Using Technologies to Teach about the Environment

<table>
<thead>
<tr>
<th>EVS 460</th>
<th>Instructor: Dr. Amy Taylor</th>
</tr>
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<tbody>
<tr>
<td>Spring Semester 2013</td>
<td>Office: Education Building, room 260</td>
</tr>
<tr>
<td>Communicate through <a href="https://learn.uncw.edu/">https://learn.uncw.edu/</a></td>
<td>Office Phone: 910-962-2673</td>
</tr>
<tr>
<td><a href="http://people.uncw.edu/taylorar/">http://people.uncw.edu/taylorar/</a></td>
<td>Hours: T/Th 12-3pm, W 12-3pm, by Appt.</td>
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COURSE OVERVIEW

This course will focus on: the exploration of new technologies to teach about the environment, current issues and trends in environmental education; the development, implementation, and assessment of new technologies; and effective instructional strategies to teach key environmental principles and concepts.

Prerequisites: None

Our primary mode of communication will be through our Blackboard Learn site. Please visit this site often to check for announcements, weekly course readings, print class material, complete online learning modules, etc. I will open new modules every week on Thursday at Noon. These new modules will include readings and information for the upcoming class.

COURSE OUTLINE:

The purpose of this course is to provide you with:

- A theoretical and conceptual framework that
  - addresses the current goals of environmental education,
  - identifies characteristics of exemplary programs, and
  - examines and/or utilizes curricular/instructional alternatives.

- Knowledge and the skills to use the following technologies in formal and informal settings:
  - Internet based data visualization tools (DVTs)
  - Probeware data collection
  - iPads
  - Selected websites
  - Robotics
  - Google Earth
  - Simulations/gaming/virtual worlds
  - Nanotechnology
  - Interactive presentation tools
  - G.I.S. and GPS

Environmental Education Center Guidelines

After completing EVS 460, you should be able to:

1. Develop a philosophy for teaching environmental education
2. Explore advanced technologies that focus upon the acquisition of process skills and conceptual change/development.
3. Compare and evaluate the major curricular alternatives for environmental education
4. Apply your knowledge of environmental issues to instructional strategies for teaching environmental education.

5. Assess your effectiveness as an environmental educator.

6. Use various technologies to enhance your teaching about the environment.

7. Design effective lessons to be utilized within a formal/informal setting.

I emphasize the importance of creating integrated thematic units and the 5-E learning cycle within science lessons. In the 5-E learning cycle, students are first engaged in the learning before they explore their ideas. Following a common exploration “hands-on” type activity, teachers and students exchange explanations of a particular concept or idea. Students are then challenged to elaborate or extend their conceptual understanding to a new context. Evaluation, or assessment, takes place throughout the whole learning cycle. Observations of teaching and learning in elementary and middle school classrooms and regular discussions with your colleagues will provide the forum for thinking about alternative ways of creating learning opportunities for ALL students.

**University Mission Statement**

The University of North Carolina at Wilmington is a public comprehensive university dedicated to excellence in teaching, scholarship and artistic achievement, and service. Through the College of Arts and Sciences, the professional schools, and the graduate school, the university seeks to stimulate intellectual curiosity, imagination, rational thinking, and thoughtful expression in a broad range of disciplines and professional fields. Of prime importance is the university's commitment to undergraduate teaching. The humanities, the arts, the natural and mathematical sciences, and the behavioral and social sciences comprise the core of the undergraduate curriculum. Strong graduate programs complement the undergraduate curriculum. The university considers scholarly practice, research, and creative activities essential for effective learning.

**UNCW Learning Goals**

The four categories of student learning articulated in the university’s mission—creative inquiry, critical thinking, thoughtful expression and responsible citizenship—give rise to eight learning goals for every baccalaureate graduate of UNCW. These goals capture the skills and expected student learning outcomes needed to ensure breadth of learning characteristic of a liberal education (the goal of a general education program).

**COURSE READINGS:**

a. Selected journal articles, laboratory guides, and curriculum/reference materials found within the weekly Blackboard Learning Modules.

b. Selected Chapters from *The Case for Constructivist Classrooms* by Brooks and Brooks. (The intro and chapters 1 & 2 are available free on the Web)

c. NSTA Teacher Journals: *Science and Children, Science Scope*, and *The Science Teacher*

**OTHER OPTIONAL RESOURCES:**

- North Carolina Department of Public Instruction (NCDPI)
Students will use this web page to “serve as a curriculum terminal from which you can travel to specific goals and objectives based on discipline and grade level. This service provides a convenient way for teachers, administrators, and parents to verify the instructional objectives of the Common Core and Essential Standards at a given grade and subject area.”

