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Fall 9-1-2000

FOR 330.01: Forest Ecology

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Instructor: Paul Alaback (Science Complex 404) email: palaback@forestry.umt.edu;
ph. 243-2913

Lectures: Tuesday and Thursday 11:10 - 12:00 J304

Labs: Mon, Tues, Weds or Thurs. 1:10pm - 5:00 pm; CP 102 or For 106

Office Hours: M, W 9:00-11:00, or email for appointment

Teaching Assistants: LaDonna Carlisle SC 460 243-6657
Victoria Yazzie-Durglo SC 401 ph 243-5326

Required textbook: Barnes, B.V., D.R. Zak, S. Denton and S.H. Spurr. 1998. **Forest Ecology**. Wiley.

Note: Extra readings will be placed on reserve in the library.

Lab manuals: **Forest Ecology Laboratory Handbook**.

General course objectives:

1. Provide overview of forest ecology with particular emphasis on interdisciplinary ecosystem perspectives.
2. Develop skills in field observation and methods, analysis, data interpretation and presentation.
3. Provide synthesis of information from basic biology, soils, microclimate, and plant ecology as a foundation for forest conservation and management in general, and in better understanding scientific basis for current environmental issues and policy debates.

Schedule

Topic	Readings	Dates
Part I. Forest Communities		
Introduction to course	CH1	9/5
The ecosystem concept	(Kimmins, 1987)	9/7
Concepts of vegetation classification	CH 13	9/12
Historical ecology	CH 3	9/14
Biodiversity	CH 20	9/19
Community composition	CH 15	9/21
Community structure	(Franklin & Spies, 1991)	9/26
Disturbance ecology	CH 16 (Connell & Slatyer, 1977)	9/28
Disturbance ecology		10/3
Plant succession	CH 17; (Alaback, 1982)	10/5
First midterm exam		10/10
Part II. Forest trees and populations		
Adaptation and evolution: genetic aspects of ecosystems	CH 4	10/12
Population genetics		10/17
Population biology introduction	Barbour Ch 4; CH 5	10/19

Topic	Readings	Dates
Population biology models		10/24
Population biology applications	(Tappeiner & Alaback, 1989)	10/26
Saturday field trip	Fac-Pack	10/14; 10/21
Competition	(Grime, 1974)	10/31

Part III. Ecosystem dynamics and the physical environment

Soil: the least renewable component of the ecosystem		
I. Key factors influencing plants	CH 11	11/2
ELECTION DAY HOLIDAY VOTE!		11/7
Soils II. Ecological responses to soils		11/9
SECOND MID TERM EXAM		11/14
Productivity I	CH 13	11/16
Productivity II	CH 18	11/21
THANKSGIVING HOLIDAY		11/22
Productivity III		11/28
Biogeochemical cycling	CH 19	11/30
Biogeochemical cycling		12/5
Climatic processes: basic patterns	CH 9	12/7
Climatic processes: ecological responses	CH 7; (Stephenson, 1990)	12/12
Synthesis	CH 21	12/14

Final Exam: Wednesday

December 18th, 10:10 am

Note: Graduate students will also be required to write term paper. Please submit topic by September 25th. Due Nov. 9th (in lecture). Background info available on internet (library ERES) and from TA's.

Readings from Library

- Alaback, P. B. (1982). Dynamics of understory biomass in Sitka spruce-western hemlock forests of southeast Alaska. Ecology, 63, 1932-1948.
- Barbour, M.G., J.H. Burk, and W.D. Pitts. 1987. Chapter 4. Population structure and plant demography. pp 52-78. Benjamin Cummings. New York.
- Connell, J. H., & Slatyer, R. O. (1977). Mechanisms of succession in natural communities and their role in community stability and organization. American Naturalist, 111, 1119-1144.
- Franklin, J. F., & Spies, T. A. (1991). Composition, structure and function of old-growth Douglas-fir forests. In L. F. Ruggiero, K. B. Aubry, A. B. Carey, & M. H. Huff (Eds.), Wildlife and Vegetation of unmanaged Douglas-fir forests (pp. 71-78). Portland: USDA Forest Service, Pac. NW. Res. Sta.
- Grime, J. P. (1974). Vegetation classification by reference to strategies. Nature, 250, 26-31.
- Kimmins, J. P. (1987). Ecology and the Ecosystem Concept. Chapter 3. In J. P. Kimmins (Ed.), Forest Ecology (pp. 23-30). New York: MacMillan.
- Stephenson, N. L. (1990). Climatic control of vegetation distribution: the role of the water balance. American Naturalist, 135(5), 649-670.
- Tappeiner, J. C. I., & Alaback, P. B. (1989). Early establishment and vegetative growth of

understory species in the western hemlock Sitka spruce forests of Southeast Alaska. Can J Bot. 318:326.

