Environmental Studies / Principles of Environmental Science
Course ENV*K101, BIO*K180, Course Number 30369, 30689
Meeting Day and Time: Monday and Wednesday 3:30 – 4:45 pm, Room B125
Course Instructor: Meredith Metcalf (Office: Room C202)
Email: meredithmetcalf@yahoo.com or mmetcalf@trcc.commnet.edu
Office Hours: Tuesday and Thursday 11:00 am – 12:00 pm or by appointment

Required Text:

Wright, Richard T. (2008) Environmental Science, 11th Edition: Toward a Sustainable Future. Prentice Hall; Upper Saddle River, New Jersey.

Most of the background information for this course you can get from the **required** textbook above. In addition, there will also be discussion threads based on supplementary articles that I provide and we will continually refer to Web sites

Course Description:

Environmental Studies presents an interdisciplinary overview of the workings of the environment and human interactions with it. The course includes a description of ecosystems, geological processes, hydrological processes, and atmospheric processes. The causes and treatment of air and water pollution are discussed as are issues related to energy development and waste disposal.

Learning Objectives:

Most important goal of this course is to be able to:

- understand the environment better, which includes the ability to analyze news of scientific advances, a grasp of the terminology of environmental matters, and a comprehensive understanding of the basic concepts of how the natural environment works.

In addition, you will be able to:

- make decisions concerning environmental policies and be capable of having discussion/arguments about certain policies
- separate information from propaganda
- perform a job that affects or depends on the environment (they all do)
- use your knowledge to perform a formal and informal study of the environment
- enjoy the natural environment more from your perception that has been enriched by understanding in this course

Tentative Schedule

Week/Date	Topics	Quiz/Exam	Reading Required	What's Due?
Week 1 and Week 2 **Aug. 30th, Sept. 1st, and 8th** **Sept. 6th – NO CLASS**	Introductions Sustainability, Stewardship, and Sound Science Video		Chapters 1 & 3	**Sept. 8th – Essay 1**
Week 3 **September 13th and 15th**	Ecosystems: What They Are and How They Work		Chapters 3 & 4	**Sept. 15th – Essay 2**
Week 4 **September 20th and 22nd**	Ecosystems: How They Change The Human Population		Chapter 5 & 8	**Sept. 22nd – Essay 3**
Week 5 **September 27th and 29th**	Population and Development Water: Hydrologic Cycle		Chapter 9 & 10	**Sept. 29th – Essay 4**
Week 6 **October 4th and 6th**	Water: Hydrologic Cycle Water Pollution and It's Prevention	**Quiz 1**	Chapter 10 & 20	**Oct. 6th – Essay 5**
Week 7 **October 11th and 13th**	Video Soil: The Foundation for Land Ecosystems		Chapter 11	**Oct. 13th – Essay 6**
Week 8 **October 18th and 20th**	The Production and Distribution of Food Video – Food Inc.		Chapter 12	**Oct. 20th – Essay 7**
Week 9 **October 25th and 27th**	Wild Species and Biodiversity Use and Restoration of Ecosystems		Chapter 6 & 7	**Oct. 27th – Essay 8**
Week 10 **November 1st and 3rd**	Energy From Fossil Fuels Nuclear Power		Chapter 14 & 15	**Nov. 3rd – Essay 9**
Week 11 **November 8th and 10th**	Nuclear Power, continued Renewable Energy	**Quiz 2**	Chapter 15 & 16	**Nov. 10th – Essay 10**
Week 12 **November 15th and 17th**	Environmental Hazards and Human Health Start Library Research work for Group Presentation		Chapter 17	**Nov. 17th – Essay 11**
Week 13 **November 22nd and 24th**	Municipal Solid Waste Disposal and Recovery Hazardous Chemicals: Pollution and Prevention		Chapter 21 & 22	**Nov. 24th – Essay 12**
Week 14 **November 29th and December 1st**	Video: Love Canal The Atmosphere: Climate, Ozone Depletion Provide an Outline of Presentation (due)		Chapter 19	**Dec. 1st – Essay 13**
Week 15 **December 6th and 8th**	Continue Library Research Work with Group Atmospheric Pollution Video: The Air We Breathe Public Policy and the Environment Sustainable Communities	**Quiz 3**	Chapter 19, 2, & 23	**Dec. 8th – Essay 14**
Week 16 **December 13th and 15th**	Start Group Presentations: Hand in Presentations Final: Chapter material – probable cumulative, possibly questions on topics discussed in class, and videos	Presentations AND Final Exam		

