

THE TEACHING OF SCIENCE GRADES K-6

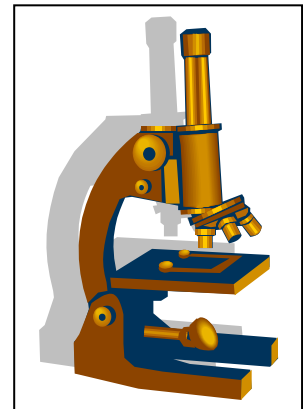
EDN 336	Instructor: Dr. Amy Taylor
Fall Semester 2011 ONLINE	Office: Education Building, room 260
Online at https://learn.uncw.edu/webapps/login/	Office Phone: 910-962-2673 taylorar@uncw.edu http://people.uncw.edu/taylorar/

The primary mission of the Donald R. Watson School of Education at the University of North Carolina at Wilmington is to develop highly competent professionals to serve in teaching and other educational leadership roles in southeastern North Carolina, the state, and nation. The Watson School is committed to achieving excellence in teacher and administrator preparation in all of its programs.

COURSE OVERVIEW:

This course is designed to provide an opportunity for students to explore methods of teaching the biological, earth, and physical sciences to elementary children. Students will focus on current issues and trends in science education; the development, implementation, and assessment of curricular materials; the evaluation and use of technology in the classroom as well as other effective instructional strategies to teach science in the elementary school. Field experiences are required.

Prerequisites: EDN 301 & two sciences.



COURSE PURPOSE:

The purpose of this course is to provide you with:

- A. A conceptual framework that
 - ✓ focuses on the teacher as decision maker and reflective practitioner
 - ✓ emphasizes the current goals of science education
 - ✓ addresses the issue of science anxiety and provide strategies for handling it
 - ✓ identifies characteristics of exemplary programs
 - ✓ examines curricular/instructional alternatives.
- B. Ideas for teaching elementary school science to enhance your expertise in
 - ✓ the selection, development and/or implementation of curricular materials resources
 - ✓ the selection of instructional strategies
 - ✓ the evaluation and assessment of students, teachers, and the curriculum
 - ✓ communicating science concepts and ideas to a diverse student population
 - ✓ fostering communication among students in order to enhance the learning of science.
- C. After completing this course, you should be able to:
 - ✓ develop a philosophy for teaching science in the elementary school.
 - ✓ use instructional strategies that focus upon the acquisition of process skills, conceptual change/development, and integration with other subject areas.
 - ✓ compare and evaluate the major curricular alternatives for teaching elementary school science.
 - ✓ apply your knowledge of instructional strategies to your teaching of science.
 - ✓ assess your effectiveness as a science teacher.
 - ✓ use the Internet to enhance and supplement your science instruction.

The epistemology of constructivism will be used to develop understanding of how and what students learn. You will need to develop skills in listening to and understanding children as they experience science. Observations of teaching and learning in elementary classrooms and regular discussions with your colleagues will provide the forum for thinking about alternative ways of creating learning opportunities for ALL students.

A substantial factor of the level of your individual success is contingent on YOU! What you bring to the course and what you hope to learn from the interactions are very important. We will endeavor to provide many appropriate experiences based on your needs and the needs of your learners in years to come.

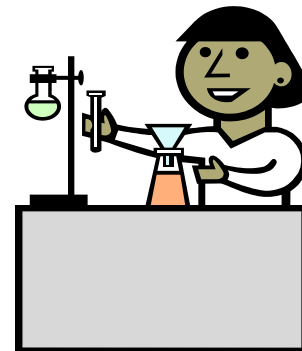
REQUIRED TEXT and MATERIALS:

Teaching Science (Custom Book) (2010). Pearson Education, Inc. (197 pgs.). ISBN: 978055892531

Access to Blackboard LearnWebsite

Readings on *electronic reserve* at Randall Library. See complete list on our course homepage. Access the readings at:

<http://library.uncw.edu/>



Beginning with the fall 2005 semester, the Watson School of Education requires that all education majors enrolled in methods courses maintain an active account on TaskStream, a web-based curriculum builder and portfolio toolset. You are asked to maintain that account for the duration of your program with the Watson School of Education (www.taskstream.com). Students in these courses will use TaskStream to maintain a Professional Development Portfolio. This portfolio includes evidence of your work to demonstrate progress toward meeting exit requirements and professional standards. *You may use TaskStream for our class to share lessons, rubrics, or assessments with me for review.*

PROFESSIONAL DEVELOPMENT: (beyond the scope of EDN 336)

It is recommended that you join the National Science Teachers Association (NSTA) at the special student membership rate (\$34/yr). You may find the link for the membership form on blackboard in the Readings folder. By joining this organization you will receive the journal Science and Children which has many activities that you can use in your teaching. You also can attend the fall science teacher conference where you can get free resources and materials.