- North Carolina Professional Teaching Standards
  - “Every public school student will graduate from high school, globally competitive for work and postsecondary education and prepared for life in the 21st Century.”

  - [www.project2061.org/tools/benchol/bolframe.htm](http://www.project2061.org/tools/benchol/bolframe.htm)


**Professional Development (beyond the scope of this course)**

It is recommended that you join a professional organization to keep you up to date on current issues and trends in your field. Join now and get special student membership rates.

1. National Science Teachers Association (NSTA) for $34/yr. Be sure to mark the Journal for the level you teach. You may also want to participate in the local student chapter of NSTA. [http://www.nsta.org/membership/student.aspx](http://www.nsta.org/membership/student.aspx)

   [http://eelinked.naaee.net/](http://eelinked.naaee.net/)

3. You may also wish to subscribe to the *Journal of Environmental Education* and participate in the local chapter activities.

**ATTENDANCE AND PARTICIPATION:**

Active participation and promptness with work are expected for all class sessions, assignments, and discussions. Students are expected to be active participants in this class—that is, to complete all reading, writing, and activity assignments. Each anticipated absence must be discussed with the instructor in advance. Each unanticipated absence must be discussed with the instructor immediately upon return to class. In the case of excessive absences, your grade may be lowered at the discretion of the instructor.

In the case of an absence, it is the student’s responsibility to find out what work was missed, and to make work up on his or her own time. I recommend finding a “study buddy” that would be willing to share with you all vital information.
ASSIGNMENTS AND COURSE REQUIREMENTS:

All material submitted for grading must be neatly typed or handwritten in ink on standard sized paper with clean margins with careful attention given to grammatical conventions. Please discuss with me at least 2 days in advance any problems you will have meeting a due date. If this is not done, 20 percent will be subtracted from the grade received for each day the material is late.

Students are bound by the UNCW Student Academic Honor Code. Any Honor Code offense (e.g., sanctions as set forth in University policy, including, but not limited to, a 0 on the assignment. Ensure all work is original (i.e., conceived and written the student) and developed specifically for this course. Any work that is explicitly borrowed must be indicated by providing the proper citation using APA 6th edition formatting.

- Participation (25 points)
- Possible Weekly Quizzes (50 points total)
- Environmental Issue Glog (25 points)
- Work with a partner to develop, conduct and present to the class the design and results of an extended (3 week) probeware experiment and a detailed instructional plan. (75 total points)
  - Experimental Design Probeware Report
  - Each student should write one instructional plan to accompany their experiment
  - Presentation incorporating some form of technology

- After attending Project Wild or Aquatic Wild, prepare a two page paper describing a technology-rich modification of an activity found within the resource guide you will receive at the workshop. (25 points)

- 3-hour Field Experience. 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 serving as a science fair judge, attending a conference, assisting a park ranger or school during a science field trip, assisting with the UNCW Science Olympics, etc. This assignment must be approved by submitting a description of what you are planning to do and the time involved. After completion of the three-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 participants, and a short description of how technology could have been incorporated to improve this experience. (25 points)

- Environmental Education paper and presentation: Prepare a brief paper (~2 pages) outlining your view of the Ideal Environmental Education classroom. This should include both the curriculum focus aligned to the Common Core Essential Standards, incorporation of technology, and strategies for engaging the students. Share a 10-15 minute interactive snapshot of your ideas. (25 points)
  - Be creative when choosing which type of presentation tool when sharing your product. Examples of tools: Youtube, xtranormal, animoto, slide rocket, Stixy, Storybird, VoiceThread, storyjumper, Fotobabble, capzles, dipity, prezi, Popplet, 280Slides, PreZentit, authorSTREAM, Zoho Show, Slideshare, GoAnimate, Vuvox, Viddix, Vcasmo, Preezo, Present.io, My Brain Shark, Slideboom, or Empressr just to name a few.

- Final Comprehensive Exam (50 points)
Grading Procedure:

During this course, it will be possible to earn a total of 300 points for EVS 460. Your final letter grade will be determined based on percentage points from total:

\[ \text{Pts. Received} = \% = \text{Final Grade} \]

300 points

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<thead>
<tr>
<th>Grade</th>
<th>Equivalent Percentage</th>
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<tbody>
<tr>
<td>A</td>
<td>94- 100%</td>
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<tr>
<td>A-</td>
<td>90-93</td>
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<tr>
<td>B+</td>
<td>87-89</td>
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<tr>
<td>B</td>
<td>84-86</td>
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<td>B-</td>
<td>80-83</td>
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<td>C+</td>
<td>77-79</td>
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<td>C</td>
<td>74-76</td>
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<td>C-</td>
<td>70-73</td>
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<td>D</td>
<td>60-69</td>
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<td>F</td>
<td>59 and below</td>
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Select from one of the following

