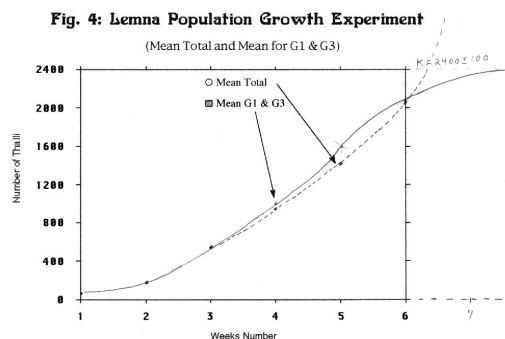


BI 130 Introduction to Ecology

CRN:27542

Winter 2018



Tobias Policha PhD. tpolicha@uoregon.edu; Office hour: Tuesday 12:30-13:30, 32 Klamath.

Twitter: [#ecologyBI130](https://twitter.com/ecologyBI130)

GEs

Felipe Campos Cerda fcamposc@uoregon.edu; Office hour: TBA-see Canvas for details.

Robert Steury steury@uoregon.edu; Office hour: Monday 9:00-10:00, 301 Pacific.

SLP Scholars

Lillie Flagel & Kylea Garces

Course Overview

This course is designed for non-majors with an interest in understanding the fundamentals of ecology. It is an introductory course, designed for freshmen and sophomores, and satisfies University general education breadth requirements for natural sciences. Ecology can be defined as the study of the distribution and abundance of organisms. It looks at anything that influences where and when species are present and how organisms interact with their environment: an environment which includes both physical characteristics and other organisms. By the end of the term, we expect that you will not only understand the significance of several fundamental concepts of ecology, but you will also appreciate how some aspects of these concepts relate directly to events in your own life. In particular, we hope that you will have gained skills and confidence that will enable you to analyze, criticize, and utilize biological information that you encounter in the media when it comes time for you to make personal decisions such as how many children you want to have, what kinds of foods you want to eat, how you decide to get yourself to school or work, how you will make decisions about how you vote on a wide range of environmental issues, or which groups you will choose to join or give money to.

Course Goals

Appreciate the interconnections between our lives and the other organisms on the planet.

Understand how knowledge about the natural world is generated.

Become discerning consumers of biological information.

Course Outcomes

Students should be able to:

- Apply the scientific method when solving complex problems.
- Recognize local organisms and identify important ecological processes taking place in the world around them.
- Describe the underlying biology behind the various ways that organisms interact with their environment.
- Articulate the causes and consequences of population growth.
- Explain the mechanisms and patterns of evolutionary change.
- Critique the importance of biodiversity conservation to ecosystem services.
- Apply knowledge of the ways energy and matter move through systems and to evaluate how these can be disrupted by human activities.

Course Format

Lectures (Tuesday and Thursday 14:00-15:20 in 180 PLC)

You should do the assigned readings before coming to the lectures. During some of the lectures there will be activities that will help you to learn difficult concepts; these will often be done collaboratively with two or three students discussing the problem together for a few minutes before discussing the problem as a whole class. Your active participation in lecture will help you to better understand the material and prepare you for exams.

Lab (Fridays 9:00, 10:00, 11:00, 12:00, 13:00 or 14:00 in 33 Klamath)

We consider the labs to be an integral part of the course. We have tried to design active learning experiences that will broaden your understanding of what the science of ecology is all about. Lab handouts will be available on Canvas and should be read before coming to lab. Lab handouts will usually be turned in at the end of each lab or at the beginning of class the following day (we will announce this during each lab). Labs cannot be made up because several involve special material or equipment. You must attend the lab section that you are registered for. Each lab is worth three percent of your final grade. Your lowest lab score will be dropped.

Out of Class Opportunities (“OCO”s)

You will be expected to attend one local event highlighting some aspect of ecology during the course of the term. These opportunities have been selected to provide a range of activities and subjects of interest, as well as being scattered throughout the days and times of the week in order to assure a lack of scheduling conflict. These opportunities will not only expose you to relevant content, but also introduce you to the offerings of the local natural history community. You will be expected to submit a 300-word synopsis of your experience. You may attend an additional two events and submit the written synopsis to receive extra credit (credit will be given for a total of three OCOs). Events are listed in the course schedule and details will be posted to Canvas under the ‘Assignments’ Module.

