

ESM 340 Research Methods in Environmental Science

Class meetings: Wednesday 2-3:50pm

In-person in SB1-426, OR via Zoom (<https://pdx.zoom.us/j/84201677377>)

Instructor: Dan Bedell, MEM (email: dbedell@pdx.edu)

Bedell office hours: Mondays 2-3:00pm via Zoom @ <https://pdx.zoom.us/j/2941453073>

Teaching assistant: Nani Ciafone (email: nciafone@pdx.edu)

Ciafone office hour: Tuesdays, 2-3:00pm via Zoom @ <https://pdx.zoom.us/j/81971099292>

Portland State University Land Acknowledgement: Portland State University is located near the heart of downtown Portland, Oregon in Multnomah County. We honor the Indigenous people whose traditional and ancestral homelands we stand on, the Multnomah, Kathlamet, Clackamas, Tumwater, Watlala bands of the Chinook, the Tualatin Kalapuya and many other Indigenous nations of the Columbia River. In remembering these communities, we honor their legacy, their lives, and their descendants. It is important to acknowledge the ancestors of this place and to recognize that we are here because of the sacrifices forced upon them.

Course Overview: This course will introduce common research methods used in environmental studies, including environmental study designs, data analysis and data interpretations. Students will be able to formulate and identify research questions and conceptual framework for environmental research. They will analyze study and experiment design, manage and summarize data, test hypotheses, analyze data, interpret results and communicate their findings.

This is a hybrid course, which means that much of the lecture material will be online. You may attend during class hours either in-person or via Zoom (your choice). We will be using the class period for discussion, group-work, and homework. This means that you must set-aside time during the week to be prepared BEFORE you arrive in class. This will typically mean 1-2 hours of online lecture material as well as the time you require to complete your homework assignments and readings (about 1-8 hours). Please put this time into your schedule immediately.

Course Objectives:

- Identify and evaluate the structure of mensurative and manipulative environmental science studies.
- Summarize, analyze, and interpret data with descriptive and basic univariate statistics.

Course Expectations:

- Be **prepared** for class
 - Arrive with assigned video lectures, readings and activities completed. Our in-class activities will assume that you have been introduced to the concepts online.
- **Participate** in class activities
 - Be aware that good grammar, clear structure and scientific reasoning will all be incorporated into your grades.
- **Ask Questions!**

Adhere to the code of conduct: <http://www.pdx.edu/dos/codeofconduct>; e.g., no academic dishonesty or negligence; no harassment. You are expected to engage with members of this University in a respectful and honest manner.

Classroom Requirements for All Students and Faculty Due to Covid-19

•The University has established rules and policies to make the return to the classroom as safe as possible. It is required for everyone to follow all the Return to Campus rules and policies. To participate in this class, PSU requires students to comply with the following.

Masks Required at all Times in Classroom

- Wear a mask or face covering indoors at all times. Your mask or face covering must be properly worn (fully covering nose and mouth and tight fitting). Mesh masks, face shields, or face covering that incorporates a valve designed to facilitate easy exhalation are not acceptable. Because a mask must be worn in the classroom, there should be no eating or drinking in the classroom. If you have a medical condition or a disability that prevents you from wearing a mask or cloth face covering, you must obtain an accommodation from the Disability Resource Center (DRC) to be exempt from this requirement.
- CDC, State, and County guidance does not limit class size for in-person instruction or require physical distancing.

Vaccination

- Be vaccinated against COVID-19 and complete the COVID-19 vaccination attestation form. Those students with medical or nonmedical exemptions or who will not be on campus at all must complete the process described on “COVID-19 Vaccine Exemption Request Form” to establish those exemptions.

Health Check, Illness, Exposure or Positive Test for COVID-19

- Complete the required self-check for COVID-19 symptoms before coming to campus each day.
- If you are feeling sick or have been exposed to COVID-19, do not come to campus. Call SHAC to discuss your symptoms and situation (503.725.2800). They will advise you on testing, quarantine, and when you can return to campus.
- If you test positive for COVID-19, report your result to SHAC and do not come to campus. SHAC will advise you on quarantine, notification of close contacts and when you can return to campus.
- Please notify me, (i.e. your instructor), should you need to miss a class period for any of these reasons so that we can discuss strategies to support your learning during this time.
- If I become ill or need to quarantine during the term, either I or the department chair will notify you via PSU email about my absence and how course instruction will continue.

Failure to Comply with Any of these Rules

As the instructor of this course, the University has given me the authority to require your compliance with these policies. If you do not comply with these requirements, I may ask you to leave the classroom or I may need to cancel the class session entirely.

In addition, failure to comply with these requirements may result in a referral to the Office of the Dean of Student Life to consider charges under PSU’s Code of Conduct. A student found to have violated a university rule (or rules) through the due process of student conduct might face disciplinary and educational sanctions (or consequences). For a complete list of sanctions, see Section 14 of the Student Code of Conduct & Responsibility

Guidance May Change

Please note that the University rules, policies, and guidance may change at any time at the direction of the CDC, State, or County requirements. Please review the University’s main COVID-19 Response webpage and look for emails from the University on these topics.

