

Forest Biology Information Sheet and syllabus

Bi 307, Fall 2013, Dickman

crn 17095 (v. Sept 20 , 2013)

In this lab/lecture/field course, we explore forest ecology and forest management from a biological perspective. The prerequisite for this course is Biology 213 or 283H or equivalent, or instructor's consent. I assume that you are familiar with 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 important concepts, we will discuss current issues, we'll 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, synthesize, analyze, and evaluate. All of this will take time and energy. In return for your efforts, I will work to help you understand the material and its importance.

Staff	email/phone	office hours	location
Alan Dickman	adickman@uoregon.edu 346-2549	Thursdays noon to 1:30 PM; during lab; or by appointment	302 Pacific Hall
Lorien Reynolds			

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

Lab: Tuesdays: Noon to 4 PM, room 5 Klamath Hall

Field trips: You must attend and write journals for at least two field trips to earn full credit for the field trip portion of the class grade.

- **Saturday, October 5 (all day)** Biogeography and Disturbance History of the Cascades. We will think about past disturbance history and will visit forests in various stages of 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. Depart at 8:30 AM, return ca. 5PM
- **Sunday, Oct 20 (all day)** Research at the H. J. Andrews Experimental Forest. Mark Schulze 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. Depart 8:30 AM, return ca. 5 PM
- **Friday Nov 1 (all day)** Spend part of the day with Jim Stark touring Weyerhaeuser property to learn about forest management on private land. May include a stop in Creswell to see a small family owned timber operation. Bring lunch, raingear, and notepad. Depart 8:30 AM, return ca. 5PM
- **Tuesday Nov 19 (afternoon)** **BLM Tyrell Seed Orchard**, outside of Lorane, OR. Includes trials of blister resistant western white pine trees, a Douglas fir seed orchard, and an arboretum.

Final Exam: 8AM, Monday, December 9, room 11 Pacific Hall

Readings I may update some of the readings on the syllabus and website as the term progresses. Nardi, (Life in the Soil) is available at the bookstore. Articles with author's names in blue font are pdfs available on course website.

Dates	Lecture/Exams	Reading	Lab/ Field/Assignments
Oct-1 Oct-3 wk. 1	L1 Introduction to Forest Biology and Forests of the PNW L2 Forest Biogeography and long term ecosystem change	Rapp Science Update # 1; Spies and Duncan Chp.1; Waring; Hebda and Whitlock	Lab One: Use of Tree ID keys Field Trip, Saturday Oct 5: West slope Cascade Forests collecting for later labs.
Oct-8 Oct 10 wk. 2	L3 How plants get tall L4 How trees get thick and how water moves	Steve Cook's botany web page Zimmerman	Lab Alton Baker Tree Walk – dress to be outdoors first field trip write up due Oct. 8
Oct 15 Oct 17 wk. 3	L5 Soil and Water L6 Soils and Soil Processes	Nardi: 1-10; 36-45 Nardi: 239-251 MSU Extension Basic soil properties	Lab Three: Leaf and Stem Anatomy Field Trip: Sunday Oct. 20 HJ Andrews Experimental Forest
Oct 22 Oct 24 wk. 4	L7 Mycorrhizae and Nutrients L8 Nutrient Cycling in Forests and importance of Nitrogen	McCullogh; Zimmer Nardi: 11-22 Barron; Lovett	Lab Four: Wood Anatomy HJA write up due Oct 22
Oct 29 Oct 31 wk. 5	L9 Decomposition and Soil Organisms Midterm Exam One (L1-8)	Moldenke; Nardi 22-36; 47-67; 251-256	Lab Five: Microorganisms Homework Set #1 due Oct 29 Field trip: Friday Nov 1 forest management
Nov 5 Nov 7 wk. 6	L11 Energy Flow, Carbon Cycling, and Biomass L12 Forest Succession and Fire	Ryan et al. Noss et al.; Spies Chp. 3; Franklin Chp. 22	Lab Six: Soil Fauna
Nov 12 Nov 14 wk. 7	L13 Biotic Disturbances L14 Disease in Forests	Schowalter et al. use as references to help with lecture: Betlejewski, Nelson, Shaw	Lab Seven: Campus Tree Walk dress to be outside
Nov 19 Nov 21 wk. 8	L15 Insects in Forests Midterm Exam Two (L9 - L15)	use as references to help with lecture: Wickman, Fellin, Amman	Homework Set #2 due 11/19 No lab this week. Instead... Field Trip: Nov 19 Tuesday afternoon BLM Tyrell Seed Orchard Complex
Nov 26 Nov 28 wk. 9	L17 Forest Genetics No class – give Thanks	Friedman	BLM trip write up due Nov.26 Open Lab (review for lab exam)
Dec 3 Dec 5 wk. 10	L18 Landscape Ecology and Forest Management. Guest Josh Laughlin L19 Synthesis Lab exam in lab this week	Carey Chp. 5; Rapp (Sci Update #3), Cissel Duncan et al. Chp 26; Moore	Lab Exam in lab, Tuesday, Dec 3
Dec 9	Final Exam (Cumulative) 8 AM Monday, December 9 in rm 111 Pacific		

Assigned reading (in the order we'll get to them in the class)

