

SCIENCE EDUCATION

Science Education Department (<http://www.csuchico.edu/sced/>)
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Insight

The Department of Science Education is a small, vibrant, multidisciplinary science education department in the College of Natural Sciences. Our department is dedicated to preparing future science teachers and informal science educators and offers the only undergraduate program within the California State University system designed specifically for the preparation of future middle school science teachers. Our faculty strive to promote culturally inclusive learning spaces where diversity of thought and expression are valued, respected, appreciated, and celebrated.

Our department values a classroom culture that respects and fully values the strengths and differences of all students; where everyone has the opportunity to share points of view, offer ideas, and be recognized for their contributions. Small enrollment courses lend to opportunities for one-on-one interaction with faculty, class-embedded early teaching experiences, and research opportunities with faculty mentors that can lead to conference presentations and publications. Become part of the next generation of science teachers and educators to advance excellence and equity in STEM education.

Experience

Students in our program will experience

- Collaborative student workspaces and dedicated student lounge and all the features of a new state-of-the-art science building.
- Learning science and science teaching by doing science coupled with hands-on early teaching experience.
- The local natural areas for environmental research and education such as the Big Chico Creek Ecological Reserve. (<https://www.csuchico.edu/bccer/>)
- Class field trips and site investigations that apply scientific and engineering practices to ask questions and solve problems.
- The National Science Teachers Association (student chapter). Our student club offers a great way to
 - Meet other students interested in teaching science (all disciplines/levels).
 - Practice strategies for teaching science.
 - Learn about science education scholarships and internships.
 - Participate in NSTA (<https://www.csuchico.edu/sced/about-students/nsta.shtml/>) student chapter-sponsored events.
 - Build confidence and skills for presenting at the NSTA's annual conference.
 - Participate in outreach efforts to foster interest and knowledge about science in the local community.

Outlook

According to the California Department of Education, "Science is one of the most acute teacher shortage areas, making job prospects very strong.

Over the next decade, California is projected to need more than 33,000 science and math teachers."

The need for well-educated science teachers has never been greater. In response to our nation's necessity for cutting-edge science educators, the CSU system has made a long-term commitment to increasing the number of science teachers. As a result, the Department of Science Education strives to meet those needs by offering a program geared toward an innovative future in science education. Come in to discuss your goals and get started on your journey toward a fulfilling career in science education.

Programs

Undergraduate

Bachelor's

- Natural Sciences BS (<https://catalog.csuchico.edu/colleges-departments/college-natural-sciences/science-education/natural-sciences-bs/>)

Graduate

Master's

- Interdisciplinary Studies Science Teaching MA (<https://catalog.csuchico.edu/colleges-departments/college-natural-sciences/science-education/interdisciplinary-studies-science-teaching-ma/>)

See Course Description Symbols and Terms (<https://catalog.csuchico.edu/academic-standards-policies/course-description-symbols-terms/>) for an explanation of course description terminology and symbols, the course numbering system, and course credit units.

SCED 101 Introduction to Earth System Science 3 Units GE

Typically Offered: Fall and spring

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 hours activity, 2 hours discussion. (020268)

General Education: Laboratory Activity (B3); Physical Science (B1)

Grade Basis: Graded

Repeatability: You may take this course for a maximum of 3 units

Course Attributes: Lower Division

SCED 102 Introduction to Living Systems 3 Units GE

Typically Offered: Fall and spring

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 hours activity, 2 hours discussion. (020372)

General Education: Laboratory Activity (B3); Life Science (B2)

