

ESM 221: Applied Environmental Studies-Preparation for Problem Solving

Winter 2016

CRN 41312, Monday and Wednesday, 9:00-10:05 in Cramer Hall 382

Labs in SRTC 149: Mon (41316) and Wed (41315) 10:15-1:15; Fri 9:00-12:00 (41313)

Instructor: Dr. de Rivera

Laboratory Teaching Assistants:

Course Prerequisites: STAT 243 (can be concurrent); MATH 112 & ESM 220 or equivalents

Course Description: 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 populations to climate change, we will focus on solving problems: solving problems with algebraic solutions, solving problems using basic models, solving problems by analyzing data and sometimes 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 and evaluating environmental management options. We will answer questions such as what is a target pop size for a managed population 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** for the lecture combined with lab 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 statistical analysis;
- e) Search for, read, and analyze scientific papers;
- f) Clearly communicate science with coherent written papers and short oral presentations.

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Approximate Course Schedule (Changes may occur and would be announced during class & on d2l)

Date	Lecture topic and readings	HW/Readings due	Lab
Wk 1 Jan 4,6	Course Intro; Environmental stressors; Module 1: Managing populations	Read pp 494-509, 262-5, 148-68	Fish Banks game
Wk 2, Jan 11, 13	Population growth: exponential & logistic growth models; small populations	HW1; Ch 7	Population modeling; lit search; excel
Wk 3, MLK, Jan 20	Small populations & isolation	HW2 (due Wed); Pp 160-1,	NO LAB
Wk 4, Jan 25, 27	Review; Start of Module 2: Managing land use and restoring connectivity. Exam I on Wed 1/27	HW 3; Pp 57, 171-3 Study for exam!	Pop growth
Wk 5, Feb 1, 3	Island biogeography, Land use, Restoration, Habitat connectivity	HW 4: paper 1; pp 265-279;	Outside: Tree diversity
Wk 6, Feb 8, 10	Land use, agriculture, water pollution & scarcity; forestry	HW 5; pp 69-76, 256-9, 381-94, 401-2, table 14.2	Tree diversity & C sequestration
Wk 7, Feb 15, 17	Land use, agriculture, and forestry Start of Module 3: Mitigating climate change. Carbon cycle	HW 6, Pp 52-55, p 66-69,	Outside: C sequestration
Wk 8, Feb 22, 24	Mitigating climate change. Exam II on Mon 2/22	Study for exam! Ch 19	C sequestration
Wk 9, Feb 29, Mar 2	Ecological effects of climate change; options to mitigate Climate justice	HW 7	C sequestration
Wk 10, Mar 7, 9	Problem solving, sustainability & equity	HW 8, pp 77-81, Ch 20	C sequestration
T 3/15	Exam III - Cumulative 8:00-9:50 AM	Study for exam!	Lab materials due

Assignments & Readings

D2L: Assignments will be posted on D2L: <https://d2l.pdx.edu/> To get an Odin ID, go to <http://oit.pdx.edu/set-up-odinacct>

Required Text: Environmental Science: Foundations and Applications by Friedland, Relyea, and Courard-Hauri. Check out the end of chapter materials and the website:

http://bcs.whfreeman.com/friedland/#t_666211

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Additional Readings – Other readings are online via the PSU library: <http://library.pdx.edu/> and will be listed on your homework. You can access them by typing in the journal name into the 'Books & More' bar or by clicking on the 'Databases and Articles' link and going from there to Google Scholar or Biosis. Need help? Ask in class.

Grading

Course Grade Breakdown

- **Homework** (10% total) Homework assignments will be posted on D2L each Wednesday of the term and due the next Monday in the appropriate D2L drop box by the start of lecture (10:15 am). The style of these assignments will vary, but will be applicable to the current lecture topic. I will then post a key and you should verify your answers are correct. These assignments are crucial to do to learn the material and succeed on the exams. Please work with your peers to master the homework, approaches to problem solving, and course content in general. Attend my office hrs as you need assistance.
- **In-class assignments** (10% of total): The style of these assignments will vary from activities, short descriptions, discussions, or written assignments based upon reading or data analysis. When these occur you must complete them and turn the in during the lecture period in which they are assigned.
- **Exams** (40% of total): Based on lectures, readings, discussions, and labs. 3 exams, 12% for each midterm, 16% for the cumulative final exam. Exam question style and format will be discussed before each exam.
- **Lab Component** (40% of total) See lab syllabus for more detail.

Grading scale: Grades will be assigned based on fixed cutoffs (93 for A, 90 for A-, 87 for B+, 83 for B, 80 for B... 70 for C-, 60 for D)

Course Guidelines:

Please bring to class: writing utensil and paper for notes and for graphing; calculator or computer; text book/ scientific paper to read that day (in print or on line).

Participation: To get the most out of this course, please do the assigned readings before class and 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; if you are absent or late, it is your responsibility to find out what you missed – check with peers first. Please try very hard not to miss your lab section (see lab syllabus for more detail). Please stay home, however, if you're sick and contagious!

Late policy: Your assignment grade will be reduced by 10% if you turn work in late and it will not be accepted after a key is distributed (typically next class). Extension requests must be made >3 days prior to the assignment due date. If you're sick, upload your assignment to d2l or if a dropbox is not available or working, e-mail it to me, with subject head 'ESM 221, assignment ___'.

Conduct: We are to realize the highest ethical standards of behavior, as per the Code of Conduct to which we are bound: <http://www.pdx.edu/dos/codeofconduct#ProscribedPSU>. If you have not yet done so, please go through the on-line training for creating a safe, respectful campus:

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<https://d2l.pdx.edu/d2l/home/425907> . 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/>

Questions and Email: As much as possible, please ask questions during and after class and come to my office hours. If these times do not work for you, send me a message to set up an alternative time. If you email me, please follow these general guidelines:

- include an informative subject line (e.g., ESM 221, assignment #1)
- include a salutation (e.g., Hello Dr de Rivera,...)
- include your name
- do not expect an immediate reply. Some days I will be able to respond you your email within the day, while other times it may take me 1-2 days to respond. I typically check mail at 4:30-5 pm and 9:30-10 pm.

Resources & Services:

Don't forget to check out the ESM webpage for all sorts of info on what the department is doing...:
<http://www.pdx.edu/esm/>

ESM student council: Email the ESM student council <esmsc@pdx.edu> with ideas for developing the ESM community, issues regarding student advocacy, ... or to join the council.

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

DRC: 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.

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/>

Departmental honors: <http://www.pdx.edu/esm/esm-undergraduate-honors-program>

LSAMP (Louise Stokes Alliance for Minority Participation) enhances the undergraduate experience for underrepresented students in STEM. Funded by the NSF, our LSAMP program focuses on: Creating a community among LSAMP scholars that values excellence, diversity, and persistence; and Expanding opportunities for LSAMP scholars through participation in undergraduate research experiences and leadership initiatives. If you're interested in finding out more, visit our LSAMP center [in 103 Epler Hall](#), talk to ESM-LSAMP faculty advisory member Cat de Rivera <derivera@pdx.edu>, SRTC 238e, or check out: <http://www.pdx.edu/lcamp/home>

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

PSU 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 transitioning to campus life, please contact 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>