

Program

MA in Interdisciplinary Programs (in suspension)

Are you looking for an exciting profession with unlimited potential? Do you love working with children, adolescents, or adults? Are you fascinated by nature and curious about how things work?

The Department of Science Education at CSU, Chico is an interdisciplinary community of faculty and students from the natural sciences and education who serve as a crucible for innovation and research in science teaching and learning; as collaborative partners with science teachers in public and private schools, and as a model of excellence in science teacher education. We are committed to providing the North State region, the State of California, and the nation with rigorous, high-quality, up-to-date programs in science teacher subject matter preparation and professional development, and contributing to an expanding knowledge-base of theory, research, and practice.

Undergraduate Programs

Our interdisciplinary faculty serve as advisors to all students who are interested in science teaching at the elementary, middle and high school levels. Would you like to specialize in a science discipline (biology, chemistry, geology, or physics) or teach introductory level courses in general science? Have you thought about teaching science in informal settings such as zoos, botanic gardens and arboreta, aquaria, museums, observatories, nature centers, preserves, or state and national parks and forests? These are some of the questions we can help you consider.

At CSU, Chico, our programs in science education will get you where you want to be, when you want to be there, and prepared to do what you want to do. Our programs are a collaborative effort that combine the strengths of faculty from several departments to offer you a strong background in the natural sciences and the professional knowledge and skills you need to be successful in your chosen profession. Advisors in the department will help you choose a major based on your strengths and interests, and will assist you in developing an individual plan that meets all the state requirements for subject matter preparation in science along with the professional education courses required for teacher certification in the State of California.

Professional Development

If you are already in the science classroom and want to enhance your knowledge and professional skills, we have a variety of exciting and challenging programs for you too! The Masters in Science Teaching (currently in suspension) enables you to earn a graduate degree without leaving your job (<http://www.csuchico.edu/sced/programs/mist.shtml>). Most of the courses are available online and include weekend and summer activities.



The California Science Project is a university-based professional development network for teachers of science at all levels. This statewide network works toward the common goal of improving science education for all students in California. Our CSP site, the Inland Northern Project, is under the direction of Professor Bev Marcum (<http://www.csuchico.edu/cspinc/>).

Special Facilities

The department administers two special facilities for elementary science, the Hands on Lab and the Science Education Learning Lab. In the Hands on Lab, students have an opportunity to work directly with elementary school children and their teachers on activities that support the California Science Teaching Standards. In the Science Education Learning Lab, students learn to integrate content knowledge of basic science concepts and teaching skills that are appropriate for elementary science students.

Employment Outlook

Science teachers are on the cutting edge of a new generation of knowledge professionals, and the need for well-educated science teachers has never been greater. A recent report of the National Science Foundation found that over 50% of all public secondary schools in the United States currently have vacant positions in biology/life sciences and physical sciences. In response to this national crisis, the CSU system has made a long-term commitment to doubling the number of science teachers in the next few years, and you might be right for one of these exciting opportunities. Come by and see us; we are waiting to help you start an exciting career in science teaching.

Science Education

College of Natural Sciences
Interim Dean: Margaret A. Owens

Department of Science Education

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Chair: David Kagan

Undergraduate Advisors:

Biology: Bev Marcum, Irene Salter and Joel Mintzes

Chemistry: Christopher Nichols

Geology: Ann Bykerk-Kauffman and Julie Monet

Physics: Chris Gaffney, David Kagan and Xueli Zou

Center for Mathematics and Science

Education: Brandi Aranguren

Graduate Coordinator: Julie Monet

Hands-on Laboratory Coordinator: Tanya Heaston

The Faculty

Leslie J. Atkins, Assistant Professor

Tanya Heaston, Lecturer

Joel J. Mintzes, Professor

Julie Monet, Assistant Professor

Irene Y. Salter, Assistant Professor


Master of Arts in Interdisciplinary Programs

Admission to the MA in Interdisciplinary Programs is currently suspended. Please contact the department of Science Education to learn the current status of this program.

Mathematics Education K-8 Science Teaching

Other programs may be individually developed with approval. Refer to the Graduate Education section of the catalog.

