

BIOLOGY/ENVIRONMENTAL STUDIES 2210 FDE — INTRODUCTORY ECOLOGY

Lectures: Tuesday and Thursday 5:30 – 7:00 pm (online via Zoom)

2021 Outline

Labs: F1: W, 8:30 – 11:30 am CB 3015 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 FD1: W, 8:30 – 11:30 am CB 3015 (online via Zoom)

Instructor: Dr. Stephen Hecnar
Email: shecnar@lakeheadu.ca
Website: <http://shecnar.lakeheadu.ca/>

Office: CB 4039 Phone: 343-8250
Office Hours: There will not be any in person face-to-face office hours in Fall 2020. I will remain on Zoom after lectures end to answer questions and then monitor my Lakehead email account (not D2L email) until 8:00 pm.

Teaching Assistant (Zoom lectures): Ian Wick, Email: iewick@lakeheadu.ca

Lab Technician: Dan Brazeau M.Sc., Office CB 3020A, Phone: 343-8593, Email: dbrazeau@lakeheadu.ca

*****Course delivery for Fall 2021:** Because of the pandemic situation all lectures and exams will be delivered remotely online through the D2L website for the course. It is ironic that the course that focuses most closely on how nature works has to be offered in such an unnatural way, but it is best for all of our health and accessibility needs at this point in time. One benefit of taking the course is that if you become familiar with fundamental ecological principles that will help you gain a better understanding of how pathogens evolve, spread, and need to be managed.

We are currently planning for a combination of in-person and remote learning for lab activities. The first several labs will be completed outdoors on campus. You are expected to dress appropriately for outdoor labs. This includes wearing closed toe shoes, a rain jacket for possible precipitation and long-sleeved clothing for walking through forest and brush. Students completing the lab exercises remotely (FD1) will have direct access to a designated TA and the lab instructor for help. Refer to D2L for videos and reference materials. Please contact Dan Brazeau (dbrazeau@lakeheadu.ca) regarding any lab questions or concerns. **Note: you must complete the Covid Screening before attending labs on Campus. This screening also pertains to outdoor labs!!!!**

Lectures will be provided ‘synchronously’ at the time assigned above for the course. The schedule and links to join lectures and labs can be accessed via the calendar link on the D2L course website under the “Other Tools” heading. Lectures will be recorded and available for a limited time on the D2L website for the course. You can access recorded lectures by clicking ‘Other Tools’ then ‘Zoom’ and ‘Cloud Recordings’. Detailed PowerPoint lecture slides can also be accessed and downloaded from the D2L website for the course. During the scheduled time slot the instructor will provide a live lecture using the Zoom link on the D2L website for the course. The instructor will use the share screen function so that students can view the slides as the live audio lecture is given. Students can ask questions during the lecture by using the raise hand function (clicking “reactions” on the control bar then “raise hand” in the pop-up menu). The midterm and final exam will also be given on a specific date and time through the ‘Quiz’ link on the D2L main page for the course. If you have special needs for the course, please contact Student Accessibility Services (SAS) who coordinate arrangements.***

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. Understanding basic ecology is also vitally 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: Relyea, R. 2021. Ecology: The Economy of Nature, 9th edition, MacMillan, ISBN: 978 1319 369323 (ebook). Reading the text provides a more detailed background and understanding of the concepts covered in lectures. A variety of options are available for purchasing the textbook (hardcopy, looseleaf, Ebook, from the LU bookstore. An earlier edition of the text will suffice.

Required Manual: Lab Manual will be provided as modules on D2L each week.

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

Other Information: A Desire2Learn (D2L) website is set up for the course. From this site you can *view and/or download the lecture material as PowerPoint or pdf files*. Downloading these files is for your own personal use as a student taking the course. Do not distribute copies to third parties or post on the internet. ***The materials in the PowerPoint lecture files are copyright protected by the instructor and publisher.*** For organizational purposes, we will closely follow the order of topics as outlined in the chapters of your textbook (Relyea 2021). 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 spending a sufficient amount of studying. Participating 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). Although student microphones will be muted during lectures it is best to avoid unnecessary noise and distractions. A student's microphone will be turned on by the instructor after the raised hand function is clicked. **Turn cell phones off during lecture and use your electronic devices for viewing course materials or taking notes, but not for shopping, surfing the web, watching movies or other purposes.**

*****All students are required to be familiar with, and abide by, the Student Code of Conduct and university regulations on academic misconduct. The penalty for plagiarism or any form of cheating on any test, quiz, assignment, midterm or final examination, ranges from a grade of zero "0" on the material in question through zero "0" for the course, to expulsion from the university. Occurrence of academic dishonesty remains on your transcript. This can affect your future in terms of employment or further education. Plagiarism or unauthorized copying is theft of intellectual property and subject to penalties to the full extent of the law.**

Midterm: Thursday 21st October.

Final Exam: TBA December.

Tentative Lecture Topics Outline:

Background Reading

1) Introduction

Chapter 1

Part I Life and the Physical Environment

2) The Physical Environment

Chapter 2 & 3

3) Adaptation to the Physical Environment

Chapter 2 & 3

4) Variations in the Physical Environment

Chapter 4 & 5

5) Biological Communities: The Biome Concept	Chapter 6
Part II Organisms	
6) Evolution and Adaptation	Chapter 7
7) Life Histories and Evolutionary Fitness	Chapter 8
8) Sex and Evolution	Chapter 9
9) Family, Society, and Evolution	Chapter 10
Part III Populations	
10) Population Structures	Chapter 11
11) Population Growth and Regulation	Chapter 12
12) Temporal and Spatial Dynamics of Populations	Chapter 13
13) Population Genetics	Chapter 7
Part IV Species Interactions	
14) Consumer-Resource Interactions Predation, Herbivory, Parasitism, Infectious Disease	Chapter 14 & 15
15) Dynamics of Consumer-Resource Interactions	Chapter 15
16) Competition	Chapter 16
17) Coevolution and Mutualism	Chapter 17
Part V Communities	
18) Community Structure	Chapter 18
19) Succession & Community Development	Chapter 19
20) Biodiversity	Chapter 23
21) History and Biogeography	Chapter 23
Part VI Ecosystems	
22) Energy in the Ecosystem	Chapter 20
23) Pathways of Elements in the Ecosystem	Chapter 21
24) Nutrient Regeneration in Terrestrial and Aquatic Ecosystems	Chapter 21
Part VII Ecological Applications	
25) The Future of Biodiversity (Landscape Ecology, Extinction, Conservation, Economic development and Global Ecology)	Chapter 22 & 23