UCSF 137: The Scientific Basis of Environmental Issues
Fall 2015
Loyola University Chicago

Instructor:	Linda C. Brazdil, Ph.D.
Office:	Cudahy Science 420
Phone (office):	773.508.3103
Email:	lbrazdil@luc.edu
Office hours:	Wednesdays 10:00 – 11:30 am, Thursdays 1:00 – 2:30 pm, or by appointment

Class Meeting Times:	Tuesday & Thursday 11:30 am-12:45 pm

Course Description
This course acts as the first foundational science course as part of Loyola University's Core Curriculum.

Where we live and the other organisms with which we live reveal an interconnectedness and interdependence of living organisms. We act and others (both living and nonliving entities) are affected. Scientific principles describe the cycles and the cause and effect relationships within our ecosystems. This course will survey these critical principles as well as the processes of science that help us participate in informed decision-making for our own health and the health of our environments.

Course Objectives
By the end of the semester, you should be able to:
- draw inferences from evidence, including identifying relevant parameters, constructing testable and falsifiable hypotheses and analyzing data;
- recognize the interconnections among the different scientific disciplines and how their principles are used in investigating environmental issues.
- demonstrate understanding of the physical and chemical principles underlying environmental science;
- exhibit knowledge of the nature of, and interaction among, the four Earth systems (biosphere, lithosphere, hydrosphere, and atmosphere);
- understand the role of energy and thermodynamics in ecosystem functioning;
- understand the chemical basis of life, and;
- understand and describe important cycles in nature.

Essential Components of the Course (IDEA Objectives):
- Gaining factual knowledge (terminology, classification, methods, trends).
- Learning fundamental principles, generalizations, or theories.
- Learning to apply course material (to improve thinking, problem solving and decisions).

Required Resources

(1) Christensen, N. and Leege, L. (2016). *The Environment and You, 2nd Edition (with MasteringEnvironmentalScience*). Prentice Hall. ISBN 978-0321957894. Any format (print, loose pages, or e-text) is acceptable as long as you have access to the text during class. The *MasteringEnvironmentalScience* site will be used for homework and may also be used for reflection papers. The course ID is BRAZDIL137FALL15. **Please make sure to purchase it from an approved vendor; access codes that have been previously used cannot be reused.**

(2) *Sakai Connection*, sakai.luc.edu

Connection to the "Hungers" of Loyola University's Transformative Education

Within the spirit of Jesuit education traditions and practices, this course seeks to assist each student in fostering hungers associated with the University's model of transformative education[1]. The focus on developing an understanding of science and the social and environmental issues can also assist in development of the specific hungers below:

- A Hunger for Integrated Knowledge – by building an understanding of a variety of scientific concepts and applying them to problems in many contexts.
- A Hunger for a Moral Compass – by examining the variables, benefits, and detriments that exist at the interface of applied science, technology, environment, and society.
- A Hunger for a Global Paradigm – by examining the variables, benefits, and detriments that exist at the interface of applied science, technology, environment, and society.

Academic Honesty

Academic honesty is an expression of interpersonal justice, responsibility and care, applicable to Loyola University faculty, students, and staff, which demands that the pursuit of knowledge in the university community be carried out with sincerity and integrity. The School of Education's Policy on Academic Integrity can be found at: http://www.luc.edu/education/academics_policies_integrity.shtml. The definitions of cheating, plagiarism, fabrication, and falsification are given at this site will be used in determining whether a student has violated academic integrity. Additionally, a clear and thorough discussion of plagiarism, including examples, is can be found on the English Department's website at http://www.luc.edu/english/writing.shtml#source

All students in this course are expected to have read and to abide by the demanding standard of personal honesty, drafted by the College of Arts & Sciences, that can be viewed at: http://www.luc.edu/cas/pdfs/CAS_Academic_Integrity_Statement_December_07.pdf Anything you submit that is incorporated as part of your grade in this course (*e.g.*, quiz, examination, homework, paper, presentation) must represent your own work. Any student found to have cheated on, plagiarized, fabricated, or falsified any portion of a test or assignment, the student will receive a zero on that test or assignment and this grade cannot be dropped. The student has the

[1] http://www.luc.edu/transformativeed/

right to appeal the instructor's decision. If the student does so, the Academic Grievance Procedure described at http://www.luc.edu/academics/catalog/undergrad/reg_academicgrievance.shtml will be followed. If a student is found to have cheated on, plagiarized, fabricated, or falsified any portion of a test or assignment for a second time in this class, they will receive an F for the class. In all cases of academic dishonesty, the instructor will report the incident to the Office of the CAS Dean. Depending on the seriousness of the incident, additional sanctions may be imposed.

