**Lab Syllabus Winter 2017**

**Instructor**: Ben Shetterly

**Sections**: Section 003 - Wed 12:45 to 15:45 in SRTC 149

Section 004 - Mon 12:45 to 15:45 in SRTC 149

**Goal:** In lab you will be developing a majority of the skills we want you to learn in ESM 221, whereas the much shorter lecture will comprise more of the subject-specific content as well as material that introduces the relevance of the lab sessions and some prerequisite skills. The goal of the lab component of 221 is to allow students to practice techniques and skills and explore concepts further than is possible in the shorter lecture sessions. Many of the overall course objectives will be addressed most in the lab section:

1. Develop approaches to environmental problem solving for different categories of problems;
2. Using basic conceptual/graphical and quantitative models in combination with writing, describe and predict processes and solutions relevant to the management of biodiversity, including population growth, take, and management
3. Characterize environmental data via graphical representation and statistical analysis (with descriptive statistics and t-tests, and correlations), and interpret it;
4. Search for, read, and analyze scientific papers;
5. Clearly communicate science, including your research, with coherent written papers and short oral presentations.

**Grade**: Your lab grade represents 40% of your total grade for ESM 221. This following list is for 100% lab score:

8% Preparation, participation (don’t miss lab!), pop quizzes – attend all labs having read the lab handout and having done any other assigned readings/tasks, ask and answer questions, do the assigned work, and help other students.

48% In-lab worksheets: Quality, precision, and thoroughness of your work on each in-lab assignment and any associated homework (other than below). **Each will be graded on a scale from 1 (little effort, many mistakes) to 3 (maximum effort, few mistakes).** The cumulative score will be adjusted to 48%.

8% Mini lab report of Diversity lab. Please pay attention to your TA’s comments on this assignment as they will help greatly with the write-up for the C sequestration lab. (see rubric)

36% Carbon sequestration labs:

* data (3%), which should be high quality, precise, complete, and shared in a timely manner;
* presentation of research (8%) clear and in-time presentation on the relevance of your study, the methods you used (especially the ones only your group used), your findings as seen in your graphs, and your conclusions about your findings and your broader conclusions on the topic (see rubric);
* lab report (15%) clear, concise, and correct report on your Carbon sequestration study, in the style of a primary literature scientific paper (see rubric).
* report revision (10%) (consult graded rubric, discussion in class, and notes on paper to revise)

Please be aware that some assignments are weighted more heavily than others (underlined in the schedule) due to the amount of work associated with the assignment. The following worksheets/assignments are worth twice the points as other worksheets: Lab 2 Population Worksheet, Lab 4 Worksheet, Lab 5 Tree Diversity Worksheet, Lab 7 Carbon sequestration data table, Annotated bibliography for C sequestration.

**Policies**

* Handouts for each week’s lab will be provided on D2L.
* Be sure to include **your name** on all lab assignments! Your assignments should always be written in complete sentences, with correct spelling and grammar.
* In each lab, there is an **Assignments** section: please read this to make sure items due by the end of lab are completed and to check what is due the following week. Turn in your lab assignments at the end of the lab in which they are assigned or, for longer assignments, at the **beginning** of the lab in which they’re due.
* As many Assignments involve computer programs we will be using D2L Dropbox to accept Assignments. Please make sure to turn in Assignments to the correct Dropbox folder (folders will be labeled with the Lab Week and name of Assignment). It is your responsibility to make sure you have turned in all of the Assignments to the appropriate place.
* Please try very hard not to miss your lab section and **be sure to communicate with your TA proactively if you are very sick and cannot attend**. Come prepared (including dressing for the outdoors on outdoor lab days), be an active member of your group, and show all other students and your TA respect.
* ***Late assignments*:** To be fair to all students and your TA, your assignment grade will be reduced by 15% if you turn work in late and it may not be returned until the end of the term. **Extension requests must be made >3 days prior to the assignment due date.**

**Services**: 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. 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.

