

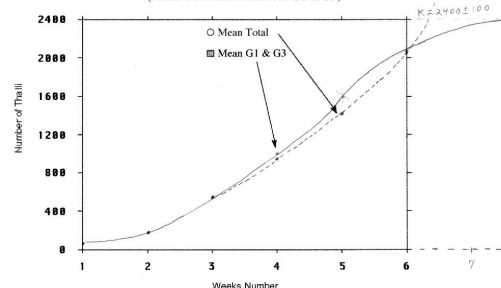
BI 130 Introduction to Ecology

ONLINE Winter 2021

CRN: 26871



Fig. 4: Lemna Population Growth Experiment
(Mean Total and Mean for G1 & G3)



Instructor

Dr. Tobias Policha tpolicha@uoregon.edu; Office hour: Tuesday 10:00 - 11:00 or by appointment

Graduate Employees

Sarah Erskine serskine@uoregon.edu; Office hour: Wednesday 16:00 - 17:00.

Aidan Short ashort2@uoregon.edu; Office hour: Thursday 12:00 – 13:00.

All Office Hours held at: <https://uoregon.zoom.us/j/95494332370>

Overview -> Goals & Outcomes -> Format & Materials -> Assessments -> Policies ->Resources -> Schedule

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.

As part of the University of Oregon's Online Course Initiative this course has been designed to be completely asynchronous. **All content will be accessed at your own pace on your own schedule.** We will still interact via Discussion Forums and Canvas Announcements. As a way to build virtual community I will also assign you to small "Study Groups", so that you have a peer group to lean on for support.

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 scientific information.

COURSE OUTCOMES

Students should be able to:

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

Note on the Context of this Course (COVID-19)

In ecology, one of the things that you will come to appreciate is that context matters. For example, plants will respond differently to herbivory when they are drought-stressed, or elk will change their browsing habits in the presence of predators. I want to acknowledge that we are all experiencing things outside the bounds of normalcy and that each of us are being stressed in ways that we have not entirely anticipated. This impacts our learning communities as much as any other aspect of our lives.

I urge us all to remember that we did not sign up for this. Not for the sickness, not for the quarantine, not for being forced into taking online classes. We will get through this though, by prioritizing each other as human beings, by prioritizing simple solutions that work for the most people, and by sharing resources and communicating clearly. We will remain flexible and adjust to the situation as needed. **Everyone needs support and understanding** in this unprecedented moment.

I want you to know that **I stand in firm solidarity with those that are demanding social justice**. I realize that the events of the last year are impacting each of you in unique ways, some of which may be difficult for others to understand. I am doing my best to encourage inclusivity and understanding around the unique issues faced by our black students and other students of color, and **I encourage all of us to extend an extra measure of kindness and care to each other** over the coming weeks and months as we collectively seek a more unified community.

In light of everything, I want you to know that I am open to working with you on a range of accommodations to help you feel successful in our upcoming class. Please **contact me early with any anticipated issues**, it will be easier for me to help you if it does not become a last-minute emergency.

I also want to say that some of the material that we will be covering this term can be a little heavy. **Environmental destruction, biodiversity collapse, and climate change** have been out of the headlines lately as we have collectively dealt with the pandemic and pressing social issues. But that does not mean that they are not still pressing issues that our society must grapple with, or that they have gone away (unfortunately!). So again, a reminder to **be gentle with each other** as we explore these issues.

I intend to facilitate a learning experience that will be of value to you in a post-pandemic world, whether you become an ecologist, or not, I truly believe that the awareness and the skills that we will develop together this term will go a long way toward **promoting a more sustainable and resilient world**, whatever the future holds.

COURSE FORMAT & MATERIALS

SELF-DIRECTED LEARNING

As an online course, you will be responsible for **staying motivated and keeping on schedule** with all of your work. In addition to the Lectures and Labs, you will have a variety of opportunities for exploring the field of ecology. There will be regular reading quizzes to help focus your readings from the textbook and other articles. You will keep a 'Nature Journal' throughout the term, you will create an iNaturalist account and participate in an online community of naturalists, and you will interact with your peers via regular Discussion Board posts. You are encouraged to get to know some of your classmates and find ways to work together on understanding the material (obviously you will complete your own assignments!).

