Soil, Water, & Ecosystem Sciences Field Research CURE

SWS 4932

Fall 2024

Location: Field sites (Bat House, Natural Area Teaching Lab)

3 credits

Tuesdays 10:40 am -12:35 pm (Periods 4-5) in person in the field, rest asynchronous online

Instructor:
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Office hours: Mondays at 3pm (online) or by appointment

Course Description:
Welcome to Soil, Water, & Ecosystem Sciences Field Research CURE! Through this field Course-based Undergraduate Research Experiences (CURE), students will learn every step that is required to conduct research through lectures and field experiences, and carry out their own research throughout the course. Students will come up with research topics based on their interests, design their own study, collect samples, process samples, analyze data, and write up a research proposal and research report/manuscript. All field exercises and activities will take place on the main campus in Gainesville, FL. Students will work as a team (a group of 2 or 3 students) in a collaborative manner or as individuals to conduct their research. Lectures are practical and use examples from soil, water, and ecosystem sciences related areas. Students will also learn how to write a scientific proposal and report or manuscript throughout the semester. By completing this course in fall 2024, you will have an opportunity to present your research work at the University of Florida undergraduate research symposium in spring 2025. This is a great opportunity for students who want hands-on field research experiences and who are thinking about going to graduate schools.

The learning objectives of this course are:

1. To practice how to conduct soil, water, and ecological science research.
2. To demonstrate proficiency in writing a scientific research proposal and manuscript.
3. To acquire the required knowledge and skills about research methods that are used to conduct research.
4. To apply knowledge and skills to conduct research.
5. To execute skills related to effective oral and written communication

Target audience and prerequisites:
This course is designed for sophomore, junior or senior level undergraduate students who are interested in conducting research related to soil, water, and ecosystem sciences. There are no prerequisites for this course.

Course Webpage/ materials:
The course will be maintained on the Canvas e-learning website https://elearning.ufl.edu/. All course materials (including lectures, readings, exercises and assignments) will be posted here. Lecture slides will be posted on the Canvas website and maintained throughout the semester. There will be no textbook in this class (see textbook section). For the field exercise and practical, students will meet in-person outdoor or in lab (synchronous), while all other lectures will be conducted through online asynchronously. Grades will also be maintained on the website. Please turn in any assignments via this website.

Grading:
Grades will be calculated as follows:
A (93% or greater), A- (90%-92.99%), B+ (87%-89.99%), B (83%-86.99%), B- (80%-82.99%), C+ (77%-79.99%), C (73%-76.99%), C- (70%-72.99%), D+ (67%-69.99%), D (63%-66.99%), D- (60%-62.99%), E (<60%)

Item	**Points**
Attendance/Participation (Field attendance/Exercise)	100
Assignments (4 assignments 20 pts each)	80
Project proposal	50
Project presentation	50
Final project report	100
Self-evaluation/Reflections	20
Total	**400**

Attendance/Participation
This course relies heavily on active student participation. While there will be short lectures at the beginning of each class, the course period will be spent on active learning activities including hands-on activities and discussions. **Class attendance** is therefore an essential part of succeeding in this course. **Exercises**, that will be provided throughout the course to evaluate your learning progress, won't be graded, but **count as attendance**. You will receive timely feedback from your instructor for each exercise.

Assignments
There will be four assignments throughout the course including scientific writing, data presentation and statistical analysis. Assignments should be submitted by the deadlines specified for each assignment. The deadlines can be extended if you have a reasonable excuse. Late submissions without excuses will still be accepted but you won't receive timely feedback nor full credit (10% of points will be deducted for each week late).

Group or Individual Project: (Proposal, Presentation and final Report)
The class will be broken up into small groups or individuals and each group or individual will choose a topic for their own research project. The group or individual will conduct research throughout the semester. They will write a research proposal, share their findings through presentation and submit a final research report/article at the end of the semester.

Textbook
There is no textbook for this field research course. Electronic resources including journal articles and prescripts for R statistical analyses will be provided on Canvas course webpage or through emails. Students who take this research course usually collect and read research articles that are relevant to their research topics throughout the semester.

Software
Statistical software called "R" is going to be used in this course. In the middle of the semester (in the month of October and November), about 4 weeks will be spent to learn "R" and to conduct statistical analyses of your own data using "R" program. There is no need for prior experiences using "R" for this course. You will be introduced to "R" and will gradually be familiarized with "R" through course activities.

