

FNR3410C NATURAL RESOURCE SAMPLING

Fall 2018

Tuesday Lab Section 19456
Wednesday Lab Section 19457
Friday Lab Section 19459

Instructors: Mr. Scott A. Sager Dr. David Fox
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Class hours: Lecture
Monday and Wednesday 2nd (8:30-9:20), MAEB 0211

Lab Sections (you're in one of these)
Tuesday 6th-8th (12:50-3:50), ROG 0129
Wednesday 5th-7th (11:45-2:45), MAEB 0234
Friday 5th-7th (11:45-2:45), MAEB 0234

Office hours: As arranged

Overview: Quantifying natural resources is the foundation of both ecology and management. You can not hope to understand how an ecosystem functions (ecology) without quantifying the parts, and describing their characteristics. You also can not make good decisions about manipulating that ecosystem to reach an objective (natural resource management), if you don't have quantitative data. This course will accomplish three objectives:

- provide a basic understanding of applied statistics;
- give you familiarity with some of the more common sampling techniques for specific types of natural resources; and
- provide the background to understand, interpret, and critique various sampling systems and techniques.

A variety of different resources, and objectives for sampling, are discussed in the course, but the intention is for this to be an overview. More detailed coverage of specific methods, for specific uses, are available in courses such as:

- FOR3430C *Forest Mensuration*
- WIS4945C *Wildlife Techniques*
- FAS4305C *Intro to Fishery Science*

Student Learning Objectives:

By the end of this course, the student will be able to:

1. For a given data set, calculate mean, median, and mode; sum-of-squares; variance; standard-deviation; standard-error; and the upper- and lower-confidence interval, and describe what each of these calculated values indicates.
2. Choose an appropriate sampling system for a given natural resource, to answer a given question, and implement that system.
3. Review a sampling methodology and critique its value in estimating the given natural resource population/characteristic.

Pre-Requisites: This course is a junior-level course intended to provide students a basic foundation in measuring various aspects of natural resources. Students should have completed an introductory statistics course before enrolling in the course (STA2023, or equivalent).

Evaluation of Student Performance:

50% Weekly Assignments/Exercises (minimum of ten)
These will be composed of approximately five questions, and will include lab worksheets, as well as assignments administered through Canvas. Each assignment is worth 5% of your grade; however, there will likely be more than

25%	ten assignments, and as such the lowest scores will be dropped.
25%	Mid-Term Exam Covering material from the first half of the course, this exam will be administered in-class. No books, notes, or electronic devices (beyond a hand calculator) will be allowed.
25%	Final Exam Covering all material from the course, this exam will be administered during exam week. No books, notes, or electronic devices (beyond a hand calculator) will be allowed.

Grading Scale (points):

		A	90.0-100		
B+	86.7-89.9	B	83.7-86.6	B-	80.0-83.6
C+	76.7-79.9	C	73.7-76.6	C-	70.0-73.6
D+	66.7-69.9	D	63.7-66.6	D-	60.0-63.6
		E	< 60.0		

Further information on UF grading policy can be found at <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>.

Attendance: Attendance is your choice. Assignments can be submitted regardless of attendance. Exams can be made-up if a valid excuse exists. Further information on UF attendance policy can be found at <https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>.

Textbook: *Statistics for Terrified Biologists* by Helmut van Emden. Blackwell Publishing, 2008. Available online for less than \$30.

Field labs: Familiarity with sampling techniques is acquired through field experience. All trips require long pants (jeans or slacks; not leggings) and closed-toe shoes. Bug spray and a hat (or sunscreen) are recommended. Water will be available, but feel free to bring your own water bottle. Any other required equipment will be provided.

Assignments: No credit will be given for assignments submitted late. None. Zero. Zilch. Nada. No excuses will be accepted; however, it's expected that there will be at least one "extra" assignment (drop).

