

ESM 221 Applied Environmental Studies: Preparation for Problem Solving
Winter 2023 (CRN): Mondays 9:00-10:05 (In Person in Karl Miller Center #470)

Lead Instructor: Prof. Cat de Rivera, Ph.D., derivera@pdx.edu
Student drop-in hours Mon 12:30-1:20; Wed 10:15-11; Fri 11:15-noon (in person); or by appointment.

Lab Teaching Assistants (TAs) Jacob Rose: jacorose@pdx.edu (M/F); Grace Hall: gkh3@pdx.edu (W)

Course Overview: Welcome to ESM 221! This course is designed to introduce Environmental Science and Environmental Studies majors to principles and practices of environmental science, especially approaches to solving environmental problems. Using a sampling of environmental issues ranging from the challenges of managing the take of populations to evaluating ecosystem restoration, we will focus on solving problems. We will explore solving problems through a variety of approaches: algebraic solutions, basic models, analyzing data and designing protocols for data collection and collecting the data as well, and working towards solving larger problems that also require team-building approaches. To help with this problem solving, we will also work on improving skills of reading and interpreting scientific studies, understanding and creating models, and evaluating environmental management options. We will answer questions such as what is a target size for a managed population, is dike removal an effective restoration technique for saltmarshes, and how much does carbon sequestration by trees mitigate global climate change? In class, the focus will often be on individual and peer problem-solving of real world issues with the goal of helping you become independent learners and garnering skills for thinking like and operating like a scientist or natural resource manager.

The **Course Objectives** are to enable you to:

- a) Identify environmental stressors and their effects as well as information needed to address them;
- b) Develop approaches to environmental problem solving for different categories of problems;
- c) Using basic conceptual/graphical and quantitative models in combination with writing, describe and predict processes and solutions relevant to the management of biodiversity;
- d) Characterize environmental data via graphical representation and statistically analysis and interpret it;
- e) Search for, read, and analyze scientific papers;
- f) Clearly communicate science, including your research, with coherent written papers and short oral presentations.

Instructor Mindset: I am committed to growing as a teacher and person as I teach. Please let me know how I can better help you learn, including making you feel safe, included, and valued. Different aspects of this course can be challenging. I believe you are capable of growing your abilities as you put time and effort in to learn the course material and use the course resources and other campus resources (see below) to support your success. I am one of those resources, as are your TAs. We are here to support you in your growth.

Instructor Inclusivity Statement: It is my intent that students from all backgrounds and perspectives be well served by this course, that students' learning needs be addressed both in and out of class, and that the diversity that students bring to this class be realized as a resource and strength. I aim to present materials and activities that are respectful of diversity including of gender, sexuality, disability, age, socioeconomic status, ethnicity, race, culture, and religion. I encourage and appreciate your suggestions to help me or the course better realize these ideals: If any aspects of instruction or course design result in barriers to your inclusion or learning, please notify me. Similarly, please let me know ways to improve the effectiveness of the course for you personally or for other students or student groups. In addition, let me know of any religious or other events that may conflict with any of our class meetings so we can make arrangements for you. My goal is to create a learning environment that is equitable, inclusive, and welcoming and that fosters mutual respect and full participation for all students.

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Land Acknowledgement: I respectfully acknowledge the land where Portland State University is located is the unceded territory and ancestral lands of the Multnomah, Kathlamet, Clackamas, Tumwater, Watlala bands of the Chinook, the Tualatin Kalapuya and other Indigenous nations of the Columbia River. I pay my respects to their elders past and present. Please take a moment to consider the many legacies and *ongoing* violence, displacement, migration, and settlement of this land where we gather for class. Please use this course to consider ways to protect the environment to respect the land and its people.

