The Teaching of Science Grades K-6 (EDN 336 Block 3 and Section 005)
Education Building, Room 223
Fall 2010

Ms. Karen Hill
Class Schedule(s):
T-Th 8:00 - 9:15 am (005);
Th 12:00 – 2:45 (003-Block)

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Office Hours: By appointment only

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.

Overview:
This course is designed to provide an opportunity for students to explore methods of teaching the **biological, earth, and physical sciences**. Students will focus on current issues and trends in science education; the development, implementation, and assessment of curricular materials; effective instructional strategies to teach science in the elementary school. Field experiences are required. **Prerequisites**: EDN 301 & two sciences.

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.

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:

Martin, R., Sexton, C., & Franklin, T. (2009). *Teaching Science for All Children: Inquiry Methods for Constructing Understanding*, 4th edition. Pearson Education, Inc. (344 pgs.).
ISBN-13: 978-0205643127

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). http://nsta.org
The North Carolina Science Teachers Association http://ncsta.org offers a student membership rate ($10/yr)

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.

Attendance and Participation:

Your promptness and active participation is expected at every class. More than one unexcused absence will result in a one letter grade reduction (Ex: A- is reduced to a B-). If you have to miss a class session you are expected to email your course instructor before class. In the event of an absence during your Field Experience (a Monday or during your two week Mini-Internship), you must contact your teacher as soon as possible and make sure that all lessons/materials are made available and then contact your university course instructor. Any missed time in the classroom must be made up. You will be responsible for making arrangements with your teacher. Three late arrivals to class will count as one absence.

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.

All material submitted for grading must be professional.

Assignments and Requirements for Science Methods:

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.

Assignment		Possible	Attained____
1. Class Participation	on-going	25 pts.	_____

Students are expected to participate in all class discussions and activities and readings assigned throughout the semester. Occasionally there will be homework questions, assigned readings, and other assignments.

2. Science Autobiography	Due: 8/26	10 pts.	_____
3. Journal Reviews	Due: 9/2	10 pts.	_____

Select two articles from the journal *Science and Children*. Read the articles and summarize the content in relation to your desired grade level. Include in your review the positive and negative aspects of the article. Limit your remarks to one page per article.

4. Research Report – It's Fair	Due: 9/9	25 pts.	_____

Your "research team" will be expected to give an oral report of your "It's the Best" research results. Your grade will be based on how well you have designed, conducted, and presented your research. More guidelines will be provided in class.

5. Micro Teaching	Due: 9/9 and 9/16	25 pts.	_____

You and a partner will be responsible for teaching a science lesson to your classmates. Your plan must be approved prior to implementation. Remember you may use Taskstream to generate your lesson plan formats. Guidance on this project will be provided as we discuss chapters in our course textbook.

6. Assessment Project	Due 9/23	25 pts.	_____

Practice the design and implementation of a science lesson assessment. This assessment will be one that you will utilize during your field experience.

7. Discrepant Event	Due: 9/30	25 pts.	_____

Select one discrepant event to share with the class. Write a one page summary describing the science concept behind the event. Be sure to include the source of the activity.

8. Putting Science in Your Life	Due 10/21	25 pts	_____

After completing a virtual trip of a specific location, you will document your trips trail using digital photos. You will then write a short reflection incorporating the photos describing the "science experience. "

9. 6 Hour Elective Due: As completed or by 11/18 15 pts. _____

   You will be able to choose from a wide range of experiences designed to enrich your experiences in a non-traditional science setting. Such activities may include participating in the Project Wild Workshop or additional workshops, serving as a science fair judge, attending a conference, assisting a park ranger or school during a science field trip, etc. This assignment must be approved by submitting a description of what you are going to do and the time involved. After completion of the six-hour elective you must submit a one-page description of what you did, including reflections on the impact of the project on you and the participating students.

10. Curriculum Resource Analysis (Group) Due: 10/28 15 pts _____
    Evaluate a science resource which may include a book, kit, game or model.

11. Quizzes (50 total points):

    One **Midterm Quiz** (25 points each) and a **final quiz** (25 points) will be administered to assess the extent to which you have mastered the concepts, principles and process skills outlined in the lab and lecture/discussion sessions for science.

