



Teaching Units for High School Science Developed by
Duke University Graduate Students in Pharmacology 693/694
Master of Arts in Teaching (MAT)

<http://sites.duke.edu/rise/duke-courses/pharm-693694/>

Daily Lesson Plan

Course Name: AP Environmental Science/AP Biology	Ⓢ Standard Ⓢ Honors ● AP
Unit Title: Ecological Health of the Ellerbe Creek Watershed and its Environmental Implications	Day/Date: Day 14 of 16
Relevant NC Standard Course of Study Goal(s): <ul style="list-style-type: none"> • Bio.2.1 Analyze the interdependence of living organisms with their environment. • Bio.2.2 Understand the impact of human activities on the environment. • EEn.2.2 Understand how human influences impact the lithosphere. 	
Specific Lesson Objectives	
Students will understand: <ol style="list-style-type: none"> 1. Interactions among living systems and with their environment result in the movement of matter and energy relating to the significance of each to maintain the health and sustainability of an ecosystem. 2. Human activities (including population growth, urbanization, pollution, global warming, burning of fossil fuels, habitat destruction, and introduction of non-native species) may impact the environment from one generation to the next. 3. Humans influence freshwater availability and quality in North Carolina's river basins, wetlands, and tidal environments. 4. The diversity of species within an ecosystem may influence the stability of the ecosystem. 5. Interactions between and within populations influence patterns of species distribution and abundance. 	
Students will know: <ol style="list-style-type: none"> 1. How humans modify ecosystems through population growth, technology, resource consumption, and production of waste 2. How to interpret data regarding the historical and predicted impact on ecosystems and global climate change 3. That urban development in the North Carolina Piedmont leads to habitat destruction and urban runoff 4. The effects of pesticides, herbicides, and pharmaceuticals on freshwater ecosystem health 5. Non-point sources of pollution 6. How biotic and abiotic factors affect biodiversity 7. How to evaluate the quality of North Carolina streams (chemical & physical properties and biotic indices) 	
Students will be able to: <ol style="list-style-type: none"> 1. Read and interpret a primary, scientific journal article through the lens of the scientific method 2. Analyze collected scientific data 3. Write a scientific research paper that includes the introduction, materials and methods, results, discussion, and literature cited sections 	

Key Vocabulary for this Lesson
<ul style="list-style-type: none"> • N/A
Materials
<ul style="list-style-type: none"> • N/A
Technology Needs
<ul style="list-style-type: none"> • Laptop cart

LESSON ACTIVITIES			
Opening (Hook, Warm-Up, Anticipatory Set, Review, etc.)			
Describe activity to elicit active involvement of students or refer to previous learning: N/A			
Procedure: Include all sections that apply to this lesson; combine as necessary.			
Section	Time	What the Teacher will do:	What the Students will do:
Statement of Objective & Purpose	5 minutes	1. Teacher will provide students with an overview of the class: teacher and students will pass back their peer reviewed papers to each respective group and students will finish writing their sections	1. Listen
Input, Modeling, & Check for Understanding	0 minutes	N/A	N/A
Guided Practice	0 minutes	N/A	N/A
Independent Practice/ Homework	80 minutes	1. Teacher will spend time with each group to assist groups in the writing of their assigned sections and provide ideas as to how to present information	1. Students will edit and finalize their section of the research paper
Closing/ Summary	5 minutes	1. Teacher will ensure all laptops are returned to the cart 2. Teacher will assign homework: student groups will send a finalized copy of their sections to the teacher by midnight if not finished in class	1. Students will return laptops to carts 2. For homework, students will send a finalized copy of their sections to the teacher by midnight if not finished in class

		3. Teacher will concatenate all of the sections into a single document to be passed out in class	
Assessment of Student Learning			
<i>How & when will you know that the students have learned this material?</i> Completed student research paper, presentation to Durham City Council			
Differentiation Strategies*			
<i>How will you adjust aspects of the lesson to accommodate student READINESS?</i>			
Struggling Students:	Gifted/Advanced Students:	English Language Learners:	
The restructuring of the groups from expert groups to section groups allows for struggling students to be considered experts within their new groups. Students will also be placed into the new section groups based on abilities. Students that are mathematically inclined will be assigned to work in the Results group. Students who excel as writers and critical thinkers will write the Introduction and Discussion sections. Those who are methodical and excellent record keepers will be responsible for the Materials and Methods section.	The restructuring of the groups from expert groups to section groups allows for struggling students to be considered experts within their new groups. Students will also be placed into the new section groups based on abilities. Students that are mathematically inclined will be assigned to work in the Results group. Students who excel as writers and critical thinkers will write the Introduction and Discussion sections. Those who are methodical and excellent record keepers will be responsible for the Materials and Methods section.	N/A	
<i>How will you adjust aspects of the lesson to accommodate students' LEARNING PROFILES?</i>			
N/A			
<i>How will you adjust aspects of the lesson to accommodate students' INTERESTS?</i>			
N/A			