Schedule & Assignments

Wk	Day	Date	Lecture Topic	Book read (due by)	Other Readings, HW (due by)
1	M	1/9	Biodiversity value		
1	W	1/11	BD loss	FRC: 119-23, skim rest of Ch 5 MS: 4.1 & 4.2; skim rest of Ch 4	HW 1: read Allen et al. 2020; De Frenne et al. 2022
2	M	1/16	NO CLASS - MLK		
2	W	1/18	water pollution	FRC: Ch 14; MS: 11	
3	M	1/23	water pollution, common pool		HW 2: Read Methods plus skim rest for both: Sonoda & Yeakley 2007; Schaider et al. 2019
3	W	1/25	exponential growth	FRC: Ch 6 pp 148-155 + crunch ## p156; MS: Ch 5.3	
4	M	1/30	logistic growth & MSY	FRC: Ch 6 pp 155-73 (esp 6.8, .10, .11), & 264-5 MS: Ch 5.3	HW 3: exponential problems
4	W	2/1	human pop growth & urbaniz	FRC: Ch 7: 178-198; pp 12, 57, 262-264; MS: Ch 7	HW 4: logistic problems
5	M	2/6	measuring biodiversity		HW 5: human pop problems
5	W	2/8	Catch up/review		Test 1 online, by end wk 6
6	M	2/13	food production	FRC: skim Ch 10 (261-278); read Ch 11 (283-304); MS: Ch 10	HW 6: diversity problems
6	W	2/15	habitat loss & fragmentation	FRC: pp 119-123; pp 160-161; pp 191-2, Ch 18 (pp 495-513); MS: Ch 8	HW 7: read Lau et al. 2020
7	M	2/20	BD rules & management	FRC: pp 144-7; MS: Ch 9	HW 8: Pimm et al. 2018
7	W	2/22	air pollution, climate ch causes	FRC: Ch 15; MS: Ch 7	
8	M	2/27	climate change consequences	FRC: Ch 19 (517-42); MS: Ch 15	
8	W	3/1	CC impacts to orgs, invasions		HW 9: skim Chuine; grape harvest central tendencies
9	M	3/6	Ecosystem services	FRC: Ch 17; MS: Ch 14	HW 10: read Butler et al. 2021
9	W	3/8	env worldviews, sustainability	FRC: Ch 20; MS: Ch 1, 17	
10	M	3/13	Problem solving		
10	W	3/15	Review/Conclude		
11	Tu	3/21	Exam		Comprehensive exam - in person

Course Materials

Required Text: (same as for ESM 220) Environmental Science: Foundations and Applications by Friedland, Relyea, and Courard-Hauri.

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Course Components and Grade Breakdown

- Practice Problems and reading summaries (20% total) Your weekly assignments will be posted on CANVAS and due in the appropriate assignment folder or in person. The style of these assignments will vary, though will consist of mathematical practice problem sets, working with data to answer questions, and support work to the term class project. The goal of this work is to give you practice with the material so you can succeed on tests and the major project and future courses and jobs. Please check the answer keys to make sure your work is correct and ask questions in class. Also, if you're stuck while doing your homework, join my drop in hours, ask in class, or ask classmates. Our grader may also be able to help. Also, You will read journal articles or other reading and these typically serve as the basis for in-class). For four of them, you will also be individually submitting your answers to questions in the form of a (typically 1-page) summary of each paper. For the other papers, you need to read them to prepare for in-class discussion and a brief small-group writeup (part of your in-class grade). These are worth 2 pts ea.
- In-class assignments (17% of total): The style of these assignments will vary from activities, discussions, and assignments based upon reading or data analysis. Complete each assignment and turn it at the end of that class (or later that day, on Canvas, if you must). These are worth ~ 1pt ea.
- Exams (28% of total): Based on lectures, readings, and discussions. There will be 2 exams: an online midterm is worth 12% of your grade and the in person comprehensive exam (with more material weighted on the second half of the course, but also covering the whole course) is worth 16%. Key topics to master, sample exam questions, and a note about the format will be provided before each exam. Homework serves as a useful guide for the quantitative part of the exams.
(DRC note: While my goal is that students with DRC exceptions for test duration shall easily receive your properly expanded amount of time, it would be helpful if those of you with this exception will send me an email reminder to ensure I set your test duration up properly. If I have not provided the appropriate time for you, don't panic – just send me an email and I will fix it.)
- Lab Component (35% of total) See lab syllabus (see Canvas for lab) for more detail.

Grading scale: Grades will be assigned based on fixed cutoffs (60-70-80-90: D-C-B-A). Plus is for each grade (above 60) ending in 7 to 9; minus is for grades ending in 0 to 2.

Course Guidelines and Policies

Participation: To get the most out of this course, please do the assigned readings and listen to the prior week's lectures in preparation for Monday's in-person class. Be prepared to participate. I appreciate it when you ask questions, whether they are to clarify assignments or concepts. You are responsible for completing all assignments. lab. If you miss a lecture or lab, please find out from other students and Canvas what material was covered. If you know you are going to miss a class please contact the relevant instructor ahead of time to discuss the assignments that will be due.

