



UNIVERSITY OF NORTHERN COLORADO

Extended Campus

College of Natural & Health Sciences
Department of Earth & Atmospheric Sciences

ESCI 591-600 Geoscience Field Issues

Topic: Bond Science Institute for Elementary Teachers

June 13-16,2022



Instructor: Amy Nicholl
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Co-Requisites/Prerequisites – NONE, but students must apply through online application described in course announcement provided through UNC Extended Campus.

Credit: 2 semester hours

Location: Poudre Learning Center – 8313 West F Street, Greeley, CO

Course Description

The Bond Science Institute for Elementary Teachers is an institute that will develop teachers understanding of 3-dimensional science instruction through the lens of the Next Generation Science Standards and Colorado Content Standards. The Institute will also explore science content, inquiry-based instruction, integration of other content areas into science instruction and STEM/STEAM lessons. Learn about how to use the outdoors to extend learning for your students!

Resources that will be referenced during the workshop:

1. *National Science Education Standards*, http://www.nap.edu/openbook.php?record_id=4962
1. *Inquiry and the National Science Education Standards*, http://www.nap.edu/catalog.php?record_id=9596#toc
2. *Next Generation Science Standards, NGSS* <http://www.nextgenscience.org/>
3. *Project 2061 Benchmarks for Science Literacy*, <http://www.aaas.org/>
4. *Colorado Department of Education*, http://www.cde.state.co.us/index_home.htm. Connect to this site particularly for information on:
 - Performance based standards for educators
 - K-12 science standards
 - K-12 grade level expectations for science
 - http://www.cde.state.co.us/sites/default/files/documents/coscience/documents/science_standards_ad_opted_2009.pdf
5. *Articles provided by the instructor*

Course Objectives: Develop a deeper knowledge of science instruction, objectives, learning, curriculum, safety, technology, and assessment for teaching science grades K-8.

- To examine science as "a way of knowing" through dialog and experiencing scientific inquiry via activities, reading, and discussion.
- To develop an understanding of how people learn in the context of scientific discovery and current brain research.
- To provide models for conducting inquiry-based investigations.
- To provide models of instruction for integrating science with other content areas.
- To provide content necessary to enable teacher licensure students to address K-12 Colorado Academic Standards (CAS) and an awareness of the Next Generation Science Standards.

Course Requirements

- Participation in all sessions (20% of course).
- Students will maintain a science notebook with materials and notes gained from the course (20% of course).
- Students will create a lesson plan for their students based on standards and information gained from the course (60% of course).

Method of Evaluation (letter graded)

- A- 90% and up
- B- 80-89.9%
- C- 70-79.9%
- D- 60-69.9%
- F Below 60%

Student Learning Outcomes:

By the end of the workshop, **participants will be able to:**

- Design a 3-Dimensional science lesson plan to be used in their classrooms during the 2020-21 school year.
- Identify key elements of the Next Generation Science Standards and the tie to Colorado Science Standards.

Outline of Course Content *Participants will participate in following topics through immersion in STEM lessons, models, and outdoor experiences:*

- Deepening content knowledge in the areas of physical, life and earth sciences
- Immersion into NGSS Science and Engineering Practices, Cross Cutting Concepts and Disciplinary Core Ideas.
- Developing STEM lessons based on NGSS (2017, The Three Dimensions of Science Learning, <https://www.nextgenscience.org/>) and the 5E Learning Cycle (R. Bybee and others, 2006, The BSCS 5E Instructional Model: Origins, Effectiveness, and Applications-Executive Summary, Biological Sciences Curriculum Study, Colorado Springs, CO).

Disability Support Services - Any student requesting disability accommodation for this class must inform the instructor giving appropriate notice. Students are encouraged to contact Disability Support Services at (970) 351-2289 to certify documentation of disability and to ensure appropriate accommodations are implemented in a timely manner. (Updated per DSS 8-24-09).

Honor Code - All members of the University of Northern Colorado community are entrusted with the responsibility to uphold and promote five fundamental values: Honesty, Trust, Respect, Fairness, and Responsibility. These core elements foster an atmosphere, inside and outside of the classroom, which serves as a foundation and guides the UNC community's academic, professional, and personal growth. Endorsement of these core elements by students, faculty, staff, administration, and trustees strengthens the integrity and value of our academic climate.

UNC's Policies - UNC's policies and recommendations for academic misconduct will be followed. For additional information, please see the Student Code of Conduct at the Dean of Student's website <http://www.unco.edu/dos/Conduct/codeofconduct.html>. In the case of academic appeals, university procedures will be followed. For information on academic appeals, see <http://www.unco.edu/regrec/Current%20Students/AcademicAppeals.html>.

Special Term/Short Course - Special Term Courses do not meet during a typical semester (begin or end earlier or later), these courses have different add/drop/withdrawal dates. It is the responsibility of the student to be aware of these dates. Please refer to "special term/short course deadlines" from this link: <http://www.unco.edu/registrar/current-students/course-add-drop.aspx>, to learn the dates for this course.

Requesting Transcripts - There are two options for requesting transcripts. For an unofficial transcript, on your Student tab in URSA, choose "Unofficial transcript" located under the "Grades" heading. For an official transcript, go to: <http://www.unco.edu/registrar/etranscripts.aspx>.