**Code of conduct**: We are to ‘realize’ the highest ethical standards of behavior. Check out the Student Code of Conduct, to which you are bound: [**http://www.pdx.edu/dos/codeofconduct**](http://www.pdx.edu/dos/codeofconduct)**.**

**ALWAYS REFER TO ASSIGNMENTS POSTED ON D2L FOR FULL INSTRUCTIONS!**

**There will be two outdoor labs for this class.** *The first outdoor lab will be April 24 or 26 (Wk 4) and we will be going to the South Park Blocks. The second outdoor lab will be May 8 or 10 (Wk 6) and we will be going to Marquam Park. This lab will require sturdy shoes for hiking around Marquam Park. Please come prepared. If you have any concerns regarding these labs let your instructor know ASAP. Additionally, as part of the Carbon Sequestration labs you will be required to collect data in the field with a group which will take place in week 8.*

Please see the schedule on the following pages for detailed information about the labs and associated Assignments.

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| **Date** | **Lab activity** | **Assignments** |
| Wk 1:  Apr 3 or 5 | **(1) Syllabus and introductions**  **(2) Fish Game** | **Due at End of Lab:**  **(1)** Fish Game Worksheet |
| Wk 2: Apr 10 or 12 | **(1) Population modeling**  **(2) Literature Search**  **(3) Mini-Excel Workshop** | **Due at End of Lab:**  **(1)** Population Model Worksheet  **(2)** Literature Search Worksheet  **Due before Wk 4 Lab:**  **(3)** Excel Practice Worksheet |
| Wk 2:  Apr 17 or 19 | **(1) Population size using Excel** | **Due at End of Lab:**   1. Population size worksheet |
| Wk 4:  Apr 24 or 26 | **OUTSIDE LAB: South Park Blocks**  **Community Diversity 1** | **Due at End of Lab:**  **(1)** Diversity worksheet  **(2)** Enter data into Class Data Sheet  **(3)** Research Question for Diversity Lab Report (1/group)  **Due before Wk 6 Lab:**  **(4)** DiversityBibliography\* of 3 potential papers for your Diversity Lab Report |
| Wk 5:  May 1 or 3 | **(1) Community Diversity 2**  **(2) Intro to Carbon sequestration**  Intro to the remaining set of labs, experimental design, hypotheses | **Due at** **End of lab:**   1. Tree Diversity Worksheet 2   **Due before Wk 7 Lab:**  **(2) Diversity Lab Report** (write-up in style of a very short scientific paper\*) |
| Wk 6:  May 8 or 10 | **OUTSIDE LAB: Marquam Park**  **Carbon sequestration:** Tree measurements and C calculations forMarquam Park; Measurements of independent variable that may be affecting tree size **or** C sequestered/hectare. | **Due at End of Lab:**  **(1)** Enter Tree measurements and C-Seq Calculations in Class Data Sheet (1/group)  **(2)** Choose your research question (1/group).  **Due before Wk 8 Lab:**  **(3)** Carbon Bibliography\* of 6 potential papers about C-Sequestration to use in C-Seq Lab Report (this will help you become familiar with the topic of C-Sequestration) |
| Wk 7:  May 15 or 17 | **Independent Data Collection for Carbon Sequestration Lab**  -Be prepared to go outside and collect data with your group | **Due at the End of Lab:**  **(1)** C sequestration data table for three sites **(2)** Data sheet of independently-collected raw data (can be on-line or other sources) (1/group).  **Due before Wk 9 Lab:**  **(3)** Annotated Bibliography of 6 papers for your C-Sequestration Lab Report. *(Annotations should consist of a few statements explaining the importance of the paper and how you will use it in your Lab Report.)* |
| Wk 8:  May 22 or 24 | **Carbon sequestration:** Graphing, writing, talk preparation | **Due at the End of Lab:**  **(1)** Graphed measurements comparing tree size or C sequestration per hectare in SPB vs MP or other comparison, with figure captions, (individual)  **Due before Wk 10 Lab:**   1. Group Presentations 2. Carbon Sequestration Lab Report – for peer review |
| Week 9  May 29 or 31 | **No labs – Monday is Memorial Day** |  |
| Wk 10:  Jun 5 or 7 | **Carbon sequestration: Peer Review and Present talks\*.** | **(1) Group Presentations**  **(2) Peer Review of** C-sequestration Lab Report\*  **For All Labs-**  **Due Tuesday March 21 by 2pm:**  -Final Carbon Sequestration Lab Report\* |

\* this item has a rubric