

BIO 4130: General Ecology (WI) Winter Semester 2021

Instructor: Glen Hood, Ph.D.
3109 Biological Sciences Building
Office phone: (313) 577-1753

LECTURE MEETING LOCATION/TIME

When/where: Meetings in Zoom accessed online via Canvas on T/TH 10:00–11:15am in the Ecology 4130 Lecture course

Instructor office hours: Tuesday 11:15am – 12:15pm or by appointment on Zoom

LAB MEETING LOCATION/TIME

Location: Meetings in Zoom accessed online via Canvas in the General Ecology Sec 001/002 course

Time: Thursday (001) 11:30am–3:20pm; Friday (002) 9:30am–1:20pm

TEACHING ASSISTANTS

Section 001: Mike Sergeant (gl1336@wayne.edu)

Office Hours: Thursday 10:30–11:30am via Zoom meeting accessed via Canvas or by appointment

Section 002: Ali Shakoor (ali.shakoor@wayne.edu)

Office Hours: Thursday 9:00–10:00am via Zoom meeting accessed via Canvas or by appointment

LEARNING ASSISTANTS

Gwendolyn Klenke (gr2274@wayne.edu)

Office Hours: Wednesday 3:00–4:00pm via Zoom meeting accessed via Canvas or by appointment

COURSE DESCRIPTION

Ecology is a broad, integrative scientific discipline that examines how organisms (including humans) interact with each other and with their physical environment. The course will utilize both theoretical and empirical studies of ecological phenomena to build your understanding of the fundamental processes that control the abundance, distribution, and diversity of organisms in both terrestrial and aquatic ecosystems. In both lectures and laboratory-based activities you will also be exposed to the basic process of scientific inference (hypothesis formation, hypothesis testing, and data interpretation) and experimental design.

This course also meets the scientific communication (SC) requirement for biology and environmental science majors. The SC component is a critical and required portion of the course for all students, regardless of whether or not you are a biology or environmental science major, already have a degree, or have already completed a SC course. This course (lecture + lab) is 4 credits.

GENERAL COURSE GOALS

- To acquire an ecological literacy about how the natural world works
- To develop an understanding of how scientific methods are used to construct ecological knowledge
- To gain a greater appreciation of why it is important to study the interaction of living organisms on Earth

- To become familiar with some of the major ecological challenges facing the Earth today, and the important research which needs to be done to address these concerns
- Better understand the benefits of ecosystems and how we can use Earth's resources in ways that leave the environment healthy for future generations
- Improve analytical and writing skills through analysis and interpretation of ecological data

GENERAL LEARNING OBJECTIVES

By the end of this course, you should be able to:

- Understand and describe the major ideas of natural selection, population, community and ecosystem ecology, and patterns of biodiversity
- Address issues of ecological concern using qualitative and quantitative arguments
- Describe how species interactions are mediated by organisms' morphological, physiological and behavioral traits
- Understand how energy and matter are transformed (e.g., trophic dynamics, nutrient recycling and how these things are mediated by both abiotic and biotic processes)
- Understand how species interactions and abiotic factors influence population structure and dynamics; how biotic interactions and abiotic factors influence community composition, diversity and community dynamics; how ecosystem processes are influenced by community composition and diversity
- Apply working knowledge of the scientific method and be able to use hypothetico-deductive reasoning to formulate predictions and tests of those predictions
- Comprehend, interpret and evaluate conclusions drawn from experimental studies
- Exhibit critical thinking by integrating and synthesizing outside sources with your own observations, data and/or interpretation; produce a conclusion that effectively interprets previously presented evidence and key points, adds new insights, and results in an integrated whole; produce focused writing that exhibits consistency, flow, correct style formatting, and mechanical/grammatical correctness

SCIENTIFIC COMMUNICATION LEARNING OBJECTIVES

- Demonstrate the ability to use general conceptual statements supported by evidence appropriate to the discipline
- Demonstrate comprehension of discipline-appropriate primary material (including scholarly articles and lab experiments) by using discipline-suitable examples, level of detail, and organization
- Exhibit critical thinking by integrating and synthesizing multiple distinct sources
- Produce a conclusion that effectively interprets previously presented evidence and key points, adds insights, and results in an integrated whole

COURSE PREREQUISITES

BIO 3070 and BIO 3500 with grades of C-minus or above, or consent of instructor; consent of departmental adviser for Environmental Sciences majors.

