

EVPP 607: Fundamentals of Ecology

Fall 2025

Tuesdays 4:30-7:10 pm

Innovation Hall Room 317 (In-person)

3 Credits

Instructor: Dr. Emily E. Conway

Office: 3048 David King Hall

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Office Hours: in-person or virtual by appointment

Course Description:

Fundamentals of Ecology is a comprehensive introductory course for graduate students that will center on ecological interactions among organisms and their environments. This course will introduce basic ecological concepts and processes within ecology including the relationships between organisms and aspects of the physical environment, relationships within and among populations, and strategies that species have developed to adapt to their particular environment and which influence their ability to adapt to changes in their environment. This course will also address the application of ecological knowledge to a range of contemporary issues in environmental management, including those of special interest to students in the class.

Learning Outcomes:

These learning outcomes are designed to help students master the fundamental concepts of ecology and ecological interactions among organisms and their environments. By the end of this course students will be able to:

- Describe and discuss the diversity of interactions between organisms and their environments, with a particular focus on general ecological principles that allow organisms to live and thrive in wide-ranging environments
- Describe the breadth of the discipline of ecology and discuss the integrative nature of the field
- Demonstrate critical thinking in analyzing and addressing contemporary ecological issues
- Advance written and oral communication skills for presenting scientific material

Assigned and Optional Readings:

Course materials include articles from the primary literature and occasionally from other media sources. All readings will be posted on Canvas.

Textbook (optional):

Smith, T.M. and Smith, R.L. 2015. *Elements of Ecology*, Ninth Edition. Pearson. ISBN 978-0-321-93418-5

Bowman and Hacker, 2021. *Ecology*, 5th edition (Sinauer) Link:

https://batrachos.com/sites/default/files/pictures/Eco_Books/Bowman_Hacker_2021.pdf

Course Structure:

Lectures: Each week lectures will center on the topics outlined in the course schedule. The **lectures will be the main learning content of the course**, and I will endeavor to post the lecture slides prior to the start of each class. However, please note that this may not always happen, and the portions of the lecture slides may be missing information that can be filled in during lecture. **Attendance is required** and will count towards your final grade. However, if you are unable to attend a lecture, or if you need accommodations, please contact me as soon as possible.

Discussions: Each week there will be **at least one required reading** posted as well as additional suggested readings if you would like to explore the topic more. Readings will pertain to the topic(s) that we are discussing during lecture each week and will help to both build knowledge on the selected topic(s) and to help build proficiency with reading and understanding of primary literature. Prior to the paper discussion, all students will be expected to **complete the assigned reading, post one (1) discussion question on Canvas**, and complete the **reading quiz on Canvas**. Discussions will take place at the end of the class and will likely last 30-40 minutes. All students are expected to participate in paper discussions. More directions will be provided.

Discussion Quizzes: Prior to in-class discussions of required readings, students must complete a reading quiz posted on the course Canvas page. These quizzes will serve to prepare everyone for the in-class discussion and to reiterate key points from the required readings.

Discussion Question: Prior to in-class discussions of the required reading, students must post at least one (1) discussion question on the course Canvas page. These discussion questions will help to facilitate the discussion of the required reading.

Muddiest Point: At the end of each class, students will spend five (5) minutes reflecting and writing down a brief summary of the previous lecture and either the most confusing (muddiest) point or a point from the lecture/paper discussion that they would like more information about. This is an opportunity for you to reflect on your understanding of the material covered each week and become more aware of your own learning process, fostering metacognition—the ability to think about one’s thinking. Additionally, it will provide immediate feedback to me about how I can best support your learning by understanding which topics need further clarification.

Midterm and Final Exam: There will be one midterm exam and a final exam, both will be take-home and open book, but each must be completed independently. The mid-term exam will include material covered in the course up to the previous class period. Whereas the final exam will be designed to encourage you to review and synthesize all course material. Exam questions are not designed to trick you but provide you with the opportunity to demonstrate your learning. Exam questions may be pulled from all class materials including lectures, assigned readings, and discussions.

Late Work Policy

There will be a 24-hour grace period on all assignment due dates. If assignments are submitted 2-7 days late, there will be a 25% reduction in points earned. If assignments are submitted more than 7 days late, there will be a 50% reduction in points earned. Please try your best to submit all assignments on or before the due date to avoid penalty but turning in your work late is better than not turning it in at all.

If you need an extension for any assignment, you must contact me at least 24 hours in advance of the due date to request one.

Grading:

Points:

Attendance	70 points (5 points/class, 14 class meetings)
Discussion Questions	45 points (5 points/each, 9 paper discussions)
Discussion Quizzes	90 points (10 points/each, 9 paper discussions)
Muddiest Points	60 points (5 points/class, 12 class meetings)
Midterm Exam	100 points
Final Exam	150 points

Total **515 points**

Grading Policies: Grades will be awarded using the following grade cut-offs: 100-90 = A; 89-80 = B; 79-70 = C; 69-60 = D; ≤ 59 = F.

