

**ENVIRONMENTAL SCIENCE: SUSTAINABILITY**  
Summer 2013 SECTIONS 801 & 802 Lecture Hall L2.85

Lecturer: Dr. Sandra Swenson

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Office: 05.66.07 ph: 212.237.8820

Office Hours: M-W 2:00PM– 4:45 PM or by appointment

During this course of study, students will:

This course examines the core topics in environmental science and how environmental science informs sustainability, environmental policies, economics, and personal choices. Students will learn principles from the sciences of ecology and toxicology to study the relationships between living organisms, including humans, and their physical environment. The course will also consider environmental risks due to economic, political and cultural factors. Discussion will focus on how the Earth's resources are limited, and how these resources can best be used to benefit ecosystems and leave the environment healthy for future generations.

**1. Identify and apply the fundamental concepts and methods of a life or physical science.**

*Develop scientific literacy by participating in two major projects where students will:*

- Acquire broad background knowledge in the physical and biological sciences;
- Correctly use basic terminology in biology and chemistry;
- Outline the basic concepts of environmental science, including:
  - sustainability
  - human impact
  - toxicology
  - ecology
- Recognize fundamental concepts of risk assessment and management.

**2. Apply the scientific method to explore natural phenomena, including hypothesis development, observation, experimentation, measurement, data analysis, and data presentation.**

- By examining local superfund clean-up sites in a group field-study project, students will critically evaluate major conflicts within the realm of the environmental sciences;
- Understand the role of creativity in problem solving and the application of scientific principles in gathering and interpreting scientific data;
- Recognize the significance of the scientific process in understanding controversial issues;
- Learn how to draw appropriate scientific conclusions from evidence and experimental data in both research and legal settings;
- Consider the dynamic relationship between politics, economics & societal issues that might influence scientific research.

**3. Use the tools of a scientific discipline to carry out collaborative laboratory investigations.**

- While performing laboratory experiments students will demonstrate lab safety and proper laboratory protocol;
- Test various products for the presence of potentially toxic substances (e.g aluminum, lead) and investigate the potential effects of heavy metals in the environment;
- Students will practice the skills of collaborative learning in a laboratory environment by working in groups to fulfill laboratory exercises. They will do this by allocating specific responsibility to each lab member, discussing their procedure, and finalizing their results. Ultimately, students are responsible for completing their own lab report. Students will assess themselves on how responsible they are for their own work as well as how well the whole group works together. (See Rubric)
- Develop competence in oral and written forms of scientific communication.

**4. Gather, analyze, and interpret data and present it in an effective written laboratory or fieldwork report.**

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- Students will practically apply observation and/or measurement in a larger scientific context and thereby assess the validity of the data they collect;
- Participate in field studies in the NY City urban environment, including, but not limited to, Superfund cleanup sites and Jamaica Bay National Park;
- Describe the basic practices of testing resource quality and the impacts of waste disposal on the environment.

### 5. Identify and apply research ethics and unbiased assessment in gathering and reporting scientific data.

- Students will discriminate between scientific and non-scientific resources by describing the basic components of a scientific investigation, and contrast this with non-scientific statements;
- Interpret environmental research findings as published in the popular media;
- Interpret environmental research findings in primary documents;
- Recognize and communicate the difference between research on environmental issues and non-research based statements.

**Course website & Readings:** Important course announcements, course readings, homework assignments, and other resources will be posted to the course Blackboard. There are extensive web links and news articles that students are responsible for reading.

Course material: Turning Technologies Response Card: Register on line at: <http://www.turningtechnologies.com/>

I recommend renting the response card from the JJ Bookstore.

Readings: All assignments can be found on the John Jay College Blackboard. Any changes or announcements will be made on that site. You should check Blackboard and your John Jay College email regularly for course information. You must have a valid John Jay email account and have access to BlackBoard for ongoing updates and notifications.

Blackboard Student Support is provided by ITSS. Students should be directed to contact ITSS at

blackboardstudent@jjay.cuny.edu<mailto:blackboardstudent@jjay.cuny.edu> and through the Help Desk at 212.237.8200.

- Essentials of Environmental Science by Andrew Friedland. WH Freeman Company: Ebooks access through the bookstore.  
Author: Friedland, et al.

EBOOK: ESSENTIALS OF ENVIRONMENTAL SCIENCE

ISBN: 9781464109836

Author: Friedland, et al.

LAB MANUAL IS AVAILABLE ON BB under "Information" but you can purchase it in the bookstore if you want to.

TURNING TECHNOLOGIES RESPONSE CARD ISBN: 9781934931394

Grading Scale:

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#### Grading Scale:

Midterm = 15 Points

Quizzes, Case Studies

HW (Podcasts, etc.) and in-class projects  
(includes attendance) = 40 Points

Final Exam = 15 Points

Lab Grade = 30 Points

All beepers, phones, headphones, etc. MUST  
be turned off in class.

