

**SYLLABUS FOR 322/522 (FOREST MENSURATION)****Fall 2019****Instructor**

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**Office hours**

Tuesday (2:00 to 3:00 pm)  
Thursday (2:00 to 3:00 pm)  
By appointment.  
I will be happy to answer some quick questions any time, please feel free to come and ask me if I am available in my office.

**Learning objectives**

Students in this course will learn forest mensuration principles and how to properly apply them in solving/addressing natural resource-based problems/needs. FOR 322/522 is one of the classes that contains materials you will be tested on during the Forestry Basic Skills exam (the junior-level exam and the FOR 449 course). Students will learn the following skills from FOR 322/522, these skills are also relevant for the basic skills exam. After the course, students will be able to:

- (1) apply basic sampling designs for forest inventory,
- (2) collect spatial data, map forest area to be sampled, and lay out and navigate to sampling points,
- (3) apply both fixed radius plot sampling and variable radius plot sampling (point sampling) concepts and analyze inventory data therein,
- (4) identify/use/define terminology commonly used in forest measurements,
- (5) identify/describe/employ measures of site index, stocking, and stand density
- (6) apply 1-inch and 2-inch DBH classes and height classes,
- (7) describe proper use of common forestry equipment (diameter tape, merriitt hypsometer, prism, clinometers, Biltmore stick, laser equipment),
- (8) determine volume of standing trees and logs,
- (9) describe, use and convert measures of volume, weight, length, and area,
- (10) describe or compare stem form/taper via Girard form class,

- (11) Identify merchantability standards for hardwood and softwood sawtimber and pulpwood, and  
 12) apply basic concepts about growth and yield

**Prerequisite**

MATH 109 Math. for the Social and Mgmt. Sciences or MATH 111 Appl. Calculus; FOR 232 Dendro. and Silv.; MATH 355 Elem. Stat. Methods or FOR 321 Forest Biometry; CNR major or written consent of instructor

**Required text**

Burkhart, H. E., T. E. Avery and B. P. Bullock. 2019. Forest Measurements. 6<sup>th</sup> ed. Waveland Press Inc. Long Grove, IL. 434 p.  
 ISBN-10: 1-4786-3618-1  
 ISBN-13: 978-1-4786-3618-2

**Reference text**

Husch, B., T. W. Beers and J. A Kershaw, Jr. 2003. Forest Mensuration. 4<sup>th</sup> ed. John Wiley & Sons, Hoboken, NJ. 443 p. ISBN:0471018503

Reed, D. D., and G. D. Mroz. 1997. Resource Assessment in Forested Landscapes. John Wiley & Sons, Inc., 386 p.

**Class locations and times****Lecture (50 minutes):**

TNR 120

Period 1: Tuesday (16:00-16:50)

Period 2: Thursday (16:00-16:50)

**Lab (2 hrs and 50 minutes)\*:**

Lab 1 (Section 1): Wednesday, 9:00-11:50 (TNR 361)

Lab 2 (Section 2): Thursday, 9:00-11:50 (TNR 361)

Lab 3 (Section 3): Friday, 12:00-14:50 (TNR 240)

Lab 4 (Section 4): Wednesday, 13:00-15:50 (TNR 361)

**\*Variable (Some labs require computers; therefore, rooms for those labs will be announced via email, please check your email before coming to a lab)**

**Quizzes, exams, project**

This class will have three quizzes, three exams, lab reports, and occasional homeworks. Grades will be distributed among these different tasks. Quizzes will be no more than 10 minutes. Exams will be 50 minutes (regular class hour). Each homework and lab reports will be due a week from the assigned date. The final exam will be comprehensive.

The tables below show the tentative schedules for Lectures and Labs. The schedules might change depending on what we achieve in prior classes or discovery of other interesting topics.