SPECIAL CONSIDERATIONS:

If you are a person with a disability and anticipate needing accommodations of any type in order to participate in this class, please notify Disability Services (Westside Hall, Ext. 7555), provide the necessary documentation of the disability and arrange for the appropriate authorized accommodations. Please identify yourself to me so that I can implement these accommodations.

PARTICIPATION:

Active participation and promptness with work are expected for all class modules, assignments, and discussions. Students are expected to be active participants in this class—that is, to complete all reading, writing and activity assignments, and to be prepared to discuss them online.

- Assignments with various possible points can be found in the table below and explained in detail within the assignment links. [Total of 230 points]
- Ten group interactions (discussions, wikis, blogs) this session. The rubric for online discussions is posted on the course homepage. [10 possible points per interaction =100 possible points total].
- In addition to the assignments and group interactions, there is a 2-PART final project (Group assignment: Content Standards and Individual Assignment: Field Experience Reflection and Analysis). This final project is a cumulative project merging your field experience with content from this course [200 points].
- Total Possible Points for this Course: 530 points.

Please discuss with me in advance, if you experience any problems with complying with the due dates of assignments. If this is not done, ten percent will be subtracted from the grade received for each day the material is late.

All assignments must be typed and submitted in a professional manner in accord with guidelines set forth by MLA or APA manuscript style. Proofread before submitting— errors in grammar, spelling, punctuation, etc. will result in a lower grade.

Avoid Plagiarism! Visit the University Learning Center: Writing Services or go to <http://www.edu/stuaff/uls/writing-plagiarism.htm>

ASSIGNMENTS AND COURSE REQUIREMENTS:

This course is designed so that learning occurs through student engagement in learning strategies that illustrate or demonstrate a philosophy of science teaching, curriculum, and learning. Students will develop as thoughtful decision makers and reflective practitioners.

Remember:

I have organized each of our learning modules on Blackboard with a **checklist** to ensure that you have completed all parts of the module including date of module availability. For each module be sure to complete:

- ✓ Assigned Readings from textbook **and/or** reserved articles on library website
- ✓ Powerpoints with topic information, links to websites, and videos for you to explore. **Detailed information and rubrics for assignments can be found within each module.**
- ✓ Double check assignment due dates.
- ✓ Class Interactions may vary from week to week (discussions, blogs, and wikis).

Tentative Fall 2011 ONLINE Schedule

MODULE (Availability Date)	Due Date	Readings	Powerpoint?	Assignment *	Group Interaction (10 pts each)
Science Literacy 8-24-11	8-30-11 by midnight	Chapter 1; textbook pages 101-108; Put a little science in your life by Brian Greene on e-reserves	YES	Submit 2-3 paragraphs about importance of teaching science, literacy, and Science in YOUR life (10 pts)	Whole Class Discussion
Science Process Skills 8-31-11	9-6-11 by midnight	Refer to Chapter 1& Process skills article	YES	Science Process Skills assignment (10 pts)	NO
Science Inquiry 9-7-11	9-13-11 by midnight	The many levels of inquiry by Banchi on e- reserves	YES	Question #1 on page 134 under Reflect and Respond. (10pts)	Class Blog
Science Inquiry Lesson 9-14-11	9-20-11 by midnight	Inquirize your teaching by Everett on e-reserves in Science and Children folder; Ready, set, go! by Erin Morgan	YES	Complete 5 E lesson plan (30 pts)	OPEN Class Blog for feedback
Questions & Assessments 9-21-11	9-27-11 by midnight	Read articles found in this week's module	YES	Create a rubric using Taskstream templates (10 pts)	Class Blog
Science Learning and Misconceptions 9-28-11	10-4-11 by midnight	Chapter 2 and pages 33-60	YES	Preconceptions List and explanations (10 pts)	Class Blog on Private Universe videos
Design Controlled Experiment 10-5-11	10-11-11 by midnight	Experimental Design Handout	YES	Detailed design of raisin experiment (30 pts)	NONE
Midterm 10-12-11	10-18-11 by midnight	NONE	NO	Complete Midterm and Mid Course Evaluation Survey (30 pts)	NO
Science Teaching Strategies 10-19-11	10-25-11 by midnight	Chapter 6 and pages 123-134	YES	Design your Safety Poster (10 pts)	Class Wiki
Discrepant Events 10-26-11	11-1-11 by midnight	Activities in discrepant event folder on e-reserves.	YES	Discrepant Event Exploration (30 pts)	Class Blog
Diverse Learners 11-2-11	11-8-11 by midnight	Chapter 3 and Readings by Marcee Steele on e-reserves.	YES	Question 1 and 3 on page 96-97 (10 pts)	Wiki Group
Technology and Integration 11-9-11	11-15-11 by midnight	Chapter 5 and Implementing Science Notebooks by Catherine Nesbit	YES	Evaluate a science website for elementary students based on ABC strategy(10 pts)	Wiki Group
Science Resources 11-16-11	11-22-11 by midnight	Any two articles of from <u>Science and Children</u> folder on e- reserves.	YES	Journal Review (30 pts)	Whole Class Discussion
11-23-11	11-30-11 by midnight	NONE	NO	Open week to work on Part A of your Final Project in groups	NO
Final Project DUE	12-9-11 by midnight	NONE	NO	Turn in Final Project (200 pts)	Class Discussion