• Personal Photo-ID MUST be present at all lecture exams.

• This is an important component of the course and requires participation by all students. All in-class work is due the same day and cannot be made up.

• ALL examinations must be taken in the class period in which you are registered.

• Plagiarism or cheating will not be tolerated. Any student suspected of cheating will be recommended for expulsion.

ATTENDANCE

## **ENVIRONMENTAL SCIENCE: SUSTAINABILITY**

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An important part of the course grade is earned through in-class participation and laboratory work; therefore, it is essential for students to attend lecture and lab if they wish to be successful. No make-ups will be given for missed in-class activities and laboratory work unless there is a documented medical excuse. If you miss an exam (or foresee that you will miss an exam) for any reason, you **MUST** contact the instructor as soon as possible.

Course Structure: Env Sci 108 consists of a lecture component and a laboratory component, completion of both is mandatory. There are two (2) lecture exams consisting of ~50 - 60 questions. All students must take the exams during the indicated periods. If you have a documented emergency, please see me to discuss options. Both exams count; no grade is dropped. The laboratory portion, worth 30% of the final course grade, will be derived from the scores of two (2) practical exams, quizzes, in-class activities, and class participation. Any student having difficulty with the class should see the instructor as soon as possible.

**Quiz and Exam policy: No student will be allowed to take a quiz or exam if they arrive 15 minutes after the start of the exam.**

No extra help can be given after the final exam is administered.

Grade of INC (Incomplete)

An Incomplete Grade may be given only to those students who would pass the course if they were to satisfactorily complete course requirements. It is within the discretion of the faculty member as to whether or not to give the grade of Incomplete.

Accommodations for Students with Disabilities: Students with hearing, visual, or mobility impairments; learning disabilities and attention deficit disorders; chronic illnesses and psychological impairments may be entitled to special accommodation under the Americans with Disabilities Act (ADA). In order to receive accommodation, students must register with the Office of Accessibility Services (O.A.S., Room 1233-N, 212-237-8031, <http://www.jjay.cuny.edu/2023.php>) which will define, for both students and faculty, the appropriate accommodations. Faculty is not allowed to work directly with students to attempt to accommodate disabilities, and accommodations cannot be applied retroactively (after-the-fact).

Statement of the College Policy on Plagiarism: Plagiarism is the presentation of someone else's ideas, words, or artistic, scientific, or technical work as one's own creation. Using the ideas or work of another is permissible only when the original author is identified. Paraphrasing and summarizing, as well as direct quotations, require citations to the original source. Plagiarism may be intentional or unintentional. Lack of dishonest intent does not necessarily absolve a student of responsibility for plagiarism. It is the student's responsibility to recognize the difference between statements that are common knowledge (which do not require documentations) and restatements of the ideas of others. Paraphrase, summary, and direct quotation are acceptable forms of restatement, as long as the source is cited. Students who are unsure how and when to provide documentation are advised to consult with their instructors. The library has free guides designed to help students with problems of documentation.

This course will utilize the services of Turnitin.com, a plagiarism prevention system approved by the College Council. All students must submit an electronic copy of their final paper using either the Word, WordPerfect, RTF, PDF or HTML format (including the reference page) to Turnitin.com for processing by the date listed. In addition, a printed original must be submitted to the lab instructor by the scheduled date (instructors may also require an electronic copy). All electronic files should be scanned for viruses before submission. Students transmitting electronic viruses will be heavily penalized.

Summary of Course Requirements:

Students are responsible for bringing the Response Cards (Turning Technologies) to every class and for accessing Blackboard once to check for new announcements. Please use your John Jay email for this class. Students must learn how to use the Discussion Board section on BB. See help options under Blackboard 9.1

Cell phones and similar devices must be turned off in class. No electronic devices of any type (phones, computers, calculators, iPods, etc.) are allowed in course exams. Students found using phones or other electronic devices during an exam will not be given credit for that exam. Students must take exams during the scheduled times and will not be given an exam if they are later than 15 minutes. Students with a documented conflict should speak with the professor.

