

Principles of Ecology (Biol 4253)

Location: 210 Williams (lectures will be live-streamed and recorded on YouTube)

Time: section 3 is T Th 4:30pm-5:50pm

Instructor: Dr. Tad Dallas (tadallas@lsu.edu)

Office: LSA 343 Life Sciences (Tad)

Office hours: T 3:00 - 4:30pm (virtual; Zoom link will be given in class and sent out on Moodle)

Course Overview:

Ecology is the study of species interactions. This broad umbrella covers levels of biological organization from individuals to entire ecosystems. We will explore ecological concepts across these different levels of organization, and gain an understanding of general ecological concepts. The course will focus particularly on population and community ecology, which aims to understand the processes which govern the abundance and diversity of species. We will also be addressing trophic relationships (e.g., predators eating prey), disease (e.g., epidemic spread), and mutualisms (e.g., plants and pollinators). It's going to be fun.

This course will be taught in-person, barring any lockdown due to coronavirus. There are previous recorded lectures from Spring 2021 available on YouTube:

https://www.youtube.com/playlist?list=PLGKQe3NU_VU1NtFDbKIL_hXfrpfeOMkz2

These are not meant to cover the same *exact* material we will cover this semester, but may be a nice signpost if you find a particular concept difficult and want to hear it explained another way, or if you have to miss a lecture. Still, this course is constantly evolving, so the best resource for learning the material is still likely the notes.pdf files in the **lectures** folder in the GitHub site (<https://github.com/dallasLab/biol4253>). I will make a concerted effort to also upload these to Moodle for folks who prefer Moodle. See below statement concerning the structure of the syllabus as well.

Updated in-person lecture recordings will be made available on YouTube as well at:

https://www.youtube.com/playlist?list=PLGKQe3NU_VU1rGupJx_H4aLiM024NiW9c

I will do my best to make sure that everything students in-person see will also be in the recorded lectures.

Vaccination statement:

Below is the standardized LSU message regarding the COVID-19 vaccine. I have some definite thoughts on this, as my PhD was on the ecology and evolution of infectious disease, and I continue to do research in this space. However, vaccination has been framed as a freedom/political issue (why does this not happen with MMR vaccine or tetanus?), so here we are. Over 500k cases and around 11k deaths in Louisiana alone (over 900 in EBR parish), and this is the messaging that I (as a representative of LSU) can provide.

LSU strongly encourages all students, faculty and staff to get vaccinated for COVID-19. Visit www.lsu.edu/roadmap/vaccines/ to learn how to get vaccinated on campus. Vaccination helps keep our campus community safe, helps protect those among us who are most vulnerable to COVID-19, and is our path back to more normal operations and the full college experience that our students deserve.

I will enforce masking in class, but it's a mask, not a force field. Anybody not wearing a mask that covers their nose and face will be asked to leave.

Syllabus Subject to Change:

Changes to the syllabus may be made during the semester. The most up-to-date and current syllabus will always be available on the course Github page (<https://github.com/dallasLab/biol4253/>) and should also be updated on Moodle (but this is not a certainty).

Course Goals:

Over the course, it is expected that students gain

- a conceptual foundation of ecological principles, from individuals to ecosystems
- the ability to link existing ecological theory to natural systems
- an appreciation for ecological systems

Suggested Reading:

There is no required textbook, but readings will be provided from the primary literature or textbook chapters. One good resource that we will use repeatedly throughout the semester is

Gotelli's *Primer of Ecology* [link to book](#)

Readings are made available in the subfolder for each week (they will be in the **readings** subfolder e.g., https://github.com/dallasLab/biol4253/tree/master/lectures/01_whatIsEcology/readings)

Grading

There will be a total of 500 points, consisting of four exams and a final project. LSU has a plus-minus grading scale. If you have 92.7 points, you still have not gotten to 93, and have an A-. There will be no overall curve, but I will likely provide opportunities to improve exam grades. If you are confused by the grading chart below, think of it as a threshold. If you get a 92.74942% in the class, you have not exceeded the 93% threshold for an A, and receive an A-.

grade	percent
A+	> 98
A	93-98
A-	90-92
B+	87-89
B	83-86
B-	80-82
C+	77-79
C	73-76
C-	70-72
D	65-69
F	< 64

Exams:

There will be four exams given in this class. Although there will be **no comprehensive** exam, each successive section will build upon material learned in earlier sections. Thus, on Exams 2-4, students will be expected to draw upon major points from previous material covered. Exams will consist of any combination of the following types of questions: fill in the blank, multiple choice, short answer, essay or problem solving. *Each exam will be worth 100 points.*

As a rule, make-up exams will be essay or oral in form depending on the decision of the instructor and will be only available to those persons who have obtained prior approval or have a valid written excuse. The instructor reserves the right to verify any excuse.

