ESM 343 and ESM 343L: Environmental Problem Solving

Lecture meetings (TBA)
Lab sessions (TBA)

Instructor
Contact info:
Office:
Office Hours:

Teaching Assistant: Contact info

Office Hours:

Overview
In Environmental Problem Solving (ESM 343) we will be discussing environmental restoration. In addition to in-class presentations, discussions and activities, you will be conducting individual investigations and inquiry-based projects. The successful completion of these projects will require that you (a) work independently and collaboratively, (b) use the PSU library and associated databases to access scientific articles, (c) collect data (d) organize, analyze and present information and (e) arrive at and defend substantiated (thus persuasive) conclusions.

ESM learning objectives addressed:
• a02 – applying scientific principles to environmental problems
• a03- critiquing previous work
• a11 - creative problem solving
• s05-environmental assessment and planning
• c01 – scientific writing (junior level)
• c06 – advancing learning through discussion
• m03 – project management
• m04 – community engagement

Lecture objectives:
• Identify drivers of environmental problems and analyze the relative merits of solutions
• Work collaboratively in a team to develop approaches to address environmental issues

Laboratory objectives:
1) Students will learn how do evaluate a site for potential restoration
2) Students will identify solutions, test effectiveness, and implement a short term restoration project
3) Students will be able to design, conduct, present and defend their scientific study

Expectations
• Be prepared for class
  o Arrive on time (absence will result in the loss of participation points)
  o Communicate and collaborate with your classmates on group assignments.
  o Read assigned papers and come to class with assignments completed.
• Participate in class activities
  o Be aware that good grammar, clear structure and scientific reasoning will all be incorporated into your grades.
  o For goodness’ sake, take notes. My notes will not be available to you online or otherwise.
• Ask Questions!
### ESM 343 and ESM 343L: Environmental Problem Solving

Schedule *(SUBJECT TO CHANGE, ALWAYS use the in-class announcements of assignments as the most up-to-date information; if you miss a class then contact a class-mate for current assignments and notes)*

<table>
<thead>
<tr>
<th>Week Number</th>
<th>Lecture Topics for ESM 343: Environmental Problem Solving</th>
<th>Lab topics</th>
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<tbody>
<tr>
<td>1:</td>
<td>Introduction to Ecological Restoration: History, Motivation and purpose Introduction to site</td>
<td>Site Evaluation: Physical traits Slope, moisture,</td>
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<tr>
<td>2:</td>
<td>Diagnosis and goal setting Identify reference sites</td>
<td>Site Evaluation: Chemical Traits water quality, soil composition</td>
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<tr>
<td>3:</td>
<td>Social and Institutional support Discuss previous projects: Monitor data</td>
<td>Site Evaluation: Biological Traits community composition, distribution</td>
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<tr>
<td>4:</td>
<td>Possible solutions Identify needs, form teams for project</td>
<td>Identify solutions, design study for effectiveness. Monitor previous restoration efforts</td>
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<td>5:</td>
<td>Establishing a baseline Team strategy: identify areas of concern</td>
<td>Test effectiveness of solutions (teams)</td>
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<tr>
<td>6:</td>
<td>Measures of success Evaluate actions from monitoring data</td>
<td>Test effectiveness of solutions (teams)</td>
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<tr>
<td>7:</td>
<td>Adaptive management protocols Strategy meeting: Submit protocols</td>
<td>Implement restoration: Identify, collect and prepare</td>
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<tr>
<td>8:</td>
<td>The role of monitoring</td>
<td>Implement restoration: Prepare site</td>
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<tr>
<td>10:</td>
<td>Project Description, Presentation and discussion</td>
<td>Informational outreach material. Structure for monitoring, measures of success.</td>
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<td>11:</td>
<td>Final exam</td>
<td>Wrap-up and present to stakeholders</td>
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Concepts for sites and projects: establishing a rooftop garden to reduce storm water run-off, site assessment and maintenance of the oak savannah on PSU campus, establish a pollinator garden, invasive species removals and replanting with natives, establish native species gardens on campus.

