

## ESM 343 and ESM 343L: Environmental Problem Solving

Lecture meetings Tues 8-950  
Lab sessions 8-1150

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### **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.

### **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 to 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
  - Arrive on time (absence will result in the loss of participation points)
  - Communicate and collaborate with your classmates on group assignments.
  - Read assigned papers and come to class with assignments completed.
- **Participate** in class activities
  - Be aware that good grammar, clear structure and scientific reasoning will all be incorporated into your grades.
  - For goodness' sake, take notes. My notes will not be available to you online or otherwise.
- **Ask Questions!**

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.

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**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)**

<b>Week: dates</b>	<b>Lecture Topics: Tuesday 8-9:50</b>	<b>Lab topics: Thursday 8-11:50</b>
1: 4/4, 4/6	Introduction to Ecological Restoration: Types and Objectives of restoration, Introduction to site	Observe: Terwilliger Oaks area
2: 4/11, 4/13	Guest: Portland Parks and Rec, MNP strategies	Monitor: MNP site evaluation, rapid assessment, grid mapping
3: 4/18, 4/20	Diagnosis and goal setting: Reference sites, stakeholders, objectives	Monitor: Grid mapping, identifying underlying issues
4: 4/25, 4/27	Objectives and identification of needs, form teams, solution proposals.	Monitor: Grid mapping, visit assigned sites, conduct initial site evaluation, outline proposals.
5: 5/2, 5/4	Establishing a baseline  Team strategy: identify areas of concern	Work with Portland Parks to establish parameters (budget, goals, impacts)
6: 5/9, 5/11	Measures of success  Evaluate actions from monitoring data	Implement restoration: Collect baseline data and implement pilot
7: 5/16, 5/18	Adaptive management protocols  Strategy meeting: Submit protocols	Implement restoration: Collect baseline data and implement pilot
8: 5/23, 5/25	The role of monitoring: Other restoration problem solving strategies: Seed Bank	Implement restoration: Collect baseline data and implement pilot. Develop and test monitoring protocols for an adaptive response and measures of success
9: 5/30, 6/1	Response to monitoring: policy, action strategy	Finalize proposals with preliminary results analyzed. Develop outreach materials and monitoring strategy.
10: 6/6, 6/8	Project Presentation in class	Facilitated discussion.
11:	Final exam	Wrap-up and present to stakeholders

Specific Learning objectives (see the current list at:

<http://web.pdx.edu/~rueterj/ESM-specific-learning-objective-table.html>

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- 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

\*\* 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, avoid them all 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.

**Required Text:** Restoration Ecology: The New Frontier, Edition 2. Jelte van Andel, James Aronson  
John Wiley & Sons

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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

This will be a short, 6-10 pg (1.5 spaced, plus references) individually written paper,

*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 (6-10 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.

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Rubric:

Introduction:

Site evaluation:

Site evaluation

Identify Area of focus

Objectives

Management strategy

Test effectiveness

Proposal:

Evidence based recommendations:

Expected outcomes

Monitoring strategy for success

Adaptive management

*Part I: Introduction*

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*Part III: Results and Presentation*

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