Course Materials

Textbook (~Free)

OpenStax, 2017. Concepts of Biology. <https://openstax.org/details/books/concepts-biology>
The readings include background material useful for preparing for lecture and for studying for quizzes. A good strategy would be to skim over the entire chapter first, concentrating on the major concepts, then to re-read more carefully for details. This book is available as a free PDF or as a low-cost e-book. If you would prefer to have a hard copy, they are available either through the UO bookstore or directly from OpenStax for \$29.

SimUText

We will be using two computer simulation lab activities this term from SimUText. They will help to visualize and manipulate content in real time with the power of modeling. The first, 'Isle Royale' will explore predator-prey dynamics and community interactions. The second, 'Nutrient Pollution' will look at the impact of excess nutrients in aquatic habitats. The cost of these modules is \$6 each. Each lab will count toward three percent of your final grade. We will have the software installed on computers in lab, but you must still register with SimUText to get credit for your work. To avoid possible problems, do not wait until the last minute to register. If you purchased a SimUText Voucher from your bookstore, be sure to have it with you when subscribing, as you will need to enter your voucher code.

When you are ready to subscribe follow this link to initiate the process:

<https://www.simutext2.com/student/register.html#/key/UbeU-P8fM-G6SH-3xgJ-72DZ>

(there is also a link on Canvas). Should you encounter problems, you may need your course-specific Access Key. It is: **UbeU-P8fM-G6SH-3xgJ-72DZ**. If you have any problems or questions, please visit SimUText's responsive support department: <http://simbio.com/support/simutext>

iClickers (Personal Response Systems)

iClickers will be used in class to encourage participation and to provide valuable feedback to instructors and students. **You will need to register your clicker on the course Canvas site.** Points will be earned two different ways: (1) attendance and participation alone, not on whether the question is answered correctly; (2) correctly answering the questions. Your iClicker responses will add up to two percent of your final grade. Your grade will be based on 90% of the total possible points (lowest 10% will be dropped).

Canvas

Course documents will be posted on the Canvas course website. These include lecture notes, assignments, required readings, information on the research paper, announcements, and supplemental material. I recommend checking Canvas frequently.

Articles

Several articles from scientific journals as well as the popular press will be assigned throughout the session. The articles will be available through Canvas under the 'Readings' Module.

Course Assessments

Need-to-Know-Questions (N2K?s) [Daily Reading Quizzes]

Brief reading quizzes will be administered on Canvas prior to most class sessions to assure that the readings are done in a timely manner. Questions may reflect readings from the text book, assigned articles or pre-lab materials. Each quiz will be worth 0.5% of your final grade. Your lowest score will be dropped.

Quizzes

There are no “Exams” in this class. In lieu of midterm exams we will have short quizzes every other week. Each quiz will be worth 8% of your final grade. These will be administered through Canvas.

Reading Reflections

We would like you to delve more deeply into two of the assigned readings this term (McLaren & Peterson 1994 and Worldwatch Institute 2002). In order to facilitate this you will be asked to respond to a series of questions based on the readings and submit your written work (~1-2 pages). Each one will be worth two percent of your final grade.

Homework Assignments

There will be three take-home assignments that you can do at your own pace. One involves analyzing data on a population of finches from the Galapagos Islands, one is to watch a film on potential environmental links to cancer and answer a series of questions, and the last one will be to assess some proposed mitigation strategies in response to climate change. Details will be posted to Canvas under the ‘Assignments’ Module. Each one will be worth two percent of your final grade.

Research Paper

You will develop a hypothesis, collect data and write an original research report this term. We will collect data as a class during week 5 and work on the initial analysis together in Lab that week. You will be responsible for writing up your methods and results as well as an introduction and discussion based on your review of the relevant literature. This project will be introduced in class and more details including a rubric will be posted to Canvas. It will be worth 10% of your final grade.

Final Reflection

In lieu of a “Final Exam” you will be asked to submit a short reflective essay on what you have learned this term. It will be worth 3.5% of your final grade.

Pre/Post-Survey

You will be asked to respond to two short surveys to help your instructors gauge the improvement in your understanding of ecology over the term. You will not be graded on the correctness of your answers, but it is assumed that you will answer the questions thoughtfully and honestly.

