

# FORESTRY 349 PRACTICE OF SILVICULTURE

## Fall 2015

Instructor: John Goodburn  
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Office hours: Mon. 11:15 am - 12:30 pm, Thur 9:00-11:00am (or by advance appointment)  
Teaching Assistant: Ed O'Donnell; email - [edward.odonnell@umontana.edu](mailto:edward.odonnell@umontana.edu)  
Lecture and Discussion Mon. & Wed. 10:10 -11:00 a.m. Rm. 204 JRH  
Lab/Field Work Thursday 2:10 - 6:00 p.m. Typically in Field  
or in assigned room (FOR 206)  
*(Field labs will meet to load vans outside the campus security office across street (east) from Griz Stadium)*

### Course Description

The FORS 349 - Practice of Silviculture course will examine the major ecological and conceptual foundations behind various silvicultural systems and vegetative management practices, and introduce students to their practical application in forest ecosystems of the Northern Rocky Mountains and elsewhere to meet multiple resource objectives.

The course will consider forest dynamics at multiple scales, ecological site classification schemes, stand-level assessments of structure and composition, alternative silvicultural systems (single and multi-cohort), thinning/stand density concepts, various regeneration practices, and specific vegetative management strategies for diverse objectives. Students will evaluate opportunities and constraints for actual forest stands, develop management prescriptions, and employ modeling and quantitative assessment of alternative prescriptions. We'll discuss ecologically-based forest mgmt strategies aimed at sustainable wood production, wildlife habitat enhancement, watershed protection, and the maintenance of biological diversity, site productivity, & aesthetic quality. Silviculture can be defined as the theory and practice of influencing forest regeneration, species composition, and growth to accomplish a specified set of resource objectives. Silviculture can be thought of as applied forest ecology directed toward vegetation management objectives.

### Learning Objectives for students completing the course will include the following:

*Understanding of Ecological/Silvicultural Concepts.* Students should be able to:

- develop a should have a clear understanding of key ecological concepts related to forest stand development and the response of forest vegetation to silvicultural practices.
- consider how different silvicultural practices might affect soil resources, forest health, wildlife habitat, biological diversity, wood production, water quality and yield, recreation, and aesthetic,
- gain an appreciation for the social dimensions of silvicultural planning and need to adapt silvicultural practices to meet landowner objectives and landscape scale issues.

*Technical expertise.* Students should be able to:

- diagnose and quantify current conditions in a stand given inventory information,
- utilize classification systems, quantitative guides, and economic analyses, other,
- correctly characterize key constraints and opportunities for silvicultural alternatives,
- model forest dynamics into future to evaluate alternative silvicultural options,
- to describe desired conditions given landowner objectives,
- prescribe silvicultural treatments to will move current stand towards desired conditions.

*Effective communication of alternative silvicultural strategies.* Students should be able to:

- demonstrate a familiarity with silvicultural terminology,
- discuss practical application of regeneration techniques, intermediate treatments, and alternative silvicultural systems
- develop a silvicultural prescription to accomplish identified ownership objectives,
- propose alternative silvicultural treatment alternatives that might lead to desired conditions at the stand- and landscape-level.

## Readings

### **Primary text**

Silviculture and Ecology of Western U.S. Forests, 2<sup>nd</sup> edition.

Tappeiner, Maguire, Harrington, and Bailey 2015. Available at the Bookstore or online.

*Please obtain book by end of first week of class for second week discussion readings*

### **Additional Background texts and articles**

Additional background reading for this semester will draw other silviculture texts, along with additional journal articles or other materials. The objective is to provide readings electronically from selected chapters of these texts, journal articles, and other sources. These other Readings will be made available through Moodle (*or via email in first week, until Moodle set up*).

The Practice of Silviculture: Applied Forest Ecology, 9<sup>th</sup> edition. Smith, Larson, Kelty, and Ashton. 1997.

Silviculture: Concepts and Applications, 2<sup>nd</sup> edition. Nyland. 2002.

## Labs

**Thursday field labs will generally meet outside the Campus Security office (east of Griz Stadium) where we will board vehicles.**

Any indoor lab periods will meet at the assigned room, FOR Rm 206. Attendance at scheduled lab sessions is expected, and unexcused absences could negatively affect your grade. **Please notify me as soon as possible if you will be unable to attend for some reason,** and we can try to make alternative a Labs are scheduled for a four hour block for efficiency in travel and field work logistics.

\*\* Unless lab is scheduled to be indoors, always **wear appropriate field clothes** and closed-toe shoes to labs. If rain is forecast, bring rain gear and do not expect lab to be canceled on account of bad weather.

\*\*\* **Please be on time for lab.** We will often have a bit of travel to get to field sites (e.g., Lubrecht Experimental Forest) and the vehicles may not be able to wait for you. \*\*\*

### FIELD LAB SCHEDULE (THURS 2-6pm)

Wk 1 Sept 3	NO LAB
Wk 2 Sept 10	Field Lab – Missoula County
Wk 3 Sept 17	Field Lab – Missoula County
Wk 4 Sept 24	Field Lab – Missoula County
Wk 5 Oct 1	Field Lab – Missoula County
Wk 6 Oct 8	Field Lab – Missoula County
Wk 7 Oct 15	<u>Midterm Exam I</u> in Lab - FOR 206
Wk 8 Oct 22	Field Lab – Missoula County
Wk 9 Oct 29	Field Lab – Missoula County
Wk 10 Nov 5	NO LAB – SAF National Convention
Wk 11 Nov 12	Field Lab – Missoula County
Wk 12 Nov 19	<u>Midterm Exam II</u> in Lab - FOR 206
Wk 13 Nov 26	NO LAB – Thanksgiving Holiday
Wk 14 Dec 3	Indoor Lab – FOR 206
Wk 15 Dec 10	Optional Lab – Review FOR 206

## Class Participation

Class participation is encouraged and will be incorporated into your grade. Your preparation and willingness to ask questions and discuss various topics will benefit not only your own learning experience, but also that of your colleagues in the class. Please feel free to ask questions and initiate discussions both in and out of class.

