

## ESCI 4420: Science for Early Childhood Education

Fall 2009

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Day & Time: Mon. 10:00-12:45  
Location: J. J. Harris Elementary  
Room 405

*The course syllabus is a general plan for the course; deviations announced to the class by the instructor may be necessary.*

**Required text**           Settlage, J. & Southerland, S. (2007). *Teaching science to every child: Using culture as a starting point*. New York: Routledge.

**Reference materials (available online)** Georgia Performance Standards  
<http://www.georgiastandards.org/science.aspx>

American Association for the Advancement of Science. (1990). *Science for All Americans: Project 2061*. New York: Oxford University Press.  
<http://www.project2061.org/publications/sfaa/online/sfaatoc.htm>

National Research Council. (1996). *National Science Education Standards*. Washington, DC: National Academy Press.  
<http://fermat.nap.edu/openbook/0309053269/html/index.html>

### Course description

This course is intended to introduce prospective elementary teachers to the practice of teaching science. Building upon current research on science teaching and learning, we will explore:

- Approaches to science instruction for elementary students;
- Elementary science curriculum and state/national science education standards;
- Learning environments that support students' understandings of science content as well as the nature of scientific knowledge;
- Forms of assessment that reveal students' understandings of science;
- Science instruction that supports the goals/needs of diverse groups of students.

### Objectives

My primary goal is to guide you to become a reflective practitioner. Being reflective means being thoughtful and critical about the science learning experiences you enact in your classroom. To be an effective science teacher, you need to consider the backgrounds and experiences your students bring to your classroom. You also need to be thoughtful about the experiences you provide for your students, and you must consider how these experiences support their understandings of science. Being a reflective practitioner involves continuously evaluating your

understanding of science content, your goals for student learning, the manner in which you engage students in science content and processes, the ways in which students participate in science learning experiences, and the ways in which students show evidence of meeting your learning goals.

Please keep in mind that teaching science (or any topic) is a highly complex practice. The complexity is due to the interplay between your understanding of science, the understandings of science your students hold, and your ability to orchestrate science learning experiences in your classroom. It is your responsibility to learn how to negotiate your classroom environment and determine which instructional strategies meet your needs and goals, as well as the needs and goals of your students. Therefore, the intent of this course is to help you develop competencies that enable you to make informed curricular and instructional decisions.

The goals for this course include:

1. Developing and reflecting on your science content understanding, as well as your understanding of the nature of scientific knowledge;
2. Becoming familiar with factors that influence learning (e.g., students' conceptions of science, how these conceptions influence science learning, how teaching practices support science learning, etc.);
3. Developing competencies that allow you to make informed decisions about curriculum and instruction;
4. Understanding how to employ various forms of assessment to evaluate student learning;
5. Developing an understanding of diversity and equity and an understanding of how you can organize your teaching practices to meet the needs of all students in your class;
6. Developing an understanding of your goals as a teacher of science and reflecting on how the decisions you make about curriculum and instruction align with these goals;
7. Developing habits of mind that allow for professional development.

This course is one step toward becoming a teacher of science. In order for you to serve your students well, it is important that you continue to refine your ideas about science teaching and learning.

### **Assignments**

#### **Science Autobiography (10%)**

Using the Foreword in the Settlage & Southerland book as a model, describe your prior experiences with science.

#### **Peer teaching (15%)**

For this assignment, you will work in groups and will develop and teach a science lesson in class. Topics will be assigned. You will be required to submit a group lesson plan and an individual reflection for this assignment.

#### **In class assignments (10%)**

We will have opportunities to interact with teachers and students at J. J. Harris Elementary (e.g., hosting science day in our classroom, etc.). Written assignments to be completed in class will accompany these opportunities.

**Students' ideas about science (25%)**

During field experience, interview at least three students about their ideas about science. Interview questions will be developed in class. A written paper will accompany this assignment.

**Teaching science in the elementary classroom (25%)**

During field experience, design and teach at least one science lesson or conduct at least one science center investigation. A lesson plan, an assessment, and a written reflection will be required for this assignment.

**Summary reflection (15%)**

**Course Policies**

Attendance and participation/professionalism will affect your final grade. Regular and punctual attendance is an important part of this course. *If you miss more than one class session your final grade will drop by one grade level (e.g., from A- to B+).* Exemptions may be granted in cases of serious illness, death in the family, religious observance, and other events that fall under the guidelines for an excused absence. Please inform me *in advance* if you are going to be absent from class.

As a class, we will explore and develop ideas related to science teaching and learning. Your participation will enhance the quality of your experience and that of your classmates. Participation involves being a thoughtful contributor to class discussions and activities. I expect that you will come to class prepared to participate in our class discussions.

Please turn off your cell phone prior to coming to class (i.e., no phone calls and no text messaging).

*Your final grade will drop by one grade level (e.g., from A- to B+) if issues of participation and/or professionalism become problematic.*

All assignments must be handed in on or before the day they are due. If an assignment is late, there will be a reduction of one grade level per day overdue. I expect you to type and proofread your assignments.

All academic work must meet the standards contained in "A Culture of Honesty." All students are responsible to inform themselves about those standards before performing any academic work (<http://www.uga.edu/~ovpi/honesty/ah.pdf>).

Your final grade will be calculated based on the following:

100-93=A, 92-90=A-  
89-87=B+, 86-83=B, 82-80=B-  
79-77=C+, 76-73=C, 72-70=C-  
69-67=D+, 66-63=D, 62-60=D-  
Below 60=F

Keep in mind that you choose the quality of the work you submit. You can earn an A by submitting assignments that exhibit exemplary quality.

DATE	TOPIC	READING (date assigned)	ASSIGNMENTS DUE
Aug 17	Introduction to course (combined ESCI 4420/EDEC 4030 class)	Foreward Preface Ch. 1—Forming commitments to science teaching	
Aug 19	Introduction to J. J. Harris Elementary (combined ESCI 4420/EDEC 4030 class)		
Aug 24	Goals for science teaching; Science standards	Ch. 2—Observe, infer, and classify: Basic science process skills Ch. 3—Measure, predict, and communicate: Basic science process skills	Science autobiography
Aug 31	Inquiry-oriented science instruction	Ch. 4—Approaches to science instruction Ch. 5—The learning cycle as a model for science teaching	
Sept 7	<b>Labor Day (no class)</b>		
Sept 14	Perspectives on science learning		
Sept 28	Peer teaching		
Sept 30	Peer teaching	Ch. 7—From activity to inquiry Ch. 8—The nature of science	Peer teaching
Oct 5	Inquiry-oriented science instruction	Ch. 6—Questioning strategies and leading discussions	Peer teaching
Oct 12	Questioning and discussion strategies	Ch. 9—From lessons to units: Science curriculum	
Oct 19	Developing science units	Ch. 10—Integrating science with other subjects	
Oct 26	Integrating science with other subjects	Ch. 12—Managing a classroom for science learning	
<b>Field experience—week of Nov. 2 or Nov. 9</b>			
Nov 2 or 9	Science instruction in elementary classrooms		Student interview assignment
Nov 16	Science instruction in elementary classrooms		
<b>Fall Break Nov. 23- Nov. 27</b>			
Nov 30	Science instruction in elementary classrooms		Teaching science assignment
Dec 7	Last day of class		Summary reflection