 |
| Chemistry elective | 3 | CHEM 4084 - Senior Seminar | 1 |
| Choose from Research/Core/General elective | 7 | Choose from Research/Chemistry <br> elective/Core/General elective | 8 |
|  | 16 |  | 14 |