Assessment	Each	Number	Total
N2K?s (Daily Reading Quizzes)	0.5%	25/26	12.5%
Discussion Activities	3%	9/10	27%
Quizzes	6%	5	30%
Reading Reflections	2%	2	4%
Homework Assignments	2%	3	6%
Out of Class Opportunity	2%	1 (2-3 extra credit)	2% (up to 6% total)
Research Paper	10%	1	10%
Final Reflection	3.5%	1	3.5%
Pre/Post-Survey	1%	2	2%
iClickers	TBD	TBD	3%
TOTAL			100%

Miscellaneous Course Policies

Classroom Conduct

I expect everyone to follow University rules and guidelines for behavior. Academic dishonesty, which includes plagiarism, is a serious offense and will be treated according to the guidelines in the [student conduct code](https://dos.uoregon.edu/conduct) (located at dos.uoregon.edu/conduct). This doesn't mean you shouldn't talk with other students about what you are thinking or writing; it does mean that when you write something, it should be in your own words, not copied from someone else.

I ask that we all do our best to be intellectually honest while also being tolerant of personal differences. I welcome and encourage intellectual controversy--I think it is essential to real learning. At the same time, I ask that we all respect the rights of others to hold different opinions, even as we challenge the ideas supporting those opinions. I promise to value each of you as individuals; I view the grade you earn to be a reflection of the quality of work you have done, but not of you as a person.

Out of respect for other students, and in keeping with departmental policy, you should plan to arrive at class on time and to stay until class is over. If, on occasion, you do arrive late, please be considerate of others and enter quietly at a time and in such a way that you don't disturb other students. If you need to leave early, please sit near an exit so that you can leave without disrupting the class.

Electronic Devices

Please put away and **do not use** your own computers, cell phones, or other electronic devices during lecture or lab. [Evidence](https://www.nytimes.com/2017/11/22/business/laptops-not-during-lecture-or-meeting.html?_r=3) (ie https://www.nytimes.com/2017/11/22/business/laptops-not-during-lecture-or-meeting.html?_r=3) suggests that computers are not a very good way for taking notes in biology courses and they are distracting to other students. Please be prepared to write and draw by hand in this class.

Communication

We will try to make ourselves as available as possible for questions related to course material. However, we ask that you pose questions to fellow students first; often you can answer them amongst yourselves. (If it pertains to course administration, **double-check the syllabus and Canvas.**) Please do not expect prompt replies to emails after regular business hours, if you email late at night you may not hear back from us until the next day. ***Please include "Bi 130" in the subject line of all emails.***

Crises Happen

If you have problems that interfere with your ability to do the work in this class, please let me know promptly. I am willing to make special arrangements when the need is real and when you have done your best to deal with the situation in a timely manner.

The University of Oregon Counseling Center provides students with confidential consultation 24 hours a day, 7 days a week. From 8-5 Monday through Friday you will be connected with the front desk, and after hours, the same number connects to their support line. Their number is 346-3227. Students often believe that their issues are not "severe" enough for them to call, but at the Counseling Center, no problem is too small.

If you miss a class, it is your responsibility to contact a classmate to get lecture notes.

Accessible Education Center

The University of Oregon is working to create inclusive learning environments (more info at <http://aec.uoregon.edu>). Please notify us if there are any aspects of the instruction or design of this course that results in barriers to your participation. **If you have a documented disability and anticipate needing accommodations in this course, please talk to your instructors during the first week of classes.** Please request that the AEC Counselor send a letter verifying your need. Please call 541-346-1155, email uoaec@uoregon.edu, or drop by 164 Oregon Hall to schedule an appointment.