For some work, you will be required to submit your work on Sakai through Turnitin. One feature of this plagiarism detection software is that you can submit drafts of your papers to make certain that you have not inadvertently failed to properly cite a source. I encourage you to use this feature.

Accessibility
Students who have disabilities which they believe entitle them to accommodations under the Americans with Disabilities Act should register with the Services for Students with Disabilities (SSWD) office. To request accommodations, students must schedule an appointment with an SSWD coordinator. Students should contact SSWD at least four weeks before their first semester or term at Loyola. Returning students should schedule an appointment within the first two weeks of the semester or term. The University policy on accommodations and participation in courses is available at: http://www.luc.edu/sswd/

Harassment (Bias Reporting)
It is unacceptable and a violation of university policy to harass, discriminate against or abuse any person because of his or her race, color, national origin, gender, sexual orientation, disability, religion, age or any other characteristic protected by applicable law. Such behavior threatens to destroy the environment of tolerance and mutual respect that must prevail for this university to fulfill its educational and health care mission. For this reason, every incident of harassment, discrimination or abuse undermines the aspirations and attacks the ideals of our community. The university qualifies these incidents as incidents of bias.

In order to uphold our mission of being Chicago's Jesuit Catholic University-- a diverse community seeking God in all things and working to expand knowledge in the service of humanity through learning, justice and faith, any incident(s) of bias must be reported and appropriately addressed. Therefore, the Bias Response (BR) Team was created to assist members of the Loyola University Chicago community in bringing incidents of bias to the attention of the university. If you believe you are subject to such bias, you should notify the Bias Response Team at this link: http://webapps.luc.edu/biasreporting/

Course Evaluation
Grades will be assigned in the course and weighted according to the sources detailed in Table 1.

Table 1. Grade Criteria

Criteria	Maximum Percent Value
Participation and Reflection Papers	15%
Homework	5%
Tests	42%
Sustainability on Campus Project	8%
Final Exam	30%

Participation will be an important part of the class. This work will be a combination of individual and group work. In order to prepare to substantively take part in class, you are expected to read the modules in the textbook before the class period in which they will be addressed and/or articles that have been assigned and complete online questions to assess your understanding. These questions will be graded for completion and used to determine areas that may need clarification on further discussion in class. Students must be present during class sessions and engage in online discussions when required in order to receive credit for these assignments. Participation will be graded on your ability to use pertinent data to take part in group work, add to discussions, and make reasoned conclusions or decisions. This will include being able to ask questions of others and to evaluate arguments and conclusions made by others.

Homework will be assigned via *MasteringEnvironmentalScience* and Sakai. Homework will be graded on your ability to correctly complete assignments. There will be homework due most weeks during the semester. *MasteringEnvironmentalScience* homework will generally be due at 11:55 pm on Thursday each week.

Tests will be administered at three different points during the course. Each will primarily reflect the content and concepts developed during prior class sessions. They will be a combination of multiple choice and short answer questions.

The *Sustainability on Campus Project* will be an individual project that will allow you to discover and investigate sustainable practices on campus. The project will include research into the scientific basis of the practice, the ethics and values that drive the practice, and the opportunities that exist for students to get involved. Further details regarding the project, including a grading rubric, will be presented in class.

The *Final Exam* will be designed to assess students' comprehensive knowledge of concepts developed during the work of the entire semester. Like the tests, the final will consist of multiple choice and short answer questions.

Grades will be assigned according to the grading scale presented in Table 2.

Table 2: Grading Scale

Percentage of Points Earned	Grade
92% or greater	A
<92% - 90%	A-
<90% - 88%	B+
<88% - 82%	B
<82% - 80%	B-
<80% - 78%	C+
<78% - 72%	C
<72% - 70%	C-
<70% -68%	D+
<68% - 60%	D
<60%	F

Practices for Success

Supporting claims with evidence, making applications, solving and analyzing problems, and using scientific principles to explain phenomena are critical skills in the field of science. The development of these skills is not without some frustration, but it carries the reward of deepening one's ability to think critically and solve problems in any field. To do this, one may have to assess, evaluate, and possibly revise approaches to learning. The use of targeted, guiding questions, regularly scheduled work, and strategic study plans can greatly assist the learning of science. With such a focus, hopefully any frustration will quickly turn to appreciation and fascination for the relevance and connectedness of science in your life and the world around you. Solving and analyzing problems is the most important feature of this work. If, at any time, you need assistance framing such plans for your work in science, please do not hesitate to ask the instructor.