FORMAT OF CLASS

This class will meet synchronously, on Tuesdays and Thursdays at 10:00-11:15am, online via the **Zoom app through Canvas**. The lecture will consist of PowerPoint presentations and some discussion of primary peer-reviewed literature. For specific information regarding the structure of the class, how to access Zoom on Canvas, and online etiquette/ground rules while using Zoom,

please see the document titled “**Bio 4130 Online Class Guidelines**” under the Home tab on the course’s Canvas webpage (<http://canvas.wayne.edu>).

REQUIRED MATERIALS

Computer: You will need a computer or similar electronic device (tablet, notebook, smartphone) to attend class, submit assignments, and access Canvas/class material. A device with a microphone and a webcam is highly recommended. If you do not have access to these materials, they may be rented/checked out from the library (<https://library.wayne.edu/equipmentcheckout>).

Internet Access: This is a synchronous, online course. Therefore, it relies heavily on meeting and interacting through Canvas and Zoom meetings in both lab and lecture on a weekly basis. The WSU campus is offering free internet access. Plan accordingly if you need to use space for internet access during class times (<https://tech.wayne.edu/coronavirus/student>).

Canvas: The use of Canvas is critical for several reasons. First, the online Zoom meetings will be accessed through Canvas. Second, additional materials such as external readings and/or problem sets will be posted to Canvas. Third, lab assignments will be submitted through Canvas and lecture exams will be accessed and taken while logged into Canvas. Please check Canvas regularly to access materials and check for announcements, emails and updates. If you have not done so, change your settings in Canvas to allow for email notifications when new material is posted, or announcements are made.

TEXTBOOK

Ecology Global Insights & Investigations, 2015 (2nd Edition) by Peter Stiling. This book is required and essential for reference and reading prior to lectures. Most of the material covered in lecture will be covered to some extent in the text.

I have placed two copies of the textbook on loan at the undergraduate library. They can be checked out for two hours at a time. Ask for the textbook by name, course number (BIO 4130 Ecology) or call number (QP 541.S0738 1015) at the front desk.

*Note: I will make the lecture slides (in pdf form) available to students via Canvas before each lecture.

ADD/DROP POLICY

Add forms will not be signed after the second week of class.

- Monday, Jan. 25, 2021 is the last day to drop the class with a tuition refund
- Sunday, Mar. 28, 2021 is the last day to withdraw

Students who withdraw from the course before March 28 will be assigned one of the following three marks: WP (withdrew but was passing at the time), WF (withdrew but was failing at the time), or WN (withdrew and never attended class or no graded work). Withdrawals after March 28 will not be approved, and a grade will be assigned. (<https://bulletins.wayne.edu/graduate/general-information/records-and-registration/>)

EXAM DATES/FORMAT

Two exams (February 16th and March 30th) will be given during the lecture period, and a two-hour final will be given during the regularly scheduled final exam period. The final examination is scheduled for Tuesday May 4th from 8:00am-10:00am. The final exam will be cumulative. All students are expected to take the exams at these times. Reasonable exceptions

will be granted in cases of illness which will require notification prior to the exam (via email or phone) and must be followed up with an original signed note from a physician on official letterhead. Exams will be closed book and held during the class period and accessed via Canvas.

Exam Format: The format of each exam (including the final) will be multiple choice, true/false, and in some cases, short answer questions. The exams will be taken during the class period online through Canvas, and student will have 1.5 hours to complete the exam (2 hours during the final). Each exam will be closed note/book/internet, and you are not allowed to talk to anyone else while taking the exam. Those students who fail to log into Canvas to take the exam will receive a score of zero. Those students who log into Canvas and begin the exam late will **not** be given extra time to finish the exam. During the exam, I will be available via Zoom for questions. More information about each exam including the study material, types of questions, and details about how to take the exam online will be discussed in detail at a later date.

Note about Academic Dishonesty when taking Exams: During difficult times, it is absolutely critical that people trust each other in multiple facets of life. I want to remind everyone that cheating is unacceptable, and would be particularly egregious and offensive during a time where trust is paramount. For each exam, there are built-in ways for me to determine if students are cheating on Canvas. Anyone caught cheating will automatically receive and be reported to the office of Academic Misconduct.

IN CLASS QUIZZES

Throughout the semester, I will give a total of 5 “pop quizzes”. These quizzes will **not** be announced ahead of time, and will cover material from the lecture period in which they are given. The quiz format will be short answer, open note, and consist of no more than 5 questions. The single lowest quiz grade of the semester will be dropped from the final grade calculation. If a student is absent during a quiz, this will constitute their lowest quiz grade. If a student is absent during more than one quiz, one will be dropped, and the other will factor into their grade. In short, it is to your advantage to attend each lecture.