Grading

30% Quizzes (each quiz is worth 10% of your final grade) – Quizzes will be given ***APPROXIMATELY*** on the dates specified above. The exact date and content of each quiz will be stated in class the week prior to the scheduled quiz. **There will be no make-up of quizzes without prior approval.**

20% Final Exam – A **cumulative** final exam will be given at the end of the semester. Date and time to be announced.

15% Assignments – Each student is required to provide a one page (double spaced, 12 font) answer to one question from the "Thinking Environmentally" at the end of each chapter in the text for the chapters discussed the previous week of class. Because several chapters are discussed during the week, please note the chapter and question number you have thoughtfully chosen to respond. All assignments are due the following week after it has been assigned.

20% Presentations – Library research work and group presentations are mandatory for a passing grade. Groups of 3 to 5 students will be required to present a power point presentation at the end of the semester. All students are expected to be in class to give their group presentation AND see presentations of fellow classmates. Presentations will be discussed within the first weeks of the course such that students are able to adequately research and investigate the topic they have chosen and present the project to the class in a timely manner.

15% Attendance and Participation – Regular attendance and class participation is expected of each student.

Grade Scale: There will be no grading on the normal distribution curve.

A	100.00 – 93.50
A-	93.49 – 90.00
B+	89.99 – 87.50
B	87.49 – 84.50
B-	84.49 – 79.50
C+	79.49 – 77.50
C	77.49 – 73.50
C-	72.49 – 69.50
D+	69.49 – 63.50
D	63.49 – 59.50
F	59.49 – 00.00

Extra Credit May Be Offered: The number of extra credit points is at the instructor's discretion and what the student will do to obtain the extra credit must also be discussed in advance. Example of extra credit may be the student conducting a class discussion on a current environmental issue observed in the news.

Course Policies

Field Work: Some field work is required – Dates are to be determined. Mandatory field trips will count as an essay grade.

Electronic Devices (cell phones, MP3 players, etc.): These devices must be turned off when entering the room to maintain a respectful class atmosphere. You will be asked to leave if you disregard this requirement.

Late/Missed Work: All assignments are due on the date specified in class. After this time the assignment will not be accepted and the student will receive a zero.

Add/Drop: The last day to add/drop and obtain partial tuition refund for this course is September 8th, 2010.

Withdrawal: The last day to withdrawal from this course is December 9th, 2010.

Incomplete: An incomplete must be finished within 60 days of the last day of the Fall 2010 Semester.

Academic Conduct: It is expected that each student will turn in only his or her own work. Violations of the Student Code are taken seriously. This includes copying or sharing answering on tests or individual assignments, plagiarism, or having someone other than yourself do your work. Depending on the act, a student could receive an F grade on the test/assignment, an F grade for the course, or could be suspended or expelled.

For Your Knowledge, cheating and plagiarism are defined below:

> Cheating is defined as the giving of assistance to another or the receiving of assistance from another person, another examination paper, other written material, or any source not explicitly permitted by the instructor, is cheating. Thus, you may not look at another's paper or answers; you may not show your paper or answers to another or leave your paper or answers around for others to look at; and, you may not verbally read or reveal your answers to another. It is also cheating to have access, without the instructor's approval, to examination, quiz, or test questions prior to the administration of the examination, quiz, or test.
>
> Plagiarism is the submission or presentation of ideas or work in any form that are not one's own without appropriate acknowledgement of the source(s). Even with the

acknowledgement, close paraphrasing can constitute plagiarism. You may quote the work of others if properly referenced.

Special Needs: Please inform me as soon as possible if you require any accommodations in addition to those provided here.

