

--This syllabus will be negotiated on the first day of class and throughout the semester.

**SPRING 2008, ESCI 4420**  
**SCIENCE FOR EARLY CHILDHOOD EDUCATION**

**Instructors:** Deborah J. Tippins, Ph.D.  
Ms. Stacey Britton

**Telephone:** (706) 542-4194 (work)

**Office:** 212 Aderhold Hall

**E-mail:** [dtippins@uga.edu](mailto:dtippins@uga.edu)

**E-mail:** [biolady24@yahoo.com](mailto:biolady24@yahoo.com)

**Class Schedule:** 220 Aderhold Hall

**Schedule:** Mondays and Wednesdays  
1:25 - 3:20 p.m.

**Course Description**

Welcome to the course, Science Education for Early Childhood! This course is intended to provide you with opportunities to construct a vision of what elementary science teaching and learning can be like and to help you learn how to plan appropriate activities which fit within this vision. During the semester you will be involved in independent and group activities that will enable you to become a competent and confident teacher of science to elementary school age children.

**Course Materials**

The instructor will make available core readings from the journal literature and selected textbooks. You will be expected to read and critique relevant course articles. The following book is required:

Louv, R. (2006). *Last child in the woods: Saving our children from nature-deficit disorder*. Chapel Hill: Algonquin Press.

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

Project Wild Materials \$15  
Miscellaneous materials and supplies  
Two Large Binder Notebooks

**Course Goals**

The course will focus on possible solutions to questions like:

1. What is the nature of science and scientific knowledge?
2. What do teachers do when they teach science?
3. How can a teacher provide learning environments which will promote active learning, student responsibility and autonomy?

4. How can science be taught as part of an interdisciplinary/thematic/whole language unit using children's literature?
5. What can be done to encourage females and minorities in science?
6. How can a teacher or student assess learning with understanding?
7. What "tools" can assist a teacher in becoming a "reflective" practitioner and students in becoming "reflective" learners?
8. What resources are available for early childhood science educators?
9. How can science be integrated across the curriculum?
10. How can science be taught using outdoor learning environments?
11. What is meant by "culturally relevant" science teaching and learning?

### Course Objectives

The objectives of this course are to develop:

- ◆ Positive attitudes towards science, science teaching and learning.
- ◆ Confidence and competence in designing teaching-learning activities needed to teach in an activity-centered or project-centered classroom.
- ◆ Awareness and knowledge of sources of current literature and contemporary issues in science education.
- ◆ Awareness of the multicultural dimensions of the classroom and what it means to teach "science for all" at the early childhood level.
- ◆ Tools to critically evaluate and reflect upon your own science teaching beliefs and practices.
- ◆ Understanding of ways to integrate science with other content areas.
- ◆ Familiarity with ways to use the outdoor learning environment as a context for science teaching.
- ◆ Understanding of constructivism as a referent for thinking about science teaching and learning.
- ◆ Awareness and knowledge of curricular options and curricular materials appropriate for science teaching at the early childhood level.
- ◆ Understanding of science inquiry as a way to motivate students and enhance their creativity.
- ◆ Understanding of how science teachers can use theory to improve their teaching effectiveness.
- ◆ Understanding of science processes skills.
- ◆ Understanding of the characteristics of teaching science as inquiry.
- ◆ Questioning skills to elicit students' ideas about science concepts.

### Expectations

I expect you to:

- ◆ Be an active participant in class discussions and activities
- ◆ Attend **all** course sessions
- ◆ Be **prompt** in attendance
- ◆ Read and reflect **critically** on assigned readings
- ◆ Locate and read additional materials related to elementary science teaching

- ◆ Demonstrate reflection through discussion and writing
- ◆ Share resources, readings and insights
- ◆ Collaborate with colleagues regarding learning
- ◆ Complete **all** assigned tasks to best of your ability
- ◆ Communicate expectations, frustrations and ideas
- ◆ Put as much into this course as you expect to get out of it!

### **Attendance**

Class participation is a very important aspect of the course. If you do not attend class, you are unable to participate in the many activities that will be undertaken during class time. In this regard, you are responsible for attending **all** class sessions. Please arrive at class in a prompt and timely manner. Equally important is your advance preparation for each class. Before class please evaluate readings and/or assignments from the perspective of your own teaching and learning experiences. Your careful preparation and enthusiastic participation will contribute to the course. If it is necessary for you to miss a class due to an emergency, please make every effort to notify me in advance.

### **Academic Honesty**

Instructors are committed to the principles of academic honesty and subscribe to the UGA Academic Honesty Policy guidelines for the definition and processes of academic integrity. All students are subject to these academic guidelines; Instructors have and will initiate academic dishonesty proceedings if in their courses they find reasonable cause to do so.

