Forest Biology Information Sheet and Syllabus
Bi 307, Fall 2007, Dickman

http://biology.uoregon.edu/classes/Bi307f07/

This upper division course explores forest ecology and forest management from a biological perspective. The prerequisite for this course is Biology 213 or 253 or equivalent, or instructor's consent. I assume that you are familiar with ecological concepts such as productivity and energy flow in ecosystems, nutrient cycling, species interactions, are comfortable with basic chemistry terms and concepts, and are willing to think critically and with an open mind about complex issues.

In addition to learning essential concepts, we will discuss current issues, we will get out in the forest to see first-hand examples of things we read about, and we will examine complex questions. You will be required to read, write and think, all of which take time and energy. In return for your efforts, I promise to work hard to help you to understand the material and its importance.

Staff	email/phone	office hours	location
Alan Dickman	adickman@uoregon.edu 346-2549	Thursday 1 – 2 PM; or during lab, or by appt.	301-B Pacific Hall
Rebecca Mueller	rmueller@uoregon.edu		
Ali Abbors	aabbors@uoregon.edu		
Melanie Marine	mmarine@uoregon.edu	in lab or by appt.	
Anna Sease	msease@uoregon.edu	in lab or by appt.	

Lecture: Tuesday and Thursday: 10 to 11:20, room 30 Pacific Hall

Labs: Wednesdays: 9AM to Noon or 1 to 4 PM, room 111 Huestis Hall

Field trips: You must attend and write journals for at least two of the first three field trip options to be able to get full credit for the field trip portion of the class grade.

- **Friday or Saturday, September 28 or 29 (all day)** Biogeography and Disturbance History of the Cascades. We will think about past disturbance history, focusing on fire, and will visit forests in various stages of postfire succession. We will examine changes in forests associated with changing temperature and moisture regimes. Be prepared for some cross-country hiking through brushy areas. Bring lunch, water, sturdy shoes, Manual of Oregon Trees, and notepad.
- **Sunday, October 14 (all day)** Research at the H. J. Andrews Experimental Forest. Kari O'Connell will lead us on a tour of this important research site and talk about a few of their research programs. Several short easy walks from the vans. Bring lunch, warm clothes (raingear?), and notepad.
- **Friday Nov 2 (all day)** Spend most of the day with Jim Stark and Mike McDowell touring Weyerhauser property to learn about forest management on private land. May include a stop in Creswell to see a small family owned operation. Bring lunch, raingear, and notepad.
- **Wednesday, Nov. 14 (leave at 1PM, return approximately 5 PM)** Forest Genetics, Dorena Genetics Resource Center, Cottage Grove. Center staff will give us a tour of the Resource Center and explain some of their research and programs, including work white pines resistant to blister rust disease and Phytophthora-resistant Port Orford cedar.

Final Exam: 8 AM, Friday, December 7, in rm 30 Pacific Hall

Readings are from selected articles available on the course website; *Botany for Gardeners* by Brian Capon, and from *Soil Science Simplified* by Kohnke and Franzmeier.

