

**Three Rivers Community College**  
**574 New London Turnpike,**  
**Norwich, CT 06360**

- Syllabus:** Summer Semester 2009
- Courses :** **CRN: 50099** BIO\* K180 **SEC: T81** – Principles of Environmental Science &  
**CRN: 50100** ENV\* K101 **SEC: T08** - Environmental Studies  
 (cross register; 3 credit hours)
- Monday & Wednesday evenings: 6:00 PM – 9:00 PM
- Location:** Room E225, Norwich Campus, 574 New London Turnpike, Norwich, CT 06360
- Required Text:** Environmental Science, 10 ed., Richard T. Wright,  
Prentice Hall, Inc., ISBN 0-13-230265-9
- Instructor:** Daryl M. Simmons (adjunct)  
 715-2065 (work)  
[daryl.m.simmons@pfizer.com](mailto:daryl.m.simmons@pfizer.com)  
[Dsimmons@trcc.commnet.edu](mailto:Dsimmons@trcc.commnet.edu)
- Office Hours:** By appointment. Call the instructor for extra help if needed.
- Special Notice:** If you have a visible or hidden disability, or a physical condition that may require classroom or test taking modifications, please see the **Learning Specialist** or see the **Counselor at the Student Services Development Center**. You must do so early in the semester. The instructor is not permitted to provide for student disabilities until the student has seen the **Learning Specialist** and is notified in writing by that office.

This syllabus may be revised at the instructor's discretion at any time.

**I. Course Description:**

**BIO K180 (from the catalog):** This is a basic course in environmental studies that introduces ecological principles and a global perspective on environmental problems such as deforestation, droughts, floods, soil erosion, overpopulation, food shortages and pollutants. Some field work will be included. This course is equivalent to ENV\* K101 Environmental Studies.

**ENV K101 (from the catalog):** This is a course that describes the study of the biological and physical aspects of the environment and environment-related issues, including procedures for lessening or controlling environmental pollution and related damage. Some field work will be included. This course is equivalent to BIO\* K180 Principles of Environmental Science.

## **II. General Course Objectives:**

Students will learn:

- A. The scientific approach to understanding and to using analytical methodology.
- B. Some basic scientific principles of Biology, Chemistry, and Physics in the cyclic nature of the environment, and the interrelationships between humans and ecosystems.
- C. the importance of sustainability and stewardship, and environmental ethics and responsibility.
- D. to recognize issues that are of environmental importance and be able to make informed opinions with regard to those issues.
- E. environmental responsibility, ethical behavior toward the environment, and sustainable use of the natural resources.
- F. the global nature of ecosystems, human impact, and the effects of populations of species across the world's ecosystems.
- G. the current environmental events in the news along with public policy, economics, and societal issues.
- H. mechanisms of environmental management, conservation, and preservation, and use those principles with published cases.

## **III. Class Attendance Policy:**

Attendance will be taken at each class. Students are required to attend each class and to be on time in accordance with the college attendance policy.

*If a class is missed due to circumstances beyond your control, notify the instructor.*

Each student is responsible for obtaining and learning the material.

Students with 4 consecutive or 6 non-consecutive absences will receive an "F" grade in this course. An explanation of the cause of all absences should be given to your instructor.

## **IV. Grade Evaluation:**

Your course grade is based on an accumulation of up to a total of 400 points by the end of the semester. (*See below V. Tests and Assignments and attached Course Outline*)

There is no grade curve.

Perfect Attendance will earn you 10 bonus points added on to your course total. This means being on time from beginning to end and not leaving early for any reason. There are no exceptions for bonus points.

Any absence or being late for any reason disqualifies the student from bonus attendance points.

The table below shows the corresponding letter grade for the accumulated points and the equivalent percentages that the final course letter grade is based on.

Letter Grade	Total Accumulated Points (Possible Total of 400 Points)		Approximated Percentages for each Letter Grade	
	A	400	368	100%
A-	367.999999999...	360	91.999999999...%	90%
B+	359.999999999...	348	89.999999999...%	87%
B	347.999999999...	328	86.999999999...%	82%
B-	327.999999999...	320	81.999999999...%	80%
C+	319.999999999...	308	79.999999999...%	77%
C	307.999999999...	288	76.999999999...%	72%
C-	287.999999999...	280	71.999999999...%	70%
D+	279.999999999...	260	69.999999999...%	65%
D	259.999999999...	240	64.999999999...%	60%
F	239.999999999...	0	59.999999999...%	0%

#### V. Tests and Assignments:

- A. There will be 4 tests, worth 100 points each. All test dates are shown below in the Test Schedule.

Every test must be taken on the dates scheduled in the course outline.

Any missed test will only be made up on the same date as the final exam.

*If you are having any problems with the course, please see the instructor as soon as possible.*

- B. Test questions are based on the lectures, textbook chapters, and assigned readings that include news articles. The grade of the home assignments constitutes a portion of the test grade for that section.

