

Forest Measurements
11:216:314 & 16:215:599

Spring 2024 – 4 credits

Instructors: Bernard Isaacson & Allyson Salisbury
Lecture: Thursday 2:00-3:20 PM
Lab: Tuesday 10:20 AM-1:20 PM, 2-3:20 PM

Course Description:

The purpose of this course is to introduce students to the most common methods of and process for quantitative assessment of forest resources. Students will take part in field and computational exercises which will be supported by lectures and readings. Participation and completion of exercises are a key component of the course. These will sequentially build a skill set so that by the end of the course, the student will have planned/conducted their own forest inventory, then synthesized their data into a report to characterize a forest area.

Prerequisites:

General Biology II (01:119:116)
Dendrology (11:216:272) or Landscape Plants (11:550:233)

Learning Goals:

By the end of the course, students will:

1. understand that forest inventory measurements are critical for any data-driven management of forest lands, whether for carbon storage, timber products, wildlife habitat, or any other management objective.
2. be able to perform major forest measurements, set up an inventory in a recognized and statistically-meaningful format, and interpret/translate forest inventory data.
3. recognize the importance of spatial scale, statistical variance, and appropriate units in characterizing forest attributes.
4. understand the tradeoffs associated with different methods of forest inventory, their effects on characterizing attributes of interest, and be able to choose appropriate methods for stated goals.

This course meets the following Ecology, Evolution, and Natural Resources program learning goals:

- Goal 1: Explain basic population, community ecology, and ecosystem-level concepts.
- Goal 4: Effectively utilize software, hardware, field, and laboratory techniques commonly used in the study of ecology, evolution, and natural resource management.
- Goal 5: Use quantitative methods to analyze and understand ecological systems, including interpretation of numeric and graphical data.
- Goal 6: Communicate effectively orally and through written text and graphics.

Textbook:

Forest Measurements 6th ed. Burkhardt, Avery, and Bullock. 2019. Waveland Press, Long Grove, IL

Grading:

All lab exercises will come with a set of questions and exercises to complete; completion of the exercises is necessary to answer the questions. The exercises are meant for you to learn the material, and your answers to the questions are meant to assess your learning. All supporting work for laboratory exercises

is due no later than the start of the first class following the exercise. Work that is not submitted by that time will have an immediate 25 point deduction from the original total possible points, with an additional 10 point per day deduction each day it is late (if you hand it in on the first subsequent class and it is perfect, it will be worth 75% of the total original points, if you hand it in two days later a perfect set of answers will be worth $100 - 75 - 10 - 10 = 55\%$). The instructors will make exceptions for medical and other exigencies but *must* be notified well in advance, and if requested, be provided appropriate documentation. Unless you are affirmatively given clearance for an exemption, don't hand in your work late.

Component	Grading Breakdown (%)		Letter Grade	Numerical Range
			A	≥90.00 %
Presentation of Readings	15		B+	<90.00 & ≥87.00
Execution of Lab Exercises	25		B	<87.00 & ≥80.00
Completion of Lab Questions	30		C+	<80.00 & ≥77.00
Capstone Project	30		C	<77.00 & ≥70.00
			D	<70.00 & ≥60.00
			F	<60.00 %

Readings:

Students should aim to complete the assigned readings for a class date *before* that class – classroom time will be used to reinforce and clarify the concepts introduced in the readings. At the beginning of each lab period we will review the assigned readings for that subject. Students will be individually called on to verbally explain the readings to the class, fielding questions regarding the material from classmates. Your grade for this portion has to do with participation, preparation, and technical accuracy – each student will present reading material and is expected to ask/answer questions about the readings when in the audience. The purpose of this exercise is to encourage class preparation, develop public speaking skills, and develop one's ability to lead a discussion.

Lab Questions/Assignments:

These will be graded on demonstration of understanding and application of underlying concepts, the correct use of terminology, and the organization of your language.

Undergraduate Capstone Project:

This is both a group and individual assignment.

