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FORS 347.B00: Multiple Resource Silviculture

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FORS 347 MULTIPLE RESOURCE SILVICULTURE

Course Syllabus - SPRING 2021

Instructor Information:

Instructor: John Goodburn

Email: john.goodburn@cfc.umt.edu

Planned Office hours: Monday. 1:00pm-3:00pm

Office: Room 201A Forestry Building

Telephone: 406-370-7257 (mobile/text)

(or by advance appointment)

Teaching Assistant: Luke Rymniak: email: luke.rymniak@umontana.edu

Meetings:

Lecture and Discussion Tu, Th 10:00-10:50 in CHCB or remote

Lab/Field Work Tues. 1:00-4:50pm (STONE 304) or remote

Course Description:

FORS 347 provides an introduction to the concepts and application of silvicultural techniques to forest ecosystems to meet multiple resource objectives. This course deals with the culture of trees in forest stands. It provides an overview of silvicultural principles and practices, and their application to control the establishment, structure, and development of forest stands to satisfy a range of possible objectives (biological, economic, and social) by drawing on an understanding of forest stand dynamics and patterns of stand development.

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, and necessarily considers forest dynamics and treatment effects at multiple scales. 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.

We 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.

"All silviculture is local" in the sense that practices are specific to the ecology and ownership of the specific region, practices and examples from other regions will be included, but the primary emphasis will be on the application of silvicultural treatments to forests of western North America.

Course Objectives - Knowledge, Skills, and Abilities:

1. Understand western U.S. tree identification, silvics, properties, and uses
2. Become familiar with the components of silvicultural systems and silvicultural prescriptions. Possess the ability to prepare and quantitatively contrast silvicultural alternatives.
3. Be able to characterize stands with qualitative descriptions and quantitative measures of trees and forest stand structure
4. Be familiar with soil properties and their relation to forest growth and site quality.
5. Understand concepts of forest stand dynamics and their relation to silvicultural practices. Be familiar with the development patterns of pure and mixed forest stand types.
6. Understand the proper conduct of intermediate (tending) treatments – thinning & pruning – and their effects on stand density, stand growth, and tree quality.
7. Understand even-age and uneven-age silvicultural systems (regeneration methods) and their variations for pure and mixed stands, for common Montana forest types.

8. Be knowledgeable of reforestation planning and practices. Understand elements of natural regeneration and the regeneration ecology of trees.
9. Be familiar with diverse applications of silviculture (including forest restoration) and regional variations in practices applied to various North American forest types.
10. Be capable of interacting with professional silviculturists/foresters

Moodle and Email will be will be the primary mechanism through which course materials, updates, assignments, news and readings are disseminated.

Readings

Readings will be posted on the course Moodle site. There is no required textbook, though we will draw primarily from the following texts:

- *The Practice of Silviculture – Applied Forest Ecology 10th edition* by Ashton and Kelty (2018, Wiley).
- *Silviculture: Concepts and Applications, 2nd ed.* by Nyland (2009, Waveland Press).
- *Forest Stand Dynamics (Update Ed.)* by Oliver and Larson (1996, Wiley & Sons).

Labs

* For Field Labs, we will meet in front of the Campus Security Office just east of the Football Stadium (where campus parking administered). Some labs will be meeting indoors, particularly at the beginning of the semester. Such arrangements will be announced in class. The field lab exercises are considered an essential component of learning forest ecology and integrating various concepts discussed in lectures. Labs are designed to introduce you to many of the key methods used to characterize ecosystem composition, structure, and function.

* Attendance at all 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 lab for some reason.

* Unless lab is scheduled to be indoors, always wear appropriate field clothes and footwear (boots) to labs. If rain, sleet, or snow are forecast, bring appropriate gear and do not expect lab to be canceled on account of bad weather.

Class Participation is encouraged and expected. 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. Approximately 2% of your course grade will be based on class participation.

Contacting You Via your UMONTANA Email Account: In order for me to contact you with any changes in plans or to send files, I will expect that you check your University email account. If you have a preferred email account, such as gmail, please arrange for any messages sent to your UM account to be forwarded to your preferred account so that you receive all messages that I might send. Thank you, and please let me know if you have any questions/problems with this.

Please Drop in or drop me a line. You are encouraged to ask questions and initiate discussions both in and out of class. No need to wait until exam to ask questions! I am available during office hours or other times (by advance appointment) if you cannot meet during posted hours. Please feel free to contact me via email to clarify questions.

Using Email to Contact me works much better for me than office phone, and we can often address questions through your email queries.

Grading System:

Weekly to Bi-weekly Written assignments (~10 assignments of various types including) Field Lab Write-ups, Discussion Questions/Problem sets, Quizzes Silvicultural Prescription(s)	55%
Midterm Performance	17%
Final exam	25%
Class participation	3%

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.

Tentative Lecture Schedule of Topics:

Part I – Forestry Foundations

Week 1-2 Introduction: Silviculture in relation to forest management. Stand Types, Objectives, Readings: Nagel & Ohara (Stand); Ashton & Kelty Chap 1; Nyland Chaps 1

Week 3-4 Tree Biology, Forest Types, Forest Site, Soils & Productivity,
Jan 26-2/4 **Readings:** TBA and available on Moodle

Week 5-6 Tree and Stand Descriptions, Characterization and Dynamics
Feb 9 -18 Growth of Forest Trees & Stands; Measures of Stand Density & Structure

Part II – Silviculture Fundamentals and Ecosystem Applications for Multiple Objectives

Week 7-8 Ecological Basis for Silviculture and its Role in Forest Management
2/23 - 3/4 Stand Tending Treatments, Thinning Methods and Objectives
Midterm Tuesday March 2nd during lab

Week 9-11 Silvicultural Systems & Regeneration
3/9 - 3/25 Early Silviculture: Regeneration of Forests: Natural vs. Artificial Regen, Site Prep and other

Week 12-13 Seed-Tree & SW Systems, Regen under partial retention harvests
3/30 – 4/8 Developing Silvicultural Prescriptions to meet Multiple Objectives

Week 14-15 Developing Silvicultural Prescriptions to meet Multiple Objectives
4/13 – 4/22 Review and Synthesis

Finals Week Final Exam Performance 8:00am – 10:00 am Tues April 27 .

Tentative Field Lab Schedule (TUES 1:00-4:50pm) subject to covid related changes:

Wk 1	NO Lab –
Wk 2	Remote zoom Lecture/Discussion (2 hr)
Wk 3	Field Lab – on Campus outdoors (meet at Stone 304)
Wk 4	Field Lab – on Campus outdoors (meet at Stone 304)
Wk 5-15	TBA

**Further details and Dates to be provided via Moodle*

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 15 th instructional day	Students can drop classes on CyberBear with refund & no “W” on Transcript
16 th to 45 th 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 46 th 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.