All students are encouraged to read and understand A Culture of Honesty (the UGA Academic Honesty Policy) found at [http://www.uga.edu/ovpi/academic\\_honesty/culture\\_honesty.htm](http://www.uga.edu/ovpi/academic_honesty/culture_honesty.htm). Printed copies of A Culture of Honesty may also be obtained from the office of the University of Georgia Vice President for Academic Affairs or from the Independent and Distance Learning office in summary form. Students may talk with their instructors about academic honesty. E-mail and/or telephone contact information is available in this course guide and in the Independent and Distance Learning Student Handbook.

### **Evaluation/Grading**

There are seven graded projects to be considered as you evaluate your learning in this course. The quality of work submitted will reflect your personal standards of quality.... keep this in mind as you make judgements regarding the conditions of projects you submit. Detailed directions will be provided for each assignment along with performance criteria.

**Assignments:**

Science Autobiography	10 points
Case Reactions	20 points
Science in the News	5 points
GSTA Presentation	15 points
Last Child in the Woods:Photoessay	30 points
Field Experience Activities	15 points
Notebooks	5 points

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Total points	100 points
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**I am looking forward to a very productive course in which we will all learn a great deal about elementary science teaching and learning!**

**Science Autobiography (10 points) - Due January 14<sup>th</sup>.**

**Science Autobiography  
Grading Rubric**

In this assignment you are asked to reflect deeply on the question “where is science in my life?” You should consider your life history and identify meaningful experiences/encounters you have had with science. You will develop a creative way to display your science autobiography along with a one-page description of it.

(Examples: Develop a book; make a mobile; make a photoessay; create a diorama; make a mural, write a Reader’s Theater; develop an epic poem; write a collection of songs)

<b>Science Autobiography</b>	<b>Points Possible</b>
<b>Shows evidence of deep reflection</b>	<b>2.5</b>
<b>Includes minimum of 5 examples</b>	<b>2.5</b>
<b>Creative organization/display</b>	<b>2.5</b>
<b>One-page Explanation of autobiography</b>	<b>2.5</b>
<b>Total Points Possible (10)</b>	

## **Case Reactions (20 points)**

During this course you will read a number of “cases” that address issues in science teaching and learning. Many of these cases were written by classroom teachers and/or science teacher educators. You should read **all** assigned cases. You will develop a written response for **two** of these cases. Your response should demonstrate insight and in-depth reflection. Your response should be two pages single spaced and typed. You should be prepared to contribute to class discussion of all cases. The two cases you will write responses are:

**The Day the Lobster Died - Due January 23<sup>rd</sup>**  
**El Secreto de Las Ninas - Due February 4<sup>th</sup>**

### **Case Reactions/Guidelines**

Classroom cases are problem-centered stories of teaching practice that are used to examine and clarify the complexities and connections in teaching practice. They are a particular type of narrative that be used to explicate and clarify the professional knowledge of teachers. In this course you will be reading selected cases written by teachers or teacher educators based on dilemmas they experienced teaching science at the elementary level. You will develop a written response reaction to selected cases. Your response/reaction should be two pages single-space in length. There is no “correct” response or reaction to these cases. Rather, this is an opportunity for you to clarify your own beliefs and biases and consider the case on relation to your personal experience as a teacher. You may want to comment on any of the following in your response:

- a. Your interpretation of the dilemmas/challenges presented in the case;
- b. Theories about science teaching and learning
- c. The solutions you recommend or your evaluation of solutions found in the case
- d. An explanation of why you think the solutions are viable or your justification of other solutions
- e. Your own experiences as a student, teacher or parent
- f. Common sense
- g. Any morals or lessons you think you can draw from your reading and interpretation of the case
- h. Experiences of friends, colleagues or relatives
- i. References to any components of the case itself.

### **Case Reaction Grading Rubric**

The purpose of this assignment is for you to read and reflect on selected cases written by science teachers or teacher educators based on dilemmas they experienced teaching science at the elementary level. You will develop a two-page, single spaced reaction to selected cases. Reaction papers should be typed/word processed and will be graded using the rubric found below.