ACCESS TO CANVAS <https://canvas.uoregon.edu/>.

We will be using Canvas constantly, for content delivery, communication and assessment. If you have questions or concerns about accessing and using Canvas, visit the [Canvas support page](#). Canvas and Technology Support also is available by phone or live chat: 6 a.m.–12 a.m. 541-346-4357 ; livehelp.uoregon.edu. Canvas will be organized into weekly modules.

FREE TEXTBOOK

OpenStax, 2017. Concepts of Biology. <https://openstax.org/details/books/concepts-biology>
The readings include background material useful for preparing for lectures and for studying for quizzes and exams. 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 directly from OpenStax for \$29.

LABS (SimBio® SimUText simulation exercises)

Ten SimBio® lab SimUText simulation exercises (one per week) will be used as a major learning resource for this class to supplement the readings and lectures. The simulations will cover quantitative aspects of ecosystem ecology, population growth, species interactions, climate change and more! **The simulations must be purchased separately from SimBio®.** Instructions for downloading and installing the modules are provided on Canvas. Please complete the simulations and submit answers to all questions (both 'graded' and 'ungraded' questions) for each simulation set. ALL questions for each simulation will be graded. Question sets for each simulation will collectively count as 30% of the final grade (3% each). ***The fee for these modules is \$82.00.***

LECTURES (on Canvas)

To increase your understanding, you should try to do the assigned readings and take the 'daily reading quizzes' (DRQs) before engaging with the lecture materials. In order to promote your active engagement with the material, the lectures themselves will be accessed through a quiz on Canvas and will include a series of short videos that are broken up by quiz questions or Discussion posts. The questions associated with the lectures each lecture will be worth 100 points (5 points per lecture) Lectures will be captured in Panopto™ and will include videos of me speaking, my presentation slides and videos, and the option to include closed-captioning. I will also post PDFs of the lecture slides and links to other videos and resources will be included as appropriate.

NATURE JOURNALS

For five weeks of the term you will be required to spend at least one hour outside (safety permitting) making observations of ecology. You will make notes and sketches, ask questions and develop hypotheses. You will submit electronic copies (scans or photos) of your work via Submission Portals on Canvas (25 points each). Further details will be available in the Assignments section of Canvas.

DRQs

Daily Reading Quizzes (5 points each) are intended to keep you up-to-date and on track with the course materials. There will be one for each lecture topic (20 over the term) All readings are included on the Course Schedule. These quizzes will be untimed. You are welcome to discuss your ideas with other students, but you should do your own work and not simply get answers from other students.

EXAMS

Both the midterm (end of week 6) and the final exams will be standard written exams, with a range of multiple choice, matching, true/false, fill-in-the-blank, and short answer questions. They will cover subjects and vocabulary presented in lecture or lab, whether that material is in the textbook or not. Furthermore, you are expected to know what is in the assigned reading, even if we don't cover that material in lab or lecture. Exams will be taken as 'Quizzes' on Canvas and will be timed. You will be given a 3-day window in which to take each exam, please plan accordingly. You are expected to do your own work.

ZOONIVERSE SERVICE-LEARNING PROJECT

Zooniverse is the world's largest platform for people-powered research. This research is made possible by volunteers like you. By contributing to a research project (of your choosing) on Zooniverse you will make a tangible contribution to real-life research even in this time of physical distancing. Start browsing potential projects here: <https://www.zooniverse.org/projects>. More details will be available on Canvas.

iNATURALIST OBSERVATIONS

As a way to get you out and observing nature on your own, you will be responsible for making and posting twenty observations (safety permitting) to the iNaturalist citizen science platform. You will need to make an (free) account at <https://www.inaturalist.org/>, and you will need access to a digital camera (phones ok). Further details will be available in the Assignments section of Canvas.

