BIOLOGY/ENVIRONMENTAL STUDIES 2210 FDE — INTRODUCTORY ECOLOGY

Lectures: Tuesdays and Thursdays 11:30 am – 1:00 pm (UC 0050) **2024 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

Instructor: Dr. Stephen Hecnar Office: CB 4039 Phone: 343-8010 Ext. 8250
Email: shecnar@lakeheadu.ca Office Hours: Virtual: Mondays & Wednesdays 1:30 – 2:00 pm on Zoom (access D2L course website, "Other Tools", "Zoom") or face to face by appointment.
Website: http://shecnar.lakeheadu.ca/

Lab Instructor/Technician: Dan Brazeau M.Sc., Office CB 3020A, Phone: 343-8010 Ext. 7739, Email: dbrazeau@lakeheadu.ca

Teaching Assistant(s): TBA

*****Course delivery for Fall 2024:** Both lectures and labs will be delivered live in person (Face to Face). If the pandemic situation increases delivery could shift on short notice to live remote (Zoom through D2L). Be sure to regularly check for the latest Covid-19 updates on the university webpage and media emails. The university does not currently have a mask mandate, but it strongly recommends their use because there is still considerable risk for transmission. **Do not attend class in person if you test positive or have symptoms of Covid or other transmissible diseases and contact the instructor as soon as possible.** If you need to miss lectures, detailed lecture slides are available to download via the D2L website for the course. 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.

Students are encouraged to ask questions during the lecture by raising their hand. 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 will coordinate arrangements. We are currently planning for in-person labs indoors and some outdoors. 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. Please contact Dan Brazeau (dbrazeau@lakeheadu.ca) regarding any lab questions or concerns that you may have.*******

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: 9781319369347 (looseleaf paper) or 9781319369323 (ebook). Reading the text provides a more detailed background and understanding of the concepts covered in lectures. You can purchase the textbook (ebook) from the LU bookstore. If a paperback is preferred you may be able to order a copy from the publisher or an online source. An earlier edition of the text will suffice.

Required Manual: The lab manual will be available by download from the D2L website for the course.

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. It is accessed from the MyCourse link at the top right of the main lakehead webpage. 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 time 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). **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. Use of Generative Artificial Intelligence (AI) such as ChatGPT or other sources is not to be used in this course and will be considered as cheating*****

Midterm: Tuesday 22nd 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) Adaptation to the Physical Environment	Chapter 3 & 4
4) Variations in the Physical Environment	Chapter 5

5) Biological Communities: The Biome Concept	Chapter 2
Part II Organisms	
6) Evolution and Adaptation	Chapter 6
7) Life Histories and Evolutionary Fitness	Chapter 7
8) Sex and Evolution	Chapter 8
9) Family, Society, and Evolution	Chapter 9
Part III Populations	
10) Population Structures	Chapter 10
11) Population Growth and Regulation	Chapter 11
12) Temporal and Spatial Dynamics of Populations	Chapter 12
13) Population Genetics	Chapter 6
Part IV Species Interactions	
14) Consumer-Resource Interactions Predation, Herbivory, Parasitism, Infectious Disease	Chapter 13 & 14
15) Dynamics of Consumer-Resource Interactions	Chapter 13 & 14
16) Competition	Chapter 15
17) Coevolution and Mutualism	Chapter 16
Part V Communities	
18) Community Structure	Chapter 17
19) Succession & Community Development	Chapter 18
20) Biodiversity	Chapter 21 & 22
21) History and Biogeography	Chapter 21 & 22
Part VI Ecosystems	
22) Energy in the Ecosystem	Chapter 19
23) Pathways of Elements in the Ecosystem	Chapter 20
24) Nutrient Regeneration in Terrestrial and Aquatic Ecosystems	Chapter 20
Part VII Ecological Applications	
25) The Future of Biodiversity (Landscape Ecology, Extinction, Conservation, Economic development and Global Ecology)	Chapter 21 & 22