<b>LECTURES</b>			
<b>Week</b>	<b>Dates</b>	<b>Day 1 (Tuesday)</b>	<b>Day 2 (Thursday)</b>
1	Sep 2-6	Introduction, Course Overview and Syllabus Distribution/ Description, Introduction to Mensuration (Chapter 1)	Review Basic Stats and Measurement Concepts (Chapter 1 and 2)
2	Sep 9-13	Review Basic Stats and Measurement Concepts (Chapter 1 and 2)/ Measuring Standing Trees (Chapter 6)	Measuring Standing Trees (Chapter 6)
3	Sep 16-20	Measuring Standing Trees (Chapter 6)	Measuring Standing Trees (Chapter 6)
4	Sep 23-27	Measuring Standing Trees (Chapter 6)/Log and Tree Volume (Chapters 4,5, and 7)	Log and Tree Volume (Chapters 4, 5, and 7) ( <b>QUIZ 1</b> )
5	Sep 30-Oct 4	Log and Tree Volume (Chapters 4,5 and 7)	Log Scaling and Log Rules (Chapter 4 and 5)
6	Oct 7-11	Log Scaling and Log Rules (Chapter 4 and 5)	Log grading (Chapter 5)
7	Oct 14-18	<b>EXAM 1</b>	Weight Scaling (Chapter 4,5, and 7)
8	Oct 21-25	Standing Tree Volume (Chapter 7)	Standing Tree Volume (7)
9	Oct 28-Nov 1	Sample size/Intro to Forest Inventory/Sampling Design (Chapters 8, 9, 11, 12)	Sample size/Intro to Forest Inventory/Sampling Design (Chapters 8, 9, 11, 12) Summarizing data/Fixed Area Plot (Chapter 11) ( <b>QUIZ 2</b> )
10	Nov 4-8	Fixed area plot (Chapter 11)	Fixed area plot (Chapter 11)

11	Nov 11-15	Variable Radius Plot (Chapter 12)	Variable Radius Plot (Chapter 12)
12	Nov 18-22	<b>Exam 2</b>	Site Quality, Stand Density and Stocking (Chapter 14)
13	Nov 25-29	Site Quality, Stand Density and Stocking (Chapter 14)	<b>THANKSGIVING</b>
14	Dec 2-6	Tree Growth (Chapter 15)	Growth and Yield (Chapter 16) <b>Quiz 3</b>
15	Dec 9-13	Growth and Yield (Chapter 16)	<b>Review</b>
16	Dec 16-20 Final Exam Period		<b>Comprehensive Final Exam (Thursday, December 19 from 17:00 to 19:00 in TNR 120)</b>

<b>LABS</b>		
<b>Week</b>	<b>Dates</b>	<b>Labs</b>
1	Sep 2-6	General Overview of lab, Excel software (Assignment)
2	Sep 9-13	GPS and GIS lab* (Assignment)
3	Sep 16-20	GPS and GIS lab* (Assignment)
4	Sep 23-27	Measuring tree diameter and height (Lab report)*
5	Sep30-Oct4	Reading Maps (Land Survey, Topo Maps)
6	Oct 7-11	Scaling lab (Volume and Weight Estimation) (Lab report)*
7	Oct 14-18	Basic Statistics /Preparing for the sampling lab (Boundary Delineation and Generating Grids)
8	Oct 21-25	Fixed Area Plot Sampling (Lab report)*
9	Oct 28-Nov1	Variable Radius Plot Sampling (Lab report)*
10	Nov 4-8	Fixed Area Plot/Variable Radius Data Analysis
11	Nov 11-15	Stratified Sampling (Homework)*
12	Nov18-22	Growth Lab (Lab Report)*
13	<b>Nov 25-29</b>	<b>THANKSGIVING (No Labs)</b>
14	Dec 2-6	Growth and Yield Lab (Lab report)
15	Dec 9-13	Coarse woody debris and snags sampling (Lab report)*

**Labs**

Labs marked with asterisks indicate some, or all, of that lab will be outdoors. For such labs, you are expected to dress appropriately for the weather/conditions so that you will be comfortable while working in the field. Be prepared for mosquito activity in early to late Fall. Watch the weather

forecast and be prepared for cold, rain, and snow. A warm hat, gloves, and layered clothing are important for cold weather. Rain gear is important for rainy weather. You are strongly encouraged to wear field shoes/boots of some kind for all outdoor labs. **Hard hats will be required for these labs.**

**Readings** You are expected to read the assigned readings before coming to the labs and lectures. Assigned readings are in the syllabus, will be announced during the class and will be posted in CANVAS. This will facilitate your learning experience.

**Exam policy** If you miss an exam or quiz without informing the instructor beforehand, there will be no make-up exam/quiz in that case. You will get zero for that particular exam/quiz. If you miss the exam/quiz because of medical reasons, family emergency, or University sponsored activities, you should provide written evidence of so. If the instructor is satisfied with your reasoning, you may be allowed a makeup task.