Course Schedule:

SWES Field Research CURE			
Steps	Date/Week	Topics	Exercises/Assignment/Reports due
Introduction	Aug 27th	Introduction to class	
		What is research?	
		Environmental research overview	
		Identify research topics	Exercise: Come up with 3 research topics
	Sep 3rd	Responsible conduct for research	
		Field and Lab safety	
		Search research articles	Search 5 articles for each topic
		Manage research articles	Exercise: Manage citations
Scientific writing	Sep 10th	Scientific writing: Research article	
		Scientific writing: Proposal	
			Assignment:
		Study objectives	Write study objectives for each topic
		Formulate hypotheses	Formulate hypothesis for each topic
		Introduction to soil, water and ecosystem sciences	
		Fundamental knowledge: Water	
		Fundamental knowledge: Soil	
		Fundamental knowledge: Ecosystem	
Research Methods	Sep 17th	Study Design	
		Experimental vs Observational	
		Evaluate effect of treatment/factor	Exercise: Write study design for each topic
		Analytical methods	Exercise: Write analytical methods
		Physical/Chemical/Biological	
		Explore data in public database	Exercise: Explore database: Post links
	Sep 24th	Discuss research topics	Exercise: Revise three topics
		Data management	
		Taking Field/Lab notebook	

	Oct 1st	Finalize research topic Proposal writing (draft) Work on logistics (1)	Narrow down to one research topic!! Exercise: Write a draft proposal for a topic
Field sampling	Oct 8th	Complete proposal Field Exercise/Practice: Soil/Water Work on logistics (2) Start collecting samples (Oct 9th -)	Project Proposal due (2 pages)
	Oct 15th	Sample collection or experiment (can continue to collect samples/data until Oct 17th)	
Data analyses (Practices)	Oct 22nd	Data processing/organization Data presentations (Figures, Tables) Introduction to R-project	(*All soil/water samples need to be collected and submitted for analysis by Oct 18th)
	Oct 29th	Statistics (testing hypothesis) 1	Assignment: Plot figures, Make tables
	Nov 5th	Statistics (testing hypothesis) 2	Assignment: Statistics
Data analyses (using your data)	Nov 12th	Write introduction/methods Analyze own data (1)	Exercise: Introduction/methods section
	Nov 19th	Write Results/Discussion Format citations Analyze own data (2) Presentation techniques	Exercise: Complete Results/Discussion Assignment: Figures/tables for your data
	Nov 26th	Thanksgiving break: No class	Enjoy the holiday!!
Present data	Dec 3rd	Project presentation 1 Report draft Report Peer Review	Project presentation (15 min each) Exercise: Draft project report due (Dec 3rd) Exercise: Peer review due (Dec 6th)
Final report	Dec 10th	Project presentation 2 (if necessary) Self-reflection Final report revision/submission Course evaluation (GatorEval)	Project presentation (15 min each) Self-reflection due Final project report due
Course end	Dec 13th	End of semester!!	Have a great holiday season!!

Grades and Grade Points
For information on current UF policies for assigning grade points, see https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/.

Attendance and Make-Up Work
Requirements for class attendance and make-up exams, assignments and other work are consistent with university policies that can be found at: https://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/.

Online Course Evaluation Process
Student assessment of instruction is an important part of efforts to improve teaching and learning. At the end of the semester, students are expected to provide feedback on the quality of instruction in this course using a standard set of university and college criteria. Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals.

Guidance on how to give feedback in a professional and respectful manner is available at: https://gatorevals.aa.ufl.edu/students/.

Students will be notified when the evaluation period opens and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via https://ufl.bluera.com/ufl/.

Summaries of course evaluation results are available to students at: https://gatorevals.aa.ufl.edu/public-results/.

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/process/student-conduct-honor-code.

Services for Students with Disabilities
The Disability Resource Center coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending 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 0001 Reid Hall, 352-392-8565, https://disability.ufl.edu/

Campus Helping Resources

Students experiencing crises or personal problems that interfere with their general wellbeing 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
    - Counseling Services, Groups, and Workshops, Outreach, and Consultation, Self-Help Library Wellness Coaching
- U Matter We Care, www.umatter.ufl.edu/
- Career Connections Center, First Floor JWRU, 392-1601, https://career.ufl.edu/.
- Student Success Initiative, http://studentsuccess.ufl.edu.

Student Complaints:
- Residential Course: https://sccr.dso.ufl.edu/policies/student-honor-code-studentconduct-code/.
- Online Course: http://www.distance.ufl.edu/student-complaint-process