Homework assignments are due on the date of the test. Late submissions are not accepted.  
Assignments can be turned in early.

- C. Test Schedule – In addition to the assigned sections in the table, there will be assigned readings and take home assignments.

Test	1	2	3	4
Date	June 22	July 6	July 20	July 27
Sections + Homework + Readings	1, 2, 3	4, 5, 6, 7, 17	8, 9, 10, 11	12, 13, 14

## **VI. Procedures for Dropping the Course (College Withdrawal Policy)**

See the College Catalog or the Registrar's office for the withdrawal policy and calendar. Any student who finds it necessary to withdraw from this course MUST complete a withdrawal form in the Registrar's Office. There is no verbal withdrawal.

Students may withdraw from the course any time during the first ten weeks of class without the instructor's signature. After that time, students MUST obtain written authorization from the instructor or their academic advisor, in order to receive a "W" grade for the course.

Students who do not withdraw, but who stop attending, will be assigned an "F" grade for this course.

## **VII. Special Notices**

- A. For Weather-Related or other Closing Information, Please Call 886-0177.
- B. "Cellular phones and beepers are only allowed in class or lab if they are turned off or in silent mode. **Under no circumstances are phones to be answered in class.** When there are extenuating circumstances that requires a student to be available by phone or beeper, that student must speak to the instructor prior to class, so that together they can arrive at an agreement."
- C. Military personnel who are ordered to mobilize or whose units are activated should mention this to the instructor, their adviser, and the Registrar's Office, and bring orders or other verification.

## **VII. Academic and Classroom Misconduct**

- A. The instructor has primary responsibility for control over classroom and/or laboratory behavior and maintenance of academic integrity, and can request temporary removal or exclusion from the classroom or laboratory, of any student engaged in conduct that violates the general rules and regulations of the institution or any student engaged in conduct deemed hazardous in the laboratory. Extended or permanent exclusion from lecture or laboratory activities or further disciplinary action can only be effected through appropriate procedures of the institution.
- B. Plagiarism, cheating on quizzes or tests, or any form of academic dishonesty is strictly prohibited. Students guilty of academic dishonesty directly or indirectly will receive a zero for the exercise or quiz or test, and will receive an "F" grade for the course in addition to other possible disciplinary sanctions which may be imposed through regular institutional procedures. Any student that believes that he or she has been erroneously accused may appeal the case through the appropriate institutional procedures if their grade was affected. (*We will work through an **HONORS CODE***).

## **VIII. Revisions to the Syllabus**

Students are responsible for learning all of the objectives and all of the items in the course outline whether they are discussed in lecture or not. The instructor reserves the right to revise the objectives, topical outline, or academic schedule contained in this syllabus without notice. However, if revisions affect the scheduled unit tests, a 48-hour notice will be given for the new test date.

Three Rivers Community/Technical College  
Detailed Course Outline, Summer Semester 2009

BIO K180 Principles of Environmental Science & ENV K101 Environmental Studies

**NOTE:** This outline may be revised at the instructor's discretion at any time.

**Class Topics and Reading Assignments**

**Section 1-** Introduction to Environmental Science and Historical Background -  
Theories of Origin of the Universe and beginnings of life, Science and the Scientific Method, Environmental Science, Analysis of the Environment, Policy/Politics, Globalization, Ecosystem Capital

**READ** – pp. 3-5, *Easter Island*,  
pp. 9-13, *Sustainability, Stewardship, Ethics, Justice for the developing world*  
pp. 21-22, *Revisiting the themes*

**Section 2** – Ecosystems: What they are -

Ecosystem structure, relationships, landscapes, biomes, aquatic systems, trophic categories, food chains & webs, symbiotic relationships, competitive relationships, Terrestrial Biomes, microclimates, biotic and abiotic factors, barriers, human factors.

**READ** – p. 47, *Earth Watch*  
p. 48, *global perspective: Can Ecosystems Be Restored?*  
p. 50, *Revisiting the Themes*

**Section 3** – Ecosystems: How they work -

Matter, energy, life, thermodynamics & conservation of energy, energy flow and efficiency, recycling of matter, the four spheres, chemistry in the environment, matter and nutrient cycling, carbon cycle, nitrogen cycle, phosphorus cycle ecosystem stability, habitats, niches, species interactions, photosynthesis, respiration, ecosystem sustainability.

**READ** – p. 66, *Global Perspective – Light and Nutrients*  
pp.74-77, *Value of ecosystem capital*  
p. 75, *ethics: Ecosystem Stakeholders*  
p. 77-79, *Revisiting the themes*

**Section 4** – Ecosystems: How they change -

Population Dynamics (growth, change, potential), population equilibrium, invading species, mechanisms of species adaptation, evolution, drifting continents, succession, disturbances, recovery, resilience,

**READ** – p. 91 -92, *Guest Essay; The Village Weaverbird: Marvel or Menace?*  
p. 108, *Earthwatch:*  
pp. 111-112 *Revisiting the Themes*

**Sections 5 & 6** – Human Populations: Dimensions -

Human population expansion, different worlds, Consequences of population growth & affluence, dynamics of population growth, developing nations, demographic transition, promoting development, family size, status of women, progress in development goals, development aid, education.

