SCIENCE EDUCATION

Science Education Department (http://www.csuchico.edu/sced/)
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Chair: Julie Monet

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 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


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.

<table>
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<tr>
<th>SCED 101</th>
<th>Introduction to Earth System Science</th>
<th>3 Units</th>
<th>GE</th>
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| 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 |

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<tr>
<th>SCED 102</th>
<th>Introduction to Living Systems</th>
<th>3 Units</th>
<th>GE</th>
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| 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)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Lower Division |
SCED 140  Teaching Science in a Museum Setting  1 Unit
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. 2 hours laboratory.  (022437)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 1 unit
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 143  Explore Teaching Science in Outdoor Settings  1 Unit
Typically Offered: Spring only
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. 1
hour seminar.  (022438)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 1 unit
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)
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 (UD);
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; Writing Course; Graduation Writing
Assessment

SCED 343 Concepts in Environmental Sciences  3 Units
Prerequisite: SCED 141 or completion of GE Physical Science (B1); and
SCED 142 or completion of GE Life Science (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 389 Internship 1-3 Units
Typically Offered: Inquire at department
This course is an internship. You must register directly with a supervising faculty member. 0 hours supervision. (022439)
Grade Basis: Credit/No Credit
Repeatability: You may take this course for a maximum of 15 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 Tecnologico de Monterrey

Christian K Asante 2022
Assistant Professor
Doctor of Philosophy Boston College

Christine W Brown 1997
Lecturer
Master of Science Univ of Cal-Berkeley

Julie A Monet 2007
Chair
Doctor of Education Rutgers Univ New Brunswick