

# **Bachelor of Science with a Major in Chemistry Degree**

## **B.S. Plan A**

### **Concentration in Applied Chemistry (ACS Certified Option)**

The B.S. Chemistry, Concentration in Applied Chemistry degree is certified by the American Chemical Society (ACS). This degree offers a greater concentration in chemistry than the non ACS certified tracks 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:

- A well-developed understanding of the major areas of chemistry including organic, analytical, physical, and inorganic chemistry
- The ability to formulate significant research questions, design experiments, carry out experimental protocol, and analyze and interpret data
- An understanding of mathematical formalism as applied to chemistry
- The ability to communicate effectively in both oral and written presentations
- Proficiency in retrieving information from the literature
- The ability to use appropriate computer applications and information technology as applied to chemistry
- Adequate preparation to compete successfully in a science-related career and/or a graduate or professional program
- An understanding of the impact of chemistry in a global/societal context

<b>Requirement</b>	<b>Hours</b>
Core Areas A, B, C, D, E on page <b>Error! Bookmark not defined.</b>	<b>42</b>
Core Area A must include MATH 1113*(*1 hr moved to Area F)	
Core Area D must include MATH 1634* (*1 hr moved to Area F), and PHYS 2211, PHYS 2212 is recommended.	
Core Area F: Courses specific to the major	<b>18</b>
MATH 2644	4
CHEM 1211 and 1211L	4
CHEM 1212 and 1212L	4
CHEM 2411 and 2411L	4
*MATH credit from Area A and D	2
Concentration	<b>50-51</b>
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	3
CHEM 4083	4
CHEM 4084**	1
CHEM 47xx	3
CHEM electives***	6
Courses from supporting disciplines:	
CS 1300	4
MATH 2654 or 3303	3-4
Electives	<b>12-13</b>
<b>TOTAL</b>	<b>120</b>

*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 3140, 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 pre-requisites and other required courses in a timely fashion to graduate in four years. **To achieve an average load of 15 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; *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.*

FRESHMAN FALL		FRESHMAN SPRING	
<a href="#">CHEM 1211</a> /1211L – Principles of Chem I	4	<a href="#">CHEM 1212</a> /1212L - 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	
<a href="#">CHEM 2411/2411L</a> – Organic Chem I	4	<a href="#">CHEM 2422/2422L</a> – Organic Chem II	4
PHYS 2211 – Physics I (Calc based)	4	PHYS 2212 – Physics II (Calc based)	4
MATH 2644 – Calculus II	4	<a href="#">CHEM 2130</a> – 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	
<a href="#">CHEM 3521</a> – Quantum Chemistry	3	<a href="#">CHEM 3522</a> – Chemical Thermodynamics	3
<a href="#">CHEM 3310</a> – Analytical Chemistry	4	<a href="#">CHEM 3550L</a> – Physical Chemistry Lab	2
MATH 3303 – Diff. Equations or MATH 2654	3-4	<a href="#">CHEM 4330K</a> – Instrumental Analysis	4
Choose from Research/Chemistry elective/Core/General elective/CS 1300	5	Choose from Research/Chemistry elective/Core/General elective/CS 1300	6
Total	15	Total	15

SENIOR FALL		SENIOR SPRING	
<a href="#">CHEM 4611</a> – Structure & Bonding	3	<a href="#">CHEM 4612</a> – Advanced Inorganic	3
<a href="#">CHEM 4711</a> – Biochemistry (or 4712 in Spring)	3	<a href="#">CHEM 4913L</a> – Advanced Synthesis Lab	2
Chemistry elective	3	<a href="#">CHEM 4084</a> – Senior Seminar	1
Choose from Research/Core/General elective	7	Choose from Research/Chemistry elective/Core/General elective	8
	16		14

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