**NO FOOD IS ALLOWED IN THE LECTURE HALL.**

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COURSE OUTLINE

<u>Date</u>	<u>Lecture Subject</u>	<u>Readings</u>
5/29	<p>Introduction to Environmental Science            Historical perspective and an Overview            Matter, Energy, and Change            Describe the discipline of environmental science as related to individuals, communities, and public policy.            Assignment: Introduce yourself on Blackboard.</p>	<p>Website: <a href="http://www.epa.gov/">http://www.epa.gov/</a>            PPT 1 &amp;2 and Ch 1 &amp; 2</p>
6/3	<p>Ecosystem Ecology and Biomes            Describe the basic principles of ecology            In class assignment: Mini Case Study: Reversing the Deforestation of Haiti  <i>HW: Podcast: PRI: The World – under assignments on BB</i></p>	PPT 3 & Ch 3
6/5	<p>Evolution, Biodiversity, and Community Ecology            Explain the concept of biodiversity and its underlying mechanisms.            Urban biodiversity: <a href="http://natureinthecity.org/urbanbiodiversity.php">http://natureinthecity.org/urbanbiodiversity.php</a>            Blog: <a href="http://cityparksblog.org/2012/05/17/celebrating-national-urban-biodiversity-week/">http://cityparksblog.org/2012/05/17/celebrating-national-urban-biodiversity-week/</a>            Of interest: <i>Field Guide to the Natural World of New York City</i> by Leslie Day 2007  <i>HW: ON BB refers to: <a href="http://www.urbanecologycollaborative.org/uec/">http://www.urbanecologycollaborative.org/uec/</a></i></p>	PPT 4 & Ch 4
6/10	<p>Human Population Growth            Describe the potential limits to human population growth and analyze relationships among changes in population size, economic development, and resource consumption at global and local scales.            In-class case study: Curitiba, Brazil</p>	PPT 5 & Ch 5
6/12	<p>Nonrenewable and Renewable Energy            Describe how energy use has varied over time and compare the energy efficiencies of the extraction and conversion of different fuels as well as the various means of generating electricity.</p>	PPT 8 & Ch 8
6/17	<p>Human Health Risk            Identify the three major categories of human health risk and explain risk analysis.            ESA21 Group project</p>	PPT 12 & Ch 12
6/19	<p>Water Resources and Water Pollution            Identify Earth's natural sources of water and identify the factors that will affect the future availability of water.            NYC RiverKeeper: <a href="http://www.riverkeeper.org/">http://www.riverkeeper.org/</a>  <b>Begin Field Study Group Project due 7/3</b></p>	PPT 9 & Ch 9

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6/24	Solid Waste Generation and Disposal Define waste generation from an ecological and systems perspective. In-class case study: Jamaica Bay	PPT 11 & Ch 11
6/26	Air Pollution Identify major air pollutants and where they come from and examine various approaches to the control and prevention of outdoor pollution. <a href="http://www.nyc.gov/html/dep/html/air/index.shtml">http://www.nyc.gov/html/dep/html/air/index.shtml</a>	PPT 10 & Ch 10
7/1	Land Resources and Agriculture Explain how human land use affects the environment and describe approaches and policies that promote sustainable land use. Pesticides and Fertilizers & Rachel Carson Biography	PPT 7 & Ch 7
7/3	Conservation of Biodiversity Identify the causes of declining biodiversity and describe conservation.	PPT 13 & Ch 13
7/8	Climate Alteration and Global Warming Distinguish among global change, global climate change, and global warming. Explain how solar radiation and greenhouse gases warm our planet and affect our oceans.	PPT 14 & Ch 14
7/10	Environmental Economics and Equity Discuss sustainability in a variety of environmental contexts including human well-being.  Environmental Policy Pollutant Regulation - The Environmental Protection Agency (EPA)	PPT 15 & Ch 15

**Final Exam 7/15**      **Lecture hall – during regular class time. Do not be late! Bring # 2 pencils and an eraser.**

Grades for Completed Courses

Grade	Numerical Value	Percentage Equivalent
A	4.0	93.0-100.0
A-	3.7	90.0- 92.9
B+	3.3	87.1- 89.9
B	3.0	83.0- 87.0
B-	2.7	80.0- 82.9
C+	2.3	77.1- 79.9
C	2.0	73.0- 77.0
C-	1.7	70.0- 72.9
D+	1.3	67.1- 69.9
D	1.0	63.0- 67.0
D-	0.7	60.0- 62.9
F	0.0	Below 60.0

JOHN JAY COLLEGE OF CRIMINAL JUSTICE  
The City University of New York

**Instructor:** Tiffany Millett  
**Email:** tmillett@jjay.cuny.edu  
**Office hours:** By appointment only. (3.61.00 and 3.83.03)

**Environmental 108**  
Summer 2013  
Section **802**

Requirements: **Environmental Science 108 Laboratory Manual 5<sup>th</sup> Edition,**  
**Safety Goggles, Non-programmable Scientific Calculator**

