

**Environmental Health Sciences Department  
College of Public Health  
University of Georgia**

**EHSC 4700  
Genetic Application in Environmental Health Sciences  
Spring, 2009 Syllabus**

**Course Information**

Instructor: Dr. Anne Marie Zimeri  
Office Location: EHS 203  
Phone: 706-542-9567  
Email: [zimeri@uga.edu](mailto:zimeri@uga.edu)  
Office Hours: T-F 3:30-4:30, or by appointment

**Course Meeting Time and Location**

Building: EHS  
Room: 101  
Days: MWF  
Time: 2:30-3:20

**Textbooks and Other Course Material**

We will be working from the primary literature throughout the semester so that student will have the most up to date information in the field of bioremediation.

We will be using WebCT throughout the semester. The syllabus, lecture outlines, literature pdfs, and assignments, will be posted on the WebCT course page.

**Course Description**

Course will explore case studies that exemplify the integration of Genetics and Environmental Health Sciences. The first part of the course will include lecture material on basic genetic principals and techniques. The remainder of the course will be taught from the primary literature in both lecture and discussion format. Throughout the course, students will collaborate with each other and with the New Georgia Encyclopedia to author articles about Genetics Application in EHS specific to Georgia with the goal of having a published article by the end of the semester.

## Course Learning Objectives

Upon successful completion of this course, the student should be able to:

- Understand the concepts of heredity, the chemical nature of the hereditary material, and its purpose in cellular/organism function
- Explain how genetics drives development of cells and organs, and the interaction of the organism with its environment
- Interpret genetic information from the current literature for environmental health applications, and present/evaluate this data
- Analyze the use of genetic tools in industry application. Students will know which technologies are used in which cases, and why.
- Reference the State and Federal laws, regulations and guidelines applicable to biologic agents
- Discuss the ethical issues that can arise from the use of this applied genetics in environmental health sciences
- Learn to communicate, in writing, genetic applications to the public at large through an article prepared for the New Georgia Encyclopedia.

## Course Requirements for Grading Purposes

Grades will be based on three exams, one group presentation, and the successful completion of a quality entry for the New Georgia Encyclopedia.

\*In addition to exams, graduate students will teach the class once near the end of the semester. They will also be charged as editors and fact checkers for the classes' New Georgia Encyclopedia articles.

## Grading Policy

There will be three 50-minute exams given throughout the semester. **THERE WILL BE NO MAKEUP EXAMS.** Exams will primarily cover the material discussed since the prior exam, though you may be tested on basic concepts on any exam. Questions related to exam grades must be made within one week of the return of the graded exam.

**Grading:** \*Grades will be based on the following points:

Exam 1	100 points
Exam 2	100 points
Exam 3	100 points
Presentation	100 points
NGE article	100 points

**Letter Grades:** A- to A 90-100%

B- to B+ 80-89%

C- to C+ 70-79%

D- to D+ 60-69%

F < 59%

## **Grading policy (cont'd)**

Presentations: Students will be given asked to select one article for class presentations. Each student selected article must be submitted one week in advance so that it may be made available to the other students on WebCT. The students will present, explain and evaluate the data included in the paper prior to leading a class discussion. Students are encouraged to use additional media for teaching as well (handouts, quizzes, videos, etc.)

### **Make-Up Policy**

*NO MAKE UP EXAMS will be administered. If you have a valid, documented excuse for missing an exam, you may receive and 'Incomplete' for the semester and finish the course the next time it is offered.*

### **Attendance Policy**

Attendance is mandatory.

### **University Honor Code and Academic Honesty Policy**

*All academic work must meet the standards contained in "A Culture of Honesty." All students are responsible to inform themselves about those standards before performing any academic work.* [http://www.uga.edu/ovpi/academic\\_honesty/culture\\_honesty.htm](http://www.uga.edu/ovpi/academic_honesty/culture_honesty.htm).

### **Students with Disabilities**

Students with disabilities who require reasonable accommodations in order to participate in course activities or meet course requirements should contact the instructor or designate during regular office hours or by appointment.

### **General Disclaimers**

*The course syllabus is a general plan for the course; deviations announced to the class by the instructor may be necessary.*

**PLEASE TURN OFF ALL CELL PHONES AND PAGERS DURING CLASS**

<b>Date</b>	<b>Presenter(s)</b>	<b>Lecture Topic/ Paper</b>
01/09	Zimeri	Class Introduction & Lecture 1: Overview & History, DNA
01/12	Zimeri	Lecture 2: Transmission (classical) genetics <ul style="list-style-type: none"> <li>• movement of genes and genetic traits from parents to offspring, and with genetic recombination</li> </ul>
01/14	Zimeri	Lecture 3: Replication and gene function
01/16	McKee	NGE
01/19	Zimeri	NGE organization
01/21	Zimeri	Lecture 4: Transcription
01/23	Zimeri	Lecture 5 : Translation
01/26	Zimeri	Lecture 6: Mutations
01/28	Zimeri	Lecture 7: Recombinant Technology
01/30	Zimeri	Lecture 8: Recombinant Technology
02/02	Zimeri	Lecture 9: Recombinant Technology
02/04	Zimeri	Lecture 9: Genetics of Cancer
02/06	Zimeri	Lecture 10: Genomics
02/09		<b>EXAM 1</b>
02/11	Zimeri	Food Safety: Detection of bacteria
02/13	Zimeri	Food Safety: Detection of bacteria. Nested PCR
02/16	Zimeri	Food Safety: Adulterated game meat using molecular markers
02/18	Glenn	Food safety: genetic engineering / mycotoxins
02/20	Zimeri	Forestry
02/23	Grad. Students	<b>NGE fact checking with Grad students</b>
02/25	Grad. Students	<b>NGE fact checking with Grad students</b>
02/27	Zimeri	Agriculture: genetic engineering
03/02	Meagher	Phytoremediation “Engineering Plants to Clean Up Arsenic Pollution”
03/04	Zimeri	Bioremediation
03/06		<b>NGE due /</b>
03/09-3/13		NO CLASS (Spring Break)
03/16	Zimeri	Lecture: Population Genetics
03/18	Zimeri	Conservation Biology: molecular phylogeny
03/20	Wares	Conservation Biology

03/23	Zimeri	Conservation Biology trait mapping, rate assessment
03/25	Zimeri	Pharmacogenetics
03/27	Zimeri	Pharmacogenetics
03/30		<b>EXAM 2</b>
04/01	Zimeri	Ethical Implications of Genetics in EHS: diseases
04/03	Zimeri	Ethical Implications of Genetics in EHS: paternity, forensics
04/06		
04/08		<b>NGE Photos and captions due / Disposal</b>
04/10	Zimeri	Regulations of Transgenics/ Community concerns
04/13		Student Selected Papers
04/15		Student Selected Papers
04/17		Student Selected Papers
04/20		Student Selected Papers
04/22		Student Selected Papers
04/24		Grad Student Presentation
04/27	McKee	NGE Launch
04/29		Grad Student Presentation
05/04		<b>FINAL EXAM 3:30-6:30</b>