Dates	Lecture	Reading	Lab/ Field
25-Sept 27-Sept wk.1	L1 Introduction to Forest Biology and Forests of the PNW L2 Forest Biogeography and long term ecosystem change	Capon 220-223 **Waring, Spies** K-F 129-143 Capon: 83-100, 109-130. **Hebda and Whitlock**	Lab One: Use of Tree ID keys; Project Ideas **Field Trip, Friday or Saturday Sept 28 or 29: Fire Ecology and Forests of the Cascades**
2-Oct 4-Oct wk. 2	L3 How trees grow L4 Movement of Water in Trees and Wood Anatomy **Homework Set #1A due**	Capon: 9-24, 34-55 Capon 56-82; 152-158 **Zimmerman**	Lab Two: Tree Walk (across river--dress to be outside)
9-Oct 11-Oct wk. 3	L5 Soil and Water **Cascade field trip write up due** L6 Soils and Soil Processes	K-F: 1-23, 75-84; skim 85-95 Capon 163-165 K-F 27-32; 61-74	Lab Three: Leaf and Stem Anatomy **Field Trip: Sunday, Oct 14** **HJ Andrews Experimental Forest**
16-Oct 18-Oct wk. 4	L7 Mycorrhizae and Nutrients **Homework Set #1B due** L8 Nutrient Cycling in Forests and importance of Nitrogen	K-F: 33-52 Capon: 158-163 **McCullogh, Zimmer** K-F: 56-58 **Barron, Lovett**	Lab Four: Wood Anatomy
23-Oct 25-Oct wk. 5	**Midterm Exam One (L1-7)** L10 Decomposition and Soil Organisms **HJA field trip write up due**	 K-F: 53-59 **Moldenke**	Lab Five: Microorganisms
30-Oct 1-Nov wk. 6	L11 Energy Flow, Carbon Cycling, and Biomass L12 Forest Succession and Fire **Homework Set #2A due**	**Beedlow** **Rapp # 11** **Noss et al.**	Lab Six: Soil Fauna **Field trip: Friday Nov 2:** **Jim Stark Weyerhaeuser**
6-Nov 8-Nov wk. 7	L13 Biotic Disturbances L14 Disease in Forests **Homework Set #2B due**	**Schowalter et al.** **Ellison et al.** **Roth, Nelson, SWOFIDSC, Worrall**	Lab Seven: Trees of Campus -- **dress to be outside**
13-Nov 15-Nov wk. 8	**Midterm Exam Two (L8-L13)** L16 Insects in Forests **Weyerhaeuser trip write up due**	 Capon: 100-108 **Wickman, Fellin, Amman**	 **No lab: Field Trip: 11/14** **Wednesday 1 PM Dorena Forest Genetics Resource Ctr.**
20-Nov 22-Nov	L17 Forest Genetics **Thanksgiving Holiday**	Capon: 175-177; 198-218 **Friedman**	Open Lab (review for lab exam)
27-Nov 29-Nov wk. 10	L18 Landscape Ecology and Forest Management. **Dorena trip write up due** L19 Synthesis and Review	**Rapp # 1, and #3, Cissel** **Hayes, Moore**	**Lab Exam, Nov 28**
Dec 7	**Final Exam (Cumulative) 8 AM Friday in rm 30 Pacific Hall**		

authors names in bold (blue) font are assigned reading available as pdfs on the course website

Assigned reading (in the order that you should read them)

Waring, Richard H. 1983. **Land of the Giant Conifers**. Natural History. October, pp. 55-62.

Spies, Tom. 2004. **Ecological concepts and diversity of old-growth forests.** Journal of Forestry 102(33): 14-20

Hebda, Richard, J., and Cathy Whitlock. 1997. **Environmental History**, Chp. 9 in *The Rainforests of Home; Profile of a North American Bioregion*. edited by P.K. Schoonmaker et al. Island Press.

Zimmerman, Martin H. 1982. **Piping Water to the Treetops**. Natural History, July pp.6-13.

McCullough, Patrick. 1998. **Mycorrhizae, your silent partner.** Western Arborist 24(4) http://www.wcisa.net/magDetails.asp?MagazineID=8&Detail=1

Zimmer, Carl. 2001. **The web below.** Western Arborist 26(4). http://www.wcisa.net/magDetails.asp?MagazineID=15&Detail=1

Barron, G.L. 2003. **Predatory fungi, wood decay, and the carbon cycle**. Biodiversity, Volume 4:3-9. http://www.uoguelph.ca/~gbarron/MISC2003/feb03.htm

Lovett, Gary M. et al. 2002. **Insect Defoliation and Nitrogen Cycling in Forests**. BioScience 52(4): 335-341.

Moldenke, Andy. 2002. **The Soil Biology Primer**. chp 7. **Arthropods**. http://soils.usda.gov/sqi/concepts/soil_biology/arthropods.html

Beedlow, Peter, et al. 2004. **Rising atmospheric CO_2 and carbon sequestration in forests.** Frontiers in Ecology and the Environment. 2(6): 315-322

Rapp, Valerie. 2005. **Conserving old forests in landscapes shaped by fire**. Science Update Issue #11. http://www.fs.fed.us/pnw/publications/sci-update.shtml

Noss, Reed, et al. 2006. **Managing fire-prone forests in the western United States**. Frontiers in Ecology and Environment 4(9):481-487.

Schowalter et al. 1997. **Integrating the Ecological Roles of Phytophagous Insects, Plant Pathogens, and Mycorrhizae in Managed Forests**. Chp. 11 in *Creating a Forestry for the 21st Century*. edited by Kathryn A. Kohm and Jerry Franklin. Island Press.

