# BIOLOGY/ENVIRONMENTAL STUDIES 2210 — INTRODUCTORY ECOLOGY

Fall 2013
FILE COPY

**Lectures**: Tuesday and Thursday 11:30am -1:00 pm in UC 2011

**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

**Instructor**: Dr. Stephen Hecnar Office: CB 4039 Phone: 343-8250
Email: shecnar@lakeheadu.ca Office Hours: TU & TH 1:00-2:00 pm
Website: http://flash.lakeheadu.ca/~shecnar/

**Lab Technicians**: Barb Barnes, Office CB 3014A, Phone: 343-8593, Email: barbara.barnes@lakeheadu.ca

**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 on 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 basic principles is thus essential for making informed decisions to solve these problems.

**Required Text**: Ricklefs, R.E. 2010. The Economy of Nature, 6th edition, W.H. Freeman and Company, New York. ISBN-10: 0-7167-8697-4 ISBN-13: 978-0-7167-8697-9 Companion Website: <http://bcs.whfreeman.com/ricklefs6e/default.asp?s=&n=&i=&v=&o=&ns=0&uid=0&rau=0>

**Required Manual**: Barnes, B. 2013. Introductory Ecology Biology/Environmental Studies 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 2010). 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. 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.

**Tentative Lecture Topics Outline**:

- Introduction — Chapter 1

Part I Life and the Physical Environment

- The Physical Environment — Chapter 2 & 3
- Adaptation to the Physical Environment — Chapter 2 & 3
- Variations in the Physical Environment — Chapter 4
- Biological Communities: The Biome Concept — Chapter 5

Part II Organisms

- Adaptation to Life in Varying Environments — Chapter 6
- Life Histories and Evolutionary Fitness — Chapter 7
- Sex and Evolution — Chapter 8
- Family, Society, and Evolution — Chapter 9

Part III Populations

- Population Structures — Chapter 10
- Population Growth and Regulation — Chapter 11
- Temporal and Spatial Dynamics of Populations — Chapter 12
- Population Genetics — Chapter 13

Part IV Species Interactions

- Predation and Herbivory — Chapter 14
- Dynamics of Predation — Chapter 15
- Competition — Chapter 16
- Coevolution and Mutualism — Chapter 17

Part V Communities

- Community Structure — Chapter 18
- Succession & Community Development — Chapter 19
- Biodiversity — Chapter 20
- History and Biogeography — Chapter 21

Part VI Ecosystems

- Energy in the Ecosystem — Chapter 22
- Pathways of Elements in the Ecosystem — Chapter 23
- Nutrient Regeneration in Terrestrial and Aquatic Ecosystems — Chapter 24

Part VII Ecological Applications

- Landscape Ecology — Chapter 25
- Extinction and Conservation — Chapter 26
- Economic Development and Global Ecology — Chapter 27

**Midterm: Tuesday 22th October.**

**BIOL/ENST 2210 -A Brief Questionaire (2013)**: 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)
    B) teaching (elementary, secondary)
    C) government employment
    D) health sciences
    E) natural resources industry
    F) other _____

11. What is your major? _____

12. Where do you come from?

    A) northern Ontario
    B) southern Ontario
    C) elsewhere in Canada
    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.