Norms of Course Proceedings

The classroom is to be a safe place to question and explore ideas. Student and teacher voices are important to this work. Collegial disagreement can be a healthy part of this process, but must always include respect for all members of the class.

Course activities will be designed to help students reach the goal of learning environmental science content and developing thinking skills. This will more often be driven by the use of data and reasoning to discover concepts and solutions rather than the identification and exchange of facts and algorithms.

Class sessions will begin and end on time. All students should attend class regularly and participate in class discussions. Multiple absences could affect one's ability to learn chemistry during this semester. Anticipated absences should be discussed with the instructor two class days before the absence. Proper documents may be requested to verify the reason for any absence. This is particularly relevant to days missed that include an in-class assessment for which a student is asking for a make-up.

Class time is designed to engage students in activities that advance their understanding of environmental science. Electronic media, including cell phone, texting devices, laptops, and tablets should be used only as they enhance the activity of the class. In general, cell phones and texting devices should be turned off during class time. If you expect that you might receive an emergency phone call or text during class, please set your phone so that it will not distract other participants in the course and sit in a place where you can easily step into the hallway to answer a call if necessary.

Email messages and other electronic communication among students in the course should be respectful, appropriate, and professional. The instructor will respond to emails and phone messages as quickly as possible and at a minimum within 24 hours except on weekends. Only emails from your Loyola University account will be accepted, and the instructor will only send emails to your Loyola University account. Communications received after 3:00 pm on Friday or over a weekend will be answered on Monday morning at the latest.

Completed course assignments must be submitted by 11:55 pm on the due date. Please note that the due date may or may not be a date that the class meets. Late assignments will not be accepted without proper verification of reasons.

Tentative Course Schedule

The official academic calendar for Fall 2015 can be found at www.luc.edu/academics/schedules.

Table 3: Proposed Semester Topics & Schedule

Dates	**Topics**
August 25, 2015	Introduction to Environmental Science (Modules 1.1, 1.2, 1.5 (parts), 2.2)
August 27, 2015	Biodiversity (Modules 1.3, 4.3, 4.4)
September 1, 2015	Biodiversity (Modules 4.5, 4.6, 4.7)
September 3, 2015	Biodiversity (Modules 6.4, 6.5, 8.1, 8.2, 8.3)
September 8, 2015	Biodiversity (Modules 8.1, 8.2, 8.3)
September 10, 2015	Biodiversity (Modules 8.7, 8.8, 2.4)
September 15, 2015	Agriculture and the Ecology of Food (Modules 2.1, 12.1, 3.2)
September 17, 2015	Agriculture and the Ecology of Food (Modules 3.2, 12.10)
September 22, 2015	Agriculture and the Ecology of Food (Modules 2.2, 12.10)
September 24, 2015	**Test 1**
September 29, 2015	Water (Module 3.1)
October 1, 2015	Water (Modules 11.1, 11.4)
October 8, 2015	Water (Modules 11.8, 2.5, 2.6, 2.7)
October 13, 2015	Human Population Growth (Modules 5.1, 5.2)
October 15, 2015	Human Population Growth (Modules 5.2, 5.3)
October 20, 2015	Human Population Growth (Modules 5.4, 5.5)
October 22, 2015	**Test 2**
October 27, 2015	Climate Change (Modules 3.3 (parts), 3.6, 3.7)
October 29, 2015	Climate Change (Modules 9.3, 9.4)
November 3, 2015	Climate Change (Modules 9.5. 9.6, 9.7)
November 5, 2015	Energy (Module 3.3) **Sustainability on Campus Project Due**
November 10, 2015	Energy (Modules 14.2, 14.3, 14.4)
November 12, 2015	Energy (Modules 14.5)
November 17, 2015	Energy (Modules 15.1, 15.2, 15.3, 15.4)
November 19, 2015	Energy (Modules 15.5, 15.6, 15.7)
November 24, 2015	**Test 3**
December 1, 2015	Energy – (Modules 15.8, 15.9)
December 3, 2015	Review for Final Exam
Exam Week: Tuesday, December 8, 2015	**FINAL EXAM, 9:00-11:00 am**

Other modules and information may be introduced by the instructor as appropriate to specific topics. Additionally, other modules may be helpful to students in completion of the energy project.