

## BIOLOGY/ENVIRONMENTAL STUDIES 2210 FA — INTRODUCTORY ECOLOGY

**Lectures:** Monday and Wednesday 11:30 am -1:00 pm in AT 1003

**2016 Outline**

**Labs:** F1: W, 8:30-11:30 am, CB 3013      F2: W, 2:30-5:30 pm, CB 3015  
F3: TH, 8:30-11:30 am, CB 3015      F4: TH, 2:30-5:30 pm, CB 3015  
F5: F, 8:30-11:30 am, CB 3015

**Instructor:** Dr. Stephen Hecnar  
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Office Hours: M & W 1:00-2:00 pm

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**Course Description:** Interrelationships of plants and animals with the environment. The distribution and dynamics of plant and animal communities. Aspects of applied ecology and conservation.

**Goal of the Course:** To develop a basic understanding of fundamental ecological concepts. Having a solid foundation in ecology will help those seeking careers in academia, teaching, environmentally related employment, or those taking virtually any other path in life. Studying ecology is both interesting and challenging in its own right because of the complexity of nature. However, understanding basic ecology is also important for utilitarian reasons. All living organisms (including humans) are completely dependent upon the ecosystems in which they occur. Because the amount of energy or resources that sustains life is limited, actions of organisms can affect other organisms and how ecosystems function. The most important problems affecting biodiversity and human society are ecological in nature. Understanding the basic fundamental principles of ecology is thus essential for making informed decisions to solve these problems.

**Required Text:** Ricklefs, R.E., R. Relyea, and C. Richter. 2015. Ecology: The Economy of Nature, 7<sup>th</sup> edition (Canadian edition), W.H. Freeman and Company, New York. ISBN-10: 1-4641-5424-4 ISBN-13: 978-1-4641-5424-9

**Required Manual:** Brazeau, D. 2016. Introductory Ecology Biol/En St 2210 Lab Manual

**Marking Scheme:** Midterm 20%, Lab 40% (see manual for details), Final Exam 40%

**Other Information:** A Desire2Learn website is set up for the course. From this site you can *view or download the lecture material as PowerPoint files*. For organizational purposes, we will closely follow the order of topics as outlined in the chapters of your textbook (Ricklefs 2015). The publisher also has a companion web site that contains chapter outlines which can be downloaded and used as a basis for taking lecture notes. This site also has online tests that you can use to monitor your progress and an interactive module so that you can increase your understanding of the fundamental models discussed in the course. The grade you ultimately earn depends on the level of your effort. A formula for success involves attending all lectures and labs, completing all assignments on time, reading your text, making good notes, and a sufficient amount of studying. Good attendance in lectures is important so that you will not miss the review of the basic topics and any additional information and examples that the instructor provides. Exam questions often come from topics covered during poorly attended lectures. If you must miss a test or exam because of illness or other serious circumstance, contact the instructor or lab technician as soon as possible (documentation may be required). Because of the number enrolled in this course, there will be a large group in the lecture hall. Please be courteous to others in the course. Unnecessary noise and distractions will not be tolerated. Turn cell phones off during lecture. Electronic devices such as laptops or ipads etc.

can be used in class for viewing course materials or taking notes, not for shopping, surfing the web, watching movies or other purposes. This distracts those beside or behind you. Please also refrain from attending lecture or office hours if you have a contagious illness. After you recover, borrow notes from a classmate or ask the instructor to review what you missed. **Midterm: Monday 24<sup>th</sup> October.**