12. Field Experience (100 points)

    http://www.uncw.edu/professionalexperience/fieldexperience.html
    * Lessons observed: as many as possible, minimum 2
    * Whole group lessons taught: as many as possible, minimum 2

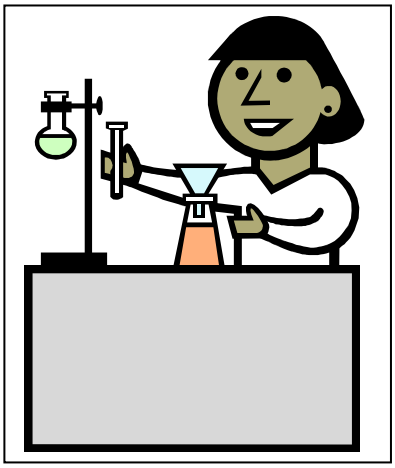
13. Final presentation and reflection of your field experience (50 points)

Grading Procedure:
During this course, it will be possible to earn a total of approximately 400 points. Your final letter grade will be determined based on percentage points from total:

$$\frac{\text{Pts. Received}}{400} = \%= \text{Final Grade}$$

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



EDN 336 – 002 (Block) – Tentative Fall 2010 Schedule

Date / Topic	Assignment Due
8/19 – Introduction to EDN 336 Nature of Science and Science Process Skills	Bring syllabus and Information Sheet
8/26 - Designing Controlled Experiments Begin constructivism and 5 E Inquiry Model	Read Chap. 1 Reading #1
9/ 2 - It's the Best Research and Presentations Continue constructivism and lesson Objectives	**Journal Reviews Due** Bring Research Materials Chap. 2 and Reading #2
9/9 - Micro-Teaching Lessons Reflection and Assessment Methods	**Lesson Plans** **Raisin Reports Due**
9/16 - Micro-Teaching Lessons Reflection and Use of Rubrics	Lesson Plans Chap. 7
9/23 - NCSCOS and National Standards Science teaching strategies and resources Questioning and Discrepant Events	Reading #5; Chap. 10 **Rubric example** ***Begin Midterm Quiz***
9/30 - Discrepant Event **Presentations** Introduction to Misconceptions	***Midterm Quiz Due*** Preconception Handouts
10/7- Evolution~Guest speaker: Dr. Rich Huber Misconception Discussion	Read pages 40-46 ***Mid Course Evaluation***
10/11- Science Assignment/Focus	**Field Experience**
10/14- Discussion of Science Field Experience Diverse Learners in Science Class	Reflection from Monday Chap. 3
10/19- LESSON PLANNING STATIONS	
10/21- Science Integration Science Notebooks	
10/28- Technology in the science class	Chap. 8
11/4- Field Experience – No Class	
11/11- Field Experience – No Class	
11/18- Population Curriculum and other activities	**Elective Reflection Due**
11/25- No class (Thanksgiving)	
11/30- FINAL PRESENTATIONS OF FIELD EXPERIENCE	

12/1- FINAL PRESENTATIONS OF FIELD EXPERIENCE

12/6- Online Final Quiz due by midnight

Professional Development Elective Dates

Project Wild and Aquatic Wild (select **one** of the following)

Project WILD	Oct.13 *and* Oct 20	5:00-8:00
Aquatic Project WILD	Fri. Oct. 15	9:00-3:30
Aquatic Project WILD	Sat. Oct. 16	9:00-3:30
Aquatic Project WILD	Fri. Oct. 29	9:00-3:30
Aquatic Project WILD	Sat. Oct. 30	9:00-3:30

Field Experience for Block Three

During your Field Experience you will be in your assigned classroom for 6 Mondays (September 13th, September 20th, September 27th, October 11th, October 18th, and October 25.) You will be in the school for the entire day beginning at 7:45 am. During the weeks of November 1 – November 12 you will be in your assigned classroom every day (Monday – Friday) for your Mini-Internship. During this time, you will be engaged in a variety of teaching and learning opportunities. You and your partner will be responsible for collaboratively planning and teaching at least 4 Integrated Lessons (integrating at least two content areas). Lesson plans must be approved prior to teaching them. Students will teach lessons collaboratively – one student will teach and the other will assist – then students will exchange roles for the next lesson. This way, each student will have the opportunity to be the 'lead' teacher for at least two lessons.

Field Experience for Non-Block (005 and students enrolled in 1-methods course)

During your Field Experience you will be in your assigned classroom for 10 hours. During this time, you will be engaged in a variety of teaching and learning opportunities. You will be responsible for collaboratively planning and teaching 2 science lessons. Lesson plans must be approved by your classroom teacher and your course instructor prior to implementation.

