

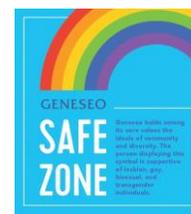
Principles of Ecology (Biology 203)

Spring 2021: MWF 9:30 – 10:20 am

Course overview

This course will provide an overview of ecology, the study of the interactions among organisms and between organisms and their environment. One of the central goals of this science is to identify, describe, and explain the processes that determine the distribution and abundance of organisms in nature. We will survey this discipline across multiple levels of organization: the individual organism, the population, the community, and the ecosystem. Throughout the course, we will emphasize the central role of natural selection and evolutionary thinking in the study of ecology. The course will demonstrate how ecologists employ the scientific process in answering questions about ecological systems. We will learn about (and practice using) quantitative tools like mathematical models, statistics, and graphical representations of data to help us understand ecological systems. The course will also explore how ecological principles can be applied to environmental problems and conservation challenges.

Instructor: Dr. Jennifer L. Apple (*she/her/hers*) Office: ISC 258 Lab: ISC 340
e-mail: applej@geneseo.edu Phone: 245-5442
Office hours: Online only, see Canvas for details



Instruction modality: Online with regular synchronous meetings via Zoom at our originally scheduled class time of 9:30 – 10:20 am on Wednesdays and Fridays.

Course description from Bulletin: A study of the interrelationship of organisms and their environment. Emphasis is placed upon levels of ecological organization. (3 credits)

Prerequisites: Biol 117 and Biol 119

Course website: canvas.geneseo.edu

What you will need: Internet access, computer with Microsoft Word, Microsoft Excel, R, and RStudio installed; computer with webcam and microphone to participate in Zoom meetings (or Smartphone).

No required textbook, but recommended texts include:

Elements of Ecology by Thomas M. Smith & Robert Leo Smith (2015, 9th ed)

A Primer in Biological Data Analysis and Visualization Using R by Gregg Hartvigsen (2014)

Learning outcomes

Upon completion of this course, successful students will be able to:

- apply evolutionary theory to help explain ecological patterns and to develop hypotheses for how ecological interactions contribute to evolutionary outcomes
- apply knowledge of ecological processes and develop models to explain ecological patterns and make predictions
- visualize, analyze, and interpret data to document ecological patterns and test hypotheses
- apply knowledge of ecological concepts to predict impacts of human activities on ecosystems and biodiversity
- synthesize ecological knowledge to evaluate the value of healthy ecosystems and the sustainability of human activities
- productively collaborate in a group to solve problems and communicate scientific information and results effectively

How this course will run

Course format and attendance expectations

This is an entirely online course with some **synchronous online sessions** that will be conducted via Zoom. As you originally registered for a course with a MWF 9:30-10:20 am meeting time, you should continue to hold these periods free from other commitments. However, I recognize that any number of obstacles, from technological issues to family commitments, may prevent you from participating in any given synchronous session. If you are unable to attend, there will be no penalty, but you will still need to complete the assignments related to those synchronous sessions, and be proactive in obtaining the instructions for those assignments to submit them on time.

Synchronous sessions

This course will entail two types of synchronous sessions, which will be conducted via Zoom.

- Typically on **Wednesdays**, you will have an **individual activity** or set of tasks to complete, and I will provide instruction for that activity and be available for questions during our class time, 9:30 – 10:20 am. Any introductory explanation I provide will be recorded, in case you cannot attend during the session, and you will still be required to complete the activity.
- On **Fridays**, you will be working on a **group activity** within a group of 3 or 4 students that will be established (by me) at the beginning of the semester. Ideally, you will do this during an 9:30 – 10:20 am Friday class time and work with your groups via the "breakout room" feature in Zoom, in which you only communicate with and see your fellow group members, but can also consult with me. If the 9:30 am class time does not work for all group members, it is possible to pick an alternative regular time to meet; ideally another time on Friday when I can also be available.
- We will not meet synchronously on Monday mornings.

Structure of the course

This course is divided into five main units, each lasting about 3 weeks. At the end of each unit you will have a unit quiz. This unit quiz will be open note and have timed and untimed components. We will maintain a weekly rhythm of the course to keep you on track with the material and associated activities and projects. Figure 1 provides a diagram that describes this rhythm (see Canvas for more explanation).