Polices and Procedures

Semester Grading Policy: Final grades will be a composite of lecture and laboratory grades. No "extra credit" is available.

Exams and Assignments: Your grade in the lecture part of For 330 will be based upon 3 exams (each worth 100 points), and 8 class assignments (worth 10 -15 points). Assignments and exams are spaced throughout the semester. Exams will cover material from lecture, labs, discussions, and assigned readings. Questions will include multiple choice, essay and short answer. Final Exam will be comprehensive for 50% and the rest will emphasize material since the second midterm.

Make-up exams: In order to make up an exam, you must be involved in a *recognized University activity or supply written verification of illness from a doctor*. In the case of University activities, arrangements must be made with Dr. Alaback PRIOR to the anticipated absence. Approved make-up exams will ONLY be given once. See the schedule below and note that they will be held in SC 403 from 7:00 - 8:00 am (a time when there is no danger that they will conflict with your other classes).

NOTE: Do not schedule travel that conflicts with exams or labs which occur near Thanksgiving break or prior to finals week. Make-up exams will not be approved because of schedule conflicts due to holiday travel plans (as per University policy)!

Exam #	Scheduled Exam Dates	Make-up Exams (Prior Approval Only)
1	Tues Oct 10	Monday Oct 16
2	Tues Nov 14	Monday Nov 26
3	Mon Dec 18 (FINAL)	NONE

Getting Your Exams and Assignments Back: Exams and assignments will be returned during your laboratory by the TA. You may also pick up exams from TA's during their office hours. Answer keys will be available on the internet (library ERES system) as soon as possible following the exams. Students will have ONE WEEK ONLY following the posting of the exam to bring incorrectly corrected questions to the attention of the appropriate lecture instructor. You may do this after class, during office hours, or by attaching a note explaining the grading problem and sending it campus mail to Paul Alaback/School of Forestry, or you can leave with receptionist in main forestry office (Forestry building 1st floor) to send in campus mail. After one week, all scores are final.

Final Grades:

	Percentage	Grade
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The following grading scheme will help you chart your progress during the semester.	> 90%	A
	> 80 %	B
	> 70 %	C
	> 60 %D	
	< 59 %F	

Please keep track of all of your own scores during the semester for both lecture and laboratory assignments and exams on the score sheet provided in the lab handbook.

Format for all Written Assignments

Please note that **NO LATE ASSIGNMENTS WILL BE ACCEPTED**. All written assignments submitted for a grade must be word processed or typed, double spaced, and a font no smaller than 10 point. Naturally we expect work of high professional quality that has been carefully edited for spelling and grammatical errors prior to submission. Use **ONE INCH MARGINS** on all sides, 1 _ or double spaced, and **do not use any kind of folder or binder**.

For ALL written assignments, place your name, lab section and TA, Course Number and date in the upper left hand corner. Staple your work **BEFORE** turning it in. For all group projects, list the name of group members and your project title. The **ACADEMIC ASSISTANCE PROGRAM** at The University of Montana provides excellent tutoring services if you wish to have your written papers critiqued prior to submission.

Readings: Please complete readings **BEFORE** scheduled class meetings! The text and the laboratory handbook are available for purchase in the UC Bookstore and Kinko's respectfully.

Optional Purchase for the lab (both available at bookstore):

Forest Habitat Types of Montana, Pfister et al. 1977. Provides general background information on forest communities in Montana, including species that occur, climate, and relationships to productivity, and full detail on the plant habitat typing vegetation classification system that we will be using.

Plants of the Rocky Mountains, Kershaw, MacKinnon and Pojar. 1998. One of the best available references on all the plants that occur in western Montana, including information on identification, distribution, ecology, human uses, etc.

Laboratories

Activities in the labs will focus on learning scientific techniques and doing science. Some labs will involve working through demonstrations, or learning field techniques, while others will focus on open-ended investigations designed by students. Group and cooperative learning will be emphasized. Lab grades will be based on completion of in-class investigations, assignments, and an independent group research project. Students will receive up to 5 points per week for attending lab and being prepared for scheduled lab activities. Other assignments relate to the specific content and activities of the lab.

Format for Ecology Laboratory Write-Ups: Lab write-ups should address thoroughly the questions provided, or detail the results of your lab research. For formal lab write-ups (e.g. the final project) , you will be provided with an example.