SONOMA STATE UNIVERSITY

Programs Offered
ACS Certified Bachelor of Science in Chemistry
Bachelor of Arts in Chemistry
Bachelor of Arts in Chemistry, with a concentration in Biochemistry
Minor in Chemistry

Chemistry

Bachelor of Arts,
Bachelor of Science

The Chemistry Department offers a flexible academic program designed to familiarize students with the concepts of the atomic and molecular world. Students may choose a course pattern of chemistry upper division electives for the B.A. or B.S. degree which emphasizes the areas of analytical, organic, inorganic, or physical chemistry, biochemistry, and pre-health professional preparation. The B.S. degree, with appropriate course selection, is certified by the American Chemical Society. A B.A. with concentration in biochemistry is also available.

Courses include classroom lectures, laboratory work, field experience, independent study projects, and seminars where well-known chemists address the students and the public. Most classes are small, providing a high degree of individual instruction and advising.

The Department emphasizes experimental laboratory work which involves independent and individualized experimentation, with critical evaluation of data as the goal of most experiments.

The Department is well-equipped with many modern scientific instruments. These are available to undergraduate students in laboratory courses and research projects in contrast to many institutions with graduate programs which limit undergraduate access to these instruments. Research instruments include ultraviolet, visible, infrared, and atomic absorption spectrophotometers, x-ray diffraction, nuclear magnetic resonance and mass spectrometers, and gas, liquid and ion chromatographs.

PROFESSIONAL OPPORTUNITIES

Graduates have pursued advanced degrees at universities across the nation in the areas of chemistry, chemical physics, biophysical chemistry, biochemistry, environmental science, chemical engineering, medical biophysical chemistry, material science, medical microbiology, medicine, dentistry, podiatry, pharmacy, and veterinary medicine.

JOB OUTLOOK

Employment of chemists is expected to grow about as fast as the average for all occupations through 2008. Job growth will be concentrated in drug manufacturing and research, development, and testing services firms. Sonoma State's Chemistry graduates have secured employment in the wine, chemical and petroleum industries; in analytical testing laboratories; in air and water pollution laboratories; in criminology laboratories, and in chemically- related jobs in teaching or sales. Nearly half of chemists are employed in the chemical manufacturing industry. Chemists also work for state and local governments and for federal agencies including Health and Human Services which is the major federal employer of chemists. Other chemists work for research, development, and testing services. In addition, chemists hold chemistry faculty positions in colleges and universities., as well as teaching science in high schools.

EARNINGS

A survey by the American Chemical Society reports that the median salary of all their members with a bachelor's degree was $50,100 a year in 1999. Bachelor's salaries begin at about $30,000, and Ph.D. salaries beginning at about the $70,000 range.

Bachelor of Science in Chemistry

The B.S. degree provides the thorough preparation needed by candidates desiring to work as chemists in industrial and governmental laboratories or desiring to enter graduate programs in chemistry leading to advanced degrees.

MAJOR CORE REQUIREMENTS

		Units
CHEM 12SAB*	Honors General Chemistry (10 units, 5 in the Major, 5 in General Education)	5
CHEM 255	Quantitative Analysis	4
CHEM 325	Inorganic Chemistry	3
CHEM 335A	Organic Chemistry	5
CHEM 335B	Organic Chemistry	3
CHEM 336	Organic Chemistry Laboratory	2
CHEM 375A	Physical Chemistry	3
CHEM 375B	Physical Chemistry	3
CHEM 376	Physical Chemistry Laboratory for B.S. students	3
CHEM 381	Computer Applications in Chemistry	2
CHEM 494	Undergraduate Research	1
CHEM 497	Seminar	1
	Total units in the major core	35

* CHEM 115AB will satisfy the CHEM 125AB requirement.

MAJOR ELECTIVES

In consultation with an advisor, students may choose a pattern of upper division chemistry electives to concentrate in the areas of analytical, inorganic, organic, physical chemistry, or biochemistry.

	Total units in major electives	5

SUPPORTING COURSES (Required)

Mathematics

MATH 161	Calculus I (4)	
MATH 211	Calculus II (4)	
MATH 261	Calculus III (4)	
(12units, 9 units in the Major, 3 units in General Education)		9

Physics

PHYS 114	Introduction to Physics I	4
PHYS 116	Introductory (Physics I) Laboratory	1
PHYS 214	Introduction to Physics II	4
PHYS 216	Introductory (Physics II) Laboratory	1
	Total units in supporting courses19	
	Total units in the major	59

Strongly recommended

PHYS 314	Introduction to Physics III	4
PHYS 316	Introductory Quantum Laboratory	1

ACS Certified Bachelor of Science Degree in Chemistry

Students meeting the requirements listed for the B.S. degree including those listed below will have their transcripts noted as a B.S. degree approved by the American Chemical Society.

GRADE POINT AVERAGE

Students must earn a minimum of 3.00 (out of 4.00) grade point average in upper division chemistry courses and advanced courses (as defined below) or receive a majority vote of the chemistry faculty.

REQUIRED UPPER DIVISION CHEMISTRY ELECTIVES

CHEM 420	Advanced Inorganic Chemistry (3)
CHEM 455	Advanced Analytical Chemistry (4)

Two other advanced courses based on physical chemistry concepts. Examples of advanced courses in chemistry are CHEM 436, 437, 441, 445, 446, 470, 481, and 496. Advanced courses taken in other Natural Science departments must be individually approved by the Chemistry Department.

Bachelor of Arts in Chemistry

The B.A. degree allows broad preparation for biochemists, for environmental scientists and for those wishing to obtain technical work or work allied to chemistry such as: pre-professional medicine or dentistry, electronics, food processing, chemical sales, patent, safety, library, or supervisory work in the chemical industries. This degree provides adequate preparation for graduate study toward an advanced degree in chemistry or in biochemistry.

MAJOR CORE REQUIREMENTS

		Units
CHEM 115AB	General Chemistry (10 units, 5 in the Major, 5 in General Education)	5
CHEM 255	Quantitative Analysis	4
CHEM 310A	Fundamentals of Physical Chemistry	3
CHEM 310B	Fundamentals of Physical Chemistry	3
CHEM 316	Physical Chemistry Laboratory for B.A. students	2
CHEM 335A	Organic Chemistry	5
CHEM 335B	Organic Chemistry	3
	Total units in the major core	25

MAJOR ELECTIVES

In consultation with an advisor, choose an additional 8 units from upper division chemistry electives.

Total units in major electives	8

SUPPORTING COURSES

Mathematics

MATH 161	Calculus I (4)	
MATH 211-S	Calculus II-S (2)	
(3 units in General Education, 3 units in major)		3

Physics

Choose one of the following two groups and complete all courses listed.

General Physics

PHYS 209A	General Physics Laboratory	1
PHYS 209B	General Physics Laboratory	1
PHYS 210A	General Physics	3
PHYS 210B	General Physics	3

or

Introductory Physics

PHYS 114	Introduction to Physics I	4
PHYS 116	Introductory (Physics I) Laboratory	1
PHYS 214	Introduction to Physics II	4
PHYS 216	Introduction to Physics II	1
	Total units in supporting courses	11 – 13
	Total units in the major	44 – 46

We hope this information will be helpful. Official requirements of all majors and programs are published in the Sonoma State University catalog.

Sonoma State University is an Affirmative Action/Equal Opportunity Institution and has a strong commitment to the principal of diversity.

A member of the California State University

SONOMA STATE UNIVERSITY

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