GRADING BREAKDOWN

Lecture		Lab	
Exam 1	175	Plagiarism Essay	15
Exam 2	175	Literature Review	10
In Class Quizzes (x 5)	160	Lab Reports (x 7)	70 (10 each)
Final Exam	210	Article Summaries (x 3)	45 (15 each)
Discussion/Participation	30	Peer Reviews	10
Total Exam Component	750 points	Primary Paper Summary	10
		First Draft Term Paper	10
		Second Draft Term Paper	10
		Final Draft Term Paper	70
		Total SC Component	250 points

*Note: Because this is a SC course, *you cannot pass this class without earning at least 60% (150) of the 250 possible points for the SC component*, even if you earn all possible points from the exam component! In other words, you must be able to prove your writing skills upon leaving this course in order to successfully complete it.

Assuming you have passed the SC component of this course, you will be graded based on the following scale:

A:	93.1 and above
A-:	90-93
B+:	87-89
B:	84-86
B-:	80-83
C+:	77-79
C:	74-76
C-:	70-73
D+:	67-69
D:	64-66
D-:	60-63
F:	below 60

Final grades with a decimal point of 0.5 or above will be rounded up (e.g., 89.5 will be rounded up to a 90). Any final grades with a decimal point below 0.50 will be rounded down. This policy is non-negotiable. Students given an "I" will automatically receive an F if the work is not completed within 1 calendar year. The failure notation at Wayne State has been changed from an E to an F. There can be no exceptions to this grading policy. Further information on the grading policy can be found at: <https://wayne.edu/registrar/records/grades/course-policy/>.

LATE ASSIGNMENT POLICY

Any papers, lab reports, or other assignments turned in after the due date will be deducted 10% of the final grade per day late. The final draft of the term paper will not be accepted more than 3 days past the due date. Exams cannot be taken late.

ATTENDANCE

Attendance in the lecture and lab is mandatory. However, I will not explicitly take attendance in lecture or lab. If a student has an unexcused absence from the lab, they cannot receive credit for the lab report assignment due the following week. Additionally, in lecture, a small component of your overall grade is participation (3%). It is difficult to participate if you do not attend the lectures. Lastly, there are unannounced in-class "pop quizzes" given throughout the semester in the lecture that account for a significant portion (16%) of your overall grade. Any unexcused absence during a lecture where a quiz is administered will result in a grade of a zero for the missed quiz. Remember, the single lowest quiz grade (including a zero due to an absence) will be dropped.

POSTING OF GRADES

All grades will be posted in the gradebook on Canvas in your respective lab sections (including lecture grades) as soon as possible after the exam/assignment has been administered.

GRADE DISPUTES / CHALLENGE OPTION

Students will have 2 weeks after the return of an exam, quiz, or a written assignment to challenge a grade. Failure to challenge the grade within this period indicates a willingness to accept the assigned grade. The challenge should consist of a written description of why the answer is correct and a complete copy of the exam or written assignment. All questions on exams and full written assignments are subject to review when a grade is challenged, and thus, it is possible to receive a lower grade if the instructor discovers any previous grading errors.

CHEATING/ACADEMIC MISCONDUCT

A strict zero-tolerance policy for cheating will be enforced. Anyone caught cheating on the in-class quizzes or exam, or plagiarizing assignments in the lab, will receive a score of zero will result in a grade of "F" for the course and the initiation of university disciplinary action. Be aware that I take cheating very personally; the act of cheating is disrespectful and an insult to myself, your TA, and your classmates. I will not be lenient in how the incidences of cheating and/or academic misconduct are handled. Further information about the university's academic misconduct policy can be found at: <https://doso.wayne.edu/conduct/academic-misconduct>.

RELIGIOUS HOLIDAY CONFLICTS

If you have a conflict with any of the scheduled exam times due to religious reasons, you must notify me (Dr. Hood) in writing by class time on Tuesday, January 22, 2019. No make-up exams will be given unless I am notified in writing by this date.

WHAT I EXPECT FROM STUDENTS

Ecology is an integrative science that draws on principles of biology and evolution as well as physical sciences such as climatology, geology, chemistry, and physics. Most importantly, ecology cannot be studied or understood in modular form – that is, ecological principles build upon each other, and principles taught early in the course must therefore be mastered because they are a foundation for further learning later in the course. The course is designed to provide you with every opportunity to succeed, but I also expect you to participate in your own potential for success. Here is a general (not exhaustive) list of what I expect from you:

- 1) Except for extenuating circumstances, attend all scheduled course meetings (both lecture and labs). Because of the integrative nature of the science, getting behind in the course is a sure path to failure.
- 2) You are expected to read the chapter or page numbers indicated in the lecture schedule before attending class (at a minimum) and certainly before the exam. The lectures may (or may not) include or expand upon information covered in the text. However, roughly 10% of the exam questions will come directly from the text book readings and/or the study questions at the end of each chapter (while not necessarily explicitly being covered in lecture). Please read the textbook and work through the problem sets associated with each chapter prior to the exam.
- 3) Be actively engaged in all parts of this course, including both lecture and lab. You should be at ease to ask questions or lend comments at any time over the course of the semester. Active learning in the course requires that you attend lectures and lab, interact with your classmates and instructors, and think critically about the material being presented. In this regard, a small portion of your overall grade (3%) is dedicated to participation in lecture. Think, take notes, ask questions, and participate in discussions when they arise!
- 4) Work to complete assignments on time and with your best effort. As in most places in your academic life, the instructors in this course will return hard work and perseverance by any given student in kind. I am very willing to help out a struggling student who is obviously working hard.

- 5) Be respectful of your instructors and fellow classmates. This includes arriving to class on time, minimizing talking during lectures and labs, and allowing others to participate without interrupting them.

WHAT YOU CAN EXPECT FROM ME

Just as professors have certain expectations of students, it makes sense that students have certain expectations of their instructors. You can expect the following in this course:

- 1) We will be prepared and equipped to develop your understanding of ecological principles in an informal setting that encourages your input and questions, and makes it easy to fully participate.
- 2) We will provide whatever access and assistance is appropriate and necessary to help you succeed in this course. If you need help in succeeding despite your best efforts, we will do our best to get you on the right track.
- 3) At all times in evaluating your performance in this class, I will be fair and open about examinations, the material I expect you to know, and your overall evaluation in the course. This does *NOT* mean I will provide you with an “easy A,” but it does mean you will get the grade you deserve based on a combination of performance and effort.

SPECIAL CONSIDERATIONS FOR INDIVIDUALS WITH DISABILITIES

If you have a physical or mental impairment that may interfere with your ability to complete the requirements for this course successfully, you are invited to contact Educational Accessibility Services (583 Student Center Building; 577-1851) to discuss appropriate accommodations on a confidential basis.

UNEXPECTED UNIVERSITY CLOSURES.

If the University is officially closed on an exam day, the exam will be held on the next regularly scheduled class day. Closure of the University is announced by the following mechanisms:

1. the University Newline (313) 577-5345 *
2. WSU Homepage (www.wayne.edu) *
3. WSU Pipeline (www.pipeline.wayne.edu) *
4. WDET-FM (Public Radio 101.9)
5. by other local radio and television stations

*Note: The information on closures and class cancellations is likely to be found at these locations before it is broadcast by local radio and television stations.

ADDITIONAL STUDENT SERVICES

Warrior Life and Wellness provides an overview of the health and wellbeing services that are available to students. Although I list a few here in the syllabus, please know that many more services exist. Visit <https://warriorlife.wayne.edu> to learn more and access links to wellbeing resources.

The Academic Success Center (Undergraduate Library) assists students with content in select courses and in strengthening study skills. Visit www.success.wayne.edu for schedules and information on study skills workshops, tutoring, and supplemental instruction (primarily in 1000 and 2000 level courses).

The Writing Center is located on the 2nd floor of the Undergraduate Library and provides individual tutoring consultations free of charge. Visit <https://www.clas.wayne.edu/writing/> to obtain information on tutors, appointments, and the type of help they can provide.

Library Research Assistance. Working on a research assignment, paper or project? Trying to figure out how to collect, organize, and cite your sources? Wayne State librarians provide personalized help. Contact them at https://library.wayne.edu/forms/consultation_request.php.

The W Food Pantry provides students with free resources such as non-perishable food, toiletries, and feminine hygiene items, to enhance student success. Bring your OneCard and a copy or photo of your class schedule for the current semester to use their services. For more information, visit <https://thew.wayne.edu/>.

Counseling and Psychological Services (CAPS) provides free counseling and psychological services. They have licensed professional counselors, psychologists, and social workers ready to help and talk about anything. For more information, visit <https://caps.wayne.edu/>.

Computing and Information Technology (C&IT) offers students computing and technological support, including issues with Canvas, Wayne email, or any other WSU system. For more information, visit their website: <https://tech.wayne.edu/helpdesk>.

Emergency Preparedness: In the event an emergency arises, please familiarize yourself with the University's emergency procedures. For details, please refer to WSU's Emergency and Safety Procedures.

Covid-19 Compliance: All students are expected to familiarize themselves with mandatory campus health and safety guidelines—including practicing social distancing and wearing a face covering—by completing the Warrior Safe Training modules in Canvas. University policy requires students to complete a campus daily health screener beginning 48 hours before first coming to campus. For more information about the pandemic and safety guidelines visit <https://wayne.edu/coronavirus>.