Course Content

We will cover the following topics over the span of 15 weeks. The following are the learning objectives for each module:

1. Introduction
   - 1.1. Welcome and Introduction
     - a) Familiarize yourself with the syllabus and the course conference
   - 1.2. Environmental science...
     - a) Describe the role of science and other fields of knowledge in the study of the environment
     - b) List the steps of the scientific method; give an example of its use
   - 1.3. ...and environmentalism
     - a) Define exploitation, environmental management, conservation, and preservation
     - b) Write a summary of the philosophy and tactics of an environmental organization
     - c) Compare and contrast Hardin's "lifeboat ethics" and Meadows et al's "limits to growth" with cornucopianism and technological optimism
2. Ecosystem Fundamentals
   - 2.1. What is an ecosystem?
     - a) Sketch a mass and energy balance for an ecosystem
     - b) Identify the inputs and outputs of an ecosystem near your home
   - 2.2. Biotic structure (trophic structure)
     - a) Compare and contrast a terrestrial and a marine food web
     - b) Describe the significance of the first two laws of thermodynamics to trophic pyramids
   - 2.3. Communities
     - a) Describe the signs of secondary succession in a biological community near your home
     - b) Classify a community as early, middle or late in successional stage
     - c) Compare the characteristics of a climax community and a sustainable ecosystem
   - 2.4. The chemistry of ecosystems
     - a) List the major elements in living systems and describe the role that each plays
     - b) Describe your own personal involvement in the carbon, nitrogen and phosphorus cycles
   - 2.5. Population dynamics
     - a) Sketch "S" and "J" growth curves; discuss the differences between them
     - b) List a few density-dependent and a few density-independent mortality factors; show their effects on growth curves
3. People and money

3.1. The human population
   a) Draw a demographic pyramid for the population of Connecticut
   b) Using a demographic pyramid, show the effects of fertility and mortality rates on population size
   c) Classify emerging and developed nations with respect to the demographic transition
   d) List pronatalist and antinatalist pressures

3.2. Environmental economics
   a) Distinguish between internal and external costs
   b) Write a cost-benefit analysis for a household decision
   c) Describe the factors that affect the size of the proven reserve of a non-renewable resource

4. Earth
   4.1. Geological resources
      a) Draw a soil profile
      b) Sketch the rock cycle
      c) Briefly describe the geological history of a landscape feature near your home
   4.2. Food production
      a) Describe the advantages and disadvantages of organic farming
      b) List the environmental impacts of your lunch

5. Water
   5.1. The water cycle
      a) Sketch the water cycle and label the parts; trace the path of your tapwater through the cycle
      b) Compare the water demands of (i) your household routine, (ii) your car, and (iii) your dinner
      c) Sketch an aquifer
   5.2. Water quality and water pollution
      a) Determine the water quality classification (AA, A, etc) for a body of water near you
      b) Compare and contrast conventional and toxic water pollutants
      c) Sketch and describe the processes of water and wastewater treatment

6. Air
   6.1. The atmosphere
      a) Inform your friends, family, and other associates about (i) the mechanism of, (ii) the evidence for, and (iii) seriousness of global warming
      b) Defend the US implementation of the Montreal Protocol for protecting and restoring stratospheric ozone
   6.2. Air quality and air pollution
      a) Determine the attainment status of air in Connecticut with respect to the six criteria pollutants
      b) Describe the control strategies for a hazardous air pollutant; justify the use of one of these on the basis of costs and benefits

7. Wastes and Hazards
   7.1. Hazardous materials and toxicology

a) Classify a substance as a hazardous material, a hazardous waste, or none of the above; describe appropriate handling procedures accordingly

b) Evaluate existing evidence concerning the long term effects of an environmental toxin

7.2. Solid waste

a) Compare and contrast a dump, a landfill and a resource recovery facility

b) Describe what happens to your household waste

c) Draw Connecticut's solid waste handling hierarchy; evaluate Connecticut's success in achieving the goals of this hierarchy

8. Energy

8.1. Energy

a) Determine the monetary cost per kilowatt hour of electricity from fossil fuels, nuclear power, and solar energy

b) List the environmental impacts of electricity from fossil fuels, nuclear power, and solar energy

c) Develop an energy conservation strategy for your home or your job; justify the strategy in light of objective (a) and (b) above