*"Any good poet, in our age at least, must begin with the scientific view of the world;
and any scientist worth listening to must be something of a poet."*

- Edward Abbey

BI130 Schedule 2018

Week	Date	Topic	Reading	Assignments
1	1/9	Introduction to Ecology	What Does Ecology Have to do with Me?; OpenStax 1.1	
1	1/11	Scientific Method	OpenStax 1.2	Pre-Survey; N2K?1
*OCO	1/11	<i>Science Pub 18:30 (\$5 donation)</i>		
1	1/12	LAB: Trees to know in Oregon	Waring 1982; OpenStax 14.3	N2K?2
2	1/16	Population Growth	OpenStax 19.1-19.3	N2K?3
2	1/18	Competition		
2	1/19	LAB: The Human Population	2017 World Population Data Sheet” pp.1-7; [Family Planning and Girls’ Education: Antidotes to Climate Change] ⁺	N2K?4
*OCO	1/19	<i>ENHS 19:30 (Free)</i>		
*OCO	1/20	<i>NPSO 18:30 (Free)</i>		
*OCO	1/21	<i>Mt. Pisgah 10:00 [\$5 +parking(\$4)]</i>		
3	1/23	Species interactions	OpenStax 19.4 (Predation & Herbivory, Competitive Exclusion Principle)	Quiz 1; N2K?5
3	1/25	Predator / Prey	McLaren & Peterson 1994	
3	1/26	LAB: Isle Royale	Isle Royale Handout (SimBio)	RR1 Due; N2K?6
4	1/30	Mutualisms	OpenStax 19.4 (Symbiosis)	N2K?7
4	2/1	Species Distributions	OpenStax 20.3-20.4	N2K?8
4	2/2	LAB: Lichens and Mosses	Bryophytes and Lichens: Small but Indispensable Forest Dwellers; [OpenStax 13.4, 14.2] ⁺	N2K?9
5	2/6	Hypothesis Testing	Basic concepts of hypothesis testing & Student's t–test for two samples	Quiz 2; N2K?10
*OCO	2/7	<i>Ideas on Tap 18:00 Free</i>		
5	2/8	<i>Data Collection in the Field</i> DRESS FOR THE WEATHER	Data Collection Handout; OpenStax Appendix C	N2K?11
*OCO	2/8	<i>Science Pub 18:30 (\$5 donation)</i>		
5	2/9	LAB: Data Analysis	Data Analysis Handout	N2K?12

6	2/13	Evolution	OpenStax 11.1-11.5, Appendix B [OpenStax 12.2; Rennie 2002] ⁺	N2K?13
6	2/15	Natural Selection		
6	2/16	LAB: Beaks as Tools	Beaks as Tools Handout	HW1 Due; Paper References Due; N2K?14
*OCO	2/16	ENHS 19:30 Free		
*OCO	2/17	Mt. Pisgah 10:00 [\$5 +parking(\$4)]		
*OCO	2/17	NPSO 18:30pm (Free)		
7	2/20	Coevolution	The human microbiome	Quiz 3; N2K?15
7	2/22	Biodiversity	OpenStax 12.1, 21.1	N2K?16
7	2/23	LAB: Bee Behavior	Taber III 1980	N2K?17
8	2/27	Community Structure	OpenStax 19.4 (Characteristics of Communities & Community Dynamics)	N2K?18
8	3/1	Disturbance & Succession	Cronenwett 2014; Introduction to Fire Ecology	N2K?19
8	3/2	LAB: Soil Fauna	Global Soil Biodiversity Assessment	N2K?20; Research Paper
9	3/6	Energy	OpenStax 20.1	Quiz 4; N2K?21
9	3/8	Nutrients	OpenStax 20.2	N2K?22
9	3/9	LAB: Nutrient Pollution	Nutrient Pollution Handout (SimBio)	N2K?23
10	3/13	Climate	EPA 2009; [Ahmed 2014] ⁺ ; OpenStax 21.2	N2K?24
10	3/15	Conservation	Worldwatch Institute 2002; OpenStax 21.3	HW2 Due; N2K?25
10	3/16	LAB: Campus Ecology	Willamette Valley	RR2 Due; Quiz 5; N2K?26
*OCO	3/16	ENHS 19:30 Free		
FINALS	3/20	Final Exam 12:30		HW3 Due; Final Reflection Due; Post-Survey.

- **OpenStax** = Concepts of Biology 2017; all other readings are posted to Canvas.
- **N2K?** = “Need-To-Know-Questions” = daily reading quizzes on Canvas
- ***OCO** = “Out-of-Class-Opportunities” – attending one is required, you may attend up to two additional OCOs for extra credit. You may also visit the MNCH on your own schedule to fill this requirement (free with Student ID).
- **RR** = “Reading Reflection” = Guided writing assignments
- **HW** = Homework
- **[]⁺** = optional reading