Environmental Literacy

ENVL 105 Environmental Literacy  **3.0 Fa/Spr**

This course introduces students to the issue and practices of environmental literacy. Environmental literacy is the capacity to perceive and interpret the relative health of environmental systems and to connect the environment to human physical, mental, and social health. Students are encouraged to recognize that their lives depend upon the environment, and that their personal decisions affect the environment. This is an approved General Education course. (003723)

Natural Sciences Course Offerings

NSCI 101 Introduction to Earth's Environment **3.0 Fa/Spr**

This course focuses on the principles and scientific thought processes as they relate to climate change, air and water resources, and ecosystem alteration. The Earth's physical environment is the primary focus, although a portion of the course covering ecosystems bridges physical and biological interrelatedness of the global environment. Problem solving skills and skills in analyzing environmental issues are emphasized. 2.0 hours discussion, 2.0 hours laboratory. This is an approved General Education course. Special fee required; see the Class Schedule. (020268)

NSCI 101H Introduction to Earth's Environment - Honors **3.0 Fall**

Prerequisites: Acceptance into the Honors Program.

This is a special section of NSCI 101 for students in the Honors in General Education Program. The course focuses on the principles and scientific thought processes as they relate to climate change, air and water resources, and ecosystem alteration. The Earth's physical environment is the primary focus, although a portion of the course covering ecosystems bridges physical and biological interrelatedness of the global environment. Problem solving skills and skills in analyzing environmental issues are emphasized. 2.0 hours discussion, 2.0 hours laboratory. This is an approved General Education course. (020269)

NSCI 102 Introduction to Living Systems **3.0 Fa/Spr**

An integrated study of the nature and interactions of living things and their environments. This course is an introduction to the processes of evolution and speciation, ecology and ecosystem processes, cellular biology and organismal physiology. The course is primarily for students without a strong background in high school biology or chemistry. The course includes online content delivery, in-class discussion, and a hands-on activity session. 2.0 hours activity, 2.0 hours discussion. This is an approved General Education course. (020372)

NSCI 141 Concepts in the Physical Sciences **3.0 Fa/Spr**

Prerequisites: Concurrent enrollment in or prior completion of MATH 110. Basic concepts of motion, force, energy, chemical change, and their interactions. Intended for Liberal Studies majors. 1.0 hours lecture, 4.0 hours activity. (004132)

NSCI 142 Concepts in Life Sciences **3.0 Fa/Spr**

Prerequisites: NSCI 141 or GEOS 141 or faculty permission.

Study of the nature and interactions of living things on the planet. Includes cell organization; diversity and physiology of plants and animals; DNA and genetics; ecology; and evolution. Intended for Liberal Studies majors or others interested in K-8 teaching. (020915)

NSCI 321 Scientific Inquiry **3.0 Fa/Spr**

Prerequisites: NSCI 141 or GEOS 141, NSCI 142 or BIOL 101.

This course engages students in inquiry into topics that span the scientific disciplines. Skills addressed include experimental design, modeling, representation, dissemination of results, and critique of peers' work. Content topics include light, color and sound, from biological, chemical and physics perspectives. (020914)

NSCI 342 Concepts in Earth and Space Science **3.0 Fa/Spr**

Prerequisites: GEOS 141 or faculty permission.

Fundamental concepts in (1) the solar system and the universe, (2) the structure and composition of the solid Earth, and (3) Earth's atmosphere and water. Intended for Liberal Studies majors and students pursuing a single subject teaching credential in science. 1.0 hours lecture, 4.0 hours activity. Special fee required; see the Class Schedule. (004144)

NSCI 343 Concepts in Environmental Sciences **3.0 Fa/Spr**

Prerequisites: NSCI 141 or GEOS 141, NSCI 142 or BIOL 101, or faculty permission.

A course designed to introduce basic principles and concepts in environmental science. Field investigations in the local environment provide a natural setting for scientific inquiry and student research on environmental processes and conditions that shape the local landscape. Intended for Liberal Studies majors and students pursuing a single subject teaching credential in science. (020916)

NSCI 489A Internship in Science Teaching **1.0 Fa/Spr**

Prerequisites: BIOL 101, GEOS 141, or faculty permission.

Students have the opportunity to work with elementary and middle school students in a science teaching/learning environment in the hands-on Science Education Laboratory facility on campus. The hands-on lessons provide early teaching experiences in science for undergraduates exploring teaching as a career. All lessons are based on the California content standards in science. Students cover instructional strategies as well as content as part of the one-hour teaching and two-hour follow-up laboratory experience. Special fee required; see the Class Schedule. ABC/no credit grading only. (015904)

Natural Science Education Course Offerings

NSCT 498 Special Topics **1.0-3.0 Inquire**

This course is offered for 1.0-3.0 units. Typically the topic is offered on a one-time basis and may vary from term to term and be different for different sections. (006402)

NSCT 680 Research Methods in Science Education. **3.0 Inquire**

Prerequisites: Admission to master's degree program in science teaching, NSCT 687, faculty permission.

