

ESCI 4420  
Science for Early Childhood Education  
Spring 2003

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Office Hours: By Appointment

#### Introduction & Course Description

This course has been designed with the intention of providing you with opportunities to learn more about science teaching and learning, and to construct a vision of yourself as a teacher of elementary science. Several broad questions will guide this science methods course, including:

How do students come to understand ideas in science?

What classroom conditions facilitate students science learning?

What do teachers need to know and do to create such conditions?

Through this course, I hope to facilitate your learning by providing opportunities for you to:

(1) reflect on others teaching via integrated media cases; (2) reflect on your own teaching experiences; (3) read, write about, and discuss issues concerning science teaching and learning; and (4) think about yourself as a science learner via a variety of science activities.

#### Purposes

The purposes of this course include helping you to:

Clarify and refine your beliefs about teaching and learning science

Become aware of students ideas in science and how those ideas influence their learning

Learn, practice, and reflect upon teaching strategies that are

commensurate with  
research on how children learn science  
Understand ways of assessing student learning in science  
Gain sensitivity to the needs of diverse learners in science  
Begin developing you own repertoire of resources for teaching  
elementary  
science

#### Outcomes

By the end of this course, you should be able to:

Present and defend your beliefs about elementary science  
teaching and  
learning

Determine ways of equitable instruction in the classroom

Recognize characteristics of teaching science as inquiry

Conduct a scientific investigation

Ask questions to elicit students ideas about science concepts

Use teaching strategies that encourage students interest and  
learning in  
science

Plan a unit of science instruction that integrates at least one  
other

subject area

Critically reflect on your own and others teaching

Evaluate science curriculum materials

#### Expectations

Delineated below are my expectations of you for the course, as  
well as

criteria I will consider when evaluating whether expectations  
have been

met.

#### Participation:

Demonstrates ability to actively contribute to group and class  
discussions

Actively engages in learning exercises

#### Critical thinking:

Class work and assignments demonstrate original thinking and  
ideas go

beyond what is described in class or in readings

Shows evidence of ability to synthesize information from a  
variety of sources

#### Communication:

Communicates respectfully with others

Shows respect for others' ideas, especially those that may differ from one's own  
Timely communication with Dr. Butler of any concerns  
Thoughtful dialogue that indicates learning is occurring

**Motivated to learn:**

Works diligently to increase knowledge and ability to teach children science  
Actively seeks information from a variety of resources  
Demonstrates a lifelong learner mentality

**Course work:**

Projects indicate that care has been taken in their completion  
Goes beyond average expectations of assignment  
Work is free of misspellings and grammatical mistakes  
Work is turned in on time

**Attendance and promptness:**

Attends every class meeting  
Arrives by the assigned starting time of the course and is prepared to begin

**Preparation:**

Prepares for teaching experiences through prior practice  
Accounts for materials and understands the working of equipment prior to teaching situations

**Attendance Policy**

Class participation is a vital component of this course. If you are not in class, you are unable to participate in course activities. It is also important that you arrive on time and are ready to begin. You are expected to be present for every class meeting. I reserve the right to lower a final grade by one or more letter grades if you exceed one unexcused absence or if tardiness becomes problematic. An absence will be considered excused if you provide written documentation for the absence. Absences that may be excused include illness, death or illness in the

family, jury duty, or a personal crisis. All work missed during any absence must be made up. It is the responsibility of the student to contact me with written documentation for any absence. It is also the responsibility of the student to contact me regarding content missed in class. In the event of illness, accident, or other emergency when circumstances permit, you should make direct contact with me, preferably before class takes place. If I cannot be reached in person or by phone, you should leave a message with the secretary in the Department of Science Education (542- 1763). If you miss more than ONE class for any reason (excused or unexcused), you may be dropped from the course.

#### Cell Phones

Prior to the beginning of each class, please remember to turn off your cell phone, or place it in the "vibrate" or "ringer off" mode.

#### Course Materials

Tippins, D.J.; Koballa, T.R.; & Payne, B.D. (2002). Learning from cases: Unraveling the complexities of elementary science teaching. Boston, MA: Allyn and Bacon.

You will also be asked to read current and landmark publications that will be on Electronic Reserve. The following are additional course materials, with estimated costs:

Readings, \$10-\$15 (for copying)

Film and developing for 6-10 pictures for a photo essay (you may want to share a camera), \$5

Blank cassette for children's interviews, \$1

Material for developing and teaching science lessons, cost varies

Georgia's Quality Core Curriculum (can be found online at [www.glc.k12.ga.us](http://www.glc.k12.ga.us))

Other readings may be distributed in class

#### Course Topics

We will attempt to cover the following topics this semester

Nature of science and science knowledge

Diversity in the classroom

Criteria for science as inquiry

Teacher and student questions about science

Science process skills

Children's ideas and explanations in science/alternative conceptions

Assessing children's learning in science

Approaches to teaching science

Integrating science with other school subjects

Assignments and Grading

Assignments are due at the beginning of class. Assignments not completed by

the beginning of class will be considered late. Late assignments will not

be accepted. Make-up exams are based upon instructor's discretion.

**Case Study Responses:** You will be reading and discussing several case

studies that relate teaching science in an elementary school.

You will

also write responses to five of these cases

(5 case responses @ 5 points each 25 points)

**Science Photo Autobiography:** You will put together a visual and text-based

piece of work that reflects your science experiences from elementary

school, middle/junior school, high school and college. (10 points)

**Elementary Students Science Interview:** A critical component of science

teaching is understanding your students' ideas before designing learning

experiences for them. One way to assess their ideas is through interviews. In this assignment, you will design an interview about a

science concept, interview an elementary student, transcribe, and analyze

your interview. This interview will be conducted during your field

experience. (20 points)

Portable Exploratory Center: One way to promote curiosity and science learning among children is through the use of exploratory activities. You will design a portable exploratory center to accompany instruction for your field experience. You will also write about the experience. (10 points)

Model Lesson and Plan: When you begin classroom teaching, a major task that you will face is curriculum development. For this course component, you will design and present an elementary science lesson. You may work in pairs for this assignment (10 points)

Final Paper: For your final exam, you will synthesize in a final paper your ideas about elementary science teaching and learning. We will discuss at a later date how you wish to organize your paper. This paper will be due on the day scheduled for the final exam. (20 points)

Class Participation: An effective way to get the most out of this course is to share your ideas regarding the science education topics that are discussed during class. This portion of the course grade will be determined after the last class meeting. (5 points)

Your final grade will be calculated based on points: 90-100 = A; 80-89 = B; 70-79 = C; 60-69 = D. Keep in mind that you choose the quality of the work you submit. A's will be earned by those products that exhibit exemplary qualities rather than simply completion of the assignment.

I will make every attempt to explicate the expectations of each assignment. However, it is your responsibility to ensure that you



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