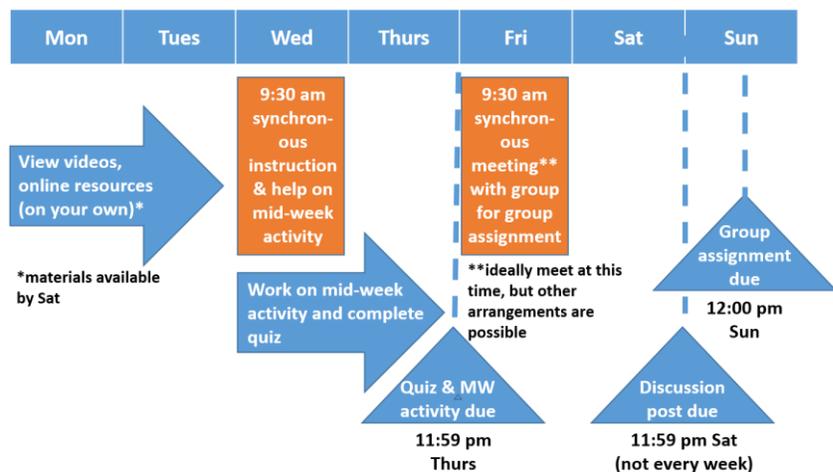


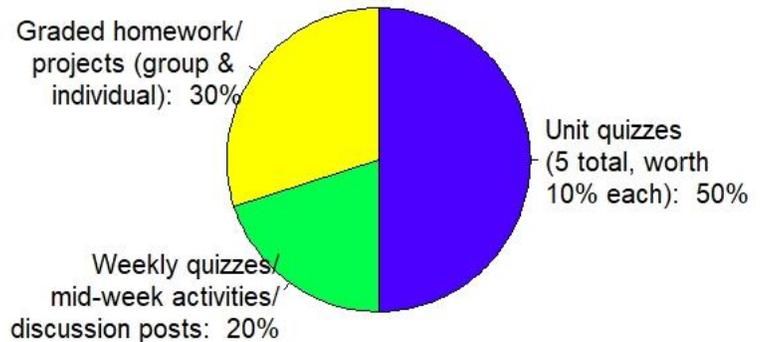
Figure 1. The weekly rhythm of activities in our course.

How is your grade determined?

Unit quizzes (50% of grade)

These will include both an online timed component performed on Canvas, and an untimed component that will be submitted separately (might include an essay, interpretation of data, drawing graphs, a problem using R...). You will have a 3-day window of time to complete these quizzes (Sun-Tues of the week they are assigned).

It is expected that you will not consult with other students in preparing your answers. You can access course material, but be aware that you cannot look up everything in the allotted time.



Graded homework (30% of grade) These assignments are graded for correctness and quality and include both individual assignments and our weekly group activities. The final assessments for the course are included in this category.

Ecological data & models (EDM) assignments. Homework for this course will include assignments dealing with using the statistical and programming software R to answer ecological questions. These assignments will involve entering, manipulating, visualizing, and analyzing data in R as well as interpreting your results. They will also include using R to simulate ecological processes and/or to fit models to data. There will be several of these assignments throughout the semester, and additional individual and group activities may make use of R.

Community science assignments. As part of this course you will participate in the collection and organization of scientific observations through a community science program. Community science describes efforts to engage curious individuals from the general public in collecting useful scientific data in collaboration with professional scientists. Often such programs involve online platforms through which participants can submit observations and data to databases that are set up and curated by experts. The online interface iNaturalist (<http://www.inaturalist.org/pages/about>) collects natural history observations of plants, animals, and other organisms in an effort to help document biodiversity and the distribution of species. You will collect your own observations as well as do some analysis and synthesis of information in the iNaturalist database. My hope is that these activities will help you appreciate the natural world around you and find enjoyment in observing it, stimulate your curiosity, and perhaps encourage you to continue to participate in community science!

Other assignments engaging with primary literature and ecological data. Some of your weekly individual and group activities will be parts of larger assignments in which you are working with real ecological data or interpreting the scientific literature. Scientists communicate their findings through peer-reviewed publications. As a developing scientist, it is important that you improve your skills in reading, interpreting, and evaluating this primary literature, as well as practice the skills of communicating scientific ideas and data.

