

Lab Instructor (TA):

Email:

Office Hours:

Lab Theme: Identify the extent to which dogs impact natural areas in and around Portland in order to provide data to Metro and Portland Parks & Rec that help evaluate regulations that prevent dog use (most Metro sites) or require them to be on leash (most PP&R sites). Metro asked us to quantify how much it helps water quality to prevent dog use in these parks. That is the data you collect and analyze this term and the conclusions you draw about it will be used by our local governments. Please pay attention and do your best work.

Course Goal: In lab you will be developing technical and scientific skills needed to succeed in ESM and careers beyond. Whereas the lecture component of this course will focus on subject-specific content as well as some practice with some prerequisite skills, the goal of the lab component of 221 is to allow students to collect data and practice additional techniques and skills that would not be possible in the shorter lecture sessions.

Learning Objectives:

- a) Become proficient in the use of a spreadsheet program for quantitative analysis;
- b) Develop approaches to environmental problem solving for real problems;
- c) Using basic conceptual, graphical, and quantitative models in combination with writing to describe or predict processes, findings, or solutions relevant to the management of biodiversity and other natural resources;
- d) Characterize environmental data via graphical representation and statistical analysis (with descriptive statistics, correlation, and hypothesis tests), and interpret them;
- e) Search for, read, and analyze scientific papers and use them to support your research;
- f) Improve your science communication, including about your research, by working towards coherent written papers and a clear and engaging oral presentation.

How to succeed:

- Prepare for and attend all labs. If you can't attend a lab (e.g., you are sick), please proactively let your TA and also your project partner(s) know asap. Ask what you can do to learn what you need and do your part.
- Come prepared to engage with your group and the material.
- Show all other students and your TA respect. We are a learning community and everyone will get the most out of the lab if we are safe with each other and respectful.
- Please ask clarifying questions or ask for help as needed. We appreciate questions and the answers will help everyone.
- Check Canvas and the table below for material for each week's lab and due dates and turn in the assignments by listed due date. Please make sure to turn in assignments to the correct Assignment folder in Canvas.
- Be sure to include your name on all lab assignments (and each page if needed).
- Written assignments should use complete sentences, with correct spelling and grammar.
- Use TA/instructor comments from prior assignments to improve your future assignments.
- Proofread, and if possible exchange papers with a friend or student colleague and proofread theirs as well. Consider bringing your writing to the Writing Center.

- Prepare your own assignments. However, you may have the same Methods and Results sections for your final project as your project partner(s). It is important to practice and get feedback on your writing as technical writing is a skill that you will use in future courses and jobs (and we encourage taking technical writing courses too).

Policies:

- **Safety:** *In lab:* On weeks when we will use chemicals (definitely week 3, maybe wk 7,8): wear close-toed shoes and clothes that cover your legs. Long hair needs to be secured back. Wear the supplied gloves and goggles. Don't eat in lab.
In the field: You will visit natural areas (parks) for this lab. During week 1 you will pick the main natural area that you will visit. You will then visit it in weeks 2, 4, and multiple natural areas later. These visits will require proper shoes and clothing for the conditions. We need you to be respectful of the areas, removing the minimum required amount of sediment and water. Use judgment for your safety e.g., not approaching the water if the water level is especially high, turbulent, or fast moving. Please skip sample collection if it is very windy out (with gusts >35 mph). Also, for your safety please **do not go alone**. Only collect data and samples with your lab partner or another adult and during daytime hours. We care about your safety: although these are relatively low risk labs, all activities carry some risk and a second adult can help you avoid harm or act to help you if needed. Wear gloves when collecting samples. If you have any concerns regarding these labs let your instructors know ASAP.
- *Missing class:* Contact your TA if you need to skip in person lab sessions due to illness, possible COVID exposure, or needing to take care of someone else. Your personal health, and the health of other students in the lab, should take precedence over any lab assignment. Please follow the university guidelines for COVID (<https://www.pdx.edu/covid-19-response>).
- *Code of conduct:* 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>.
- *Timeliness of work:* To be fair to all students and your TA 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, your instructor will likely reach out to you.
- *Email:* Your TA will typically return emails within 48 hrs. Please put 'ESM 221L' into the subject along with the topic of your email. E.g., 'ESM 221L: question on Lab 3 Methods'

Services: Please see main course syllabus or <https://www.pdx.edu/liberal-arts-sciences/class-student-success> or <https://www.pdx.edu/dos/student-resources> for services.

