

BACHELOR OF SCIENCE IN CHEMISTRY

In pursuing a [Bachelor of Science in Chemistry](#), students first receive a strong foundation in analytical, physical, organic and inorganic chemistry before selecting one of three options leading to the degree: biochemistry and natural products, environmental chemistry, and natural and synthetic polymer chemistry.

Each option offers an advanced course of studies beyond the basic courses of the classical undergraduate chemistry curriculum. All options are excellent grounding for professional work at the B.S. level or for advanced graduate study.

Biochemistry and Organic Chemistry of Natural Products

This option stresses a chemical approach to problems in life and health sciences. Students take advanced courses in natural products chemistry, chemical analysis, and biochemistry. Professional electives in physiology, chemical ecology, genetics and molecular biology strengthen connections in the life and health sciences.

Research areas include the elucidation of chemical signals by which organisms communicate with each other, the role of trace metals in the growth of microorganisms, the origin and function of biologically active natural compounds, and synthetic biology and metabolic engineering for the production of value-added products and antimicrobial compounds.

Environmental Chemistry

Environmental chemistry stresses applications of fundamental chemical principles to describe and predict behavior of chemicals in the environment. After obtaining a strong foundation in analytical, physical and organic chemistry, students pursue advanced study in air and water chemistry.

Professional Electives provide student exposure to environmental topics in health, engineering, biology and sustainability. The senior year culminates in a senior research project undertaken under the supervision of one of the chemistry faculty. This gives students the opportunity to experience research ranging from laboratory work to field-intensive studies.

Natural and Synthetic Polymer Chemistry

Students take advanced courses in mechanisms of polymerization and polymer synthesis, physical properties and characterization of polymers, and laboratory techniques of polymer synthesis and characterization. Special topics courses in contemporary polymer and material science are available as electives. In addition, courses in carbohydrate chemistry provide a solid background for chemists planning careers in paper, plastic, high-tech, energy, membranes, and related areas. Biochemistry is an appropriate elective for students interested in the growth of biotechnologies while environmental chemistry complements this program for students interested in working on problems of biodegradation.

Lower Division Required Courses

APM 205

Calculus I: Science & Engr

4

APM 206	Calculus II:Science & Engr	4
EFB 102	General Biology I Laboratory	1
EFB 103	Gen Bio II:Cell Bio & Genetics	3
EFB 104	General Biology II Laboratory	1
ESF 200	Information Literacy	1
EWP 190	Writing And The Envrnment	3
EWP 290	Research Writing & Humanities	3
FCH 132	Orientation Seminar:FCH	1
FCH 232	Career Skills for Chemists	1
FCH 150	General Chemistry I	3
FCH 151	General Chemistry I Lab	1
FCH 152	General Chemistry II	3
FCH 153	General Chemistry II Lab	1
FCH 221	Organic Chemistry 1	3
FCH 222	Organic Chemistry Lab 1	1
FCH 223	Organic Chemistry II	3
FCH 224	Organic Chemistry Lab II	1
EPH 201	Calculus Based Physics I	3
EPH 202	Calculus Based Physics I Lab	1
EPH 203	Calculus Based Physics II	3
EPH 204	Calculus Based Physics II Lab	1

Lower Division Electives

Course	Codes*	Credits
Math Elective (Calculus III [APM307] OR Statistics [APM210])		
Free Elective		

General Education Course in two of the following categories: US History & Civic Engagement, The Arts, Social Sciences, World History and Global Awareness, World Languages	G	6
General Education Course in Diversity, Equity, Inclusion and Social Justice	G	3

Upper Division Required Courses

EWP 407	Writing/Env & Sci Professionals	3
FCH 325	Organic Chemistry III	4
FCH 360	Physical Chemistry I	3
FCH 361	Physical Chemistry II	3
FCH 380	Analytical Chemistry I	2
FCH 381	Analytical Chemistry II	3
FCH 382	Analytical Chemistry I Lab	1
FCH 410	Inorganic Chemistry	3
FCH 495	Intro/Professional Chem	1
FCH 497	Undergraduate Seminar	1
FCH 498	Introduction To Research	1 - 5

Note: 5 credits of FCH 498 are required

Upper Division Required Courses

Course	Codes*	Credits
Professional Electives allow students to explore interests in a wide range of areas, including biology, chemistry, ecology, forestry, environmental law, mathematics, geology, physics, biophysics, and		

various engineering disciplines. Professional elective are typically 300-level and above.		
Electives		

Upper Division Option Area Required Courses

Biochemistry and Natural Products Option

FCH 430	Biochemistry I	3
OR		
FCH 530	Biochemistry I	3
FCH 431	Biochemistry Laboratory	3
OR		
FCH 531	Biochemistry Laboratory	3
FCH 432	Biochemistry II	3
OR		
FCH 532	Biochemistry II	3

Environmental Chemistry Option

FCH 510	Environmental Chemistry I	3
FCH 511	Atmospheric Chemistry	3
FCH 515	Meth/Envrn Chem Analysis	3

Natural and Synthetic Polymer Chemistry Option

FCH 550	Polymer Sci:Synth&Mech	3
FCH 551	Polymer Techniques	3
FCH 552	Polymer Sci:Prop&Tech	3

Total Minimum Credits for Degree: 121