Weekly individual activities (20% of grade) These include the weekly online quizzes (10 points each), mid-week activities (10 points each), and discussion posts (10 points each).

Online quizzes. Online quizzes are timed and graded for correctness to encourage your effort to learn the material, but you will have two attempts. Your lowest quiz grade will be dropped.

Mid-week activities. These individual tasks will generally be graded for completeness, rather than correctness, as these are assessments to help you learn the course material.

Discussion posts. At the end of some weeks you will be asked to post to an online discussion board.

Grading scale

A 93.0-100%	B 83.0-86.9%	C 73.0-76.9%
A- 90.0-92.9%	B- 80.0-82.9%	C- 70.0-72.9%
B+ 87.0-89.9%	C+ 77.0-79.9%	D 60.0-69.9%

I follow conventional rounding procedures, so a 92.94% would represent an A- (rounded down to 92.9%), while a 92.95% would be rounded up to 93.0% and an A.

How to be successful in this course

Health and well-being in a stressful time: take care of yourself

The changes brought on by COVID-19 have impacted us all in a number of ways and will continue to do so at various times and to varying degrees during the upcoming semester. Your health and well-being are foundational to your ability to learn, and if you find that you are feeling unwell (physically or mentally) and it is impacting your ability to complete your coursework, please reach out. Because the learning environment will be different than it has been in the past, the indicators that usually let you know something is wrong may not be as clear to you or those around you as they would be during a typical semester. Additionally, the ways in which you normally engage in self-care may have been disrupted. Please remember that it's never too late to ask for help. The [Dean of Students](#) (585-245-5706) can assist and provide direction to appropriate campus resources. The college also has collected resources in a [Coping with COVID webpage](#).

Adjust to the rhythm of the course

In an online course in which you access much of the course material on your own schedule, it is especially important that you establish a weekly rhythm in viewing lecture videos and online resources and keep up with weekly deadlines so that you do not fall behind. You are expected to pay attention to the syllabus, emails from me, and posted announcements on Canvas to keep pace with the course's activities. Here are some [helpful tips for students adjusting to online learning](#).

Take advantage of course resources and study aids

I maintain a running Google doc of study questions for video lectures and online readings which can serve as review questions for each unit quiz to help guide your studying. Review of these questions before viewing lectures or online resources might help focus you on the most important concepts. PDFs of the lecture slides are posted in a Google folder. If you keep up with reviewing these questions, you can be better prepared for unit quizzes without a lot of last-minute cramming. While you can consult your notes and online resources while taking a quiz (they are open-note), time limits will preclude this from being a viable strategy for doing well.

Embrace learning R

One of my objectives in this course is to help you develop and refine skills in visualizing, analyzing, and interpreting data. R is a powerful and free platform for statistical analysis and programming and an excellent tool for achieving this goal. Learning R now will provide skills that you can build on and use for other courses (and even a job) in the future. You will have the opportunity to practice using R both in class and for homework assignments.

Back up your work

Do yourself a favor to avoid last-minute computer calamities and stress by saving your work frequently and backing up your files using some kind of cloud storage system like Google Drive, Dropbox, or some other service. CIT provides some [tips on data backup](#). Also, don't wait until the day before a deadline to get started!

Getting help with online classes

CIT has developed a [number of resources that can help you formulate good strategies for success in online courses](#). These include general strategies for keeping on track with your courses as well as more specific resources about learning experiences that you may encounter in an online course. The Office of the Dean for Academic Planning and Advising has also introduced the new KOALA ([Knights' Online Academic Learning Assistance](#)) course support resource. Throughout the semester, if you need help with online learning strategies, you can contact the KOALA support desk, which will assist you with identifying resources and strategies for success. CIT also provides a range of [technology support resources](#). When you are in Canvas, the Help menu on the left side of the screen will also direct you to a number of CIT supports, including self-help resources and options to request technology assistance.

Communicating with me

Office hours. All of my office hours will be **online** this semester and conducted via Zoom video conference. I will have regular “walk-in” office hours which are first-come, first-served. You may have to wait in the Zoom “waiting room” until I finish with other students. I will also have scheduled 15-min office hour sessions that you can sign up for via my Google Calendar. See Canvas for details. If any of the posted times do not suit you, you can email me to set up another appointment for a video conference. When doing so, please suggest some possible times that you are available to meet in your email to make our correspondence more efficient.