The course focuses on quantitative and qualitative methods to conduct research in science education that informs and strengthens their classroom practice. Successful completion of the course requires students to develop a research proposal. This course is also offered as MTHE 680. (005930)

NSCT 681 Physical Science for Elementary Teaching **3.0 Inquire**

Prerequisites: Teaching credential; three college science courses.

This course explores natural phenomena that are fundamental to all physical sciences. Teachers explore the connections between ideas in physical science (such as light, sound, color and motion) and work with problems and home activities that deepen their content knowledge and are applicable to teaching elementary science. 2.0 hours discussion, 3.0 hours laboratory. (006403)

NSCT 682 Physical Science for Secondary Teaching **3.0 Inquire**

Prerequisites: Bachelor's degree in a science discipline; teaching credential.

This course explores natural phenomena that are fundamental to all physical sciences. Teachers explore the connections between ideas in physical science (such as energy, force, motion, and atomic theory) and work with problems and home activities that deepen their content knowledge and are applicable to teaching secondary physical science. 2.0 hours discussion, 3.0 hours laboratory. (006404)

NSCT 683 Earth Science for Elementary Teaching **3.0 Inquire**

Prerequisites: Teaching credential; three college science courses.

This course examines fundamental concepts for teaching earth science in elementary school. An emphasis is placed on the design of field trips in the local landscape to connect elementary earth science curriculum with real-world applications. 2.0 hours discussion, 3.0 hours laboratory. (006405)

NSCT 684 Earth Science for Secondary Teaching **3.0 Inquire**

Prerequisites: Bachelor's degree in a science discipline; teaching credential.

This course addresses the professional development needs of secondary earth science teaching. Emphasis is placed on developing students' conceptual understanding of fundamental concepts in earth science, and the integration of technology into the science classroom. 2.0 hours discussion, 3.0 hours laboratory. (006406)

Highlighted text indicates a change from the original publication.

NSCT 685 Life Science for Elementary Teaching 3.0 Inquire

Prerequisites: Teaching credential; three college science courses.

This course explores central life science concepts through an inquiry approach. Course content integrates plant and animal physiology, photosynthesis, respiration, ecology and evolution. Using these topics, participants develop lesson plans for implementation in their own classrooms. 2.0 hours discussion, 3.0 hours laboratory. (006407)

NSCT 686 Life Science for Secondary Teaching 3.0 Inquire

Prerequisites: Bachelor's degree in a science discipline; teaching credential.

This course emphasizes the application of biological principles in the real world. Course content is driven by participant interest and may include cell biology with human disease implications, genetics with biotechnology applications, and/or ecology and evolution with an outdoor explorations emphasis. 2.0 hours discussion, 3.0 hours laboratory. (006408)

NSCT 689 Internship in Science Teaching 1.0–3.0 Inquire

This internship is offered for 1.0-3.0 units. Faculty permission is required. You may take this course more than once for a maximum of 15.0 units. Credit/no credit grading only. (006409)

NSCT 690 Thesis/Project Writing Seminar 3.0 Fa/Spr

Prerequisites: NSCT 680 or permission of instructor.

Formulation and pursuit, with supervision, of advanced projects and theses. Emphasis is on planning, reading, discussing, and evaluating student's manuscript-in progress. This is a required course for the distance master's program, MA in Interdisciplinary Studies: Science Teaching. You may take this course more than once for a maximum of 9.0 units. (006410)

NSCT 697 Independent Study 1.0–3.0 Fa/Spr

This course is a graduate-level independent study offered for 1.0-3.0 units. You may take this course more than once for a maximum of 3.0 units. Credit/no credit grading only. (006412)

NSCT 698 Special Topics in Science Education 3.0 EvnSp

Prerequisites: Teaching Credential; four college science courses (elementary track) or science bachelor's degree (secondary track).

Typically the topic is offered on a one-time basis and may vary from term to term and be different for different sections. (006411)

NSCT 699P Master's Project 1.0–6.0 Fa/Spr

This course is offered for 1.0-6.0 units. You must register directly with a supervising faculty member. You may take this course more than once for a maximum of 6.0 units. (006418)

NSCT 699T Master's Thesis 1.0–6.0 Fa/Spr

This course is offered for 1.0-6.0 units. You must register directly with a supervising faculty member. You may take this course more than once for a maximum of 6.0 units. (006416)