OTHER

The instructor reserves the right to modify the syllabus, including the class/lecture schedule, as necessary. Students will be informed of any changes to the schedule during class and via Canvas. Any specific issue not covered by this syllabus will be resolved using University policies. Disputes which cannot be resolved following the guidelines present in this syllabus will be resolved by following the guidelines of the University "Student Due Process."

BIO 4130: Ecology (SC)
Tentative Lecture Schedule, Winter 2021

Date	Topic	Reading
Background		
Tue, Jan. 12	Course administration and introductions	Chapter 1
Thu, Jan. 14	Introduction to ecology and scientific inference	"
Abiotic factors in ecology		
Tue, Jan. 19	Variation in light and nutrients	Chapter 7
Thu, Jan. 21	Variation in temperature and water	Chapter 5, 6
Tue, Jan. 26	Large-scale variation in energy, climate	Chapter 22, 23, 24
Population ecology		
Thu, Jan. 28	Population patterns, growth and regulation	Chapter 8, 10
Tue, Feb. 2	Population patterns, growth and regulation (cont.)	"
Thu, Feb. 4	Life history, demography, life tables	Chapter 9, 10 (pp 205-208)
Organismal ecology		
Tue, Feb. 9	Natural selection and evolution	Chapter 2, 3, 4
Thu, Feb. 11	Behavioral ecology	"
Tue, Feb. 16	EXAM 1	
Species interactions		
Thu, Feb. 18	Competition	Chapter 11
Tue, Feb. 23	Predation and herbivory	Chapter 13, 14
Thu, Feb. 25	Parasitism and disease ecology	Chapter 15
Community ecology		
Tue, Mar. 2	Facilitation	Chapter 12
Thu, Mar. 4	The nature of communities	Chapter 16, 17
Tue, Mar. 9	Temporal dynamics (succession and assembly)	Chapter 20
Thu, Mar. 11	Determinants of species diversity	Chapter 18
Mar. 15 - 20	NO CLASS - SPRING BREAK	
Tue, Mar. 23	Determinants of species diversity (cont.)	Chapter 18
Ecosystem ecology		
Thu, Mar. 25	Production, food webs, and energy flow	Chapter 19, 25, 26
Tue, Mar. 30	EXAM 2	
Thu, Apr. 1	Biogeochemical cycles	Chapter 27
Landscape ecology		
Tue, Mar. 6	Island biogeography & landscape ecology	Chapter 21, 8
Human impacts on ecological systems		
Thu, Apr. 8	Environmental contaminants and ecotoxicology	TBA
Tue, Apr. 13	Conservation biology	Chapter 5.3, TBA
Thu, Apr. 15	TBA	TBA
Tue, Apr. 20	Global change biology	TBA
Thu, Apr. 22	Course synthesis and review	
Tue, May 4	FINAL EXAM: 8:00 am - 10:00 am	

BIO 4130: Ecology (SC)
Tentative Lab Activities, Winter 2021

Date	Lab Activity	Assignments Due
Jan. 14-15	No Lab this week	None
Jan. 21-22	Introduction and Plagiarism Discussion	None
Jan. 28-29	Physiological Ecology Lab Part 1	Plagiarism Essay and Literature Review
Feb. 4-5	Physiological Ecology Lab: Part 2	Primary Paper Selection
Feb. 11-12	Article #1 Discussion Population Ecology	Primary Paper Summary Phys. Ecology Lab Report
Feb. 18-19	Natural Selection Lab	Article #1 Write Up & Pop Ecology Lab Report
Feb. 25-26	Article #2 Discussion	Natural Selection Lab Report
Mar. 4-5	Predation Lab	Article #2 Write Up
Mar. 11-12	Article #3 Discussion	Predation Lab Report Term Paper First Draft – primary paper and 2 supporting paper summaries
Mar. 18-19	SPRING BREAK! NO LAB!	None!
Mar. 25-26	Trophic Regulation Lab –Part 1	Article #3 Write Up
Apr. 1-2	Trophic Regulation Lab – Part 2 Peer Review of Term Papers	3 copies of 2nd draft Term Paper (Primary paper and 4 supporting paper summaries)
Apr. 8-9	Carbon Sequestration Lab	Trophic Regulation Lab Report
Apr. 15-16	Terrestrial Field Lab at Maybury SP	Carbon Sequestration Lab Report
Apr. 22-23	Aquatic Field Lab at Maybury SP	Terrestrial Field Lab Report Term Paper Final Draft