Email communication. I can often answer questions by email as well, even about problems using R. Please do not expect an immediate response – I will try to get back to you within 24 hours. If you are emailing me about a problem with R, be very specific about your issue. I usually cannot diagnose a problem unless you send me your complete R code (not just a screenshot of the error you are experiencing) – you can easily attach or copy this into your email (attach the data file too if you are using one!). Feel free to seek help in this way - sometimes it only requires a second set of eyes to solve your problem and save you time!

Course policies

Attendance at “synchronous” online sessions

Accessing course materials online may be challenging - we've all experienced things like unforeseen emergencies and internet disruptions. Although this course includes some “live” or synchronous course activities, we can all be understanding about the challenges posed by the COVID-19 pandemic and the limits of technology. If you miss a synchronous session, please let me know as soon as possible so that we can discuss ways to keep you on track - it is your responsibility to get in touch with me in a timely manner to make up what you have missed. Note that you will not be subject to grading penalties if you are unable to attend scheduled synchronous online meetings due to pandemic-related obstacles, though you still must complete the work associated with those sessions. If you are experiencing longer-term disruptions, please be proactive in communicating with me and contact the Dean of Students if you expect to be out for an extended period of time.

Late work

Regular individual weekly activities (online quizzes, mid-week activity, discussion post) must be completed by their posted due dates for credit. Staying on track with these tasks is important to give you the tools to assess your progress in learning the material. It will also facilitate the timely posting of answers and return of graded work for all students. If meeting these deadlines becomes a problem for you, please discuss your situation with me. You can turn in these assignments late and still receive feedback, though depending on your timing you might not get work evaluated before the next unit quiz.

Graded homework assignments (both individual and group) will be penalized by a loss of 5% of the total assignment's points possible per day and will not be accepted at all after graded work has been returned to students or answer keys have been provided. (But if you think you must turn in something late because of extenuating circumstances, feel free to discuss the situation with me and we can negotiate terms.)

Plagiarism and academic dishonesty

Plagiarism and other forms of academic dishonesty (cheating, turning in another student's work as your own) will not be tolerated. Evidence of academic dishonesty is grounds for a score of zero on any assignment and further action including notifying the department chair, Dean of Academic Planning and Advising, Dean of Students, and Student Conduct Board, which can result a report filed with the Dean of Students.

Plagiarism. According to the Academic Dishonesty Policy in the Student Handbook (<https://www.geneseo.edu/handbook/academic-dishonesty-policy>), plagiarism includes the following:

1. direct quotation without identifying punctuation and citation of source;
2. paraphrase of expression or thought without proper attribution;
3. unacknowledged dependence upon a source in plan, organization, or argument.

In SUNY Geneseo's policy, “Plagiarism is the representation of someone else's words or ideas as one's own or the arrangement of someone else's material(s) as one's own.” Take care to properly cite sources of ideas, figures, data, etc. (including internet sources) in your writing and presentations. Even if you properly cite your source, when you borrow wording and sentence structure from the original source and

pass it off as your own (i.e., by not using quotation marks), you are guilty of plagiarism. Learn how to paraphrase in your own words information from the original source.

Working with students on homework. Although I do not mind if you work with other students on homework assignments, you must each produce original written answers to the questions and prepare or adapt code on your own (no copying and pasting from classmates). Identical or highly similar responses from two or more students suggest answers are being copied and all students may receive a zero or substantial penalty on the assignment. Feel free to collaborate and help each other, but always turn in your own work.

Online quizzes. It is my expectation that your work on quizzes (timed and untimed portions). I will be attentive to any anomalies that suggest student collaboration on answers in these assessments. It is not appropriate to communicate with other students while taking quizzes, or share information about quiz questions and answers until the quiz has officially closed. As I am being flexible in giving you a window of time to complete these online quizzes, I expect you to respect the integrity of this form of academic assessment. Cheating only impedes your ability to learn and can have serious consequences.