COURSE DETAILS:

Texts & readings:

Elzinga, C, Salzer D., Wiloughby J. (1998) Measuring and monitoring plant populations. BLM Technical Reference 1730-1: 477 pp. (Available online)

Hurlburt, S. (1984) Pseudoreplication and the design of ecological field experiments. Ecological Monographs. 52(2): 187-211.

Schedule (SUBJECT TO CHANGE)

*The topics and schedule of discussions listed in this syllabus may change, changes will be announced in class.

Class Policies:

- Assignments and quizzes may be submitted to improve your grade at any point before Week 9.
- Late assignments will be accepted until the end of Week 9.
- Although much of the work will be conducted as a class or in small groups, your homework must be your *own work*. I encourage you to discuss the *concepts* and interpretations of the data with your classmates, however, you must generate your own reports, graphs, etc... Do not turn in identical or strikingly similar assignments as your classmates (current or anyone who has taken this class previously). You will not receive a score and you risk further academic prosecution for plagiarism.
- Be considerate of your classmates. Because this class will involve group activities, please come prepared and ready to participate in group and class activities.
- Arrive to our class meeting on time, if you arrive late, make sure you review material you missed at the beginning of class.
- Familiarize yourself with the academic code in the University catalog.
- There are many forms of plagiarism, including:
 - Copying word for word without quotation marks and proper citation
 - Closely paraphrasing without proper citation
 - Be especially careful of information obtained from the Internet. In general, for your lab reports **do not cite work from the web**. Follow the information to its source and cite the primary, peer reviewed literature.

STUDENT EVALUATION & POLICIES:

Participation	5%
Topic Activities (5% ea)	30%
Project:	50%
Peer Review (5%)	
Proposal (15%)	
Final poster (30%)	
Quizzes (3% ea):	15%
Total	100%

A= 100 to 94%; A-= 93 to 90%; B+= 89 to 87%; B= 86 to 84%; B-=83 to 80%; C+=79 to 77%; C=76 to 74%; C-= 73 to 70%; D= 69 to 60%; F= 59% and below.

Participation & Attendance:

Attendance is optional and you may attend either online or in-person on any given week. Your participation grade will be determined by the level of engagement and commitment you show to your group members during the group project portion of the course. This will be assessed with an anonymous survey at the end of the term.

Homework:

Assignments will begin on the first day of the week and be due at the end of the day on Sunday. Assignments must be typed and on-time.

Please note, that assignments for some weeks will be relatively light, whereas other weeks you may have a homework plus parts of your project due, or a homework may take more time, please work carefully. We will make time to start the homework in each class period, however it will not typically be sufficient to finish the assignment, just get you off to a strong start.

Project:

The purpose of the project is to create a scientific poster from an experiment that you will design as a group. There are multiple phases of the project, and the learning units within each week will act as scaffolding to prepare you with the skills you will need to design, conduct, and share your work in the scientific poster format. You will also be required to undergo a peer review as part of the final project.

This is a hybrid course, which means that much of the information you will access will be online and done outside of class. Below is roughly what you can expect on a weekly basis.

Due by Sunday 11:59pm:

- Homework from previous module
- Watch lectures and take quiz
- Participate in meetings with your group to work on the Final Project.

***PREFERRED FORMAT FOR CITATION OF RESERARCH PAPERS:**

Last name, first initial of all authors (Year) Title of article, Journal title, Volume(issue): pgs.

Hurlburt, S. (1984) Pseudoreplication and the design of ecological field experiments. *Ecological Monographs*. 52(2): 187-211.

Please notice what is NOT included in this reference... eliminate any extraneous information including the date accessed, publisher, which website you used, the doi (unless extremely relevant).

General student information:

All students are expected to embrace a culture of respect, inclusion, and academic integrity. Plagiarism will not be tolerated. Students must abide by the University's conduct policies here: <https://www.pdx.edu/dos/psu-student-code-conduct/>

Don't forget to check out the ESM department and School of Environment webpages: <http://www.pdx.edu/esm/>
<http://www.pdx.edu/environment/>

Advising & Career Services: <https://www.pdx.edu/careers/> and
<https://www.pdx.edu/careers/what-can-i-do-degree-environmental-studiesenvironmental-sciences>

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

Safe Campus: If you have not done so already, please complete the [Safe Campus Module in D2L](#). The module should take approximately 30 to 40 minutes to complete and contains important information and resources. If you are uncomfortable completing the module, please send an email to saveact@pdx.edu to request an exemption. If you or someone you know has been harassed or assaulted, you can find the appropriate resources at Sexual Misconduct Prevention & Response: 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. <http://www.pdx.edu/sexual-assault/safe-campus-module>

Learning Center/Free Tutoring: <http://www.pdx.edu/tutoring/> PSU library rm 245

Writing Center: for class assignments, resumes... <http://www.writingcenter.pdx.edu/> Cramer rm 188
Please consult the Purdue OWL regarding *plagiarism* and other writing issues:
<https://owl.english.purdue.edu/owl/resource/589/01/>

Math: <https://www.pdx.edu/math/math-resource-lab>; Department of Mathematics and Statistics provides free tutors for lower division algebra, calculus and statistics: <https://www.pdx.edu/math/resources>

Disability Resource Center: 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.

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 Chris Goodrich, Coordinator of Veterans Services at the Office of Veterans' Services, SMSU room 425.

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-casa-latina-student-center>

Queer Resource Center: www.pdx.edu/queer