Course Schedule:

Week	Date	Lecture Topic	Required Readings	Supplemental Readings	Assignments (Due Date)
1	Tuesday 8/26	Introduction to Course and the Field of Ecology		Smith and Smith Chapter 1 Bowman and Hacker Chapter 1	
Part 1: The Physical Environment					
2	Tuesday 9/02	The Physical Environment and the Biosphere		Smith and Smith Chapter 2 Bowman and Hacker Chapters 2-3	Muddiest Point Summary Due at end of class
3	Tuesday 9/09	Aquatic and Terrestrial Environments	Tully, et al. (2019). The invisible flood: The chemistry, ecology, and social implications of coastal saltwater intrusion. BioScience, 69(5), 368-378.	Smith and Smith Chapters 3-4 Bowman and Hacker Chapters 4-5	Discussion Quiz Due prior to class Muddiest Point Summary Due at end of class
Part 2: Organisms and their Environment					
4	Tuesday 9/16	Adaptation and Natural Selection		Smith and Smith Chapters 5-7 Bowman and Hacker Chapters 4-6	Discussion Quiz Due prior to class Muddiest Point Summary Due at end of class
Part 3: Populations					
5	Tuesday 9/23	Life Histories and Behavioral Ecology		Smith and Smith Chapter 10 Bowman and Hacker Chapters 7-8	Discussion Quiz Due prior to class Muddiest Point Summary Due at end of class

6	Tuesday 9/30	Populations: Distribution, Growth, and Dynamics		Smith and Smith Chapters 8-9, 11 Bowman and Hacker Chapters 9-11	Discussion Quiz Due prior to class Muddiest Point Summary Due at end of class
7	Tuesday 10/07	Species Interactions		Smith and Smith Chapters 12-15 Bowman and Hacker Chapters 12-15	Discussion Quiz Due prior to class Muddiest Point Summary Due at end of class
8	Tuesday 10/14	Mid-term Exam			Take home exam available Tuesday 10/14, due Tuesday 10/21 @ 11:59 pm
Part 4: Communities					
9	Tuesday 10/21	Communities and Community Ecology		Smith and Smith Chapters 16-17 Bowman and Hacker Chapters 16-17	Discussion Quiz Due prior to class Muddiest Point Summary Due at end of class
10	Tuesday 10/28	Community Dynamics		Smith and Smith Chapters 18 Bowman and Hacker Chapters 16-17, 19	Discussion Quiz Due prior to class Muddiest Point Summary Due at end of class
11	Tuesday 11/04	Election Day – No classes (University Closed)			
12	Tuesday 11/11	Landscape Dynamics & Landscape Ecology		Smith and Smith Chapter 19 Bowman and Hacker Chapters 18, 24	Muddiest Point Summary Due at end of class
Part 5: Ecosystems					
13	Tuesday 11/18	Ecosystem Ecology		Smith and Smith Chapters 20 Bowman and Hacker Chapters 20-21	Discussion Quiz Due prior to class

					Muddiest Point Summary Due at end of class
14	Tuesday 11/25	Nutrient Supply and Cycling		Smith and Smith Chapters 21-22 Bowman and Hacker Chapter 22	Discussion Quiz Due prior to class Muddiest Point Summary Due at end of class
Part 5: Ecological Biogeography					
15	Tuesday 12/02	Applied and Large-Scale Ecology		Smith and Smith Chapters 23-27 Bowman and Hacker Chapters 23-25	Muddiest Point Summary Due at end of class Take home exam available Wednesday 12/03, due Wednesday 12/10 @ 11:59 pm
16	Tuesday 12/09	Reading Day			

Additional GMU Policies:

Academic Standards

Academic Standards exist to promote authentic scholarship, support the institution's goal of maintaining high standards of academic excellence, and encourage continued ethical behavior of faculty and students to cultivate an educational community which values integrity and produces graduates who carry this commitment forward into professional practice.

As members of the George Mason University community, we are committed to fostering an environment of trust, respect, and scholarly excellence. Our academic standards are the foundation of this commitment, guiding our behavior and interactions within this academic community. The practices for implementing these standards adapt to modern practices, disciplinary contexts, and technological advancements. Our standards are embodied in our courses, policies, and scholarship, and are upheld in the following principles:

- **Honesty:** Providing accurate information in all academic endeavors, including communications, assignments, and examinations.
- **Acknowledgement:** Giving proper credit for all contributions to one's work. This involves the use of accurate citations and references for any ideas, words, or materials created by others in the style appropriate to the discipline. It also includes acknowledging shared authorship in group projects, co-authored pieces, and project reports.
- **Uniqueness of Work:** Ensuring that all submitted work is the result of one's own effort and is original, including free from self-plagiarism. This principle extends to written assignments, code, presentations, exams, and all other forms of academic work.