Part I (Group): Students will be grouped into teams of approximately 2-3 to design and collect an inventory for an area of forested land nearby. Successful and safe completion of the inventory requires teamwork and forethought. You will work as a group to turn those measurements into a dataset that will comprise the first part of your grade.

Part II (Individual): You will individually prepare a report describing and summarizing the pertinent quantitative forest conditions for the dataset you collected. Applying the lessons you've learned, you will:

- explain and support the rationale for the inventory parameters, including why you took the measurements you did;
- characterize the data using text, tables, and figures;
- produce a document of professional quality.

Graduate Capstone Project:

Graduate students in the class will design a forest inventory to address a research question or management project at a site or sites of their choosing. For example, designing a forest inventory for a state park to evaluate pollinator habitat. Graduate students are welcome for this project to be a complement to their thesis or dissertation research. You will prepare a report that will:

- describe the research question, its importance, and the purpose of conducting an inventory;
- document the inventory plan and its details;
- explain and support the rationale for the inventory design and parameters;

Class Preparation:

Be ready to measure trees in the woods for each lab class day. This means you will need to be dressed to be in the weather and the woods for several hours. Closed-toed shoes, long pants to protect your legs, and layers to keep you warm and dry, as appropriate. If you aren't dressed appropriately, you're going to have a challenging time focusing on your learning, so don't make things hard on yourself. On lab days, the class schedule spans lunch. If we are in the field, bring a lunch with you so that you don't have to scrounge one up. If we are on campus, expect a truncated lunch during the break between sessions.

Missed Classes:

A good chunk of the fun of this class is based on field and classroom exercises. If you miss them, you'll be disappointed by the challenge of making them up. For this reason it is critical for you to attend each class. Let the instructors know ahead of time (!) if you have medical or other commitments (jury duty, family emergencies, for example) that preclude your attendance. Otherwise we expect to see you in class.

Academic Integrity:

Each student is subject to the most recent policy on Academic Integrity published by Rutgers (see below). You are here to learn – so don't cheat yourself by violating the policy. You are welcome to work collaboratively with classmates but MUST cite them in each instance. Your answers must be in your own words, which cannot be the same as someone else - even if you work collaboratively with others to correctly answer a question, your language needs to be unique to you. *Example: "Attached is my stand and stock table for Stand 7A (completed with [NAME OF COLLABORATOR]). I observed..."*

Similarly, the use of Large Language Models has proliferated. While these power tools are undoubtedly useful and you should expect to use them once in the workforce, you'll be able to make the most out of them if you know what you are doing, first. Use of AI and AI tools such as ChatGPT is not permitted in any stages on any assignment.

The university's policy on Academic Integrity is available at

<https://academicintegrity.rutgers.edu/sites/default/files/pdfs/current.pdf>. The principles of academic integrity require that a student:

- properly acknowledge and cite all use of the ideas, results, or words of others.
- properly acknowledge all contributors to a given piece of work.
- make sure that all work submitted as his or her own in a course or other academic activity is produced without the aid of impermissible materials or impermissible collaboration.

- obtain all data or results by ethical means and report them accurately without suppressing any results inconsistent with his or her interpretation or conclusions.
- treat all other students in an ethical manner, respecting their integrity and right to pursue their educational goals without interference. This requires that a student neither facilitate academic dishonesty by others nor obstruct their academic progress.
- uphold the canons of the ethical or professional code of the profession for which he or she is preparing.

Adherence to these principles is necessary in order to ensure that

- everyone is given proper credit for his or her ideas, words, results, and other scholarly accomplishments.
- all student work is fairly evaluated, and no student has an inappropriate advantage over others.
- the academic and ethical development of all students is fostered.
- the reputation of the University for integrity in its teaching, research, and scholarship is maintained and enhanced.

Failure to uphold these principles of academic integrity threatens both the reputation of the University and the value of the degrees awarded to its students. Every member of the University community therefore bears a responsibility for ensuring that the highest standards of academic integrity are upheld.