Spring 2013

<b>801</b>	<b>802</b>	<b>LAB #</b>	<b>EXPERIMENT</b>	<b>PAGE #</b>
W 5/29	T 5/28	-	Intro	-
M 6/3	TH 5/30	1	Laboratory Equipment and Measurements	1
W 6/5	T 6/4	5	Lead Detection and Toxicity	13
M 6/10	TH 6/6	6	Aluminum Detection	16
W 6/12	T 6/11	7	Sulfur Dioxide Detection in Foods	18
M 6/17	TH 6/13	10	Solids in Smoke	25
W 6/19	T 6/18	3	Drug Analysis- Color Tests	6
M 6/24	TH 6/20	2	Drug Analysis- Thin Layer Chromatography	3
W 6/26	T 6/25	4	Drug Analysis- Crystal Test	8
M 7/1	TH 6/27	9	Testing Sunscreens	23
W 7/3	T 7/2	8	Alcohol Detection <i>Research Paper due</i>	20
M 7/8	T 7/9	12	Clarification of Water	28
W 7/10	TH 7/11	-	Environmental Effects on Daphnia	-
M 7/15	T 7/16	11	Water Quality Testing	27

**☑ GRADING SCALE: LAB GRADE REFLECTS 30% OF LECTURE GRADE**

- ① Monday through Thursday includes recitation (R) **and** lab (L). You must attend the specified days to receive full credit for lab.
- ② Lab participation includes adherence to safety rules, attendance, punctuality and lab station cleanup.
- ③ **Please do not bring food or beverages into the lab. Do not dispose of food in the waste receptacles.**
- ④ **For your protection please do not wear any open footwear (e.g. sandals, etc.) in the lab.**
- ⑤ All labs will be performed on the scheduled day and time only. **NO MAKE-UP LABS.**
- ⑥ Each individual is responsible for lab station cleanup—not the lab technician!
- ⑦ **A quiz is given during each lab session starting Thursday, May 30. NO MAKE-UP QUIZZES.**
- ⑧ **No programmable calculators, cell phones, iPads, etc., are allowed for quizzes.**

## Lab Policy

### Lab Participation and Attendance (5%)

Attendance and Punctuality are mandatory. Each student is required to attend each laboratory recitation and exercise and to stay for its duration. Attendance will be taken at the beginning of each period and it is the student's responsibility to make sure that the instructor records their attendance. Two lateness marks will equal one absence. Each absence is equivalent to approximately 0.5%, which will be deducted from the 5%. In case of sickness the respective student is responsible for communicating with the laboratory instructor and to provide the necessary documentation to verify said absence. Irrespective of the reason for the absence, there will be **no make-up labs or quizzes**.

Lab participation includes adherence to safety rules, involvement in experimental procedures and station cleanup. Students will be required to work in groups and each student should participate in the laboratory exercises. The instructor will observe each student's involvement in the laboratory recitations and exercises and the students will be evaluated accordingly. The lab safety rules will be strictly enforced at all times and students are expected to observe them while in the lab. In that respect, under no circumstance should food be brought into lab or should food be disposed of in waste receptacles. **Honor the dress code set out for you in the lab safety rules. Students will be barred from the laboratory if they are not in accordance with the safety rules.**

### Lab Reports (10%)

The Lab Manual Reports are to be completed during the Laboratory exercise and should be handed in at the end of each Lab (prior to the student leaving the Lab). The Reports are to be neatly completed (legible) and all results noted, calculations completed and questions answered as related to the respective laboratory exercise. **If you do not participate in the lab you may not turn in a lab report.**

NOTE: Each student is required to procure a copy of the laboratory manual and safety goggles. No student will be allowed to conduct the laboratory exercise without his/her safety goggles and will be barred from the lab for that period, receiving an absent mark. **Lab instructors will not supply safety goggles for any student. No make-up labs will be given.**

### Quizzes (10%)

Starting Thursday, May 30 for Section 802 and Monday, June 3 for Sections 801, a quiz of approximately 5 questions will be given **at the beginning of each session**. Students will be allowed **20 minutes** to complete the quiz. Questions will include multiple choice, fill-ins and calculations using a non-programmable calculator—**no cell phones**. Calculators may **not** be shared. Students are required to write legibly and answer all questions. **Students arriving after the quiz has begun will be counted as late and will only be given the remaining part of the 20 minute limit to complete the quiz. There will be no make-up quiz for a student who arrives after the quizzes are collected or for any student absent on that day.** The **best 10 out of 13** quizzes will count toward the student's final lab grade.

### Research Paper (5%)

Each student is expected to write and submit a detailed research paper (a hard copy and electronic submission to turnitin.com). A separate handout will provide additional details on the requirements for the successful completion of this assignment. All papers must be turned in at Turnitin.com; please register.

Research Paper will be due on **7/3/13 (section 801) and 7/2/13 (section 802)**. No reports will be accepted after this date. A hard copy of the paper must be submitted to the instructor on this day, and also be submitted to Turnitin.com. The report must be type written (Font 12; double spaced, Times New Roman). The lab report must be written in the past tense and be grammatically correct. Please see additional handout for Research Guidelines.

Class ID: \_\_\_\_\_

Password: \_\_\_\_\_