ESM 221 Lab Syllabus, Winter 2023

Lab Schedule and Assignments (please check Canvas in case we need to alter the schedule):

Wk & date	Location	Lab topic	Products Due
Wk 1 1/9-13	SRTC 149	Intros, syllabus, theme recap, pick team & parks, techniques (mass, volume: meniscus, vacuum filter, micro-pipet, spreadsheet); safety	Identify team, park; Excel exercise (follow Canvas tutorial on this; due by next lab)
Wk 2 1/16-20	On own: Your park	Survey dogs, and within 48 hrs of next lab: gather water, sediment, keep in refrigerator. Test sediment pH <i>in situ</i>	Dog & pH data collected and entered into shared spreadsheet; Samples collected and refrigerated; info on samples into spreadsheet. Remember to bring in samples!
Wk 3 1/23-27	SRTC 149	Measure N & P from water, from soil. Prepare E. coli & total fecal coliform bacteria plates; review Methods requirements	Written Method Section for fieldwork and lab work to date (due 3 days after lab)
4: 1/30-2/3	SRTC 149 (then park)	Read coliform outputs; review graphs; make graphs for N & P & E. coli/coliform; learn about plant sampling	Graphs of class findings; sample vegetation in your park and enter data into shared spreadsheet (by lab wk 5)
Wk 5 2/6-10	SRTC 149	Zotero, Literature finding, Diversity calculations; review Results requirements; make figures; check in about own experiments	Screenshot of Zotero with at least 8 relevant papers. Diversity calculations for veg. Written Results section, complete with revised and extra graphs by wk 6 lab
Wk 6 2/13-17	Your parks	Collect data for own experiment	Enter your data; written Introduction for overall and your focus (due by wk 7 lab)
Wk 7 2/20-24	Park/lab	Collect data for own experiment &/or analyze in lab	Enter data; write Conclusions about dog impacts on parks from data to date (due by wk 8 lab)
8: 2/27-3/3	Lab/park	Data analysis and figures in lab (or if really needed, finish data collection and then make figures on own)	Work on project writeup
Wk 9 3/6-3/10	SRTC 149	Prep presentations; work on papers	Rough draft of presentation and full draft writeup of Intro, Methods, findings, conclusions, and recommendations Due by end of lab. Peer review due by next lab.
Wk 10 3/13-17	SRTC 149	Final presentations in lab; revise papers	Peer reviews returned. Final papers due 6 days after this final lab meeting.

Grade: Your lab grade represents 35% of your total grade for ESM 221. Please refer to the assignment list below for assignment types and point values.

Assignment Breakdown:

Wk 1: Excel Tutorial	/2
Wk 2 data collected & entered (complete & on time)	/1
Wk 3 Methods section	/1
Wk 4 veg data collected & entered (complete, timely)	/1
Wk 4 Graphs	/1
Wk 5 Zotero screenshot with 8+ references in it	/1
Wk 5 Results with graphs	/2
Wk 5 Diversity calculations	/1
Wk 6 Introduction, incorporating ≥ 5 references	/2
Wk 7 Conclusion, incorporating ≥ 3 references	/2
Presentation of independent findings & conclusions	/5
Rough draft of report	/3
Report peer review	/1
Final report with conclusions/recommendations for Metro	<u>/12</u>
Total Lab Points	/35

All assignments (other than lab reports and presentations, which have detailed rubrics) will be graded based on quality, precision, and thoroughness of your work with the following scale:

- Complete, correct, easy to follow, addressed all thoughtfully, minimal writing mistakes: 90 - 100%
- Complete but maybe not as insightfully or with some conceptual or technical errors, or mostly completed but otherwise very high quality work: 80-89%)
- only $\sim\frac{3}{4}$ complete, very sloppy, or showing multiple conceptual or functional errors: 70-79%
- Incomplete, rushed answers, many conceptual/functional/technical errors: 20-69%
- Not turned in: 0