Ellison A., et al. 2005**. Loss of foundation species: consequences for the structure and dynamics of forested ecosystems.** Front Ecol Environ 2005; 3(9): 479–486

Roth, Lew, R. Harvey Jr. and J. Kliejunas. 2002 (1987). **Port Orford Cedar Root Disease.** USDA Forest Service. R6 FPM PR 010 91. Available at http://www.fs.fed.us/r6/nr/fid/fidls/poc.htm

Nelson, Earl, N. Martin, and R. Williams. 1989. **Laminated root rot of western conifers**. FIDL #159. http://www.fs.fed.us/r6/nr/fid/fidls/fidl159.htm

SWOFIDSC (Southwest Oregon Forest Insect and Disease Service Center). Undated website. **Swiss Needle Cast** http://www.fs.fed.us/r6/rogue/swofidsc/swiss/swissneedle.html

Worrall, J. (forestpathology.org) **Swiss Needle Cast** Updated May 2007 http://www.forestpathology.org/dis_swiss.html

Wickman, Boyd; Richard R. Mason and Galen C. Trostlel. Not dated. **Douglas-Fir Tussock Moth** U.S. Department of Agriculture Forest Service Forest Insect & Disease Leaflet 86. http://www.fs.fed.us/r6/w-w/resources/dftm.htm

Fellin, David, and J. Dewey. 1982. **Western Spruce Budworm**. U.S. Department of Agriculture Forest Service. Forest Insect & Disease Leaflet 53 http://www.na.fs.fed.us/spfo/pubs/fidls/westbw/fidl-wbw.htm

Amman, Gene, M. McGregor, and R. Dolph, Jr. 1989. **Mountain Pine Beetle**. U.S. Department of Agriculture Forest Service. Forest Insect & Disease Leaflet 2. http://www.barkbeetles.org/mountain/fidl2.htm

Friedman, Sharon. 1997. **Forest Genetics for Ecosystem Management.** Chp 13 in *Creating a Forestry for the 21st Century*. edited by Kathryn A. Kohm and Jerry Franklin. Island Press.

Rapp, Valerie. 2003. **Dynamic Landscape Management.** Science Update Issue 3, Pacific Northwest Research Station. http://www.fs.fed.us/pnw/publications/sci-update.shtml

Rapp, Valerie. 2002. **Restoring Complexity: Second-Growth Forests and Habitat Diversity**. Science Update Issue 1, Pacific Northwest Research Station. http://www.fs.fed.us/pnw/publications/sci-update.shtml

Cissel, J. H., F.J. Swanson, and P.J. Weisberg. 1999. **Landscape Management Using Historical Fire Regimes: Blue River, Oregon**. Ecological Applications 9(4): 1217-1231.

Hayes, J.P. et al. 2005. **Environmental Consequences of Intensively Managed Forest Plantations in the Pacific Northwest.** Journal of Forestry 103(2): 83-87

Moore, Kathleen Dean. 2007. **In the Shadow of the Cedars: the Spiritual Values of Old-Growth Forests** Conservation Biology 21(4): 1120-1123

Grading Criteria and my Grading Philosophy:

You have the option of basing part of your grade on a term project. If you do the project, exams will count less for your grade. You will have until October 10 to decide to do a project for part of your grade

If you get 90% or more of the total possible points, you are guaranteed an A- (80% a B-, 70% a C-). I may lower these cutoffs, but I will not raise them. What does this mean for you? If you do excellent work (in my judgment) you will get an A, good work earns a B, satisfactory work earns a C. I grade on performance, not on effort. On the other hand, it is rare that anyone who comes to class regularly, does all of the reading, and puts a serious effort into studying gets less than a C.

Grade Criteria without project

Component	Percent of total
lecture exams (best two of three)	60%
lab exam	20%
field trip journals	10%
homework	10%
Total	100%

Grade Criteria with project

Component	Percent of total
lecture exams (best two of three)	40%
lab exam	20%
field trip journals	10%
homework	10%
term project	20%
Total	100%

Classroom Conduct.

This syllabus is an agreement about how we will carry out our duties this quarter. You should read this carefully and talk to me about it as soon as possible if you have any questions. I always appreciate suggestions for how to improve the course.