Group Project:

Students will complete a group project which will be presented to the class at the end of the semester. The project options are open, but must deal with an ecological topic covered in class. Topics must be approved by the instructor.

Audio-visual equipment can be [checked out from the library](#).

You will be graded on your creativity, enthusiasm, accuracy and how clearly the project relates to the field of ecology. More detail on the group project is at the end of this document.

The project is worth 100 points

Academic honesty

Louisiana State University adopted the Commitment to Community in 1995 to set forth guidelines for student behavior both inside and outside of the classroom. The Commitment to Community charges students to maintain high standards of academic and personal integrity. All students are expected to read and be familiar with the LSU Code of Student Conduct and Commitment to Community, found online at <https://www.lsu.edu/saa/>. It is your responsibility as a student at LSU to know and understand the academic standards for our community.

Students who are suspected of violating the Code of Conduct will be referred to the office of Student Advocacy & Accountability. For undergraduate students, a first academic violation could result in a zero grade on the assignment or failing the class and disciplinary probation until graduation. For a second academic violation, the result could be suspension from LSU. For graduate students, suspension is the appropriate outcome for the first offense.

Further information is provided on the [LSU website](#)

Special needs statement

Our goal is to help you learn. Students who have any difficulty (either permanent or temporary) that might affect their ability to perform in class can contact us privately, or reach out to the LSU Disability Services staff.

More information on registering a disability is available at [LSU Disability Services](#), located at 124 Johnston Hall. Contact the Center by telephone at 225-578-5919 or via email at disability@lsu.edu.

Late Assignments:

Assignments are expected to be turned in on time. I will not accept late assignments.

Attendance:

I will not take attendance. However, much of the material presented will not be available if you aren't in class to hear it. I will do my best to make lecture notes available, but this should not be viewed as a substitute for coming to class. If you miss a lecture, the best option for getting the needed material is to do the readings and reach out to a classmate.

Schedule

What is ecology?

What controls population dynamics?

How does individual behavior influence population processes?

[Exam 1](#) [September 9](#)

What is a species niche?

What determines community composition?

[Exam 2](#) [October 2](#)

How does landscape structure influence population processes?

What controls predator-prey interactions and dynamics?

What are the effects of parasites and pathogens?

[Exam 3](#) [November 4](#)

Can we generalize species interactions to ecological networks?

How does global environmental change influence ecology?

How do we scale small scale processes to global scales?

[Exam 4](#) [Final exam day](#)

BIOL 4253 – Student Presentations

Here are a final set of instructions for your class presentations. Please see the rubric <https://github.com/dallasLab/biol4253/blob/master/finalProjectRubric.pdf> for a coarse breakdown of points. This is worth the same as an exam, and should be worked on throughout the semester. I encourage discussing potential ideas with me and/or potential team members. You will form teams of 3-5 students to address a topic in more detail than we were able to get into in class. Presentations should not be overly general (e.g., “what is climate change?”) or oddly specific to an organism of interest (e.g., “everything about the right whale”). Instead, I’d like presentations to go into detail on an ecological concept (e.g., competitive exclusion) in more detail, and with relevant citations, providing us all with some fun examples of the phenomenon as well as some nuance (e.g., in what systems would we expect to observe competitive exclusion?) and a demonstration of tying different concepts together (e.g., how would demographic stochasticity influence competitive exclusion?).

1. **Time limit.** Each presentation will be allotted 5 minutes. Presentations going over this limit will be interrupted. An incomplete presentation will affect your grade.
2. **Participation.** Everyone in your group must contribute equally to the presentation/video. That includes being involved in the research and occurring in the video or contributing to the oral presentation. If one of your assigned group members has not responded to your requests to participate or does not show up for the presentation, proceed without him/her. That person will receive an F and you will not be penalized for their lack of participation.
3. **Citations.** When preparing your presentation, you must cite your sources of information. Otherwise, you risk being accused of plagiarism. Please refer to LSU’s Student Advocacy and Accountability web page (<https://www.lsu.edu/saa/students/academicintegrity/index.php>) for a description of plagiarism and how to cite your work. For either your video or Powerpoint presentation, provide a list of citations at the end of your presentation.
4. **Grading.** Your presentation will be evaluated by a panel of ecologists. Your presentation will be graded on your creativity, enthusiasm, accuracy and how clearly the project relates to the field of ecology. All participants will share the same grade.
5. **Submission of presentations.** All presentations must be submitted as a digital file before presentations begin.
6. **Order of presentations.** Presentations will be given over a two-day period. To keep things as fair as possible, I will randomly determine the order of presentation. You will all need to be prepared to give your presentations/videos on the first day.
7. **Presentations & Final Exam.** The material presented by your classmates will be treated like any other lecture material and, thus, could be included on the final exam. You will only be responsible for the content of the presentations given during your assigned section of the class.