DEI Statement:

We intend for this class to be a place where all students, regardless of background, feel welcomed, supported, and valued for their contributions. Our class community will respect all facets of a person's identity, including, but not limited to race, ethnicity, gender, sexual orientation, religion, age, disability, social class, and nationality. Our unique identities serve to enrich our learning experiences as a class and should be valued as such. We are always learning how to be more effective teachers and welcome and encourage your suggestions as we move through the semester. You can submit feedback directly in-person or via email, or anonymously via Canvas.

STUDENT WELLNESS SERVICES

Counseling, ADAP & Psychiatric Services (CAPS)

(848) 932-7884 / 17 Senior Street, New Brunswick, NJ 08901/ www.rhscaps.rutgers.edu/

CAPS is a University mental health support service that includes counseling, alcohol and other drug assistance, and psychiatric services staffed by a team of professional within Rutgers Health services to support students' efforts to succeed at Rutgers University. CAPS offers a variety of services that include individual therapy, group therapy and workshops, crisis intervention, referral to specialists in the community and consultation and collaboration with campus partners.

Violence Prevention & Victim Assistance (VPVA)

(848) 932-1181 / 3 Bartlett Street, New Brunswick, NJ 08901 / www.vpva.rutgers.edu/

The Office for Violence Prevention and Victim Assistance provides confidential crisis intervention, counseling and advocacy for victims of sexual and relationship violence and stalking to students, staff and faculty. To reach staff during office hours when the university is open or to reach an advocate after hours, call 848-932-1181.

Disability Services

(848) 445-6800 / Lucy Stone Hall, Suite A145, Livingston Campus, 54 Joyce Kilmer Avenue, Piscataway, NJ 08854 / <https://ods.rutgers.edu/>

Rutgers University welcomes students with disabilities into all of the University's educational programs. In order to receive consideration for reasonable accommodations, a student with a disability must contact the appropriate disability services office at the campus where you are officially enrolled, participate in an intake interview, and provide documentation:

<https://ods.rutgers.edu/students/documentation-guidelines>. If the documentation supports your request for reasonable accommodations, your campus's disability services office will provide you with a Letter of Accommodations. Please share this letter with your instructors and discuss the accommodations with them as early in your courses as possible. To begin this process, please complete the Registration form on the ODS web site at: <https://webapps.rutgers.edu/student-ods/forms/registration>.

DoSomething button through Rutgers Dean of Students office:

<http://health.rutgers.edu/do-something-to-help/>

Wellness Coaching through Rutgers HOPE:

<https://success.rutgers.edu/resource/wellness-coaching>

NJ Hopeline - (1-855-654-6735) | National Suicide Hotline - (1-800-273-8255)

BASIC NEEDS RESOURCES

Any student who has difficulty affording groceries or accessing sufficient food, or who lacks a safe and stable place to live, is urged to contact the Rutgers Student Food Pantry and/or the Dean of Students (details below). Furthermore, please notify the professor if you are comfortable doing so, as they may be able to provide additional support.

Rutgers Student Food Pantry

848-932-5500 / College Ave Student Center, Room 115 (126 College Ave) /

<http://ruoffcampus.rutgers.edu/food/>

Check their website for hours and additional locations. The Rutgers Student Food Pantry is dedicated to helping all Rutgers students in need of food, no questions asked. Students will be provided with groceries that typically last about one week.

Dean of Students Office

848-932-2300 / 88 College Avenue, New Brunswick, NJ 08901 / <https://deanofstudents.rutgers.edu/>

Mon-Fri, 8:30am-5:00pm

The Dean of Students Office at Rutgers University-New Brunswick provides solutions, services, and support to help students navigate Rutgers University. The Office serves as a student support network by providing advocacy, problem resolution, and critical incident intervention for those times when additional assistance is needed. Please call to schedule an appointment to meet with a representative from the Dean's office.