Missing Class: Please stay home if sick or if you need to take care of someone, and follow the university guidelines for COVID (<https://www.pdx.edu/covid-19-response>). It is your responsibility to find out what you have missed and make up the work from that time. Please check on Canvas, with classmates, and then with me. I am posting online versions of the lectures in case you miss class or want to further review the lecture material (most have closed captioning). I will also try to provide a zoom option and recording of that – please remind me to hit record and to post. In class assignments will also be posted on Canvas, though will not be as meaningful as if they are done in groups in class. If you need to join by zoom, please email me ahead of time. I may be able to provide an option for remote groupwork, depending on what other students are doing.

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Timeliness of work: To be fair to all students and to encourage you to keep up with the work, your assignment grade will be reduced by 5% if submitted more than 1 day late. Extension requests must be made >2 days prior to the assignment due date. We are keeping this penalty minor as we understand everyone has a lot going on and obstacles surface unexpectedly. If you miss turning in three assignments in a row, I will likely reach out to you. (Check lab syllabus for lab late policies).

Code of conduct, Academic Honesty, and Plagiarism: We are to realize the highest ethical standards of behavior. Check out the Student Code of Conduct to which we are bound:

<http://www.pdx.edu/dos/codeofconduct#ProscribedPSU>. I expect you to do your part to support a safe, respectful campus. If you have not yet done so, also go through the on-line training for creating a safe, respectful campus: <https://www.pdx.edu/diversity/understanding-sexual-misconduct-and-resources-student-module>

Plagiarism or other academic dishonesty will not be permitted and will **yield a failing grade for the project**. Please consult the Purdue OWL, one of the TAs, or me regarding plagiarism and other writing issues: <https://owl.english.purdue.edu/owl/resource/589/01/>

There are various reasons why students 'cheat' in their classes such as lack of time, unwillingness to put forth own effort, lack of understanding of course material or assignments, and a different interpretation of what constitutes academic dishonesty. In this class, academic dishonesty is broadly defined as the use of someone else's (including AI's) work as yours. This includes some obvious actions such as:

- Having someone take a course for you or complete part to all of your test, paper, or assignment for you
- Using a quote or direct passage or novel idea from a source without citing it in your paper (this does not include your responses provided on tests that are taken from the professor's lecture or other class material)
- Working collaboratively on projects or assignments that are expected to be completed on an individual basis (e.g., writeups even from group projects require you to write on your own unless stated otherwise).

The above list of actions is not intended to be exhaustive. If you have any question about what is an appropriate way to cite particular information, please contact your instructor or teaching assistant.

Email Etiquette: As much as possible, please ask questions during and after class and attend my and the LA's and TAs' office hours (these are for you!). If these times do not work for you, request we set up an alternative time. When you send me or TAs or LA an email, please follow these general guidelines:

- Include an informative subject line that includes the course number (e.g., ESM 221 assignment #1)
- In the main message, start with a salutation (e.g., Dear, Hello,...)
- Include your name
- Do not expect an immediate reply. Some days we will be able to respond to your email within the day, but sometimes it may take 1-2 days to respond. If I don't respond within 48 hrs, please feel free to re-send your email – I try to stay up to date on emails from students (& usually succeed) but often get >200 mails/day and yours may have gotten lost in the deluge, especially if it didn't read 'ESM 221' in the subject line.

Resources

Students face many challenges and barriers to success in college and we encourage you to fully use resources available throughout campus to help you overcome these challenges and succeed.

Canvas: Hardware/software requirements: This course will use CANVAS to share information, and post and submit assignments. Your grades will also be posted on CANVAS. You can access CANVAS

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through: <https://Canvas.pdx.edu/> If you don't have an Odin ID, go to <http://oit.pdx.edu/set-up-odinacct>. Although this web-based course management system can display material on a wide range of platforms from desktops to tablets to phones, you may need to use functions that are only available on a fully functioning browser. We will often supply .pdf documents and these can be challenging to read on a small screen. Our best advice is to find a larger screen device. Our second recommendation is to download the .pdf and then use a viewer on your phone such as iBooks.

Computing needs: The [library has laptops and google chromebooks for check out](#) for fall quarter, and will deliver the equipment to your home. Please remember to note that your request is for the fall quarter so you receive the appropriate loan period. **Software needs:** PSU has made many software licenses available to the PSU community for use on personal machines to facilitate remote learning and research through the [virtual computer lab](#). PSU students, faculty, and staff can also access [Microsoft Office](#) suite on their personal machines.

