Environmental Science: Biological Diversity and Ecosystems

EVPP 301

Synchronous Online Lecture Monday / Wednesday 3:00 – 4:15pm

Lecture Instructor

Dr. Amy Fowler
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Laboratory Instructor

Darby Pochtar
By email appointment
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Topics of this Course

Together with EVPP 210 and 302, this course is part of a three-semester sequence for environmental science majors, which provides the basic underpinning for majors courses. Topics include the human dimensions of the environment, biological diversity, vertebrate organ systems, conservation biology, and general ecology.

Textbooks

Life: The Science of Biology. 2017. Sadava, Hillis, Heller, and Berenbaum. 11th Edition. (also used in EVPP 210 and 302)

S&S: Elements of Ecology. T.M. Smith and R.L. Smith. 9th ed. (also used in EVPP 302).

Additional required reading: (1) Leopold: https://www.uky.edu/~rsand1/china2017/library/Leopold1.pdf, (2) Silent Spring by Rachel Carson. (Bookstore will order, but can get cheap used copies online. Also available as an ebook)

Lab Manual: Jones, R.C., et al. 2020. EVPP 301: Environmental Science: Biological Diversity and Ecosystems. Available online through Blackboard.

Grading and Assignments

The course consists of a coupled lecture and laboratory; both must be taken concurrently and your grade will depend on your performance in both lecture and lab.

The final grade you earn in the lecture part of the course will be based on your performance in examinations. There will be **three exams (100 points each)**, **and a final exam**. The final exam will include material since the third exam (required) (50 points) and a cumulative section (optional) (50 points). If you elect not to take the cumulative section, your total out of 350 points will be scaled up to 400 points. Total points for the lecture is 400 points.

The final grade you earn in the laboratory portion of the course will be based on your performance on worksheets (10 worksheets, 8 points each = 80 points), a full laboratory report on *Daphnia* toxicity (40 points), and an oral presentation on the effects of nutrients on algal growth (30 points). Total points for the laboratory is 150 points.

Final grades will be assigned for undergraduates based on a standard plus/minus scale:

A	(94 - 100 %)	C+	(77 - 79.99 %)
A-	(90 - 93.99 %)	C	(73 - 76.99 %)
B+	(87 - 89.99 %)	C-	(70 - 72.99 %)
B	(83 - 86.99 %)	D	(60 - 69.99 %)
B-	(80 - 82.99 %)	F	(< 60 %)

Practical Matters

It is not possible to master this material without regular class attendance. I will use some different examples than are in the book and incorporate material from other sources. The PowerPoint lectures, posted on Blackboard, are ***not*** *a substitute for lecture attendance*. Students should focus on taking detailed notes of lectures and synthesizing the information with the ideas illustrated in the slides. Occasionally videos will be shown, and students will be

responsible for knowing the organisms as well as the concepts they illustrate. Students are responsible for everything discussed in lecture, announced changes in the syllabus, and any handouts distributed in class. All of that is fair game for exams.

Please adhere to the list below during lecture and lab:

Be prepared for class.
Do not be late to class (classes will start on time).
Cell phones are **not** to be used in any way, under *any* circumstances during lecture/lab, and should be turned OFF and stowed out of sight for the duration of every lecture/lab.

Policies for Online Learning: Activities and assignments in this course will regularly use the Blackboard learning system, available at https://mymason.gmu.edu. Students are required to have regular, reliable access to a computer with an updated operating system (recommended: Windows 10 or Mac OSX 10.13 or higher) and a stable broadband Internet connection (cable modem, DSL, satellite broadband, etc., with a consistent 1.5 Mbps [megabits per second] download speed or higher.)

Activities and assignments in this course will regularly use web-conferencing software (Blackboard Collaborate / Zoom). In addition to the requirements above, students are required to have a device with a functional camera and microphone. In an emergency, students can connect through a telephone call, but video connection is the expected norm.

All course materials posted to Blackboard or other course site are private to this class; by federal law, any materials that identify specific students (via their name, voice, or image) must not be shared with anyone not enrolled in this class.

Some/All of our synchronous meetings in this class will be recorded to provide necessary information for students in this class. Recordings will be stored on Blackboard and will only be accessible to students taking this course during this semester.

Video recordings — whether made by instructors or students — of class meetings that include audio, visual, or textual information from other students are private and must not be shared outside the class. Live video conference meetings (e.g. Collaborate or Zoom) that include audio, textual, or visual information from other students must be viewed privately and not shared with others in your household or recorded and shared outside the class

Students must use their MasonLive email account to receive important University information, including communications related to this class. I will not respond to messages sent from or send messages to a non-Mason email address.

The only valid reasons for missing an assignment deadline or an examination are those accepted by the University and include death in the immediate family and major illness of the student. Any student missing a graded assignment (including tests) for health reasons or other extenuating circumstances may be required to submit at doctor's statement or other appropriate documentation to avoid a zero for that assignment.

If the campus closes or class is canceled due to weather or other concern, students should check Blackboard for updates on how to continue learning and information about any changes to events or assignments.

Student and Faculty Names and Pronouns: Gender identity and pronoun use: If you wish, please share your name and gender pronouns with me and how best to address you in class and via email. I use she/her for myself and you may address me as "Dr. Fowler" in email and verbally.