Violations of these standards—including but not limited to plagiarism, fabrication, and cheating—are taken seriously and will be addressed in accordance with university policies. The process for reporting, investigating, and adjudicating violations is outlined in the university's procedures. Consequences of violations may include academic sanctions, disciplinary actions, and other measures necessary to uphold the integrity of our academic community.

The principles outlined in these academic standards reflect our collective commitment to upholding the highest standards of honesty, acknowledgement, and uniqueness of work. By adhering to these principles, we ensure the continued excellence and integrity of George Mason University's academic community.

Student responsibility: Students are responsible for understanding how these general expectations regarding academic standards apply to each course, assignment, or exam they participate in; students should ask their instructor for clarification on any aspect that is not clear to them.

Use of AI Tools

The effective use of Artificial Intelligence (AI) tools is an increasingly important skill that students will likely need to be familiar with beyond the university setting. As such their use may sometimes be allowed in course assignments if:

- Instructor permission is obtained in advance and
- That use is properly documented and credited. For example, text generated using ChatGPT-3 should include a citation such as: "Chat-GPT-3. (YYYY, Month DD of query). "Text of your query." Generated using OpenAI. <https://chat.openai.com/>" Material generated using other tools should follow a similar citation convention.

- That use adheres to George Mason University AI Guidelines (<https://www.gmu.edu/ai-guidelines/ai-guidelines>)

The use of generative AI tools is not permitted in this course for the following activities:

- Impersonating you in classroom contexts, such as by using the tool to compose discussion board prompts assigned to you or content that you put into a Zoom chat.
- Completing group work that your group has assigned to you, unless it is mutually agreed upon that you may utilize the tool.
- Writing a draft of a writing assignment.
- Writing entire sentences, paragraphs or papers to complete class assignments.

AI tools can be helpful when generating ideas, identifying sources, synthesizing text, and helping you to understand what are important concepts within a topic of interest. However, it is critical that students use their own critical thinking skills to guide, verify, and craft their work products – not AI.

Accommodations for Students with Disabilities

Disability Services at George Mason University is committed to upholding the letter and spirit of the laws that ensure equal treatment of people with disabilities. Under the administration of University Life, Disability Services implements and coordinates reasonable accommodations and disability-related services that afford equal access to university programs and activities. Students can begin the registration process with Disability Services at any time during their enrollment at George Mason University. If you are seeking accommodations, please visit <https://ds.gmu.edu/> for detailed information about the Disability Services registration process. Disability Services is located in Student Union Building I (SUB I), Suite 2500. Email: ods@gmu.edu. Phone: (703) 993-2474.

Student responsibility: Students are responsible for registering with Disability Services and communicating about their approved accommodations with their instructor *in advance* of any relevant class meeting, assignment, or exam.

FERPA and Use of GMU Email Addresses for Course Communication

The Family Educational Rights and Privacy Act (FERPA) governs the disclosure of education records for eligible students and is an essential aspect of any course. **Students must use their GMU email account** to receive important University information, including

communications related to this class. Instructors will not respond to messages sent from or send messages regarding course content to a non-GMU email address.

Student responsibility: Students are responsible for checking their GMU email regularly for course-related information, and/or ensuring that GMU email messages are forwarded to an account they do check.

Title IX Resources and Required Reporting

As a part of George Mason University's commitment to providing a safe and non-discriminatory learning, living, and working environment for all members of the University community, the University does not discriminate on the basis of sex or gender in any of its education or employment programs and activities. Accordingly, **all non-confidential employees, including your faculty member, have a legal requirement to report to the Title IX Coordinator, all relevant details obtained directly or indirectly about any incident of Prohibited Conduct** (such as sexual harassment, sexual assault, gender-based stalking, dating/domestic violence). Upon notifying the Title IX Coordinator of possible Prohibited Conduct, the Title IX Coordinator will assess the report and determine if outreach is required. If outreach is required, the individual the report is about (the "Complainant") will receive a communication, likely in the form of an email, offering that person the option to meet with a representative of the Title IX office.

For more information about non-confidential employees, resources, and Prohibited Conduct, please see University Policy 1202: Sexual and Gender-Based Misconduct and Other Forms of Interpersonal Violence. Questions regarding Title IX can be directed to the Title IX Coordinator via email to TitleIX@gmu.edu, by phone at 703-993-8730, or in person on the Fairfax campus in Aquia 373.

*** Please note, as a faculty member I am a mandatory reporter and must report all disclosures ***

Student opportunity: If you prefer to speak to someone **confidentially**, please contact one of Mason's confidential employees in Student Support and Advocacy (SSAC), Counseling and Psychological Services (CAPS), Student Health Services (SHS), and/or the Office of the University Ombudsperson.