Adhere to the code of conduct: http://www.pdx.edu/dos/codeofconduct; e.g., no academic dishonesty or negligence; no harassment...

Limit spread of diseases: wash hands (20 sec!); use a tissue to cover your sneeze/cough; get a flu shot; stay at home if sick; go to the doctor as necessary.

** Assignments are due on the listed day by the start of class.

Class Policies:

- Assignments must be in on time. I will not accept unexcused late homework.
- **Type** your homework assignments. Handwritten homework will not be graded.
- Quality is important and is factored into the grade of each assignment
- 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.
- If you choose not to participate in this course, please do not converse or distract the other students.
- 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 class on time.** If you arrive late, you disrupt the class activities and will miss valuable information presented at the beginning of class. You are responsible for any material and activities that are conducted in class, even if you are not there!
  - 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 reports do not cite work from the web. Follow the information to its source and cite the primary, peer reviewed literature.

Participation & Attendance:
Each day you will be awarded points for: attendance, being prepared for class with any assignments due, participation in discussions and in-class activities. You are responsible for any assignments whether or not you attend class. At the end of the term I will drop your two lowest daily participation scores. Participation is a substantial portion of your grade, please be prepared to attend and be prepared for each class. Missing more than 2 classes will substantially impact your grade.

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**Desire 2 Learn:**
The class will use D2L to share readings, handouts, asking questions of fellow students. It will be our primary contact outside of class, so please check it at least every other day. To access D2L you must have an ODIN
account. If you do not have one, please get one as soon as possible. Access to D2L is a privilege. Please do not abuse it as a forum for putting others down or communicating offensive material to the rest of the class. More extensive information on the protocols that we will be following can be found at The Core Rules of Netiquette: http://www.albion.com/netiquette/corerules.html Failure to use D2L in a respectful way and to treat all class participants with respect will result in a loss of access to D2L and potentially a failing grade for this course.

**Final:** Primarily short-answer, based more generally on the concepts of restoration, strategies, monitoring and action than the project specifics; 1 word – 1 paragraph responses will be required to be written legibly and reflect the information that you have learned in class. All information presented during class and in homework may be addressed in the exams.

**The Writing Center:**
http://www.writingcenter.pdx.edu/
The writing center has been very effective at improving student papers. Please schedule an appointment in advance with them as sometimes they fill-up, particularly if you would like to improve your papers, are not comfortable writing a scientific paper and/or if you do not excel at writing in English.

**PROJECT AND PAPER:** We will be focusing on environmental restoration

Objective: demonstrate an ability to design and execute a successful restoration effort. Students will collect and evaluate data, to gain information by going to primary references and apply their knowledge and creativity to plan and execute a local restoration effort.

This will be a short, 6-8 pg (1.5 spaced, plus references) individually written paper, include outreach materials developed by small teams and a class presentation.

*Part I: Introduction*

*Part II: Site evaluation, identify solutions, test effectiveness, implement a short term restoration project and design monitoring strategy that will evaluate success.*

*Part III: Results and Presentation*

**As individuals,** you will write a paper (6-8 pgs) that addresses your team’s particular research question. It should include at least 3 primary references from scientific journals (6 if you are conducting a literature survey). Your paper should not only relate the data and topic that your team focused on, but how your project contributes to the overall restoration goals.

**As a team:** You will develop a strategy for your focus area that will permit you to evaluate existing conditions and design goals and solutions for your focus area. Your team will be in charge of execution and of the collection of data, but as a class we will all work together to achieve these goals. Your team will then develop outreach material that explains the benefits of your goal and strategy.

**As a class:** you will put together a comprehensive (40 min + 10 min questions) presentation on your project that will be presented to appropriate stakeholders. Each team will have an opportunity to speak. Teams will describe their evaluation of the site for their particular goal, and how the restoration effort will achieve the goals.