

Natural Science

In the College of Sciences

Administered by the Department of Physics

OFFICE: Physics 131
TELEPHONE: 619-594-6240

Faculty

Emeritus: Dessel, Dowler, Feher, Fisher, May, Thompson, Wallace
Program Coordinator: Roeder, P.

Faculty: Goldberg (Physics), Kimbrough (Geological Sciences),
Metzger (Chemistry and Biochemistry), Riggs (Geological
Sciences)

Offered by Natural Science

Teaching major in physical science for the single subject teaching
credential in science/physical science.

Minor in history of science and technology.

The Major

The physical science major is offered as an interdisciplinary approach to the study of science. It stresses the interrelationship of physics with chemistry, geology, astronomy, biology, and mathematics. The major is designed primarily for students who intend to become high school teachers of both interdisciplinary science and physics.

One of the requirements for acceptance into the College of Education's post-baccalaureate credential program is to either pass the appropriate CSET examinations or complete an approved academic program. The single subject teaching credential in science subject matter preparation program described below satisfies the academic requirements for a student planning to teach integrated science and physics at the secondary level. Entrance into the post-baccalaureate credentialing program in part requires certification of subject matter competency by this program. This certification requires completion of the academic program with the required grades, submission of a satisfactory portfolio, and the recommendation of the department. Contact the subject matter preparation program adviser. In addition, all candidates for a Single Subject Teaching credential at San Diego State University must complete the requirements outlined in the catalog under Teacher Education or Policy Studies. Contact the School of Teacher Education or the Policy Studies in Language and Cross-Cultural Education department for up-to-date information on prerequisites.

Major Academic Plans (MAPs)

Visit <http://www.sdsu.edu/mymap> for the recommended courses needed to fulfill your major requirements. The MAPs Web site was created to help students navigate the course requirements for their majors and to identify which General Education course will also fulfill a major preparation course requirement.

Physical Science Major

**In preparation for the Single Subject Teaching Credential
in Science/Physical Science**

With the B.A. Degree in Applied Arts and Sciences
(Major Code: 19011)

The physical science major in preparation for the single subject teaching credential in science/physical science has been submitted to the California Commission on Teacher Credentialing for approval.

Contact Dr. Phoebe Roeder for additional information.

All candidates for a degree in applied arts and sciences must complete the graduation requirements listed in the section of the catalog on "Graduation Requirements." Candidates may complete one of their two American Institutions courses at the upper division level or satisfy the California state and local government portion of American Institutions by passing the California Government examination available through the Student Testing, Assessment and Research Office.

A minor is not required for this major.

Preparation for the Major. Africana Studies 140 or Chicana and Chicano Studies 111A or Communication 103; Astronomy 109, 201; Biology 201A, 201B; Chemistry 200, 201; Mathematics 150, 151, 252; Physics 195, 195L, 196, 196L, 197, 197L; Teacher Education 211 (1 unit). (50 units)

Graduation Writing Assessment Requirement. Passing the Writing Proficiency Assessment with a score of 10 or above or completing one of the approved upper division writing courses (W) with a grade of C (2.0) or better. See page 81 in "Graduation Requirements" section for a complete listing of requirements.

Major. A minimum of 31 upper division units to include Natural Science 315; Geological Sciences 412; Mathematics 342A; Physics 311, 317, 350, 354, 357, 360, 400A.

Additional Requirements for Subject Matter Preparation Certification

Satisfactory Grades. A 2.0 or higher grade point average based on all upper division courses is required for the major. At most one course with a C- or lower among the courses listed under Preparation for the Major, and at most one course with a C- or lower among the courses listed under the Major. If a course is repeated, the highest grade will count.

Formative Assessment. Completion of a satisfactory, preliminary portfolio two semesters prior to graduation. Contact the subject matter preparation adviser for information.

Summative Assessment. Completion of a satisfactory, final portfolio, and a positive recommendation from a committee consisting of the instructor of Physics 357, the Department of Physics chair, and the subject matter preparation program adviser.

Minor in History of Science and Technology

No new students are being accepted. Contact Dr. Phoebe Roeder for information.

The minor in the history of science and technology consists of a minimum of 15 units to include Natural Science 315, 317; History 441; Mathematics 303; Philosophy 537*.

Courses in the minor may not be counted toward the major, but may be used to satisfy requirements for preparation for the major and general education requirements, if applicable. A minimum of six upper division units must be completed in residence at San Diego State University.

* Prerequisites waived.

Courses (N SCI)

Refer to *Courses and Curricula and University Policies* sections of this catalog for explanation of the course numbering system, unit or credit hour, prerequisites, and related information.

LOWER DIVISION COURSE

N SCI 100. Physical Science (3) [GE] I, II

Conceptual approach to major issues in physics and chemistry, including principles of motion and energy and structure and properties of matter. Effects of physical science and technology on individuals and human society.

**UPPER DIVISION COURSES
(Intended for Undergraduates)**

N SCI 310. Science in Science Fiction (3) [GE]

Prerequisite: Completion of the General Education requirement in Foundations II.A., Natural Sciences and Quantitative Reasoning.

Comparison of science portrayed in science fiction literature and mass media with science as understood by practicing scientists, emphasizing theoretical frameworks such as relativity, quantum mechanics, and evolution, and how authors work within or against such frameworks.

N SCI 315. History of Science and Technology (3) [GE]

Prerequisite: Completion of the General Education requirement in Foundations II.A., Natural Sciences and Quantitative Reasoning.

Ethical, moral, social, and cultural implications of significant issues and ideas in science and technology. History of development of these ideas from ancient Greek thinkers to contemporary scientists.

N SCI 317. Development of Scientific Thought (3) [GE]

Prerequisite: Completion of the General Education requirement in Foundations II.A., Natural Sciences and Quantitative Reasoning.

Basic scientific concepts and their historical development with emphasis on the problem of theory construction. The relationship between disciplined imagination and observational fact, as illustrated by selected case histories. Limitations of scientific inquiry.

N SCI 333. Technology and Human Values (3) [GE]

Prerequisite: Completion of the General Education requirement in Foundations II.A., Natural Sciences and Quantitative Reasoning.

Development of technology from the Middle Ages to present. Ethical, moral, social, cultural, and organizational implications as to how societies acquire technology.

N SCI 412. Processes and Inquiry in the Physical Sciences (4) I, II

Three lectures and two hours of activity.

Prerequisite: Completion of the General Education requirement in Foundations II.A., Natural Sciences and Quantitative Reasoning.

Investigation of processes of inquiry and rational thinking skills characteristic of the physical sciences. (Formerly numbered Natural Science 412A.)

**UPPER DIVISION COURSE
(Also Acceptable for Advanced Degrees)**

N SCI 596. Special Topics in Natural Science (1-4) I, II, S

Prerequisite: Minimum ten units of natural science.

Selected topics in natural science for preservice and inservice elementary and secondary teachers and candidates for the M.A. in education. May be repeated with consent of instructor. See *Class Schedule* for specific content. Limit of nine units of any combination of 296, 496, 596 courses applicable to a bachelor's degree. Maximum credit of six units of 596 applicable to a bachelor's degree. Maximum combined credit of six units of 596 and 696 applicable to a 30-unit master's degree.

**GRADUATE COURSES
Refer to the *Graduate Bulletin*.**