**Tentative Lecture Topics Outline:**

**Background Reading**

<ul style="list-style-type: none"> <li>• 1) Introduction</li> </ul>	Chapter 1
<b>Part I Life and the Physical Environment</b>	
<ul style="list-style-type: none"> <li>• 2) The Physical Environment</li> <li>• 3) Adaptation to the Physical Environment</li> <li>• 4) Variations in the Physical Environment</li> <li>• 5) Biological Communities: The Biome Concept</li> </ul>	Chapter 2 & 3 Chapter 2 & 3 Chapter 4 & 5 Chapter 6
<b>Part II Organisms</b>	
<ul style="list-style-type: none"> <li>• 6) Evolution and Adaptation</li> <li>• 7) Life Histories and Evolutionary Fitness</li> <li>• 8) Sex and Evolution</li> <li>• 9) Family, Society, and Evolution</li> </ul>	Chapter 7 Chapter 8 Chapter 9 Chapter 10
<b>Part III Populations</b>	
<ul style="list-style-type: none"> <li>• 10) Population Structures</li> <li>• 11) Population Growth and Regulation</li> <li>• 12) Temporal and Spatial Dynamics of Populations</li> <li>• 13) Population Genetics</li> </ul>	Chapter 11 Chapter 12 Chapter 13 Chapter 7
<b>Part IV Species Interactions</b>	
<ul style="list-style-type: none"> <li>• 14) Consumer-Resource Interactions                Predation, Herbivory, Parasitism, Infectious Disease</li> <li>• 15) Dynamics of Consumer-Resource Interactions</li> <li>• 16) Competition</li> <li>• 17) Coevolution and Mutualism</li> </ul>	Chapter 14 & 15 Chapter 15 Chapter 16 Chapter 17
<b>Part V Communities</b>	
<ul style="list-style-type: none"> <li>• 18) Community Structure</li> <li>• 19) Succession &amp; Community Development</li> <li>• 20) Biodiversity</li> <li>• 21) History and Biogeography</li> </ul>	Chapter 18 Chapter 19 Chapter 23 Chapter 23
<b>Part VI Ecosystems</b>	
<ul style="list-style-type: none"> <li>• 22) Energy in the Ecosystem</li> <li>• 23) Pathways of Elements in the Ecosystem</li> <li>• 24) Nutrient Regeneration in Terrestrial and Aquatic Ecosystems</li> </ul>	Chapter 20 Chapter 21 Chapter 21
<b>Part VII Ecological Applications</b>	
<ul style="list-style-type: none"> <li>• 25) Landscape Ecology</li> <li>• 26) Extinction and Conservation</li> <li>• 27) Economic Development and Global Ecology</li> </ul>	Chapter 22 Chapter 23 Chapter 23

**BIOL/ENST 2210 -A Brief Questionnaire (2016):** This is a voluntary anonymous survey for informational purposes only. However, try to answer or at least provide your best guess to the questions below.

1. How many species of living organisms inhabit the earth? \_\_\_\_\_.
2. T F The “Balance of Nature” is a viable concept.
3. T F Human societies are ultimately dependent on natural ecosystems for their existence.
4. T F “Pristine” natural areas exist.
5. Of all the energy available to support life on earth, what percentage is currently appropriated by humans?  
10 20 30 40 50 60 70 80 90
6. What percentage of earth’s terrestrial surface has been altered by humans?  
10 20 30 40 50 60 70 80 90
7. Along what lines are your interests and career aspirations are more closely aligned?  
A) environment, ecology, natural resources B) molecular biology, health sciences, forensics etc.
8. If this course was not required, would you still take it? Yes No
9. In your opinion, what is the most important problem facing human society?  
\_\_\_\_\_
10. What is your ultimate career goal?  
A) academics (university) D) health sciences  
B) teaching (elementary, secondary) E) natural resources industry  
C) government employment F) other \_\_\_\_\_
11. What is your major? \_\_\_\_\_
12. Where do you come from?  
A) northern Ontario C) elsewhere in Canada  
B) southern Ontario D) another country
13. In what setting have you spent most of your life? A) rural B) suburban C) urban
14. How often do you  
camp? A) never B) occasionally C) often  
hunt? A) never B) occasionally C) often  
fish? A) never B) occasionally C) often  
hike? A) never B) occasionally C) often  
canoe/kayak? A) never B) occasionally C) often  
birdwatch or other natural observation? A) never B) occasionally C) often

Thanks for participating.