Component	Points
Catchy title for the case reaction	1
In-depth insight and reflection	3
Should include at least five of the following elements: a. Your interpretation of the dilemmas/challenges presented in the case; b. theories about science teaching and learning. c. the solutions you recommend or your evaluation of the solutions found in the case; d. an explanation of why you think your solutions are viable or your justification of other solutions; e. your experiences as a student, teacher or parent; f. common sense g. any morals or lessons you think you can draw from your reading and interpretation of the case; h. experiences of friends, colleagues, or relations; i. References to any components of the case itself.	5
<b>Typed and Submitted on Time</b>	1
<b>Total points possible (10)</b>	

### **Science in the News (5 points)**

Once during the semester you will locate and provide a brief report of a current news event featuring some aspect of science. As you share with the class you should:

- a) summarize the key ideas of the news report
- b) describe what surprised you about the news report
- c) discuss relevance of the ideas to our lives and to teaching

You should prepare an index card addressing these three points.

### **Last Child in the Wood: Photoessay (30 pts). - Due February 20<sup>th</sup>**

This semester you will be reading the book “*Last child in the woods: Saving our children from nature deficit disorder.*” As you read this book you should keep a list of questions this book raises for you. You will select one of these questions, or a set of questions to explore through the development of a photoessay. A photoessay is a story you will tell, through words and pictures about one of the questions, or set of questions. As a narrative story, your photoessay should demonstrate evidence of deep and critical reflection. A rubric will be provided.

### **Field Experience Activities (15 points): Due April 2nd.**

You will conduct a minimum of two science activities from the list provided. For one of the activities, you will write up what you learned from the experience following the rubric provided. Your paper should be 2 pages, single spaced and organized in 3 sections (a,b,c on your rubric).

## FIELD EXPERIENCE GRADING RUBRIC

During your field experience you will select and carry out a minimum of two activities from the list provided. You will prepare a field experience report for one of these activities, which should be signed by your supervising teacher. Your field experience report will be evaluated according to the criteria listed below.

OBJECTIVE	POINTS
Participation in an activity with primary focus on science (selected from list)	2
Typed, written report that includes the following information	
a. description of the nature of the science teaching/learning activity, including purpose and goals	4
b. in-depth reflective summary of what you learned about elementary science teaching/learning through this activity	4
c. describes implications of what was learned for future teaching	4
d. signature of supervising teacher	1
TOTAL SCORE (15 points possible)	

### **Science Notebooks (5 points): Due April 28<sup>th</sup>.**

You should organize all course materials/handouts in notebooks. You may use any organizational scheme that you find useful. You may need some plastic sheet protectors for some items. You will probably need two notebooks or a very large notebook.

### **Science Notebook Rubric**

Table of Contents	1
Logically organized	2
Comprehensive	1
Neatness	1
Points Possible (5)	

**LAST CHILD IN THE WOODS  
DISCUSSION**

NAME	DATE	CHAPTERS
	Jan. 9 <sup>th</sup>	Ch. 1 Gifts of Nature Ch. 2 The Third Frontier
	Jan. 16 <sup>th</sup> .	Ch. 3 The Criminalization of Natural Play Ch. 4 Climbing the Tree of Health
	Jan. 23 <sup>rd</sup> .	Ch. 5 A Life of the Senses Ch. 6 The “Eighth” Intelligence
	Jan. 28 <sup>th</sup> .	Ch. 7 The Genius of Childhood Ch. 8 Nature - Deficit Disorder
	Jan. 30 <sup>th</sup> .	Ch. 9 Time and Fear Ch. 10 The Bogeyman Syndrome
	Feb. 4 <sup>th</sup> .	Ch. 11 Don’t Know Much about Natural History Ch. 12 Where will Future Stewards of nature Come From?
	Feb. 6 <sup>th</sup> .	Ch. 13 Bringing nature Home Ch. 14 Scared Smart
	Feb. 11 <sup>th</sup>	Ch. 15 Telling Turtle Tales Ch. 16 Natural School Reform
	Feb. 13 <sup>th</sup> .	Ch. 17 Camp Revival Ch. 18 The Education of Judge Thatcher
	Feb. 18 <sup>th</sup> .	Ch. 19 Cities Gone Wild Ch. 20 Where the Wild Things Will Be
	Feb. 20 <sup>th</sup> .	Ch. 21 The Spiritual Necessity of Nature Ch. 22 Fire and Fermentation Ch. 23 While It Lasts

**Field Experiences for Science**  
**ESCI 4420**  
**Spring Semester, 2008**  
**Deborah J. Tippins, Ph.D.**

Welcome back to a new semester! You will have many opportunities to see and do elementary science teaching this spring in the context of your methods class and your school-based practica. A list of science activities and experiences for your school-based practica are described below. Your participation in a minimum of two activities is required. The other activities and experiences are recommended-try to take an active role in any science activities that may arise. You will prepare a report discussing your participation in one of these activities.