- 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>
- Spies, Thomas, and Sally Duncan. 2009. **Searching for Old Growth**. Chp. 1 in *Old Growth in a New World*. Island Press.
- Waring, Richard H. 1983. **Land of the Giant Conifers**. Natural History. October, pp. 55-62.
- 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.
- Steve Cook. 2008. Plant Growth (read for lab, and bring to lab) http://www.steve.gb.com/science/plant_growth.html
- Zimmerman, Martin H. 1982. **Piping Water to the Treetops**. Natural History, July pp.6-13.
- McCauley et al. 2005. **Basic Soil Properties**. Montana State Univ. Extension Service management module #1. http://landresources.montana.edu/SWM/PDF/Final_proof_SW1.pdf
- 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
- Ryan, M.G et al. **A Synthesis of the Science on Forests and Carbon for US Forests**. Issues in Ecology, report # 13. . http://esa.org/science_resources/issues.php
- Noss, Reed, et al. 2006. **Managing fire-prone forests in the western United States**. Frontiers in Ecology and Environment 4(9):481-487.
- Spies, Tom. 2009. **Historical Context of OG in the PNW**. Chp. 3 in *Old Growth in a New World*. Island Press.
- Franklin, Jerry 2009. **Conserving Old Growth Forest and Attributes**. Chp. 22 in *Old Growth in a New World*.
- 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.
- Use the following 6 as references to help with lecture material. Don't sweat the details that aren't stressed in lecture.
- Betlejewski, Goheen, Angwin, Sniezko. 2011 **Port Orford Cedar Root Disease**. USDA Forest Service. R6 FIDL 131. Available at http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5346825.pdf
- 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>
- Shaw, David, 2008. Swiss needle cast of Douglas-fir in Oregon. Oregon State Extension Forest Health Fact Sheet. <http://www.oregon.gov/ODF/privateforests/docs/fh/SwissNeedleCast.pdf?ga=>
- 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>
- 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.
- Maleki, Sussanne. 2008. **Counting all that matters; recognizing the value of ecosystem services**. Science Update 16. <http://www.fs.fed.us/pnw/publications/sci-update.shtml>
- Moore, Kathleen Dean. 2007. **In the Shadow of the Cedars: the Spiritual Values of Old-Growth Forests** Conservation Biology 21(4): 1120-1123
- And assigned pages in Nardi, James. 2007 **Life in the Soil**. University of Chicago Press.
- Five readings are chapters from **Old Growth in a New World, A Pacific Northwest Icon Reexamined**. 2009. Island Press.

Grading Criteria and my Grading Philosophy:

If you earn 70% or more of the total possible points, you are guaranteed a C; earn 80% and you receive at least a B-; earn 90% and receive at least an A-. I may lower these cutoffs, but I will not raise them. What does this mean for you? If you do satisfactory work (in my judgment), you earn a C, good work earns a B, and excellent work earns an A. I grade on performance, not on effort, but it is rare that anyone who comes to class regularly, does all of the reading, and puts a serious effort into studying doesn't pass with a C or better.

Grade Criteria

Component	Percent of total
midterm exams (two @ 20% each)	40%
final exam	20%
lab exam	20%
homework	10%
field trips and field notes	10%
Total	100%

Classroom Conduct.

I expect everyone to follow University rules and guidelines for behavior. Academic dishonesty, which includes cheating and plagiarism, is a serious offense and will be treated according to the guidelines in the [student conduct code](http://uodos.uoregon.edu) (located at uodos.uoregon.edu). 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.

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, texting, checking email, etc. when someone else (instructor or classmate) is talking.

If you have a documented disability and anticipate needing accommodations in this course, please make arrangements with me soon.

Crises happen. If you have problems that interfere 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 Counseling Center, provides students with confidential consultation 24 hours a day, 7 days a week. From 8-5 Monday through Friday you will be connected with the front desk, and after hours, the same number connects to their support line. **Their number is 346-3227.** Students often believe that their issues are not "severe" enough for them to call, but at the Counseling Center, no problem is too small.

I welcome suggestions for ways to improve the class at anytime.

Lab Activities and Field Trips:

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

There are four different field trips offered. You earn two points for attending and up to three points for a report for each trip. It is possible to earn the maximum points by attending any two field trips, but you are encouraged and invited to attend all four. Field trip reports should explain how things we have read about or discussed in lecture are manifested in the field. They should be approximately two pages (typed, double-spaced) and are due in lab the week following the field trip. 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 often work well, but rain coats, rain pants, and rubber boots are a good idea if it is really wet). **Bring any food and water you might want.** Markets and restrooms are rare to non-existent where we will be on many of our field trips.

Homework and late policies

There are two homework assignments; one due prior to each midterm. They are meant to help you study so as to do well on the midterm. Do them as you go along, not all at the last minute. Each is worth 5 % of your course grade. Late assignments will have ten percent deducted per day late (weekend days count). Homework will not be accepted after the exam, however.

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 gone on any of those dates. The final exam will be cumulative and is on Tuesday, June 11.

How to do well in this course:

- Attend all class functions (lectures, labs, field trip), arrive on time, and participate fully.
- 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.
- Use slides posted to Blackboard, but do not use these as a replacement for attending lectures.
- Ask questions.
- 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.