Academic Honesty: As a student at the University of Florida, you have committed yourself to uphold the Honor Code, which includes the following pledge: *We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity.* You are expected to exhibit behavior consistent with this commitment to the UF academic community, and on all work submitted for credit at the University of Florida, the following pledge is either required or implied: *On my honor, I have neither given nor received unauthorized aid in doing this assignment.*

It is assumed that you will complete all work independently in each course unless the instructor provides explicit permission for you to collaborate on course tasks (e.g. assignments, papers, quizzes, exams). Furthermore, as part of your obligation to uphold the Honor Code, you should report any condition that facilitates academic misconduct to appropriate personnel. It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated. Violations will be reported to the Dean of Students Office for consideration of disciplinary action. For more information regarding the Student Honor Code, please see <http://www.dso.ufl.edu/SCCR/honorcodes/honorcode.php>.

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.

Campus Helping Resources: Students experiencing crisis or personal problems that interfere with their general well-being are encouraged to utilize the university's counseling resources. The Counseling & Wellness

Center provides confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having personal problems or lacking clear career or academic goals, which interfere with their academic performance.

University Counseling & Wellness Center, 3190 Radio Road, 352.392.1575,
www.counseling.ufl.edu/cwc/

Counseling Services
Groups and Workshops
Outreach and Consultation
Self-Help Library
Training Programs
Community Provider Database

Career Resource Center, First Floor JWReitz Union, 352.39231601, www.crc.ufl.edu/

Services for Students with Disabilities: The Disability Resource Center coordinates the needed accommodations of students with disabilities. This includes the registration of disabilities, academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services, and mediating faculty-student disability related issues. Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the instructor when requesting accommodation.

001 Reid Hall, 352.392.8565, www.dso.ufl.edu/drc/.

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Fall 2018 Schedule

Detailed Outline

Week	Monday Lecture	Wednesday Lecture	Tuesday Lab	Wednesday Lab	Friday Lab
20 August	No class	Course Overview	No class		
27 August	Stats Review – average to standard deviation	Stats Review – standard error to confidence interval	Excel Primer – in classroom		
3 September	No class	Basics – population vs. sample; simple-/systematic-/stratified-random sample	Statistics Review – in classroom		
10 September	Vegetation Sampling – overstory tools and techniques	Vegetation Sampling – overstory methodology selection	Vegetation-Overstory (plots, horizontal-point-sampling, point-quarter) – Millhopper Tract		
17 September	Vegetation Sampling – understory tools and techniques	Vegetation Sampling – understory methodology selection	Vegetation-Understory (quadrats, transects) – Natural Area Teaching Lab		
24 September	Vegetation Sampling - aerial photography and remote sensing (Eben Broadbent)	Soil Surveys – limitations, web-based system	Aerial Photography Lab (tree density, height, species) – campus (Eben Broadbent)		
1 October	Soil and Water Sampling – tools and techniques	Sampling with Replacement	Soil and Water Sampling (material, depth to water table, water temperature and clarity) – Austin Cary Forest		
8 October	Fish Sampling – tools and techniques (Chuck Cichra)	Fish Sampling – tools and techniques (Chuck Cichra)	Fish Sampling (electroshocking) – Lake Alice (Chuck Cichra)		
15 October	Insect Sampling – tools and techniques	Herpetology Sampling – drift fences and bucket traps (Steve Johnson)	Insect Sampling (baits, effort expended) – Natural Area Teaching Lab		
22 October	Tortoise Burrow Inventory – techniques	Mid-Term Exam	Tortoise Burrow Inventory – Austin Cary Forest		
29 October	Regression Analysis	Sample Size Calculations	No class		
5 November	Camera Trapping – tools and techniques	Human Sampling – tools and techniques (Taylor Stein)	Camera Trapping Deer Populations (ageing/sexing) – in classroom		
12 November	No class	Citizen Science – opportunities and limits	Human Sampling (recreational use, demographics) – Morningside? (Taylor Stein)		
19 November	Human Sampling – surveys	Limits of Statistics	No class		
26 November	Diversity – presence/absence sampling	Diversity Indices	Presence/Absence Plots		
3 December	Catch-Up and Questions		No class		
10 December	Final Exam				