Suggested experiences:

- Demonstrate a discrepant event (perhaps one you saw in class) and engage students in an activity designed to resolve cognitive dissonance;
- Teach an inquiry lesson that encourages students to be problem-solvers (i.e., such as the oil spill activity we will do in class);
- Have students do the “draw-a-scientists” activity and conduct mini-interviews to develop an understanding of how students perceive science;
- Teach a science lesson in which you use cooperative learning strategies (i.e., assigned roles) to organize the lesson and facilitate learning;
- Plan and implement a science lesson or series of lessons that start with the learners’ questions (i.e., What would you like to learn about rocks? How can we go about learning that?);
- Look closely at the types of questions students are asking about a science concept and record these questions for later analysis;
- Teach a science lesson that is designed to integrate science with other content areas (perhaps through literature, role play, mathematics, etc.);
- Interview teachers concerning their beliefs about the nature of science, science teaching and science learning.
- Develop and use a non-paper and pencil task for assessing student learning of a science concept;
- Observe/assist with the use of technology in science teaching;
- Select two diverse students (i.e., culturally, linguistically, academically) and get to know these students-write about and analyze the process by which you get to know these students, particularly in relation to students as science learners;

- Teach a science lesson which involves the use of living organisms-check with your teacher to make sure that the organisms you plan to use fall within the parameters of school, district, state and federal guidelines);
- Teach a science lesson which directly relates the science content to societal issues;
- Examine the QCC (Quality Core Curriculum) science objectives for the elementary grades;
- Participate in school-based science events (i.e., Family Science Night, Science Fairs, etc.).
- Observe and critique a peer as they teach a science lesson;
- Design an interactive science bulletin board or learning center.

**Field Experience**

**Activity Report Form: (Do not use this actual form. You should respond in depth to these four questions in a two-page, single-spaced report organized into three sections as follows: Be sure to obtain the signature of your teacher).**

A) Describe in detail the nature of the science teaching/learning activity you participated in during your field experience. Include the purpose/goal of the activity.

B) Write a reflective summary of what you learned about elementary science teaching and learning through this activity.

C) Briefly discuss the implications of what you learned for your future teaching.

D) Signature of Supervising Teacher (please have your teacher sign the bottom of your report).

Name: \_\_\_\_\_

Signature of Supervising Teacher: \_\_\_\_\_

### ESCI 4420 Schedule

DATE	TOPIC	ASSIGNMENT
Monday, January 7 <sup>th</sup> .		
Wednesday, January 9 <sup>th</sup> .		News Update
Monday, January 14 <sup>th</sup> .		Science Autobiography due
Wednesday, January 16 <sup>th</sup> .		News update
Monday, January 21 <sup>st</sup> .	Martin Luther King Holiday	
Wednesday, January 23 <sup>rd</sup> .		News update The Day the Lobster Died Case Reaction #1
Monday, January 28 <sup>th</sup> .		

Wednesday, January 30 <sup>th</sup> .		News update
Monday, February 4 <sup>th</sup> .		El Secreto de las Ninas Case Reaction #2
Wednesday, February 6 <sup>th</sup> .		News update
Monday, February 11 <sup>th</sup> .		
Wednesday, February 13 <sup>th</sup> .		
Friday, February 15 <sup>th</sup>	GSTA Presentation	*You will not go to the field this day. You will make up this field day April 4 <sup>th</sup> . If your school is on spring break you will make it up the following week.
Monday, February 18 <sup>th</sup> .		News update
Wednesday, February 20 <sup>th</sup>		Last Child in the Woods Photoessay Due

Monday, February 25 <sup>th</sup> - March 28 <sup>th</sup>	FIELD EXPERIENCE	
Monday, March 31 <sup>st</sup> .		News update
Wednesday, April 2 <sup>nd</sup> .		FIELD EXPERIENCE REPORT DUE
Monday, April 7 <sup>th</sup> .	Project Wild	
Wednesday, April 9 <sup>th</sup> .	Project Wild	
Monday, April 14 <sup>th</sup> .		News update
Wednesday, April 16 <sup>th</sup> .	Astronomy	
Monday, April 21 <sup>st</sup> .		News update

Wednesday, April 23 <sup>rd</sup> .		News update
Monday, April 28 <sup>th</sup> .		SCIENCE NOTEBOOK DUE

IMPORTANT DATES:

Martin Luther King Holiday - January 21, 2008

Meet Your Teacher Day: Friday, February 5<sup>th</sup>, 1:00 p.m.

Georgia Science Teachers Conference: February 14<sup>th</sup>, 15<sup>th</sup>, 16<sup>th</sup>

Friday Field Experience Days: February 8<sup>th</sup>, February 15<sup>th</sup>, February 22<sup>nd</sup>.

**You will not go to the field on February 15<sup>th</sup>, but will make up this day.**