*** Note: Be sure to use the Table of Contents for the textbook to find the correct Chapter.**

Final Project

PART A

Group Assignment: Science Content, Standards, and Lesson Plans

Often new teachers have difficulty visualizing the connection between science content, NC Science Standards, and their own lesson plans. This section of your final project will have you exploring a science content area, correlating standards, and designing a 5 E lesson plan about that topic.

- a. Choose a type of science that you want to focus on such as earth science, life science, physical science, space science, etc. Give a brief overview about that type of science. (10pts)
- b. Now, pick one concept that you want to explore in more detail from that science. For example, if you chose earth science then you could explore plate tectonics. Write a 3-5 page paper on this concept including important vocabulary, theories, and information. Be sure to include references. (40 pts)
- c. For this science concept, identify all North Carolina teaching standards that are correlated to this science content (include all grade levels K-6). (10pts)
- d. Finally, choose a specific grade level and write a detailed 5 E lesson plan to teach a specific concept. (40 pts)

PART B.

Individual Assignment: Components of the Field Experience Reflection *and* Analysis:

- a. Field Experience Contact Signed Log (5 pts.)

Field experiences are required for EDN 336. Make sure that you pay close attention to e-mails from Stephanie Gumina (field experience office) to receive a placement by the date determined. You should be given a placement within a couple of weeks. Once you are given your field experience placement, you are expected to be in the school on a consistent and predictable basis. I will provide you with a log to keep track of your experiences. You will submit this summary form at the end of the semester. *This form can be located in the Field Experience Project folder on the course homepage and you should have received one from Stephanie Gumina. This signed log must be scanned and submitted as part of your final project.*

- b. General observations of the class: classroom layout, demographics, behavior management policy, procedures, etc. (10 pts.)
- c. Rubrics: Create a rubric to accompany the lesson you teach. The rubric may be utilized to help with a formative or summative assessment. Remember, *Taskstream* has a rubric wizard to help you with design. (5 pts.)
- d. Use of technology in science class. Describe the various ways technology may be used to teach a science lesson. Be sure to include the pros and cons of incorporating technology. What types of technology did you observe or utilize during your field experience? (5 pts.)
- e. Reflective observations describing the science lesson you observe with comments on what went well and what you would have done differently. In addition this paper should include a thoughtful **analysis** applying the principles and concepts learned in EDN-336. (20 pts.)

- f. **Detailed lesson plan** that you used to teach one your field experience lessons in the 5 E format. Be sure to include all components of the lesson in **great detail**. Refer to rubric for 5 E lesson plan form located in the Field Experience Project folder on the course homepage. If possible, try to integrate this science lesson with some other content area such as math, reading, or social studies. (20 pts)
- g. **Reflective** comments on the positive and negative aspects of the science lesson you teach. **Brief overview of what you did, what went well, what didn't go well, and what would you change next time.** A simple description of what you taught will not be acceptable. (20 pts.)
- h. A summary of your field experience including comments on what you learned in relationship to the time invested. (15 pts.)

GRADING PROCEDURE:

During this course, it will be possible to earn a total of approximately 530 points. Your final letter grade will be determined based on percentage points from total:

$$\frac{\text{Pts. Received}}{530} = \% \text{ Final Grade}$$

Grading Scale

Grade	Equivalent Percentage
A	94- 100%
A-	90-93
B+	87-89
B	84-86
B-	80-83
C+	77-79
C	74-76
C-	70-73
D	60-69
F	59 and below

Religious Observance Policy

In accordance with NC SL 2010-211, you are entitled to two excused absences for religious observances **per academic year**. You must inform me in writing the first week of class if you will be missing any classes due to religious observance and using one of the two permissible absences for the academic year. In addition, please inform the Registrar the first week of class who will then confirm your intentions to miss class with the impacted course instructors. Any absence for religious purposes will be considered unexcused unless you submit the request in writing the first week to either me and the Registrar.

The UNCW Statement on Diversity in the University Community

As an institution of higher learning, the University of North Carolina Wilmington represents a rich diversity of human beings among its faculty, staff, and students and is committed to maintaining a campus environment that values that diversity. Accordingly, the university supports policies, curricula, and co-curricular activities that encourage understanding of and appreciation for all members of its community and will not tolerate any harassment or disrespect for persons because of race, gender, age, color, national origin, ethnicity, creed, religion, disability, sexual orientation, political affiliation, marital status, or relationship to other university constituents. Students with Disabilities information and resources available at <http://www.uncw.edu/stuaff/disability/>