FNR3410C Natural Resource Sampling (3 Credits)
Course Syllabus Fall 2025

INSTRUCTOR

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Office hours: Monday, 9:00-10:00 am. I have an open-door policy for students. Stop in whenever you see me in my office. For the best chances of reaching me, contact me via email to set up an appointment.
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TEACHING ASSISTANT

Alan Ivory
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OFFICE HOURS & COMMUNICATION

For general course questions: The preferred method of communication is by Canvas email. For technical issues and questions regarding the navigation and use of Canvas: Contact the UF Help Desk online at helpdesk@ufl.edu or by phone (352) 392-HELP – select option 2. On occasion, I will send an email via Canvas regarding updates to the syllabus, clarifications of assignments, or changes in due dates. You should be checking your email on a regular basis.

PREREQUISITES

Statistics 2023

PURPOSE OF THE COURSE

Our ability to analyze and evaluate the environment around us requires effective data collection. Natural Resource Sampling examines the theory and techniques for sampling various characteristics of a variety of natural resources and attributes of the environments in which they are found. The course begins with a comprehensive review of elementary statistics and continues with specific applications of field sampling methods commonly used in forestry, fisheries, ecology, and wildlife management. In conjunction with learning various sampling methods, students will be exposed to a variety of analysis techniques and application of data obtained during laboratory sampling sessions. The techniques learned in this class will provide a foundation for more advanced labs in the other upper-division courses in the NRC major as well as provide supplemental instruction for those working in the natural resources field.

OBJECTIVES

By the end of the course, students should demonstrate an understanding of the following concepts and techniques:

- Statistical terminology and descriptive statistics
- Sampling theory and design
- Hypothesis testing; t-tests
- Forestry measurements, e.g. dbh, density, basal area
- Vegetation sampling methods
- Terrestrial and aquatic animal methods, e.g. double sampling, line transects, variable circular plots, point counts, recapture techniques, radio telemetry, fish sampling
- Environmental sampling, e.g., light, weather, soil, and water

LEARNING OUTCOMES:

Upon successful completion of the course, students should:

- Demonstrate an understanding of the underlying theories upon which sampling methods and frequently used statistics are based
- Develop hypothesis and demonstrate application of proper experimental design to sampling of animals, plants, and environmental variables
- Demonstrate correct sampling methodology and use of equipment to collect animal, plant, and environmental data
- Compute basic descriptive statistics for animal, plant, and environmental data
- Use computers and software programs to analyze data
- Perform t-test and simple regression when appropriate to analyze data
- Prepare graphs and tables using computer software to summarize descriptive data and statistical analysis
- Write scientific reports to interpret, present, and explain results of data collection

COURSE FORMAT & PARTICIPATION

This is a 3-credit course, consisting of in-person class meetings, recorded lectures, and off-campus field labs. Course materials (recorded lectures, assignments, quizzes, etc.) will be available through the Canvas e-learning site. https://elearning.ufl.edu/

Lecture recordings (where applicable) will be posted for each week in the respective Module in Canvas. Mandatory in-person class meetings will occur on Thursdays at 5:00-7:00 pm (Central) to discuss the lecture material and/or conduct outdoor mini labs. Mandatory field labs will occur off-campus on Saturdays throughout the semester to reinforce and strengthen the concepts learned in class through hands-on activities.

The field labs will be conducted at several locations off-campus. Whenever field (outdoor) labs are scheduled, wear appropriate clothing (long pants and sturdy shoes) and bring water, sunscreen, and insect spray. Also, be prepared to take notes (clipboard, pen, and paper, or audio recorder) and pictures (if you have a camera). During the field lab, students will practice techniques for properly handling equipment and collecting data. The data will be analyzed and presented in lab reports (see Description of Assignments below). Outdoor lab work is conducted as scheduled regardless of weather conditions. Never assume lab is canceled.

Students are expected to actively participate during the class meetings. When applicable, students must watch the recorded lectures and complete the weekly quiz (quizzes begin Week 8) on Wednesday at 11:59 pm (Central). Also, be prepared to answer questions, perform calculations, and work on in-class group activities.

TECHNOLOGY REQUIREMENTS

- A computer or mobile device with high-speed internet connection.
- A webcam, headset and/or microphone, and speakers.
- Latest version of a web browser.

TEXTBOOKS AND/OR READINGS

There is no required text for the course, but an introductory statistics textbook may be useful. The instructors highly recommend "CliffsNotes Statistics Quick Review, 2nd Edition" as an inexpensive resource. Also, there are numerous resources available online to assist you with mathematical and statistical calculations.

