

**AUGUSTA STATE UNIVERSITY  
COLLEGE OF EDUCATION  
DEPARTMENT OF TEACHER EDUCATION**

**COURSE TITLE: Early Childhood Science Education II**

**COURSE PREFIX AND NUMBER: ECED 4332**

**INSTRUCTOR:** Kim Franklin, M.Ed, University Hall 379, 706-729-2455; [kfrankli@aug.edu](mailto:kfrankli@aug.edu)

**OFFICE HOURS:** Tuesday 2:30-4:30, Wednesday 8:30-2:30, Thursday 2:30-4:30

**TEXT:** Abruscato, Joseph (2004). *Teaching children science: discovery activities and demonstrations for the elementary and middle grades*. Pearson Education, Inc. Boston.

*Live Text Membership* (Live Text is required course material that will be used in every education class. This is a one time purchase and can be bought in the bookstore.)

**PREREQUISITE:** Admission into the Teacher Education Program and classes in Blocks I & 2.

**COURSE DESCRIPTION:** This course will build on Science Education I. The course will include experiences that engage prospective teachers in active learning that builds on their knowledge, understanding, and ability. The course will address issues, events, problems, and process skills through incorporating scientific, technological, and societal content appropriate to those in grades Pre-K through 5. The students will be expected to integrate knowledge of science, learning, and pedagogy, and apply that knowledge to science teaching.

**CLASSROOM: University Hall:**

**Section A-** Room 355, (1:00-2:15)

**Section B-** Room 353, (11:30-12:45)

**CONCEPTUAL FRAMEWORK PRINCIPLES ADDRESSED:**

**Primary Learning Outcomes**

Students will:

1. understand the central concepts, tools of inquiry, and structures of the discipline(s) and be able to create learning experiences that make these aspects of subject matter meaningful for learners.
2. understand and use a variety of instructional strategies to encourage the learner's development of critical and creative thinking, problem solving, and performance skills.
3. use knowledge of effective verbal, nonverbal, and information technology techniques to foster active inquiry, collaboration, and supportive interaction in the classroom.
4. plan instruction based upon knowledge of subject matter, the learners, the community and curriculum goals.

**Secondary Learning Outcomes:**

Students will:

1. understand how students learn and develop and be able to provide developmentally appropriate learning opportunities that support their intellectual, social, and personal development.
2. foster relationships with school colleagues, parents, and agencies in the larger community to support the learning and well-being of all students

## **SPECIFIC COURSE OBJECTIVES:**

Throughout the course students will demonstrate the ability to:

1. examine the characteristics of effective science teaching including concepts, skills, strategies, and approaches to developing understanding in the sciences.(CF 1).
2. investigate the standards, expectations, and curriculum for teaching Pre-K through 5 grades in the sciences.(CF 7).
3. demonstrate the ability to plan instruction that fosters inquiry learning, problem solving, hands-on participation, and critical thinking in the learning of science, and that reflects “best practice” in elementary science teaching.
4. demonstrate the ability to utilize current research, experts in the field, and technology to support instruction for the young learner.
5. develop approaches to science instruction and assessment which reflect a sensitivity to and an understanding of diversity among students in the classroom within and across disciplines (CF 2).
6. develop approaches to curriculum, instruction, and assessment that reflect an understanding of current research in early childhood science education (CF 7).
7. demonstrate understanding of dimensionality of assessment practices to evaluate students’ science conceptual understandings (CF 8).
8. demonstrate skills in working with colleagues, parents, students, and peers, and show effective instructional skill development from the field experience (CF 10).

## **COURSE OUTLINE**

The Early Childhood Education Program is founded on the premise that instructors model the practices that students are asked to employ in effective science instruction. The course outline is designed to provide topics essential for students to attain the intended course outcomes and objectives.. All course topics outlined below will be addressed in the context of the content standards put forth in the National Science Education Standards for children in grades K-5.

## **TOPICS**

1. Teaching inquiry-based science
  - a. science concepts to be taught in elementary science education
    1. Characteristics of organisms
    2. Life cycles of organisms
    3. Organisms and environments
    4. Structure and function of living systems
    5. Regulation and behavior
    6. Populations and ecosystems
    7. Characteristics and changes in populations
    8. Diversity and adaptations of organisms
    9. Changes in environments
    10. Understanding about science and technology
    11. Abilities of technological design
    12. Science as a human endeavor
  - b. national, state, local curricula and standards for science
    1. Georgia GPS per grade level
    2. Performance skills in the sciences

- a. unifying concepts and processes: the ability to investigate and identify systems, order, organization, and use models, explanations and evidence to explain change, constancy, evolution., equilibrium, form, and function.
  - b. inquiry skills and hands-on learning: the ability to investigate and share information and draw reasonable conclusions about science experimentation through active participation
  - c. critical thinking skills: developing decision-making and value-analysis skills for investigating science related problems in society
  - d. problem-solving skills: pose problems, view problems from multiple perspectives, suggest multiple solutions and communicate results effectively
  - e. process skills: work cooperatively to solve open-ended investigations and suggest solutions to real-world, science related problems
3. Strategic learning within the natural sciences
    - a. exemplars: utilizing analogy, metaphor, simulations, visuals, and modeling in the science classroom
    - b. conceptualization: utilizing concept maps, webbing, models, demonstrations, presentations, and exhibitions that link the natural sciences with other disciplines
    - c. application and understanding: linking understanding of science concepts with real-world events and experiences beyond the classroom
    - d. engagement and motivation: promoting student decision making, student ownership, diversity, and inclusion within the science classroom culture
    - e. problem-based learning: encouraging student involvement through using age appropriate science problems that frame the learning of science concepts
  4. Multidimensional assessment in the natural sciences
    - a. informal assessment: utilize observation, oral responses and questioning techniques to become informed about understandings of science concepts
    - b. formal assessment: utilize multiple forms of assessments such as portfolios, check lists, rubrics, performances, and journal writings to become informed about understandings of the natural sciences
  5. integrated unit planning for effective elementary science teaching
    - a. teaching to diversity in learning style, intelligences, cultural differences
    - b. teaching for engagement and meaningfulness
    - c. teaching for understanding in science and across disciplines
    - d. developing the relationship among the natural sciences, technology, society and human issues