DISCUSSION POSTS

You will be required to post to Discussion Forums on a regular basis. Each week there will be one primary contribution to both a course-wide Discussion and to smaller "study group" Discussions. Sometimes this will be relatively personal, like introductions, mid-term feedback on the course or a final reflection, other weeks it will be more aligned with various assignments. For example, your Nature Journals will be submitted as Discussion posts, your Zooniverse report will be submitted as a Discussion post, and we will watch a film on potential environmental links to cancer the you will reflect on in the Discussion Forum. I will occasionally ask Lecture Activity questions or DRQ questions that will be submitted as Discussion posts. You will be required to respond to someone else's post (**for all Discussions**). This will hopefully lead to interactions that would normally take place in a classroom.

COURSE ASSESSMENTS

DEADLINES AND DUE DATES

All assignments for each week will be due at 11:59 pm on the Sunday of that week. These regular deadlines are intended to help keep you on track with the material and to help space out the assessment and feedback from staff. There is no penalty for early submissions, but late submissions will be penalized at the rate of 5% per day. No work will be accepted more than a week late, unless you have made special arrangements. **SEE CANVAS FOR DUE DATES.**

MENTAL HEALTH OPT-OUT POLICY

Due to the unprecedented nature of our times (pandemic, social unrest, economic challenges) I am offering everyone the option to not do ONE assignment, of your choosing. Couldn't do a reading quiz? No problem. Don't want to take the final exam? No worries. Thinking about the realities of climate change too overwhelming? Don't do the lab. If you need a break, take a break. **Students MUST communicate to me that you are opting out of an assignment BY THE DUE DATE, in order to not receive a zero for that assignment.** I don't need to know why, just that you are opting out. Keep in mind that any assignments that you opt out of will not count toward your final grade. You will effectively get graded on fewer things and therefore the assignments that you do complete will have more weight than what is listed in the syllabus. This is a different concept than 'dropping your lowest score'.

Assessment	Number	Each Worth	Total
Labs	10	30	300
Nature Journals	5	25	125
Reading Quizzes	20	5	100
Lecture Activities	20	5	100
Service Learning	1	100	100
Midterm Exam	1	75	75
Final Exam	1	75	75
iNaturalist Observations	20	2.5	50
Discussion Posts	3	15	45
Living Downstream' Viewing	1	30	30
TOTAL	82		1000

COURSE POLICIES

ACADEMIC INTEGRITY

All students are expected to complete assignments in a manner consistent with academic integrity. Students must produce their own work and properly acknowledge and document all sources. Students can find more complete information about the University of Oregon's Policy on Academic Dishonesty in the [student conduct code](https://dos.uoregon.edu/conduct) (located at dos.uoregon.edu/conduct).

INCLUSIVENESS

Open inquiry, freedom of expression, and respect for difference are fundamental to a comprehensive and dynamic education. We are committed to upholding these ideals by encouraging the exploration, engagement, and expression of divergent perspectives and diverse identities.

COMMUNICATION

In general, our class will communicate through our Canvas site. Announcements and emails are archived there and automatically forwarded to your UO email, and can even reach you by text. Check and adjust

your settings under Account > Notifications. I will have a running Discussion forum on our Canvas site called “Question Board” for the entire group to ask and answer questions.

I will try to make myself as available as possible for questions related to course material. However, I ask that you pose questions to fellow students first, you can do this through Canvas. If it pertains to course administration, **double-check the syllabus and Canvas**. If you email after regular business hours you may not hear back from me until the next day. ***Please include “BI 130” in the subject line of all emails.***

PROHIBITED DISCRIMINATION AND HARASSMENT

UO is committed to providing an environment free of all forms of prohibited discrimination and harassment, including sex or gender based violence. As an instructor, one of my responsibilities is to help create a safe learning environment for my students and for the campus as a whole. Students experiencing any form of prohibited discrimination or harassment may seek further information on safe.uoregon.edu, respect.uoregon.edu, titleix.uoregon.edu, or aaeo.uoregon.edu or contact the Title IX office (541-346-8136), Office of Civil Rights Compliance office (541-346-3123), or Dean of Students offices (541-346-3216), or call the 24-7 hotline 541-346-SAFE for help.