Additionally, you can access an e-book useful for this course for free from the UF library catalog:

Statistics for Terrified Biologists

Other references (available on short-term loan from the instructors) include:

Silvy, N.J. 2012. *The Wildlife Techniques Manual*, 7th Ed. The Johns Hopkins University Press.
Witlock, M.C., Schluter, D. 2009. *The Analysis of Biological Data*. Roberts and Company Publishers.
Heyer, R., Donnelly, M. A., Foster, M., & Mcdiarmid, R. (Eds.). 2014. *Measuring and monitoring biological diversity: standard methods for amphibians*. Smithsonian Institution.

OTHER COURSE RESOURCES

- LinkedIn Learning is a useful resource for help in Excel and other common software. It can be accessed by UF students for free at https://training.it.ufl.edu/linkedin/.
- For scientific literature, the "web of science" is available to students free of charge on campus or when connected by the campus VPN (virtual private network). http://apps.webofknowledge.com/WOS_GeneralSearch_input.do?product=WOS&search_mode=GeneralSearch&SID=6FCzRdAxQtEBV9qHAPA&preferencesSaved=
- To set up the VPN on your computer, go to https://it.ufl.edu/ict/documentation/network-infrastructure/vpn/anyconnect-installation--configuration-guide/

GRADES AND GRADING SCALE

Assignment	Value
Homework Assignments (2% each)	24%
Quizzes (1.25% each)	15%
Mini Lab Report	6%
Full Lab Reports (10% each)	20%
Exams - Midterm Exam (15%) - Final Exam (20%)	35%
Total	100%

Letter grades will be assigned as follows based on percent score:

A (93-100), A^- (90-92), B^+ (86-89), B (83-85), B^- (80- 82), C^+ (76-79), C (73-75), C^- (70-72), D^+ (66-69), D (63-65), D- (60-62), E (<60)

DESCRIPTION OF ASSIGNMENTS

Homework Assignments

Homework assignments will generally consist of a set of calculations to reinforce the statistical concepts discussed in class. All homework is due the following Wednesday at 10:59 pm (Central). To earn full credit, you must show your work (i.e., write out the equations). Some homework assignments will need to be completed in an Excel spreadsheet or in R statistical software. In those cases, you will be required to upload the Excel file or R code Text File to the assignment in Canvas to receive full credit.

Weekly Quizzes

There will be a short quiz (4-5 questions) each week there is a recorded lecture to reinforce lecture material.

Weekly quizzes cover the coinciding/current Module lectures, and they are due on Wednesday before class meetings.

Mini Lab Report
Th purpose of the mini lab is to practice using standard natural resource equipment and collect small data sets outdoors. In your mini report (total of 2-3 pages) you will briefly summarize the methods for data collection and analysis, present your results in tables and figures, and provide a brief (1-2 paragraph) interpretation of the results. You may also be required to upload to Canvas an Excel file (or attach additional sheets) showing your calculations.

Full Lab Reports
The purpose of extended Saturday labs is to gain experience with the techniques used in resource sampling and to reinforce the methods for analyzing environmental data. For full lab reports, you will present the results of the lab exercises using standard scientific reporting, including the following sections: Abstract, brief Introduction and Objectives, Methods, Results, and Conclusions. You will receive and should refer to the Report Writing Guidelines and the Grading Rubric sheet to review the specific criteria needed in each section. Your grade will be based on accuracy of calculations, clarity of text, grammar, and formatting/presentation.

Exams
Exams are intended to evaluate your understanding of conceptual material and to demonstrate your critical thinking and problem-solving skills in applying these concepts and techniques under a variety of sampling scenarios. The format will be a combination of calculations, multiple choice, true/false questions, and short answer. The exams will be administered either in-person or online (TBD).

LATE WORK POLICY
Assignments and quizzes are turned in electronically via Canvas. Refer to the syllabus schedule or Canvas assignments tab for due dates and times. Without an excused absence, students will not have the option to complete a quiz after the established close date/time. Late assignments will lose value at the rate of 10% each subsequent late day (**weekend days count too!**). Requirements for class attendance and make-up exams, assignments and other work are consistent with university policies (see below).

Computer or other hardware failures, except failure of the UF e-Learning system, will not excuse students for missing assignments. Any late submissions due to technical issues MUST be accompanied by the ticket number received from the Helpdesk when the problem was reported to them. The ticket number will document the time and date of the problem. You MUST e-mail your instructor within 24 hours of the technical difficulty if you wish to request consideration. For computer, software compatibility, or access problems call the HELP DESK phone number—352-392- HELP = 352- 392-4357 (option 2).

TENTATIVE SCHEDULE
FALL 2025

In classroom, online sessions, and/or outdoors activities on the Milton Campus are held Thursday at 5 – 7 PM Central Time. Off-campus labs will be held on Saturdays (meeting location/time TBA). This course plan and syllabus are subject to change in response to student and instructor needs. Any changes will be clearly communicated in advance through Canvas.

