

Texas A&M University-San Antonio
College of Education and Human Development
EDCI 4346: Science Methods
Fall 2023

Course: EDCI 4346 Science Methods

A. MAJOR COURSE REQUIREMENTS:

- **Individual Unit Plan**
A unit plan is to be completed individually by each student for a 3rd – 5th grade science unit of study assigned and learning management system resources provided.
- **Group Science Presentation with Mini Teach**
This presentation will include a PowerPoint to provide the science content/background information about your assigned science topic thread (set of related TEKS).
- **Final Exam**

B. LEARNING OBJECTIVES:

Upon completion of this course, the student will be able to:

1. **Articulate** the current goals and **summarize** the standards in science education, including *Next Generation Science Standards* (NRC, 2013) and Texas Essential Knowledge and Skills (TEKS) for the EC-6 science courses.
2. **Identify** the cognitive mechanisms determining how elementary students learn science.
3. **Define** the requisite fundamental content knowledge needed for teaching elementary science (life science, physical science, and earth and space science).
4. **Articulate** the *nature of science* including citations of some of the important consensus views of the nature of science that science researchers presented.
5. **Summarize** the science process skills and **identify** materials that can be used in the elementary science classroom.
6. **Design** science lessons/units, and activities that promote inquiry and scientific literacy while simultaneously meeting the diverse needs of elementary school students.
7. **Identify** a variety of effective assessments for evaluating students' progress in science.
8. **Integrate** other subject areas into the instructional process to enhance science teaching strategies.
9. **Identify** technology to reinforce science teaching resources and improve learner outcomes.
10. **Utilize** reflection to inform mechanisms for expanding learning and teaching ideas in the classroom.

C. STANDARDS: Teaching Standards for EC-6 Science

- **Standard I.** The science teacher manages classroom, field, and laboratory activities to ensure the safety of all students and the ethical care and treatment of organisms and specimens. (SLO 5, 6, 7)
- **Standard II.** The science teacher understands the correct use of tools, materials, equipment, and technologies. (SLO 5, 9)
- **Standard III.** The science teacher understands the process of scientific inquiry and its role in science instruction. (SLO 6)
- **Standard IV.** The science teacher has theoretical and practical knowledge about teaching science and about how students learn science. (SLO 2, 4)
- **Standard V.** The science teacher knows the varied and appropriate assessments and assessment practices to monitor science learning. (SLO 7)
- **Standard VI.** The science teacher understands the history and nature of science. (SLO 4)

- **Standard VII.** The science teacher understands how science affects the daily lives of students and how science interacts with and influences personal and societal decisions. (SLO 4)
- **Standard VIII.** The science teacher knows and understands the science content appropriate to teach the statewide curriculum (Texas Essential Knowledge and Skills [TEKS]) in physical science. (SLO 3)
- **Standard IX.** The science teacher knows and understands the science content appropriate to teach the statewide curriculum (Texas Essential Knowledge and Skills [TEKS]) in life science. (SLO 3)
- **Standard X.** The science teacher knows and understands the science content appropriate to teach the statewide curriculum (Texas Essential Knowledge and Skills [TEKS]) in Earth and space science. (SLO 3)
- **Standard XI.** The science teacher knows unifying concepts and processes that are common to all sciences. (SLO 3)