

BA in Natural Sciences (Science Teaching)

The Departments of Biology, Chemistry, Geology, and Physics offer a Bachelor of Arts in Natural Sciences.

This degree program offers the required subject matter content to help prepare prospective science teachers to apply for subject matter certification in California by taking the California Subject Matter Examinations for Teachers (CSET) in Science. The CSET Science exams consist of three exams: two covering breadth in science (Biology, Chemistry, Earth/Planetary Science and Physics), and one covering depth in one of these areas, corresponding to the primary concentration. Passage of the CSET in Science is required to certify subject matter competency before entering a teacher credential program. Consult your advisor or the School of Education for details on other entry requirements for pursuing a secondary teaching credential. The BA in Natural Sciences offers a broad foundation in all four of the natural science areas (Biology, Chemistry, Earth Science, and Physics) as well as depth preparation in two of the four areas. While this broad foundation has been developed for prospective teachers, it also serves as excellent preparation for graduate school or employment in any area of business, industry or government where scientific skills are in demand.



The program consists of three components: I. Primary Concentration (major) II. Secondary Concentration (minor), and III. Cognates (breadth). A student may major in Biology, Chemistry, Geology, or Physics. They must also minor in one of the other three sciences and take cognates in the remaining two sciences, Math, and Astronomy. For example, a student might major in Chemistry with a minor in Biology and take cognates in Geology, Physics, Math, and Astronomy. Another example could be that a student might major in Geology with a minor in Physics and take cognates in Biology, Chemistry, Math, and Astronomy.

For students who already have a degree and would like to be certified as subject matter competent in the sciences, please see www.cset.nesinc.com for information on the CSET Exams.

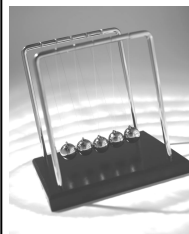
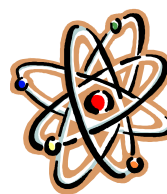
For each concentration, Science 360C is recommended to satisfy General Education Theme I and INST 312 for Theme II. All courses must be completed with their respective laboratory components.

School of Natural Sciences & Mathematics
California State University, Bakersfield
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"The scientific method", Thomas Henry Huxley once wrote, "is nothing but the normal working of the human mind. That is to say, when the mind is working: that is to say further, when it is engaged in correcting its mistakes."

Taking this point of view, we may conclude that science is not physics, biology, or chemistry - is not even a "subject" - but a moral imperative drawn from a larger narrative whose purpose is to give perspective, balance, and humility to learning.

Neil Postman



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Requirements for the Bachelor of Arts in Natural Sciences

Sample program for students who want to graduate with a degree in **Natural Sciences**

<u>Biology Major</u>	<u>Chemistry Major</u>	<u>Geology Major</u>	<u>Physics Major</u>
I. Courses for the Major.	I. Courses for the Major.	I. Courses for the Major.	I. Courses for the Major.
A. Biology 201, 202 and 203 B. Biology 304, 305, 306, 318 or 357, 470 and 490 C. One approved upper division Biology laboratory elective	A. Chemistry 211, 212 and 213 B. Chemistry 331, 332, 400 and 490 C. One approved upper division Chemistry elective	A. Geology 201 and 204 or 205 or 308 B. Geology 303, 306, 307, 309, 475 and 490	A. Physics 110, 221, 222 and 223 B. Physics 307, 324 and 490 C. 6 units of additional upper division Physics acceptable for the major D. Math 201, 202, 222
II. Courses for the Minor and Cognates - choose one of the three listed below.	II. Courses for the Minor and Cognates - choose one of the three listed below.	II. Courses for the Minor and Cognates - choose one of the three listed below.	II. Courses for the Minor and Cognates - choose one of the three listed below.
<i>Chemistry Minor & Cognates</i>	<i>Biology Minor & Cognates</i>	<i>Biology Minor & Cognates</i>	<i>Biology Minor & Cognates</i>
A. Chemistry 211, 212 and 213 B. Two upper division Chemistry electives C. Cognates 1. Geology 201 and 205 or 204 or 308 2. Physics 110, 201, 202, 203 or 221, 222, 223	A. Biology 201, 202 and 203 B. Biology 304, 305 and 306 or 470 C. Cognates 1. Geology 201 and 205 or 308 2. Physics 110, 201, 202, 203 or 221, 222, 223	A. Biology 201, 202 and 203 B. Biology 304, 305 and 306 or 470 C. Cognates 1. Chemistry 211 and 212 2. Physics 110, 201, 202, 203 or 221, 222, 223	A. Biology 201, 202 and 203 B. Biology 304, 305 and 306 or 470 C. Cognates 1. Chemistry 211 and 212 2. Geology 201 and 204 or 205 or 308
<i>Geology Minor & Cognates</i>	<i>Geology Minor & Cognates</i>	<i>Chemistry Minor & Cognates</i>	<i>Chemistry Minor & Cognates</i>
A. Geology 201, 303 and 204 or 205 or 308 B. Two from Geology 307, 309 and 475. C. Cognates 1. Chemistry 211 and 212 2. Physics 110, 201, 202, 203 or 221, 222, 223	A. Geology 201, 303 and 205 or 308 B. Two from Geology 307, 309 and 475 C. Cognates 1. Biology 201, 202 and 203 2. Physics 110, 201, 202, 203 or 221, 222, 223	A. Chemistry 211, 212 and 213 B. Two upper division Chemistry electives C. Cognates 1. Biology 201, 202 and 203 2. Physics 110, 201, 202, 203 or 221, 222, 223	A. Chemistry 211, 212 and 213 B. Two upper division Chemistry electives C. Cognates 1. Biology 201, 202 and 203 2. Geology 201 and 204 or 205 or 308
<i>Physics Minor & Cognates</i>	<i>Physics Minor & Cognates</i>	<i>Physics Minor & Cognates</i>	<i>Geology Minor & Cognates</i>
A. Physics 110, 221, 222, 223, 307 and 324 B. Cognates 1. Math 201, 202, 222 2. Chemistry 211 and 212 3. Geology 201 and 204 or 205 or 308	A. Physics 110, 221, 222, 223, 307 and 324 B. Cognates 1. Math 201, 202, 222 2. Biology 201, 202 and 203 3. Geology 201 and 205 or 308	A. Physics 110, 221, 222, 223, 307 and 324 B. Cognates 1. Math 201, 202, 222 2. Biology 201, 202 and 203 3. Chemistry 211 and 212	A. Geology 201, 303 and 204 or 205 or 308 B. Two from Geology 307, 309 and 475 C. Cognates 1. Biology 201, 202 and 203 2. Chemistry 211 and 212
Additional information may be obtained from the Biology Department Office (661) 654-3089	Additional information may be obtained from the Chemistry Department Office (661) 654-3027.	Additional information may be obtained from the Geology Department Office (661) 654-3027.	Additional information may be obtained from the Physics Department Office (661) 654-3027.