Date	Topics and Activities	Assignment Due
Week 1	**Thursday, Aug. 21 at 5 PM** *In-person class meeting* *Lecture*: Course introduction; summary statistics, using excel	
Week 2	*Recorded lecture:* Plotting **Thursday, Aug. 28 at 5 PM** *In-person class meeting*	**Wednesday, August 27 at 10:59 PM** - Quiz #1 Due
Week 3	*Recorded lecture:* Sampling Design, Probability, Confidence Intervals **Thursday, Sept. 4 at 5 PM** *In-person class meeting*	**Wednesday, Sept. 3 at 10:59 PM** - Quiz # 2 Due - Homework #1 Due
Week 4	*Recorded lecture:* Hypothesis testing part 1 **Thursday, Sept. 11 at 5 PM** *In-person class meeting*	**Wednesday, Sept. 10 at 10:59 PM** - Quiz #3 Due - Homework #2 Due
Lab Field Trip	**Saturday, Sept 13** *Mini Lab:* Aquatic Sampling	
Week 5	*Recorded lecture:* Hypothesis Testing part 2 **Thursday, Sept. 18 at 5 PM** *In-person class meeting*	**Wednesday, Sept. 17 at 10:59 PM** - Quiz #4 Due - Homework #3 Due
Week 6	*Recorded Lecture:* Vegetation Sampling **Thursday, Sept. 25 at 5 PM** *In-person field and class meeting*	**Wednesday, Sept. 24 at 10:59 PM** - Quiz #5 Due - Homework #4 Due
Week 7	*Recorded Lecture:* Remote Sensing **Thursday, Oct. 2 at 5 PM** *In-person class meeting*	**Wednesday, Oct. 1 at 10:59 PM** - Quiz #6 Due - Homework #5 Due - Mini Lab Report Due
Week 8	**Thursday, Oct. 9 at 5 PM** *Mid-term Exam*	

Week 9	*Recorded lecture:* Intro to Animal Sampling; Mark-Recapture **Thursday, Oct. 16 at 5 PM** *In-person class meeting*	**Wednesday, Oct. 15 at 10:59 PM** - Homework #6 Due - Quiz #7 Due
Lab Field Trip	**Saturday, Oct. 18th** *Full Lab:* Insect Density – Transect and Distance Sampling	
Week 10	*Recorded Lectures:* Point Counts; Variable Circle Plots; Distance Sampling; Spot Mapping **Thursday, Oct. 23 at 5 PM** *In-person class meeting*	**Wednesday, Oct. 22 at 10:59 PM** - Homework #7 Due - Quiz #8 Due
Week 11	*Recorded lecture:* Aerial Sampling **Thursday, Oct 30 at 5 PM** *In-person class meeting*	**Wednesday, Oct. 29 at 10:59 PM** - Homework #8 Due - Quiz #9 Due
Week 12	*Recorded lecture:* Occupancy; Remote Cameras **Thursday, Nov. 6 at 5 PM** *In-person class meeting*	**Wednesday, Nov. 5 at 10:59 PM** - Homework #9 Due - Quiz #10 Due - Wildlife Density Lab
Lab Field Trip	**Saturday, Nov. 8th** *Full Lab:* Forestry lab at Jay Research Facility	
Week 13	*Recorded lecture:* Radio Telemetry; Resource Selection **Thursday, Nov. 13 at 5 PM** *In-person class meeting*	**Wednesday, Nov. 12 at 10:59 PM** - Homework #10 Due - Quiz #11 Due -
Week 14	*Recorded Lecture:* Human Dimensions **Thursday, Nov. 20 at 5 PM** *In-person class meeting*	**Wednesday, Nov. 19 at 10:59 PM** - Homework #11 Due - Quiz #12 Due
Week 15	**Thanksgiving break**	**Wednesday, Nov. 26 at 10:59 PM** - Homework #12 Due - Forestry Lab Due
Week 16	**Thursday, Dec. 5** *No class, reading days*	
Week 17	**Thursday, Dec. 12** *Final Exam*	

POLICIES AND REQUIREMENTS

This course plan and syllabus are subject to change in response to student and instructor needs. Any changes will be clearly communicated in advance through Canvas. CALS and UF Policies can be reviewed at https://syllabus.ufl.edu/syllabus-policy/uf-syllabus-policy-links/

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Communication Courtesy and Professionalism

Just as in any professional environment, meaningful and constructive dialogue is expected in this class and requires a degree of mutual respect, willingness to listen, and tolerance of opposing points of view. Respect for individual differences and alternative viewpoints will be maintained in this class at all times. All members of the class are expected to follow rules of common courtesy, decency, and civility in all interactions. Failure to do so will not be tolerated and may result in loss of participation points and/or referral to the Dean of Students' Office.

Privacy Statement

Our class sessions may be audio-visually recorded for students in the class to reference and for enrolled students who are unable to attend live. Students who participate with their camera engaged or utilize a profile image agree to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.

Software Use

All faculty, staff and students of the university are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against university policies and rules, disciplinary action will be taken as appropriate.