Requirements and point distribution of 100 points:
Teacher interview – 10 points due by September 27
Classroom sketch – 10 points due by September 27
2-written observations – 10 points each due by October 29
2-Lesson Plans with reflections – 30 points each
Lesson plans submitted on Taskstream by October 25

Field Experience Reflection *and* Analysis Journal

a. Observations of the class in general. (1 page) Teacher interview and Classroom sketch (20 points total)

Teacher Interview Questions: (10 points)

1. Classroom Climate. How do you foster scientific thinking in the classroom?
2. Classroom Management. What is your management plan for science materials?
3. Parental/Community Involvement. How do you involve your parents/community? How do you communicate with your partners?
4. Instructional Delivery. Do you group students and how? How do you distribute whole group, individual, small group instruction?
5. Learning Needs of Students. Describe your subgroups.
6. Content Specific interview questions – (5 total)

Classroom Sketch: (10 points)

1. Location of science materials (kits)
2. Where is the teacher located throughout the instruction
3. Where is science safety equipment?
4.

b. Reflective observations describing the two science lessons/activities with comments on the students learning and the teachers teaching. 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. This analysis must incorporate the National Science Education Standards and how you believe the author of your text would have evaluated these classes. (1 page per observation) (20 pts or 10 pts each)

c. Reflective comments on the positive and negative aspects of the two science lesson you teach. **These comments must be thoughtful and incorporate class discussions and ideas from your textbook.** Your analysis should incorporate the National Science Education Standards and how you believe the author of your text would have evaluated these lessons. A simple description of what you taught will not be acceptable. (1 page per lesson taught) (60 pts or 30 pts each)

d. **Assessment Project** to evaluate student learning for one of the science lessons

Final Presentation – Reflection of field experience (50 pts.)

Your story will be created individually using a platform you are most comfortable with using. (Microsoft Photo Story, Wiki, Website, etc.) The presentation must include the use of photos and other images, audio clips and your voice narration. Two content specific questions from science will be answered in your reflective story. What were you thinking and feeling before this experience? What did you learn about teaching? What did your students learn? What did you learn about your students? Be sure to take a variety of photos that will help you tell your story. Your story will be viewed and assessed in small groups during exam week.

University of North Carolina at Wilmington
Watson School of Education
Field Experience Evaluation Instrument Criteria
EYC, Elementary, Middle Grades, Special Education

***Rating Scale*: (+) = *satisfactory*; (√) = *needs improvement*; () = *not satisfactory*;**
(id) = *insufficient data*; (*na*) = *not applicable*

I. Professional/Personal Characteristics

A. Personal and Professional Behaviors

- Demonstrated appropriate professional attributes (i.e., prompt and reliable attendance; attentive and respectful during observations; prompt submission of plans for review before teaching; professional attire & demeanor)
- Was organized and consistently prepared for field experience
- Accepted feedback well; used it conscientiously to improve performance
- Exhibited reflective thinking about teaching and students' performance

B. Rapport and Relationships w/ Students, UNCW Peers, and Partnership Teacher

- Developed satisfactory rapport with students and appropriate teacher-student relationships
- Collaborated well with partnership teacher
- Collaborated well with UNCW student peers, if appropriate for placement

C. Content Knowledge, Oral Language, and Written Expression

- Demonstrated satisfactory content knowledge
- Used grammatically correct oral and written language

II. Instructional Planning (If applicable)

- Used specific knowledge of students to plan instruction, making accommodations for developmental and individual learning needs
- Designed thorough lessons (including NC Curriculum goals or Standard Course of Study) with learning outcomes clearly stated
- Created an appropriate sequence for lesson activities
- Used a variety of materials and instructional methods appropriate to content and learners
- Planned activities that fostered higher-order thinking
- Planned for concepts/generalizations, as well as facts and skills
- Used well chosen examples and modeling to clarify understanding

- Planned lessons to engage learners meaningfully in the learning process

III. Basic Teaching and Management Skills (If applicable)

A. Classroom Management Capabilities

- Made expectations for student behavior clear
- Established positive environment for students, encouraging and reinforcing desirable behavior
- Responded appropriately to student misbehavior and off-task behavior
- Made effective use of time and routines

B. Generic Teaching Capabilities

- Maintained appropriate pace of lessons/work
- Gave directions that were clear and easy to understand
- Used meaningful group activities with adequate monitoring
- Used effective questioning strategies
- Conducted lessons in ways that stimulated learners' motivation
- Treated all learners with consideration and respect during lessons
- Used valid ways to assess whether learners met lesson objectives

FIELD EXPERIENCE SUMMARY FORM
University of North Carolina Wilmington
Watson School of Education

Name of UNCW Student:_____

Date of Visit	Time of Visit	Number of Hours	Signature	Observed or Taught? Brief Description of Activity
TOTAL NUMBER OF HOURS →				

Suggestions for improvement as UNCW student continues teacher preparation:

Strengths to be continued as UNCW student continues teacher preparation:

Circle Overall Rating: Exceeds Expectations Meets Expectations Fails to Meet Expectations

Teacher Signature:_____ School Phone or Email: _____ Date_____
Teacher Signature confirms hours met and performance discussed with UNCW student.