Ecosystem Ecology
Course Outline
2013

COURSE INSTRUCTOR:

Instructor: Dr. Gabor Sass (gabor.sass@uwo.ca)
Office: Collip Building, Room 209
Office hours: 1 hour immediately following lecture or by arrangement

Teaching Assistants: Ryan Sorichetti (rsorich@uwo.ca)
Eric Enanga (eenanga@uwo.ca)

COURSE INFORMATION:

Structure:
Lecture: Tuesday and Thursday, 10:30 to 11:30 in Physics and Astronomy Building - 150
Laboratory: Friday, 9:30 to 12:30 in B&G - 0153

Calendar Description:
This course traces the flow of water, energy, and nutrients from their abiotic origins, to their cycles through microbes, plants, and animals. This course will synthesize current advances in ecology with established theory to offer a comprehensive survey of ecosystem pattern and process.

Prerequisites:
Biology 2483a Ecology

The Senate regulation with respect to your responsibility for ensuring that course prerequisites have been completed successfully states: “Unless you have either the prerequisites for this course or written special permission from your Dean to enroll in it, you may be removed from this course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment of your fees in the event that you are dropped from a course for failing to have the necessary prerequisites.”

COURSE SYLLABUS:

Detailed Description:
This course introduces students to the science of ecosystem ecology. Ecosystem ecology is a young, inherently multidisciplinary science. Over the 21st century, major advances in ecosystem ecology were driven by the emergence of environmental problems. For example, in the 1960s, the response of ecosystems to biomagnifications of pesticides and eutrophication of waters from excess nutrients led to the formation of the discipline of ecosystem ecology. By the end of the 21st century, recognition of the fundamental role that humans play in all ecological problems led to the integration of ecosystem ecology with social sciences. This course examines the concept of ecosystem ecology; the factors that influence ecosystem structure and function; the processes that determine the flow of energy and water and the cycling of carbon and nutrients in ecosystems; the role of disturbance on these processes; and the integrated effects of these processes at landscape scales and their consequences for sustainable use by human societies.

Lectures will focus on the fundamental principles of ecosystem ecology. Laboratories will focus on application of these fundamental principles to ecosystem science being conducted by ecosystem scientists that are designed to improve our understanding of how humans impact ecosystems.
Course Evaluation:
This course is designated as an essay course. Students will prepare three reflection papers (500 words each), which must be handed in during class by the deadlines indicated below. Both hardcopies and softcopies must be submitted.

30%  Reflections (3 x 10%)
20%  Attendance & Participation (Individual and Group)
15%  Mid-term Exam
35%  Final Exam

Reflections (30%):
The reflection papers will be focused on historical accounts of how “a cadre of influential scientists have clouded public understanding of scientific facts to advance a political and economic agenda”. These reflections papers will be informed from a film, a selected chapter in the course book “Merchants of Doubt” plus 3-5 additional readings chosen by the student. Guidelines for how to prepare a successful reflection paper (including a rubric) will be provided during the first week of class.

Reflection papers are due at the beginning of class on January 29, March 5, and April 9 as hardcopies. Also please send digital copy to TA (for “turnitin” analysis).

There will be a 10% late penalty each day (including weekends).

Exams (50%):
The two exams – a mid-term (15%) and end of term (35%) – will include a combination of short-answer and long-answer questions drawn from theories and techniques presented in both the lectures and the laboratories.

Attendance & Participation - individual and group (20%):
Participation is fundamental to the learning environment.

Attendance in class activities is mandatory. An individual participation grade will be awarded based on your attendance, readiness, and discussion during class activities and on-line discussion forums. Students will be expected to check and comment on the class blog on a weekly basis (10%).

