FORS 341 Timber Harvesting and Forest Roads
Spring 2024

Course and Instructor Information

Instructor: Marc Vessar
Office: none
Email: marc.vessar@mso.umt.edu
Office Hours: by appointment

TA: Samantha Westfahl (Mon/Wed Lab)
Email: samantha.westfahl@umconnect.umt.edu
Office Hours: By appointment

TA: Levi Weatherd (Tues Lab)
Email: levi.weatherd@umconnect.umt.edu
Office Hours: By appointment

Class Times: Lecture: MW 9:00-9:50 in FOR 106
Lab: M 12:30-4:20 in Schreiber 303 or at motor pool (default)
                 T 12:30-4:20 in FOR 206 or at motor pool (default)
                 W 12:30-4:20 in LA 303 or at motor pool (default)

Required Text: Water Quality BMPs (Best Management Practices) for Montana Forests
                 Montana Guide to the Streamside Management Zone Law and Rules
                 (these will be distributed in class)
                 Other readings as assigned (available in class Moodle)

Course Description:

An overview of harvesting system capabilities and selection for multiple resource objectives. Fundamentals of forest road management. Best management practices as they apply to forest operations in Montana and the western US.

Course Learning Objectives:

At the end of this course, students will be able to:
- Identify harvesting systems common in North America
- Understand basic safety principles applied to harvesting operations
- Match stand, terrain, and management goals to appropriate harvesting systems
- Have a working knowledge of forest road form and function
- Understand how road management decisions impact the safety, cost effectiveness, and environmental performance of forest road systems
- Demonstrate improved technical writing skills

FORS 341 is one of the WA Franke College of Forestry and Conservation's distributed advanced writing courses.
    Approved writing course learning outcomes:
- Use writing to learn and synthesize new concepts

- Formulate and express written opinions and ideas that are developed, logical, and organized
- Compose written documents that are appropriate for a given audience or purpose
- Revise written work based on constructive feedback
- Find, evaluate, and use information effectively and ethically
- Begin to use discipline-specific writing conventions
- Demonstrate appropriate English language usage

Advanced Writing Requirement in the Major Outcomes
- Identify and pursue more sophisticated questions for academic inquiry
- Find, evaluate, analyze, and synthesize information effectively from diverse sources
- Manage multiple perspectives as appropriate
- Recognize the purposes and needs of discipline-specific audiences and adopt the academic voice necessary for the chosen discipline
- Use multiple drafts, revision, and editing in conducting inquiry and preparing written work
- Follow the conventions of citation, documentation, and formal presentation appropriate to that discipline
- Develop competence in information technology and digital literacy

Course Policies:
- If you feel sick and/or are exhibiting COVID symptoms, please don't come to class and contact the Curry Health Center at (406) 243-4330.
- If you are required to isolate or quarantine, you will receive support in the class to ensure continued academic progress. Contact Marc ASAP to make alternate arrangements for class and/or lab attendance.
- UM recommends students get the COVID vaccine and booster. Please direct your questions or concerns about vaccines to the Curry Health Center.
- Drinking liquids and eating food is discouraged within the classroom.
- Please note this class may be streamed and/or recorded.
- All assignments are due at the BEGINNING of class or lab on the assigned date. Unless otherwise specified, all lab assignments are due one week from when they are initially assigned.
- Unless otherwise specified, all assignments are to be submitted electronically through the course Moodle.
- Late assignments will be penalized 20% of the possible points per day.
- All work must be neat, legible and complete.
- **In order to be afforded accommodation, all absences from lab activities or exams must be arranged PRIOR to the missed class.**
- While you are allowed to work with fellow students on individual assignments, all submitted assignments must represent your own individual work.
- Students with disabilities may request reasonable modifications by contacting me. The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and Disability Services for Students (DSS). "Reasonable" means the University permits no fundamental alterations of academic standards or retroactive modifications. 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 or (406)243-2243.
- 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. The Code is available for review online at: Student Conduct Code.

- Any student who faces challenges securing their food or housing and believes this may affect their performance in the course is urged to contact the Office of Student Success for support. Furthermore, please notify the professor if you are comfortable in doing so. This will enable her to provide any resources that she may possess.

Lab policies:

- No personal vehicles are allowed unless prearranged.
- No pets are allowed in vehicles or on field labs. If a service animal is required, arrangements must be made ahead of time and expectations agreed upon to minimize distractions and keep all beings involved safe.
- Labs will only be canceled based on unexpected operational challenges experienced by our host or extremely hazardous driving conditions. These cancelations will be communicated to students via official UM email as soon as a cancelation is known as well as in lecture.
- It is the students' responsibility to dress appropriately for weather and field conditions. This includes warm boots with adequate traction on snow and ice. Expect each lab to include 1-2 hours out of vehicles observing active forest operations and/or forest roads, both walking over rough terrain and standing still.

