FOR 202 Forest Mensuration
Spring 2024

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Office hours: 2:00-4:00 Wed or by appt

Lectures: M, W 11:00-12:00 Forestry 206

Labs: Section 1 M 3:00-6:00 Stone 106 or outside somewhere
Section 2 T 1:00-4:00 Stone 106 outside somewhere

Prerequisites:
Forest Biometrics (FOR 201) **or** STAT 216 (MATH 241) **or** SOCI 202 (SOC 202) **or** WILD 240 (WBIO 240); and M 121 and M 122 (MATH 111 and MATH 112) **or** M 151 (MATH 121) **or** M 162 (MATH 150) **or** M 171 (MATH 152) **or** M 172 (MATH 153).

Learning Outcomes (you will be able to):
1) Orient yourself in the woods
2) Measure tree and stand characteristics
3) Understand common sampling and statistical strategies used in forest inventory
4) Know how to estimate merchantable timber volumes and board feet in stands
5) Understand principles of tree and stand growth as well as be able to estimate site quality.

Textbook (optional and will be on reserve in the library): Forest Mensuration, 4th ed. By Husch, Beers, and Kershaw. I will provide notes via Moodle.

Tools:
Forestry requires specialized equipment. I don't require a textbook for this course but I do require that all students purchase a loggers tape at a minimum and if you plan to continue in forestry you should also own a clinometer:

1) **Spencer 75' loggers tape (model 975dc)** with feet/10ths on one side and diameter inches on the other. I recommend buying this from Baileys (~ $70) because it comes with a tape nail installed whereas it needs to be purchased separately and installed from other companies:

https://www.baileysonline.com/spencer-75-diameter-tape-model-975dc-feet-10ths-with-bailey-nail.html

2) **Suunto PM-5 clinometer** (SS011104010 SUUNTO PM-5/66 PC OPTI CLINOMETER) in percent and topo scale (~$190). You can find these at Forestry Suppliers or Amazon. Make sure that the model you are purchasing has percent and topo scale.

Grading:
There will be 460 points possible in the course. There will be two exams worth 100 points each. There will be 8 lab exercises worth 20 points each. Lastly, there will be a final group project worth 100 points. Letter grades will be based on the percentage of points earned and will follow the standard academic scale: A (>90%); B (80-89%); C (70-79%); D (60-69%); F (<60%)

Exams:

There will be two mid-term exams. I will provide a list of relevant equations.

Labs:
There will be 8 labs that consist of field work, problem solving, and computing. Some of these will be individual assignments. Some will be group assignments. Labs will be due at the beginning of the following week's lab unless otherwise noted. Late assignments may be penalized. If a student needs to miss a lab, **inform the TA ahead of time** so arrangements can be made.

Final Project: The final project will synthesize much of the techniques and skills you learn over the period of the course. Groups will design and implement a forest inventory for a forest stand followed by analysis of that data. The final project will require extensive planning. During the week of and prior to finals, each group will present their approach, findings, and conclusions in both a written and oral format. Oral and written presentations will be graded based on their thoroughness as well as their technical and professional merits. Of the 100 points awarded, 70 will be for individual performance, while the remainder (30 points) will be for group performance.

Labs will require the use of Microsoft Excel. Students can install O365 on up to 5 devices for free using their UM account with these steps: https://umtqsg.atlassian.net/l/c/AuenhhD1

Tentative Calendar:

Week	Date	Lecture	Lab
1	Jan 22	Introduction/Scales of measurements/ geometry and trigonometry review/Tree attributes	**none**
2	Jan 29	Tree attributes/tree form	Lab 1 Tree Measurements
3	Feb 5	Determining tree volume	Lab 2 Tree Taper
4	Feb 12	Determining tree volume and weight	Lab 3 Log Rules and Scaling
5	Feb 19	Sampling and statistical concepts –means and measures of dispersion, frequencies, sample size, error. **2/19 Presidents Day (no classes)**	none
6	Feb 26	Stand attributes-composition, age, diameter **Mid term exam #1: Wed Feb 28th**	Lab 4 distance, bearing, and area
7	Mar 4	Stand attributes-height, density and stocking, competition	Lab 5 Stand Tables
8	Mar 11	Stand attributes – site quality, site index, volume	Lab 6 Combined stand and stock tables
9	Mar 18	**3/18 Spring Break. No classes**	**None**
10	Mar 25	Sampling – random, systematic, stratified random,fixed area plots, stand and stock tables	Lab 7 Simple random sampling with fixed area plots
11	April 1	Sampling-variable probability sampling,	Lab 8. Point sampling

		distance based sampling, Timber cruise design	
12	Apr 8	Tree and stand growth, growth and yield models **Field Trip for Final Project: Sat Apr 13**	
13	Apr 15	Forest fuels and sampling **Mid term exam #2: Wed April 17th**	**Exam review**
14	Apr 22	Landscapes and measurements	**Final project preparation**
15	Apr 29	Advanced topics in sample design	**Final project presentations**

Students with Disabilities

- Students with disabilities may request reasonable modifications by contacting me. 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.

Student Conduct Code

- 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.

Grading Option

- Please note, this class is offered for traditional letter grade only, it is not offered under the credit/no credit option.

Course Withdrawal Deadlines

Important Dates Restricting Opportunities to Drop a Course Spring 2024:

https://www.umt.edu/registrar/calendar/spring.php