FORESTRY 349 PRACTICE OF SILVICULTURE
Fall 2020

Instructor Information

Instructor:	John Goodburn
Office:	Rm. 201A Forestry Building Telephone: 406-370-7257 mobile/text
Email:	john.goodburn@ umt.edu *(best way to reach Instructor)*
Office hours:	Friday. 8:30 am - 11:00 am *(or by advance appointment) via Zoom or outdoors*
Teaching Assistant:	Luke Rymniak; email: luke.rymniak@umontana.edu
Lecture and Discussion	Mon. & Wed. 10:00 -10:50 a.m. Remote via Zoom
Lab/Field Work	Thursday 2:00 - 5:50 p.m. Typically in Field, often at Lubrecht Exp. Forest

(Field labs will meet to load vehicles 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. 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.

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.

Learning Objectives

Learning objectives for students completing the course will include the following:

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

- develop 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 aesthetics;
- and 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 texts:

Ecological Silviculture: Foundations and Applications. Palik, D'Amato, Franklin, and Johnson. 2020.
The Practice of Silviculture: Applied Forest Ecology, 10th edition. Ashton, M. and M. Kelty. 2018.

Silviculture and Ecology of Western U.S. Forests, 2nd ed. Tappeiner, Maguire, Harrington, & Bailey 2015.

Silviculture: Concepts and Applications, 3nd edition. Nyland. 2016.
ALL Required Discussion Readings will be available via Moodle online, though you may want to pick up a copy of one of these texts for your own future use.

Additional Background texts and articles

Additional background reading for this semester will draw upon 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.

Labs

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

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. ***

TENTATIVE FIELD LAB SCHEDULE (THURS 2:00pm-5:50pm)

Wk 1	Aug 27	Lubrecht Experimental Forest
Wk 2	Sept 3	NO Lab –
Wk 3	Sept 10	Field Lab – Lubrecht Stand Inventory and Rx Development
Wk 4	Sept 17	Field Lab – week of Sept 17 (MT SAF Annual Meeting)
Wk 5	Sept 26	Field Lab – Lubrecht Regeneration Surveys, stocking, planting plans
Wk 6	- week 13	Field Labs plans under development (to be announced) Missoula County

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General Course Lecture Outline and Initial Reading Assignments

Tentative Lecture Schedule of Topics

Week/Date and Topic

Week 1 Aug 24	Introduction:Silviculture in relation to forest management. Stand Types, Objectives, Readings: Nagel & Ohara (Stand);Ashton & Kelty Chap 1; Nyland Chaps 1
Week 2 Aug 31	No Class Monday - Labor Day Holiday (No Class) Stand Types, Silvicultural Objectives, and Silvicultural Systems **Readings:** TBA and available on Moodle
Week 3 Sept 7	No Class Monday - Labor Day Holiday (No Class) Ecological Basis for Silviculture and its Role in Forest Management **Readings:** TBA and available on Moodle
Week 4 Sept 14	Growth of Forest Trees & Stands; Measures of Stand Density & Structure **Readings:** TBA and available on Moodle
Week 5 Sept 21	Early Silviculture: Regeneration of Forests: Natural vs. Artificial Regen, Site Prep and other **Readings:** TBA and available on Moodle
Week 6 Sept 28 on **Week 7** Oct 5	Seed-Tree & SW Systems, Regen under partial retention harvests **Readings:** TBA and available on Moodle Stand density concepts; Natural self-thinning; PCT; Commercial Thinning Methods Application of thinning; Quantitative Assessment
Week 8 Oct 12	Monday- Midterm Review (Covering material through 10/9) Wednesday - **Midterm Performance 1 – Weds, Oct 14**
Week 9 Oct 19	Developing Silvicultural Prescriptions to meet Multiple Objectives Readings TBA **Field Lab** ***Tentative Location – TBA***
Week 10 Oct 26	Developing Silvicultural Prescriptions to meet Multiple Objectives Quantitative methods of managing Uneven-aged stands Readings TBA **Field Lab** ***Tentative Location – TBA***
Week 11 Nov 2	Developing Silvicultural Prescriptions & Quantifying Effects – Wildlife and Fuels Reduction Readings TBA **Field Lab** ***Tentative Location – TBA***
Week 12-13	Developing Silvicultural Prescriptions and Quantifying Effects (cont) Review and Synthesis Note: Veteran's Day Holiday, Nov. 11. Last day of class Nov 18.

Finals Week Final Exam Performance 8:00am – 10:00 am Thur Nov 19th .

Grading System

Written assignments, Lab exercises Field Lab Write-ups, Silvicultural Prescriptions, Discussion Questions/Problem sets, Quizzes	50%
Midterm Performance	20%
Final exam	25%
Class participation	5%

Final Grade will be based on a standard +/- grading scale (e.g., 80-82= B-; 83-86=B; and 87-89.5 = B+)
Further information on assignments, due dates, etc. forthcoming.

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 request reasonable modifications.

The University of Montana assures equal access to instruction for students with disabilities in collaboration with instructors and Disability Services for Students, which is located in Lommasson Center 154. The University does not permit fundamental alterations of academic standards or retroactive modifications.. For more information, please consult Disability Services for Students.

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.

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:

Date	**Description**
To 15th instructional day	Students can drop classes on CyberBear with refund & no "W" on Transcript
16th to 45th instructional day	A class drop requires a form with instructor and advisor signature, a $10 fee from registrar's office, student will receive a 'W' on transcript, no refund.
Beginning 46th 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, switching majors, 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 45th instructional day of the semester. Requests to drop must be signed by the instructor, advisor, and Associate Dean (in that order) so if you pursue this request, leave sufficient time to schedule meetings with each of these individuals (generally this will take at least 3-5 working days). A $10 fee applies if approved. Instructors must indicate whether the individual is Passing or Failing the class at the time of request.

Good Luck and best wishes for an interesting, productive, and fulfilling semester in all your courses. Prof John G