

REQUIREMENTS FOR THE BACHELOR'S DEGREE

[See below for Concentration in Chemistry Education.]

School Requirements: None.

Departmental Requirements

Basic Requirements: Mathematics 2A-B-D, Physics 7B-D-E and 7LB-LD, Chemistry 1A-B-C and M2LA-LB-LC (or H2A-B-C and H2LA-LB-LC), Chemistry 5, Chemistry 51A-B-C and 51LA-LB-LC (or H52A-B-C and H52LA-LB-LC), Chemistry 107 and 107L, Chemistry 131A-B-C (or 130A-B-C), Chemistry 151 and 151L.

Elective Requirements: At least five electives from the following lists, including at least two courses selected from the lecture list and two courses selected from the laboratory list. Lectures: Chemistry 125, 127, 128, 135, 137, 138, 177; and Chemistry courses numbered 201-205, 213-249, 262, 271, and 272; Biological Sciences 98 (Biochemistry), 99 (Molecular Biology); Earth System Science 122 (Atmospheric Dynamics), 130 (Physical Oceanography); Physics 111A-B (Classical Mechanics), 112A-B (Electromagnetic Theory); Engineering CBEMS110 (Reaction Kinetics and Reactor Design), CBEMS112 (Introduction to Biochemical Engineering), CBEMS120A (Momentum Transfer), CBEMS120B (Heat and Mass Transfer), CBEMS130 (Separation Processes), CBEMS135 (Chemical Process Control), CBEMS145 (Chemical Engineering Design), CEE162 (Introduction to Environmental Chemistry), CEE165 (Physical-Chemical Treatment Processes).

Laboratories: Biological Sciences M114L (Biochemistry Laboratory), M116L (Molecular Biology Laboratory), Chemistry 128L (Introduction to Chemical Biology Laboratory Techniques), 152 (Advanced Analytical Chemistry), 153 (Physical Chemistry Laboratory), 156 (Advanced Laboratory in Chemistry and Synthesis of Materials), 160 (Organic Synthesis Laboratory), 170 (Radioisotope Techniques), 177L (Medicinal Chemistry Laboratory), 180 (Undergraduate Research), Engineering CBEMS140A-B (Chemical Engineering Laboratory), Physics 120 (Electronics for Scientists), and 121 (Advanced Laboratory). (Chemistry 180 can be counted toward this requirement no more than once.)

At least three of the courses used to satisfy the Elective Requirement must be courses offered by the Chemistry Department, including at least one lecture course and one laboratory course.

Optional American Chemical Society Certification: For ACS Certification the program must include Biological Sciences 98 or Chemistry 128; Mathematics 2J and 3D.

Optional Concentration in Biochemistry: The program must include Biological Sciences 97, 98, 99; Chemistry 128, 128L; and three advanced biology electives chosen from: Biological Sciences D103, D104, D111L, D137, D147, D151, D152, E109, E112L, M114, M114L, M116, M116L, M121, M121L, M122, M122L, M124, M124L, M128, M130, M133, M137, M138, M140, M144, N110, and N132.

Optional Concentration in Chemistry Education:

Chemistry majors interested in K-12 education are required to take one course in education theory (Education 173 or 176) and three two-unit seminar/fieldwork courses in science education (Physical Sciences 5, 105, and 106). Chemistry majors who wish to teach in California will ultimately need to pass both a general exam (California Basic Educational Skills Test, CBEST) and a set of science subject tests (California Subject Examination for Teachers, CSET).

High school science teachers in California are expected to have a broad range of general science knowledge. The General Science Subject test of the CSET exam covers: astronomy, geodynamics, Earth resources, ecology, genetics and evolution, molecular biology and biochemistry, cell and organismal biology, waves, forces and motion, electricity and magnetism, heat transfer and thermodynamics, structure and properties of matter. Chemistry majors will be well prepared for the general science component of the CSET by taking two courses in biology (Biological Sciences 93 and 94), two courses in geosciences (Earth System Science 1 and 7), one course in astronomy (Physics 20A), and one course in biochemistry (Biological Sciences 98), which counts as a required chemistry elective). Alternatively, students can prepare for the General Science CSET exam through independent study. Interested students should consult the CSET Web site at <http://www.cset.nesinc.com/index.asp>.