- **Aquatic Project WILD**  
  Tuesday Feb. 5 and Thursday, Feb 7  
  5:00-8:00

- **Project WILD**  
  Saturday, Feb. 23  
  9:00-3:30

- **Aquatic Project WILD**  
  Tuesday Mar. 12 and Thursday, Mar. 14  
  5:00-8:00

- **Growing Up WILD**  
  Saturday Mar. 16  
  9:00-3:30
## Tentative Schedule for EVS 460

<table>
<thead>
<tr>
<th>DATE</th>
<th>Learning Module Topic</th>
<th>Reminders &amp; What’s Due?</th>
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| 1/9  | **Welcome to EVS 460!**  
   Environmental Education  
   Formal Science vs. Informal Science Topics  
   Graduate student assignment planning | Bring Syllabus  
   North Carolina Environmental Literacy Plan |
| 1/16 | Bridging the gap between formal & informal science education: From a teacher’s perspective, Mr. David Glenn (Burgaw M.S.)  
   Inquiry Learning Model  
   Begin working on Instructional Plans/Units | Quiz and discussion on Brooks  
   National Science Education Standards  
   North Carolina Essential Science Standards  
   Read Intro, chapters 1 & 2 of Brooks and Brooks |
| 1/23 | Utilizing River Run DVT to facilitate inquiry with Dr. Rich Huber  
   Graduate student assignment planning | Inquiry Learning Model Quiz  
   Internet tools for facilitating inquiry by Huber |
| 1/30 | New River DVT & Ocean View | River Run Quiz |
| 2/6  | Using Google Earth  
   Cheston Saunders, WVU  
   Graduate student assignment planning | DVT quiz |
| 2/13 | Introduction to Probeware  
   Mr. Chris Gorman  
   Specialization with data collection for research | Experimental design quiz |
| 2/20 | Digital Microscopes with Dr. Dennis Kubasko  
   TEM with Dr. Richard Dillaman  
   Planning for Probeware research | Bring outline for experiment and unit  
   Digital Microscopes: Enhancing Collaboration |
| 2/27 | Planetarium & Research project workday  
   Utilizing Science Websites | Bring draft for experiment and unit |
| 3/6  | SPRING BREAK 😞 | Work on research projects |
| 3/13 | Nanotechnology  
   Dr. Gail Jones, NCSU | Virtual Viruses & Haptics in Education  
   See Blackboard Module |
| 3/20 | Using Squeak to Infuse Information Technology into the STEM with Dr. Sridhar Narayan  
   Probeware research presentations | SQUEAK Technologies  
   Presentations & instructional plan |
| 3/27 | Teaching Technologies and Gaming with Jeff Ertzberger & Salena Rabidoux  
   Probeware research presentations | Uncw.edu/EdGames  
   Presentations & instructional plan |
| 4/3  | GIS exploration w/ Jeremy, Tracy, & Morgan  
   Probeware research presentations | Presentations & instructional plan |
| 4/10 | Introduction to GPS and handheld units  
   Mr. Chris Gordon | Technology-based Project Wild Lesson Due |
| 4/17 | Robotics with Mr. Chris Gordon  
   EE presentations | |
| 4/24 | EE presentations  
   **Review for final exam** | Field Experience Reflections Due |
| 5/1  | Final Exam | |
Online Resources:
River Run DVT:  http://uncw.edu/riverrun/river-dataRR.htm
New River DVT:  http://www.uncw.edu/riverrun/DWQ/DWQindex.htm
Ocean View:    http://uncw.edu/Oceanview/
EPA Air Now:   http://airnow.gov/
USGS:          http://www.usgs.gov/
Gizmos:        http://www.explorelearning.com/
SQUEAK         http://www.csc.uncw.edu/useit/
NC Envir ED    http://www.eenorthcarolina.org/index.asp

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.

Please silence your cell phone and do not make calls, access applications or text during class. If you have
a personal, urgent matter for which you need to be on call, please let me know in advance. In addition,
please do not have active any PDAs or laptops/netbooks/iPads open and active unless the activity warrants.
We will use these devices in selected activities and they are permissible then.

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 me and the Registrar.

UNCW practices a zero-tolerance policy for violence and harassment of any kind. For emergencies contact
UNCW CARE at 962-2273, Campus Police at 962-3184, or Wilmington Police at 911. For University or
community resources visit http://www.uncw.edu/stuaff/care/.