**READ** – p. 128, *Ethics: The Dilemma of Immigration*  
p. 132, *Earthwatch - Are We Living Longer?*  
p. 139, *Revisiting the Themes*  
p. 149, *guest essay: Poverty Traps & Natural Resources Management*  
p. 160, *ethics: China's population policies*  
p. 162, *Putting it all together*

**Section 7 – Water, The Hydrologic Cycle, Human Use, and Pollution -**

Water resources, conservation, hydrologic cycle, evaporation & purification, precipitation, groundwater, surface water, recharge, runoff, floods, climate change, atmospheric pollution, irrigation, overuse, droughts, pollution, and water treatment, drought, water management, water stewardship, damming, conservation, agriculture effects, municipal water, Biological Oxygen Demand (B.O.D.), stream bed loads, oligotrophic, mesotrophic, eutrophic, eutrophication, benthos.

**READ – p. 185, *Global Perspective – Water: Key to life ;and Progress in Darewadi***  
*p. 190, Global Perspective: The Fourth World Water Forum*  
*p. 191, Revisiting the themes*  
*pp. 437-438 Chap 17 Introduction*

**Section 8 – Soil -**

Soil & plants, soil texture, soil profiles, soil classes, soil & plant growth, minerals, water holding capacity, aeration, relative acidity, water uptake, soil communities, enrichment, degradation, erosion, drylands, desertification, cultivation, overcultivation, preventing erosion, deforestation, irrigation, salinization,

**READ – p. 210, *Ethics; Erosion by Equation***  
*p. 214, Global Perspective; Three-Strata Forage System for Mountainous Drylands*  
*p. 216, Revisiting the Themes*

**Section 9 – Production and Distribution of Food -**

Modern and subsistence agriculture, agricultural chemicals – production, use, overuse, runoff, waste. Genetically modified organisms, Green revolution, animal farming, affluence, industrial farms, increasing food production, distributing food, food trade, food security, hunger, nutrition, famine, environmental concerns, food safety, Cartagena Protocol, Aquaculture.

**READ – p. 234, *Feeding the hungry in the U.S.***  
*Handout – Lifeboat ethic of Garrett Hardin*  
*p. 236, Ethics; World food summit*  
*pp. 242-243; Revisiting the themes*

**Section 10 - Wild Species & Biodiversity -**

Biological value of wild species, Value to agriculture, forestry, aquaculture, animal husbandry, medicine, recreational value, aesthetic value, Saving wild species, managing populations, endangered species, threatened species, declining populations, returning species, maintaining biodiversity, Endangered Species Act, E.P.A.

**READ – p. 257, *Earthwatch – Return of the Gray Wolf***  
*p. 266, Global perspective – Biodiversity: essential or not?*  
*p. 269, Revisiting the themes*

**Section 11 - Ecosystem Capital: Use & Restoration -**

Goods & services from ecosystems, conservation, preservation, consumptive use, productive use, sustainable yield, restoration, Forests: biomes, management. Oceans: fisheries, sustainable use, whaling, desirable species, Magnusen Act, Sustainable Fisheries Act, coral reefs & bleaching, ecosystems under pressure.

**READ – p. 289, *Earth Watch: Will Aquaculture be able to fill the Gap?***  
*p. 295, Global Perspective: The Mangrove Man*  
*p. 299 - 300, Revisiting the Themes*

**Section 12 - Energy from Fossil Fuels -**

Energy sources and uses, formation of fossil fuels; petroleum, coal, natural gas, exploiting fossil fuels, environmental cost of fossil fuel, electricity, electricity generators, energy security, declining reserves, dependency of fossil fuels, energy distribution, electricity power grids.

**READ – p. 326, *earth watch – CHP: Industrial common sense***  
*p. 327, Revisiting the Themes*

*Section 13 - Nuclear Power, Policies, Radon*

Radiation and nuclear power, radioactivity, radiation dosage, half life, how nuclear power works, hazards and costs of nuclear power, nuclear waste, nuclear power safety, types of nuclear power reactors, future of nuclear power, nuclear power vs. power from fossil fuels, radon in soil and water, radon mitigation.

**READ** – p. 344, *ethics – Showdown in the New West*  
pp. 352-353, *Revisiting the themes*

*Section 14 - Renewable Energy and Resources*

Solar Energy, wind energy, hydroelectric power, biofuels for energy, other alternative energy sources: geothermal, tidal, ocean thermal, renewable energy for transportation, clean energy

**READ** – p. 365, *Earth Watch - Economics Payoff of Solar Energy*

p. 366, *Ethics - transfer of Energy Technology to the Developing World*

pp. 378-379, *guest essay – Caring for our planet earth through the proper use of our energy resources*

pp. 379 - 380, *revisiting the themes.*