I will be available during office hours or at other times if you wish to schedule an alternative time. Also feel free to contact me or clarify questions you have via email. No need to wait until *after* an exam to ask questions!

## Special Accommodations

Students with disabilities who need accommodations should see me privately after class or during my office hours to make arrangements.

Learning Disabilities: The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and Disability Services for Students (DSS). If you think you may have a disability adversely affecting your academic performance, and you have not already registered with DSS, please contact DSS in Lommasson 154. I will work with you and DSS to provide an appropriate accommodation. For more information, please consult [Disability Services for Students](#).

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FALL 2015**

**General Course Lecture Outline and Reading Assignments**

**Lecture/Lab Schedule**

<u>Week/Date</u>	<u>Topic</u>
<b>Week 1</b> Aug 31 – 9/3	Introduction, Silviculture in relation to forest management Readings Smith Chap. 1; Nyland Chap 1 <b>No Lab</b>
<b>Week 2</b> Sept 7-10	Stand Types, Silvicultural Objectives, and Silvicultural Systems No Class Monday - Labor Day Holiday (No Class) Readings Tappeiner et al. Chap 2 <b>Field Lab Intro to Forest Stands &amp; SilvSystems – Elk Meadows Road</b>
<b>Week 3</b> Sept 14-17	Ecological Basis for Silviculture and its Role in Forest Management Readings Tappeiner et al. Chap 3 <b>Field Lab Ecological Classification – Point Six Transect</b>
<b>Week 4</b> Sept 21-24	Regeneration of Forests: Natural vs. Artificial Regen, Site Prep and other Readings Tappeiner Chap 4; <b>Field Lab Regen and Planting plans – Ninemile Valley Tree Farm</b>
<b>Week 5</b> Sept 28-10/1	Regeneration of Forests: Natural vs. Artificial Regen, Site Prep and other Readings Smith Chap 7; Nyland Chap 4; <b>Field Lab Tentative Location – Ninemile Valley Tree Farm</b>
<b>Week 6</b> Oct 5-8	Stand density concepts; Natural self-thinning; Readings Tappeiner Chap 5; Smith Chap 6 pp147-156; <b>Field Lab Tentative Location – Lubrecht Experimental Forest</b>
<b>Week 7</b> Oct 12-15	Stand density concepts; PCT; Commercial Thinning Methods Weds Midterm Review (Covering material through 10/12) <b>Midterm Performance during LAB</b>
<b>Week 8</b> Oct 19-22	Application of thinning; Commercial thinning methods; Quantitative Assessment Readings TBA <b>Field Lab Tentative Location – TBA</b>
<b>Week 9</b> Oct 26-29	Developing Silvicultural Prescriptions to meet Multiple Objectives Seed-Tree & SW Systems, Regen under partial retention harvests Readings TBA <b>Field Lab Tentative Location – TBA</b>
<b>Week 10</b> Nov 2-5	Developing Silvicultural Prescriptions to meet Multiple Objectives Quantitative methods of managing Uneven-aged stands Readings TBA <b>Field Lab Tentative Location – TBA</b>
<b>Week 11</b> Nov 9-12	Developing Silvicultural Prescriptions & Quantifying Effects – Wildlife and Fuels Reduction Readings TBA <b>Field Lab Tentative Location – TBA</b>
<b>Week 12-14</b> <b>Week 15</b> <b>Finals Week</b>	Developing Silvicultural Prescriptions and Quantifying Effects (cont) Review and Synthesis <b>Final Exam Performance</b>

## Grading System

Written assignments, Lab exercises	-	45%
Field Lab Write-ups, Silvicultural Prescriptions, Discussion Questions/Problem sets, Quizzes		
Midterm Performances (2 midterms 15% each)	-	30%
Final exam	-	20%
Class participation	-	5%

Final Grade will be based on a standard +/- grading scale (e.g., 80-82.5= B-; 82.5-87.5=B; and 87.5-89.99 = B+)  
*Further information on assignments, due dates, etc. forthcoming.*

## UM Course Policies:

Students at the University of Montana have the responsibility to conduct themselves in a way that positively impacts the safety, welfare, or educational opportunities of others in the University community. Students are expected to act as responsible members of the community, respect the rights, privileges, and dignity of others, and refrain from actions that infringe upon the rights of others or interfere with normal University activities.

<http://www.umt.edu/vpsa/documents/Student%20Conduct%20Code%20FULL%20%20UPDATED%20AUG%2028%202012.pdf>

All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University. All students need to be familiar with the Student Conduct Code.

## **Important UM deadlines for changing course options:**

To 15 <sup>th</sup> instructional day	Students can drop classes on Cyberbear with refund	September 21 = last day
16 <sup>th</sup> to 45 <sup>th</sup> instructional day	Drop requires form with instructor and advisor signature, a \$10 fee from registrar's office, student will receive a 'W' on transcript, no refund.	September 22 through November 2
Beginning 46 <sup>th</sup> instructional day	Students are only allowed to drop a class under very limited and unusual circumstances. Not doing well in the class, deciding you are concerned about how the class grade might affect your GPA, deciding you did not want to take the class after all, and similar reasons are not among those limited and unusual circumstances. If you want to drop the class for these sorts of reasons, make sure you do so by the end of the 45 <sup>th</sup> instructional day of the semester. Requests to drop must be signed by the instructor, advisor, and Associate Dean and a \$10 fee applies.	November 3 – December 11