Disability Resource Center: PSU values diversity and inclusion; we are committed to fostering mutual respect and full participation for all students. My goal is to create a learning environment that is equitable, useable, inclusive, and welcoming. If any aspects of instruction or course design result in barriers to your inclusion or learning, please notify me. If you are a student with a documented disability and are registered with the Disability Resource Center, please contact me so that we can arrange whatever academic accommodations you need. drc@pdx.edu, <https://www.pdx.edu/drc> 116 Smith Memorial Student Union, 503-725-4150

Everyone: Please be aware that the accessible tables or chairs in the room should remain available for students who find that standard classroom seating is not useable.

Emergency preparedness: For information about emergency preparedness, please go to the Fire and Life Safety webpage <https://www.pdx.edu/environmental-health-safety/fire-and-life-safety>.

Library Research Tutorials: <http://guides.library.pdx.edu/home/howto> ;
<https://guides.library.pdx.edu/esm>

Other Resources & Services <https://www.pdx.edu/liberal-arts-sciences/clas-student-success>
and <https://www.pdx.edu/dos/student-resources>

Career Services: <https://www.pdx.edu/careers/what-can-i-do-degree-environmental-studiesenvironmental-sciences> and <https://www.pdx.edu/careers/>; **Departmental honors:**
<http://www.pdx.edu/esm/esm-undergraduate-honors-program>

Emergency Relief Resources for PDX (compiled in 2020 but many still available). Click [here](#) or https://docs.google.com/spreadsheets/u/0/d/1_vxTr5ze9Po3noASrhc3075x9EMsKZQczUe-QHsWADQ/htmlview?urp=gmail_link

ESM webpage: all sorts of info on what the department is doing...: <http://www.pdx.edu/esm/>

Health: Student Health and Counseling (SHAC): 1880 SW 6th Ave, (503) 725-2800

Student Legal Services: 1825 SW Broadway, (SMSU) M343, (503) 725-4556

Learning Services: Free Tutoring: <http://www.pdx.edu/tutoring/> or visit the PSU library rm 245

Writing Center (for class assignments, resumes): <http://www.writingcenter.pdx.edu/> or visit Cramer 188.

Please consult the Purdue OWL regarding plagiarism and other writing issues:

<https://owl.english.purdue.edu/owl/resource/589/01/>

Library Research Tutorials: <http://guides.library.pdx.edu/home/howto> and
<http://guides.library.pdx.edu/biology>

Multicultural Centers: <https://www.pdx.edu/dmss/multicultural-student-center> ;

<https://www.pdx.edu/dmss/native-american-student-community-center> ; <https://www.pdx.edu/dmss/la->

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[casa-latina-student-center](#) ; [LSAMP](#) (Louise Stokes Alliance for Minority Participation in STEM, enhances the undergraduate experience for underrepresented students in STEM)
<http://www.pdx.edu/lisamp/home>; [Queer Resource Center](#): www.pdx.edu/queer (503-725-9742); [Food pantry](#): SMSU 325 <https://sites.google.com/a/pdx.edu/psufoodpantry/>; [Veterans](#): If you are a Veteran and have questions about University services or need assistance with your transition from military to campus life, please contact the Coordinator of Veterans Services at the Office of Veterans' Services, <https://www.pdx.edu/veterans/>

Title IX You may report any incident of discrimination or discriminatory harassment, including sexual harassment, to either the [Office of Equity and Compliance](#) or the [Office of the Dean of Student Life](#). Please be aware that as a faculty member, I have the responsibility to report any instances of sexual harassment, sexual violence and/or other forms of prohibited discrimination. [Women's Resource Center](#) (503-725-5672). If you or someone you know has been harassed or assaulted, you can find resources on PSU's Enrollment Management & Student Affairs: Sexual Prevention & Response website at <http://www.pdx.edu/sexual-assault>. PSU's Student Code of Conduct makes it clear that violence and harassment based on sex and gender are strictly prohibited and offenses are subject to the full realm of sanctions, up to and including suspension and expulsion.

Students' Right to Privacy: The Family Educational Rights and Privacy Act (FERPA) is a Federal law that protects the privacy of student education records. You have the right to: privacy (but we can disclose directory information without consent unless you direct us not to), to inspect and review your education records, and to request the school correct inaccurate records.