**Attendance policy** Attendance is a very important requirement for this class. You are not allowed to miss a class, especially labs, unless there is a genuine reason (for e.g. Medical emergency, Family Emergency, or University sponsored activities). If you have to miss a class you should inform the instructor beforehand with genuine reason and evidence of so. If you miss lab classes and did not submit the required assignments, you will not receive grade for that particular lab/assignment. **I WILL TAKE ATTENDANCE DURING EVERY LAB.** I reserve the right to deduct points for unexcused lab absences and lack of professionalism.

**Grading** Each of the quizzes is 10 point (**Total 30 points**). Exams 1, 2, and 3 are 50 points each (**Total 150 points**). Furthermore, there will be a series of lab assignments (individual and group assignments) throughout the semester (Total 120 points), as well as a group lab report based on the plot/point sampling labs, worth **25 points**. I may also offer extra credit assignments as I see fit. Finally, attendance and professionalism will be worth **15 points**.

Grades will be distributed among the following:

**Total – 340 points**

**Attendance/Professional points –15 points**

**Quizzes - 30 points**

**Exams – 150 points**

**Lab reports and assignments – 145 points**

I will round the cumulative percentages to the nearest tenth and assign letter grades as follows:

91.1% or higher	A
89 % to 91 %	A-

87 % to 88.9 %	B+
81.6% to 86.9%	B
79.6% to 81.5%	B-
77.6% to 79.5%	C+
71.6% to 77.5%	C
69.6% to 71.5%	C-
67.6% to 69.5%	D+
61.6% to 67.5%	D
59.6% to 61.5%	D-
Less than 59.6%	F

**Student code of conduct** You should be familiar with rules of academic misconduct and University of Wisconsin System Code. You should not claim somebody else’s work as yours without authorization or citation. The work you submit should be your original. You should not consult with others during exams or homework unless in cases where the instructor grants permission of consultation. Be aware of plagiarism. Read **“Professionalism Statement”** below

**For students with disabilities** The university has a legal responsibility to provide accommodations and program access as mandated by Section 504 and the Americans with Disabilities Act (ADA). The university’s philosophy is to not only provide what is mandated, but also convey its genuine concern for one’s total well-being. If accommodations are needed, please contact the instructor as well as the Disability and Assistive Technology Center, Room 609 in the Albertson Hall. You can also call at 715 346 3365.

For more information about the law and Regency policy, see:  
<https://www.uwsp.edu/datc/Pages/law-regency-policy.aspx>

Additional information is available at:  
<http://www.uwsp.edu/special/disability/>

**Field requirements** Some of the labs for this course are outdoors. You should be properly dressed for the field work (for e.g. heavy boots and pants). You should follow the safety instructions at all times.

**Tips for success** Regular reading, regular class attendance, notes taking in the class, asking questions, participating in discussions, and timely submission of lab reports and homework are some of the tips for success in this class. Don’t hesitate to consult your instructor about any confusion; my priority is to help you succeed in this course.

**CANVAS** It is important to regularly follow course CANVAS. Many important announcements, readings, homework and labs will be available on CANVAS.

### **Professionalism Statement (UWSP Community Bill of Rights and Responsibilities)**

Be aware of plagiarism. Respect ideas generated by others and give due credits. Cheating is strictly prohibited. Please read the following links regarding UWSP policies.

UW-Stevens Point values a safe, honest, respectful, and inviting learning environment. In order to ensure that each student has the opportunity to succeed, we have developed a set of expectations for all students and instructors. This set of expectations is known as the Rights and Responsibilities document, and it is intended to help establish a positive living and learning environment at UWSP. Click here for more information:

<http://www.uwsp.edu/acadaff/HLCSelfStudy/Community%20Rights%20and%20Responsibilities%202011.pdf>

Academic integrity is central to the mission of higher education in general and UWSP in particular. Academic dishonesty (cheating, plagiarism, etc.) is taken very seriously. Don't do it! The minimum penalty for a violation of academic integrity is a failure (zero) for the assignment. For more information, see the UWSP "Student Academic Standards and Disciplinary Procedures" section of the Rights and Responsibilities document, Chapter 14, which can be accessed here:

<http://www.uwsp.edu/acadaff/HLCSelfStudy/Community%20Rights%20and%20Responsibilities%202011.pdf>

Some excerpts from Chapter 14 of Rights and Responsibilities document

UWSP 14.03 ACADEMIC MISCONDUCT SUBJECT TO DISCIPLINARY ACTION.