A group participation grade will be awarded for your introduction of one of the guest speakers. The introduction will be supported by: (a) 1-2 journal articles on the topic to be placed on course website; (b) a biography of the guest speaker; and (c) a two page summary of the topic that will be distributed to the class. On the day that the guest speaker presents, your group will be responsible for introducing the guest speaker, leading (and/or stimulating!) the Question/Answer (Q/A) period; and taking the guest speaker to lunch (the Instructor will cover cost of lunch for guest speaker only). (10%).
COURSE RESOURCES:

Web Site:
Course updates and lecture and laboratory resources (i.e., presentations, readings) will be available online through Owl [https://owl.uwo.ca/portal] as PowerPoint files and/or PDF files. The login user name and password are the same as your UWO email. Please check this page on a weekly basis for course updates.

Blog Site: Another way to participate in the course is through the course blog site. Students will be expected to check and comment on the blog on a weekly basis.

Required Textbooks:

The required books are available in the bookstore. Alternatively, the books are available on reserve at the Taylor Library. All reserves are for 1 day.

COURSE POLICIES:

Late Penalties:
A penalty of 10% per day (including weekends) will be deducted from the assigned grade for late submissions. Once reflection papers are graded and returned, a grade of 0 will be assigned.

Academic Offences:
Scholastic offences are taken seriously and you are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web Site: http://www.uwo.ca/univsec/handbook/appeals/scholoff.pdf.

The reflection papers will be subject for textual similarity review to the commercial plagiarism detection software under license to the University for the detection of plagiarism. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between The University of Western Ontario and Turnitin.com (http://www.turnitin.com).

Use of Electronic Devices:
No electronic devices will be allowed during the examinations.

Illnesses:
The University recognizes that a student’s ability to meet his/her academic responsibilities may, on occasion, be impaired by medical illness. Academic accommodation for work representing 10% or more of the student’s overall grade in the course shall be granted only in those cases where there is documentation indicating that the student was seriously affected by illness and could not reasonably be expected to meet his/her academic responsibilities. Documentation shall be submitted, as soon as possible, to the appropriate Dean’s office (the Office of the Dean of the student’s Faculty of registration/home Faculty) together with a request for relief specifying the nature of the accommodation being requested. Once the petition and supporting documents have been received and assessed, appropriate academic accommodation shall be determined by the Dean’s Office in consultation with the student’s instructor(s).
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<th>Week Starting</th>
<th>Tuesday</th>
<th>Thursday</th>
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| Jan-07        | Introduction             | The Ecosystem Concept   | Laboratory philosophy and schedule; How to write a good reflection?; FILM | Chapter 1
|               |                          |                         | Readings [1, 2, 3]                                     |        |
| Jan-14        | Earth’s Climate System   | Earth’s Climate System  | River walk: Ecosystem science in the winter           | Chapter 2 |
| Jan-21        | Water and Energy Balance | Water and Energy Balance| Guest speakers                                        | Chapter 4 |
| Jan-28        | Carbon Input to Ecosystems | Carbon Input to Ecosystems | Guest speakers                                      | Chapter 5 |
| Feb-04        | Carbon Budgets - Plants  | Carbon Budgets - Plants | Guest speakers                                        | Chapter 6 |
| Feb-11        | Carbon Budgets – Ecosystems | Carbon Budgets – Ecosystems | Guest speakers                                      | Chapter 7 |
| Feb-18        | Reading week             | Reading week            | Reading week                                          |        |
| Feb-25        | Review                   | Mid-term Exam           | FILM                                                  | Mid-Term |
| Mar-04        | Nutrient Use             | Nutrient Cycling        | Guest speakers                                        | Chapter 8, 9 |
| Mar-11        | Trophic Dynamics         | Trophic Dynamics        | Guest speakers                                        | Chapter 10 |
| Mar-18        | Temporal Dynamics        | Landscape Heterogeneity | Guest speakers                                        | Chapter 12, 13 |
| Mar-25        | Change in the Earth System | Change in the Earth System | Good Friday                                           | Chapter 14 |
| Apr-01        | Managing and Sustaining Ecosystems | Managing and Sustaining Ecosystems | Guest speakers | Chapter 15 |
| Apr-08        | Managing and Sustaining Ecosystems | Review | NO TUTORIAL                   | Chapter 15 |