I expect all of us to follow University rules and guidelines for behavior. One of these has to do with academic dishonesty, including cheating and plagiarism or taking credit for the work of others. Academic dishonesty is a serious offense and will be treated according to the guidelines in the class schedule. This doesn't mean you shouldn't talk with other students about what you are thinking or writing; it does mean that when you write something, it should be in your own words, not copied from someone else. Even though it is one of the least favorite parts of my job and it can have serious consequences on your academic career, I do refer cases to the Office of Student Judicial Affairs.

I ask that we all do our best to be intellectually honest while also being tolerant of personal differences. I welcome and encourage intellectual controversy--I think it is essential to real learning. At the same time, I ask that we all respect the rights of others to hold different opinions, even as we challenge the ideas supporting those opinions. I promise to value each of you as individuals; I view the grade you earn to be a reflection of the quality of work you have done, but not of you as a person.

Out of respect for other students, and in keeping with departmental policy, you should plan to arrive at class on time and to stay until class is over. If, on occasion, you do arrive late, please be considerate of others and enter quietly at a time and in such a way that you don't disturb other students. If you need to leave early, please sit near an exit so that you can leave without disrupting the class. I ask that you not interfere with the ability of other students to learn by making noise when someone else (instructor or classmate) is talking.

Crises happen; if you are having problems that are interfering with your ability to do the work in this class, please let me know promptly. I am willing to make special arrangements when the need is real **and** when you have done your best to deal with the situation in a timely manner. The University of Oregon Crisis Center, a student funded organization, provides students with confidential telephone crisis intervention 24 hours a day, 7 days a week. The hotline number is 346-4488. Students often believe that their issues are not “severe” enough for them to call a crisis intervention hotline. At the Crisis Center, there is no problem too small.

Lab Activities and Field Trips:

Lab activities are an important part of the course. It is often not possible to make-up a lab because they often require special equipment and materials. If you know in advance that you have to miss a lab, contact one of the instructors to see if you can attend a different lab section, or, if possible, to make other arrangements. You will not turn in formal lab reports, but some notes that you take in lab may be used on a portion of the lab exam.

I encourage you to attend as many field trips as you can, but you must attend at least two of the first three and turn in a report for each one attended in order to earn all of the points associated with field trips. The report should explain how things we have read about or discussed in lecture are manifested in the field. Field trip reports should be approximately three pages (typed, double-spaced) and are due within 10 days of the field trip. For most trips, we will travel in state vans and will depart from the parking lot that is immediately behind (north of) the Onyx Bridge entrance to the Science Library. Dress for field conditions: it is usually a good idea to bring several layers of clothes (more than you think you may need). If it has rained in the past week, be prepared for damp vegetation (umbrellas work well often, but rain coats, rain pants, and rubber boots are a good idea if it is really wet). **Also bring any food you might want and something to drink. Markets and restrooms are rare to non-existent in the forest.**

Term project:

The term project is meant to encourage you to explore a particular aspect of forest biology in more depth, and to apply some of your knowledge and skills to a practical situation. The project may culminate in a written report or in a written analysis of a project. A separate handout gives more suggestions and guidelines for the term project. A project proposal will be due on Oct. 11, progress reports due Nov 1, and final project reports are due by November 28.

Exams

Use the exams in the course packet to get a sense for the kinds of questions I ask. Often you will be asked to apply or to synthesize information. This is harder than simply recalling facts. I do not give make-up exams, so note the dates of the exams carefully and don't make plans to be out of town on any of those dates. You will find it easiest to study for the lab exam as you go along. The final exam will be cumulative. Notice that the final exam is scheduled for 10:15 AM Friday, Dec 7, and that if you do well enough on the first two midterms you may decide to not take the final exam.

How to do well in this course:

- Attend all class functions (lectures, labs, field trip) and arrive on time.
- Do the assigned reading. You don't have to read it thoroughly in advance, but skim the material so that you know what is there and can go back and read in more depth later.
- Make use of the course web page and the lecture notes and outlines on it, but do not try to use these as a replacement for attending lectures.
- Ask questions in lecture.
- Get together with someone else in the class at least once a week to study. Without looking at notes, reconstruct the most important concepts studied in class that week. Then use your notes to fill in the gaps in your understanding.
- Ask yourself how what you are learning matters. If it isn't apparent, then ask. Read magazines, the newspaper, and listen to radio and television for issues relevant to this course.
- Don't believe everything you hear or read; be able to back up your own opinions with credible evidence and good logic.
- Don't miss the forest for the trees; the big picture is essential.