Cross listing(s): BIOL 102

Grade Basis: Graded

Repeatability: You may take this course for a maximum of 3 units

Course Attributes: Lower Division

- SCED 141 Concepts in the Physical Sciences** **3 Units**
Prerequisite: Recommended: Concurrent enrollment in or prior completion of MATH 110.
Typically Offered: Fall and spring
 Basic concepts of motion, force, energy, chemical change, and their interactions. Intended for Science Education or Liberal Studies majors. 4 hours activity, 1 hour lecture. (004132)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Lower Division
- SCED 142 Concepts in Life Science** **3 Units**
Prerequisite: SCED 141 or completion of GE Physical Sciences (B1).
Typically Offered: Fall and spring
 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 Science Education or Liberal Studies majors or others interested in K-8 teaching. 4 hours activity, 1 hour lecture. (020915)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Lower Division
- SCED 198 Special Topics** **1-3 Units**
Prerequisite: Department permission.
Typically Offered: Fall and spring
 This course is for special topics offered for 1.0-3.0 units. Typically the topic is offered on a one-time-only basis and may vary from term to term and be different for different sections. See the Class Schedule for the specific topic being offered. 1 hour lecture. (006394)
Grade Basis: Graded
Repeatability: You may take this course more than once
Course Attributes: Lower Division
- SCED 300W Scientific Innovations Behind Modern Technology (W)** **3 Units GE, W**
Prerequisite: GE Oral Communication (A1); GE Written Communication (A2); GE Critical Thinking (A3); GE Physical Sciences (B1); GE Life Sciences (B2); GE Mathematics/Quantitative Reasoning (B4) requirements, or consent of the instructor.
Typically Offered: Fall and spring
 This course explores the history of innovations in the natural sciences that have contributed to major breakthroughs in technology. Students examine the intended and unintended consequences of these innovations on society. The second half of the course looks at innovations of the digital age. Students research possible implications of new technologies on the quality of life for future generations. An emphasis will be placed on evidence-based reasoning and writing skills. 3 hours lecture. (021115)
General Education: Upper-Division Scientific Inq/Quant Reason (UDB); Innovation, Design, and the Arts Pathway; Science, Technology, and Society Pathway
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Upper Division; Writing Course
- SCED 321W Scientific Inquiry (W)** **3 Units W, GW**
Prerequisite: Completion of GE Written Communication (A2) requirement, SCED 141, SCED 142.
Typically Offered: Spring only
 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. 4 hours activity, 1 hour lecture. (020914)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Upper Division; Writing Course; Graduation Writing Assessment
- SCED 342 Concepts in Earth and Space Science** **3 Units**
Prerequisite: SCED 141 or completion of GE Physical Sciences (B1); and SCED 142 or completion of GE Life Sciences (B2).
Typically Offered: Fall and spring
 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 Science Education or Liberal Studies majors and students pursuing a single subject teaching credential in science. 4 hours activity, 1 hour lecture. (004144)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Upper Division
- SCED 343 Concepts in Environmental Sciences** **3 Units**
Prerequisite: SCED 141 or completion of GE Physical Sciences (B1); and SCED 142 or completion of GE Life Sciences (B2).
Typically Offered: Fall and spring
 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 Science Education or Liberal Studies majors and students pursuing a single subject teaching credential in science. 4 hours activity, 1 hour lecture. (020916)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Upper Division; Sustainable Course
- SCED 350 Learning Assistant Training** **2 Units**
Prerequisite: Acceptance as a Learning Assistant.
Typically Offered: Fall and spring
 This course is required for all first year Learning Assistants (LAs). The course prepares students to be effective LAs by working with faculty and peers to transform undergraduate learning environments. 2 hours discussion. (021657)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 2 units
Course Attributes: Upper Division
- SCED 352 Science Museum Docent Training** **1 Unit**
Prerequisite: SCED 342 or SCED 343 (may be taken concurrently).
Typically Offered: Fall and spring
 Students in this course facilitate the elementary grade level field trip activities for visiting K-8 students at the Gateway Science Museum to foster an appreciation and understanding of the natural world around them. 3 hours laboratory. (020964)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 1 unit
Course Attributes: Upper Division

SCED 389 Teaching Science in Outdoor Settings 2 Units

Prerequisite: SCED 142; SCED 342 or SCED 343 (may be taken concurrently).

Typically Offered: Spring only

This course requires a 1-hr seminar and 3-hours of directed internship with local environmental educators in private or public settings to gain experience teaching science in outdoor settings to children and adults of all ages. This course is for students with an interest and/or background in environmental issues who want to learn how to facilitate learning about environmental problems and solutions in a variety of outdoor settings. 3 hours independent study, 1 hour seminar. (021901)

Grade Basis: Graded

Repeatability: You may take this course for a maximum of 2 units

Course Attributes: Upper Division

SCED 398 Special Topics 1-3 Units

Prerequisite: Department permission.

Typically Offered: Fall and spring

This course is for special topics offered for 1.0-3.0 units. Typically the topic is offered on a one-time-only basis and may vary from term to term and be different for different sections. See the Class Schedule for the specific topic being offered. 3 hours lecture. (020470)

Grade Basis: Graded

Repeatability: You may take this course more than once

Course Attributes: Upper Division

SCED 490 Natural Sciences Seminar 2 Units

Prerequisite: Senior standing.

Typically Offered: Fall only

This course is a capstone experience for Natural Sciences Majors. In this course, students reflect on their work in the program, read and discuss the relevant literature, and synthesize their accomplishments across the sciences into a professional portfolio. In addition, students are required to present a portion of their portfolio as a departmental seminar. 2 hours seminar. (021290)

Grade Basis: Graded

Repeatability: You may take this course for a maximum of 2 units

Course Attributes: Upper Division

SCED 495 Science Education Capstone 3 Units

Prerequisite: SCED 490.

Typically Offered: Spring only

This course is intended for future middle school and informal science teacher educators. Students explore and analyze discipline-based education research articles and apply the principles of behavioral sciences within a science learning environment. Students demonstrate an understanding of Physical Science, Life Science, Environmental Science, and Earth and Space Science by designing and facilitating student-centered activities using energy as a cross-cutting disciplinary concept. 3 hours lecture. (021884)

Grade Basis: Graded

Repeatability: You may take this course for a maximum of 3 units

Course Attributes: Upper Division

SCED 499 Special Problems 1-3 Units

Prerequisite: Faculty permission.

Typically Offered: Fall and spring

This course is an independent study of special problems offered for 1.0-3.0 units. You must register directly with a supervising faculty member. 0 hours supervision. (021538)

Grade Basis: Credit/No Credit

Repeatability: You may take this course for a maximum of 6 units

Course Attributes: Upper Division

Science Education Department

The Faculty

Kelli M Albertson 2008

Lecturer

Master of Science CSU-Chico

Carolina Alvarado Leyva 2016

Associate Professor

Doctor of Philosophy Instituto Tecnológico de Monterrey

Kevin M McLin 2021

Lecturer

Doctor of Philosophy Univ Of Colorado At Boulder

Julie A Monet 2007

Chair

Doctor of Education Rutgers Univ New Brunswick

Julie A Monet 2007

Professor

Doctor of Education Rutgers Univ New Brunswick

Carrie E Monohan 2011

Lecturer

Doctor of Philosophy Univ Of Washington

Anne K Stephens 2005

Assistant Professor

Doctor of Philosophy Univ Of Cal-Davis

Eric H Willard 2004

Lecturer

Bachelor of Arts San Francisco St Univ