(1) Academic misconduct is an act in which a student:

- (a) Seeks to claim credit for the work or efforts of another without authorization or citation;
- (b) Uses unauthorized materials or fabricated data in any academic exercise;
- (c) Forges or falsifies academic documents or records;
- (d) Intentionally impedes or damages the academic work of others;
- (e) Engages in conduct aimed at making false representation of a student's academic performance; or

- (f) Assists other students in any of these acts.
  - (g) Violates electronic communication policies or standards as agreed upon when logging on initially (See [uwsp.edu/it/policy](http://uwsp.edu/it/policy)).
- (2) Examples of academic misconduct include, but are not limited to: cheating on an examination; collaborating with others in work to be presented, contrary to the stated rules of the course; submitting a paper or assignment as one's own work when a part or all of the paper or assignment is the work of another; submitting a paper or assignment that contains ideas or research of others without appropriately identifying the sources of those ideas; stealing examinations or course materials; submitting, if contrary to the rules of a course, work previously presented in another course; tampering with the laboratory experiment or computer program of another student; knowingly and intentionally assisting another student in any of the above, including assistance in an arrangement whereby any work, classroom performance, examination or other activity is submitted or performed by a person other than the student under whose name the work is submitted or performed.

#### UWSP 14.04 DISCIPLINARY SANCTIONS.

- (1) The following are the disciplinary sanctions that may be imposed for academic misconduct in accordance with the procedures of s. UWSP 14.05, 14.06 or 14.07:
- (a) An oral reprimand;
  - (b) A written reprimand presented only to the student;
  - (c) An assignment to repeat the work, to be graded on its merits;
  - (d) A lower or failing grade on the particular assignment or test;
  - (e) A lower grade in the course;
  - (f) A failing grade in the course;
  - (g) Removal of the student from the course in progress;
  - (h) A written reprimand to be included in the student's disciplinary file;
  - (i) Disciplinary probation; or
  - (j) Recommendation of Suspension or expulsion from the university.
- (2) One or more of the disciplinary sanctions listed in sub. (1) may be imposed for an incident of academic misconduct.

#### **Forestry Basic Skills Exam Topical Areas**



FOR 322 is one of the classes that compose the knowledge base tested as part of the Forestry Basic Skills exam (the junior-level exam and the FOR 449 course). Therefore, many students enrolled in this class take these exams. Basic skills from FOR 322 covered on these exams focus on one's ability to correctly:

- (1) apply both fixed radius plot sampling and variable radius plot sampling (point sampling) concepts, respectively, and analyze inventory data therein,
- (2) identify/use/define terminology commonly used in forest measurements,
- (3) identify/describe/employ measures of site index.
- (4) apply 1-inch and 2-inch DBH classes and 10-foot height classes,
- (5) describe proper use of common forestry equipment (diameter tape, prism, clinometers, Biltmore stick)
- (6) determine cubic foot volume of logs,
- (7) describe, use and convert measures of volume, weight, length, and area,
- (8) describe or compare stem form/taper via Girard form class, and
- (9) identify merchantability standards for hardwood and softwood sawtimber and pulpwood.

Additionally skills utilized in FOR 322 and also covered in the Basic Skills exam include correctly: using map scales to determine distances or areas, identifying features as found on air photos and topographic maps, and converting between azimuths and bearings.

### **Cell Phone Policy**

Please do not use cell phones during the class or the lab.

### **Emergency Procedures**

“In the event of a medical emergency, call 911 or use red emergency phone located outside TNR 151 and 172 . Offer assistance if trained and willing to do so. Guide emergency responders to victim.

In the event of a tornado warning, proceed to the lowest level interior room without window exposure at TNR 170, 159, 157, 120, 122, Corridor 150 (corridor in front of TNR 157 and 159 on south side of TNR building).

See <https://www.uwsp.edu/rmgt/Pages/em/procedures/other/floor-plans.aspx> for floor plans showing severe weather shelters on campus. Avoid wide-span rooms and buildings.

In the event of a fire alarm, evacuate the building in a calm manner. Meet at west/north side of TNR building at parking lot D or E (stay at least 200 yards away from the building). Notify instructor or emergency command personnel of any missing individuals.

Active Shooter – Run/Escape, Hide, Fight. If trapped hide, lock doors, turn off lights, spread out and remain quiet. Follow instructions of emergency responders.

See UW-Stevens Point Emergency Management Plan at [www.uwsp.edu/rmgt](http://www.uwsp.edu/rmgt) for details on all emergency response at UW-Stevens Point.”