Important deadlines for changing course options

Feb 7	Last day to drop classes on Cyberbear. Last day to drop a course without a "W" assigned to the course.
Feb 8 – March 28	(45th instructional day). Dropping a course requires a drop/add form **with instructor and advisor signature**. There is a $20 fee at the registrar's office. The course will appear on your transcript with a grade of "W".
March 29 – May 3	At this point in the semester 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, or deciding you want to change majors are not among those limited and unusual circumstances. If you want to drop a class for these sorts of reasons, make sure you do so before March 28.

Grading:

Midterm/Final exams:	20%
Lab worksheets (12-14):	20%
Lab reports (2)	20%
Peer-learning project:	20%
Road project:	20%

Please note, this class is offered for traditional letter grade only, it is not offered under the credit/no credit option. A standard +/- grading scale will be used. Final course grades will be adjusted down (never up) if necessary; a curve will not be applied to individual exams or assignments.

Midterm exam: This in-class exam will cover harvesting systems and will be composed of short-answer questions. A previous years' exam will be distributed as a study guide.

Lab worksheets: After each lab, students will complete a worksheet via Moodle prior to class (9 am) the Wednesday following lab. This worksheet will include the following:

- Landowner and contractor names
- Equipment used and task(s) performed by each
- Order of operations
- Goal(s) of the operation (i.e. thinning for fuel reduction, salvage logging, road maintenance to reduce environmental impacts, etc.)
- Special considerations and how these considerations are met with the specific operation (i.e. riparian areas, sensitive soils, neighbor concerns, aesthetics, etc.)

Lab reports: Each student will complete two full lab reports throughout the semester, one each on a harvesting and a road lab. Students may select any one harvesting lab and any one road lab to submit as a full report. Note that submission of a lab worksheet is still required. Each report should be 5-10 pages in length, covering the information required in the lab worksheets in detail as well as any additional observations deemed noteworthy. Illustrative photos are encouraged. Two drafts of each report are required:

- First draft, due by class (9 am) the Wednesday the week following the lab that is the subject of the report. This initial draft should be submitted via email to marc.vessar@umtconnect.umt.edu AND your lab TA samantha.westfahl@umconnect.umt.edu or levi.weatherd@umconnect.umt.edu. This first draft will be graded for content and returned with comments by COB on the Friday following submission (50% of grade).
- A revised second draft is due by class (9 am) on the following Wednesday. This final draft should be submitted via email to marc.vessar@umtconnect.umt.edu AND your lab TA samantha.westfahl@umconnect.umt.edu or levi.weatherd@umconnect.umt.edu.   This final draft will be graded for quality of writing (50% of grade).

Peer learning project: This project includes both a group and an individual component. Please see the assignment description posted on Moodle.

Schedule of Topics:

Week of:	Monday lecture	Wednesday lecture	Lab
1/22	Course introduction	Hand Felling/processing	Video lab from 1930's, 1980'
1/29	Soil mechanics for in-woods operations, Mechanical felling and processing	Ground skidding	Humboldt video lab #2 Shovel logging
2/5	Ground skidding safety and BMPs	Tethered/steep-slope ground-based systems	Active Operation—Potomac Flats
2/12	Biomass and mastication	Skyline	Active CTL operation – BCCA near Ovando
2/19	No Class	Best Management Practices and SMZs	Active skyline operation – Burr 4 near St. Regis
2/26	Skyline/Helicopter	Logging Safety	Active Operation—Grapple on Excaliner near St. Regis

Week of:	Monday lecture	Wednesday lecture	Lab
3/4	Logging Systems	Logging Costs/Loading and hauling	Model yarder (on campus)
3/11	Review	Mid-term exam	No Labs
3/18	Spring Break	Spring Break	None
3/25	Soil mechanics for forest roads	Road form and function	Road introduction – Miller Creek
4/1	Road drainage	Stream crossings – culverts	Road drainage
4/8	Stream crossings – sizing and fish passage	Stream crossings – bridges and fords	Culvert design
4/15	Stream crossings – temporary options	Crossing selection	Stream crossings
4/22	Road removal	Road removal	BMP road evaluation (TBD)
4/29	Road management	Road management - upgrades	Active road construction/removal (TBD)
5/2	Road management – other considerations	Review	Operational planning exercise
5/6	Final exam period Tuesday 5/7/2024, 10:10-12:10		