Copyright statement

Many of the materials that are provided to students in this course have been created by me. Students would be best to assume that all course materials are protected by legal copyright. Copyright will be indicated by a “© DATE AUTHOR” on the document. Copyright protection means that reproduction of this material is prohibited without the author’s consent. Thus, students are prohibited from sharing or posting copyrighted material to any websites outside our course Canvas site. Students are also prohibited from reproducing material to be shared with other more limited groups (e.g., sorority/fraternity test bank). Be aware that UUP (Union of University Professionals, the union representing faculty on this campus) is seeking to take legal action against these and other sites, and that posting or selling copies of materials to such sites may put a student in legal jeopardy.

Department of Biology policies

Biology proficiency. Students must have a C+ or better average in their first two REQUIRED Biology lecture courses at SUNY Geneseo to remain as Biology or Biochemistry majors. For most students these courses are Biol 117 and Biol 119, but for those accepting AP credits or transfer students it could be other combinations, that may include this course.

Minimum competence requirement. To graduate with a biology major, students must attain a grade of C- or better in all required biology courses, excluding electives. A grade of C- must be achieved in any course before it can be used as a prerequisite for another course. A student may only repeat a required biology course or related requirement once for major credit and the course must be taken at the next offering of the class. If the student does not earn at least a C- on the second taking of the class, she/he will not be able to complete the major.

Student success resources

Accessibility and accommodations. SUNY Geneseo is dedicated to providing an equitable and inclusive educational experience for all students. The Office of Accessibility will coordinate reasonable accommodations for persons with documented physical, emotional, or cognitive disabilities, as well as medical conditions related to pregnancy or parenting. Students with letters of accommodation should submit a letter to each faculty member at the beginning of the semester and discuss specific

arrangements. Please contact the Office of Accessibility Services for questions related to access and accommodations: access@geneseo.edu, 585-245-5112, www.geneseo.edu/accessibility-office.

Bias-related incidents. The [Community Commitment to Diversity, Equity, and Inclusion](#) states, “We are here to listen, to learn, to teach, to debate, to change, to grow. We should all be safe to pursue these goals at SUNY Geneseo while being who we are. Together, we commit ourselves to pluralism, cultivating a community that respects difference and promotes a sense of inclusion and belonging.” If in the unfortunate instance you experience an incident of bias, we encourage you to reach out to the Chief Diversity Officer (routenberg@geneseo.edu) and/or our University Police Department. In trying to create an environment that facilitates growth through diverse thoughts and ideas, reporting incidents of bias - including threats, vandalism, and microaggressive behaviors - can help bring a better understanding of our campus climate as well as provide opportunities for learning and restoring harm.

The Department of Biology has pledged to develop more inclusive pedagogical practices and work to promote diversity in our curriculum while confronting racism, particularly ways in which science has been used to sustain it ([Biology Department’s Statement in Support of Racial Justice](#), also available on [Department of Biology website](#)). This course is no exception, and to help achieve these goals I will be highlighting the work of a diversity of scientists and incorporating topics that demonstrate the impacts of systemic racism as it pertains to the study of ecology.

Student well-being. Prioritizing well-being can support the achievement of academic goals and alleviate stress. Eating nutritious foods, getting enough sleep, exercising, avoiding drugs and alcohol, maintaining healthy relationships, and building in time to relax all help promote a healthy lifestyle and general well-being.

Concerns about academic performance, health situations, family health and wellness (including the loss of a loved one), interpersonal relationships and commitments, and other factors can contribute to stress. Students are strongly encouraged to communicate their needs to faculty and staff and seek support if they are experiencing unmanageable stress or are having difficulties with daily functioning. The Dean of Students (585-245-5706) can assist and provide direction to appropriate campus resources. For more information, see www.geneseo.edu/dean_students.

Mental health. As a student, you may experience a range of challenges that can impact your mental health and thus impact your learning; common examples include increased anxiety, shifts in mood, strained relationships, difficulties related to substance use, trouble concentrating, and lack of motivation, among many others. These experiences may reduce your ability to participate fully in daily activities and affect your academic performance.

SUNY Geneseo offers free, confidential counseling for students at the Lauderdale Center for Student Health and Counseling, and seeking support for your mental health can be key to your success at college. You can learn more about the various mental health services available on campus at health.geneseo.edu. Getting help is a smart and courageous thing to do -- for yourself and for those who care about you.

Other resources. Additional resources are available to support your academic success and well-being, including academic support services, library research help, computer and technology support, and food security. See the “Student Success Resources” link on the Canvas course page for more information about these services.