CAMPUS RESOURCES

ACCESSIBLE EDUCATION CENTER (AEC)

The University of Oregon is working to create inclusive learning environments. If there are aspects of the instruction or design of this course that result in barriers to your participation, please notify us as soon as possible. You are also encouraged to contact the [Accessible Education Center](#). If you are not a student with a documented disability, but you would like for us to know about class issues that will impact your ability to learn, contact us so that we can strategize how you can get the most out of this course.

In order to promote social distancing to limit the spread of COVID-19, the Accessible Education Center is currently operating remotely. They are available Monday-Friday 8am-5pm by calling (541) 346-1155 or emailing uoaec@uoregon.edu. Appointments can be made by calling, emailing, or completing our [online scheduling form](#).

Appointments are available by **phone or by computer/smartphone using [Microsoft Teams](#)**. **Teams is free to the UO community**. For more information, please visit the [UO Teams Download Instructions](#). **Support will also be available through email and a text-based chat window.**

CENTER FOR MULTICULTURAL ACADEMIC EXCELLENCE (CMAE)

Promoting student retention and persistence for historically underrepresented and underserved populations. Programs and services that support retention, academic excellence, and success at the UO and beyond. Committed to all students, including undocumented and tuition equity students. cmae@uoregon.edu.

All CMAE advising services will be offered remotely. Please connect with us, we are still here providing you support. **To schedule an appointment**, log into Navigate with your Duck ID: <http://uo.campus.eab.com> or call the front desk at 541-346-3479. You can also access the CMAE Advising Helpdesk live Chat Monday-Friday from 10am- 12pm & 1pm-4pm.

COUNSELING CENTER

The Counseling Center provides students with confidential consultation 24 hours a day, 7 days a week. 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. <https://counseling.uoregon.edu/>.

If you’re unable or don’t wish to come to the Counseling Center in person, help is still available. Our after-hours support/crisis line is open to all students, wherever you are located. Call 541-346-3227 when the Counseling Center is closed to speak to a therapist. Counseling Center staff can help you figure

out how to find mental health services in your area. Call 541-346-3227 during business hours to schedule a consultation with a case manager. We are working to provide telemental health (video) sessions to students physically located in Oregon and California soon. Updates will be posted to [this website](#) when available, or call for more information.

LECTURE AND LAB SCHEDULE

WEEK	Lecture	TOPIC	READING
1	1	Introduction to Ecology	OpenStax 1.1; What is Ecology?;
1	2	Scientific Method	OpenStax 1.2; Kimmerer 2013
1		Understanding Experimental Design	
2	3	Ecosystems: Energy	OpenStax 5.1 & 20.1
2	4	Ecosystems: Nutrients	OpenStax 20.2
2		Ecosystem Ecology	
3	5	Environmental Variation	TBA
3	6	Species Distribution	OpenStax 20.3 & 20.4
3		Physiological Ecology	
4	7	Population Growth	OpenStax 19.1-19.3
4	8	Population Regulation	OpenStax 19.1-19.3
4		Population Growth	
5	9	Competition	OpenStax 19.4
5	10	Herbivory & Predation	McLaren & Peterson 1994
5		Isle Royale	
6	11	Mutualism	OpenStax 19.4
6	12	Parasitism	OpenStax 19.4
6		Epidemiology Explored	
7	13	Community Structure	OpenStax 19.4
7	14	Community Dynamics	Cronenwett 2014; Introduction to Fire Ecology
7		Community Dynamics	
8	15	Evolution	OpenStax 11.1-11.5, 12.2, Appendix B; Rennie 2002
8	16	Natural Selection	<i>Viewing</i> : Selection and the Rock Pocket Mouse
8		Evolution for Ecology	
9	17	Coevolution	Gilbert <i>et.al</i> 2018
9	18	Biodiversity	OpenStax 12.1, 21.1
9		Biogeography	
10	19	Conservation	Worldwatch Institute 2002; OpenStax 21.3
10	20	Climate Change	EPA 2009; OpenStax 21.2
10		Climate Change	
FINAL		Final Exam DUE by midnight on Wednesday March 18th	

- OpenStax = Concepts of Biology 2017; all other readings are posted to Canvas.

"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