Academic Integrity: It is expected that students adhere to the George Mason University Honor Code as it relates to integrity regarding coursework and grades. The Honor Code reads as follows: "To promote a stronger sense of mutual responsibility, respect, trust, and fairness among all members of the George Mason University community and with the desire for greater academic and personal achievement, we, the student members of the University Community have set forth this: Student members of the George Mason University community pledge not to cheat, plagiarize, steal and/or lie in matters related to academic work." More information about the Honor Code, including definitions of cheating, lying, and plagiarism, can be found at the Office of Academic Integrity website at http://oai.gmu.edu. Students should read these statements and understand their implications and how they apply to this course. Any violation of the code of academic integrity will result in a severe penalty assessed on the final grade. This penalty will range from a **minimum** of a full letter grade reduction to an F for the course. All academic

integrity violations will be reported to the Chair of the Department of Environmental Science and Policy, the Dean of the College of Science, and the Director of the Academic Integrity Board.

Any assignment turned in for a grade in this course must reflect your work and your work only.

Some kinds of participation in online study sites violate the Mason Honor code: these include accessing exam or quiz questions for this class; accessing exam, quiz, or assignment answers for this class; uploading of any of the instructor's materials or exams; and uploading any of your own answers or finished work. Always consult your syllabus and your professor before using these sites.

Student Disabilities: Disability Services at George Mason University is committed to providing equitable access to learning opportunities for all students by upholding the laws that ensure equal treatment of people with disabilities. If you are seeking accommodations for this class, please first visit http://ds.gmu.edu/ for detailed information about the Disability Services registration process. Then please discuss your approved accommodations with me. Disability Services is located in Student Union Building I (SUB I), Suite 2500. Email:ods@gmu.edu | Phone: (703) 993-2474.

Diversity and Inclusion: In this course, we welcome and value individuals and their differences, including gender expression and identity, race, economic status, sex, sexuality, ethnicity, national origin, first language, religion, age and ability. We encourage all members of the learning environment to engage with the material personally, but to also be open to exploring and learning from experiences different than their own.

Students are responsible for verifying their enrollment in this class. Schedule adjustments must be made by the deadlines posted in the Schedule of Classes.

January 23, 2021

Week	Lecture topic and Reading Assignment	Laboratory topic and assignment
25 Jan	(1) Humans and Nature-History (2) Population Dynamics See Lecture notes AND S&S, Ch. 9	Human Population Growth; Population Pyramids Lab manual, Lab 1
1 Feb	(3) Environmental Ethics Leopold: https://www.uky.edu/~rsand1/china2017/library/Leopold1.pdf (4) Biological Diversity: Bacteria and Archaea Sandava et al.: Ch. 25, 26	Human Survivorship Curves Derived from Gravestones Lab manual, Lab 2
8 Feb	(5) Biological Diversity: Eukaryotes; (6) Biological Diversity: Fungi, Protists, Plants I Sandava et al.: Ch. 25, 26, 27, 28, 29, 37	Environmental Ethics Discussion Lab manual, Lab 3 AND "The Land Ethic" by Aldo Leopold
15 Feb	(7) Biological Diversity: Plants II: Plant Structure and Function Sandava et al.: Ch. 33-35 **Exam 1 – Wednesday, Feb 17**	Protist and Fungal diversity, form, and function Lab manual, Lab 4
22 Feb	(8) Biological Diversity: Animal Diversity I (9) Biological Diversity: Animal Diversity II Sandava et al.: Ch. 30-31	The Eukaryotic Domain: Plant diversity, form, and function Lab manual, Lab 5
1 Mar	(10) Biological Diversity: Animal Diversity III (11) Vertebrate Organ Systems Sandava et al.: Ch. 32, 46-51	The Eukaryotic Domain: Animal diversity, form, and function I Lab manual, Lab 6
8 Mar	(12) Toxicology See Lec. Notes, Silent Spring, AND S&S: Ch 19 **Exam 2 Wednesday, March 10**	The Eukaryotic Domain: Animal diversity, form, and function II Lab manual, Lab 7
15 Mar	(13) Conservation Biology (14) Population Ecology Sandava et al.: Ch. 54, 58 AND S&S: Ch. 8-9, 26	Overview of Data Analysis and Scientific Report Writing//Overview of Daphnia Toxicity Lab Lab manual, Lab 8 AND Appendices

22 Mar	(15) Population Regulation (16) Adaptation and Evolution S&S: Ch. 5, 10, 11 AND Sadava et al: Ch. 54	Impact of Pesticides Discussion Chapters 1-4 "Silent Spring" by Rachel Carson AND Lab manual, Lab 9
29 Mar	(17) Life Histories (18) Species Interactions S&S: Ch. 12-18 AND Sadava et al: Ch. 55	Toxicity Test on a Small Aquatic Organism **Formal Write-up; 3 Parts**
5 Apr	(19) Communities (20) Ecosystems; Decomposers and Local Nutrients S&S: Ch. 20-21 AND Sadava et al.: Ch. 56, 57	Effect of Nutrients on Primary Production: Completion Lab manual, Lab 10
12 Apr	(21) Biogeochemical Cycling S&S: Ch. 22 AND Sadava et al.: Ch. 57 **Exam 3 – Wednesday, April 14**	PPT Presentations: Effects of Nutrients on Primary Production **(Presentation)** Lab manual, Lab 12 AND Appendix on Oral Presentation
19 Apr	(22) Climate Basics (23) Terrestrial Ecosystems S&S: Ch. 2-4, 22	Toxicity Test – **Final Paper Due**
26 Apr	(24) Biomes (25) Biomes S&S: Ch. 23, 27	No Lab

FINAL EXAM – MONDAY, MAY 3, 2021

1:30 – 4:15 PM