

SWS 4800: Soil and Water Monitoring Techniques
SWS 5805: Advanced Soil and Water Monitoring Techniques
Course Syllabus Spring 2022

General Information

Credit/Contact	3	
Teaching Format	CANVAS Login: http://lss.at.ufl.edu Pre-recorded lectures & lecture slides Reading materials Multi-media materials Weekly live chat sessions: <ul style="list-style-type: none"> • By Zoom – Link is in Canvas • Schedule – Tuesdays 8-9 pm Field trip (St. Augustine, FL) March 25/26	
Instructors	Dr. Todd Z. Osborne (352) 256-3826 (cell) osbornet@ufl.edu	Dr. Heather Enloe (352) 294-3139 (office) Heather.enloe@ufl.edu
Teaching Assistant	TBD	

Course Overview: The course will provide participants with an understanding of the rules and regulations relevant to environmental monitoring, the concept and importance of representative environmental sampling; standard sampling and analytical procedures; use of common instrumentation for sample collection; quality assurance and control for monitoring; proper documentation techniques, and sampling designs and development of a sampling plan with health and safety features. The students learn in multiple learning activity format, including recorded lectures, video demonstration of sampling techniques, reading materials, online discussions, assignments, team projects, and a field trip with hands-on demonstration. The students not only learn the “what and hows,” but most importantly, the “whys” as they relate to sampling and testing procedures. This will help the students who maybe conducting sampling and testing for their research projects, as well as in performing these tasks in their professional career. Generation of data of acceptable and documented quality helps assure reliability of the data that could be used in forming conclusions or critical decisions.

Course Core Objectives

Those successfully completing this course will be able to:

1. Recognize environmental regulations relevant to monitoring program implementation
2. Prepare sampling designs, sampling plan, and health and safety plan
3. Describe the methods, technology, and tools for various types of environmental monitoring

4. Apply environmental monitoring concepts, tools, and technologies using hands-on experiences
5. Identify environmental data sources and assess the usability of data
6. Understand and practice common data analysis, interpretation, and presentation
7. For Graduate Students Only: Apply environmental monitoring theories, principles, and practices through an independent research (group) project.

Required Textbook:

Artiola, Janick F., Ian L. Pepper, and Mark L. Brusseau. 2004. Environmental Monitoring and Characterization. Elsevier Academic Press, San Diego, CA. 410 pages.

Other Suggested References:

Standard Operating Procedures for Laboratory Operations and Sample Collection Activities
DEP-QA-001/2008, Florida Department of Environmental Protection, 2600 Blair Stone Road, Tallahassee, Florida. Quality Assurance Section, 2008.
(<http://www.dep.state.fl.us/water/sas/sop/sops.htm>)

Environmental Investigations Standard Operating Procedures and Quality Assurance Manual
U.S. Environmental Protection Agency, Region 4, 980 College Station Road, Athens, Georgia. May 1996 (Includes 1997 Revisions) (<http://www.epa.gov/region4/sesd/eisopqam>)

Guidance on Choosing a Sampling Design for Environmental Data Collection, US EPA QA/G-5S, December 2002 (<http://www.epa.gov/quality>).

Oster, Neal K. Sampling and analysis. 1997. Prentice-Hall, Inc. Upper Saddle River, NJ 07458.

Course Outline*

*Dates may change. Notification of a change in date will be given in advance.

Week 1 (1/5-1/9)	<ul style="list-style-type: none"> • Course overview, objectives, and expectations • Introduction to Environmental Monitoring <ul style="list-style-type: none"> ○ Overview of Environmental Monitoring and Characterization ○ Introduction to Common Terminologies and Acronyms ○ Regulations Related to Environmental Monitoring • Syllabus Quiz
Week 2 (1/10-1/16)	<ul style="list-style-type: none"> • Environmental Project Planning <ul style="list-style-type: none"> ○ Environmental Project Cycle ○ Data Quality Objectives ○ Sampling Plans ○ Health and Safety Plans • Assignment 1 (due 1/13)

Week 3 & 4 (1/18-1/30)	<ul style="list-style-type: none"> • Field Sampling Techniques and Practices <ul style="list-style-type: none"> ○ Types of field sampling • Introduction Regulatory Field Standard Operating Procedures <ul style="list-style-type: none"> ○ Quality Assurance and Quality Control • Assignment 2 (due 1/20) • Assignment 3 (due 1/27)
Week 5 & 6 (1/31-2/13)	<ul style="list-style-type: none"> • Monitoring Surface Water <ul style="list-style-type: none"> ○ Sampling objectives ○ Sampling methods ○ Sampling equipment ○ Field testing • Assignment 4 (due 2/10)
Week 7 & 8 (2/14-2/27)	<ul style="list-style-type: none"> • Introduction to Groundwater Monitoring <ul style="list-style-type: none"> ○ Sampling objectives ○ Types of wells and well configuration ○ Sampling methods ○ Sampling equipment ○ Purging and Stabilization Criteria • Assignment 5 (due 2/17, to grade in time for midterm)
Week 9	Midterm Open book, open notes timed exam. Once you start the exam, you must finish it within the time allotted. The exam is available over a 4-day period (3/2-3/5). No chat. No Assignment due.
Week 10 (3/14-3/20)	<ul style="list-style-type: none"> • Soil and Vadose Characterization <ul style="list-style-type: none"> ○ Sampling objectives ○ Sampling methods ○ Sampling equipment ○ Field measurements • Assignment 6 (due 3/24)
Week 11 (3/21-3/27)	<ul style="list-style-type: none"> • Vegetation and Benthic Organism Monitoring <ul style="list-style-type: none"> ○ Sampling objectives ○ Sampling methods ○ Sampling equipment
Week 11/12 Weekend	Weekend Field trip to Whitney Lab- hands on lab (3/26-3/27)
Week 12 (3/28-4/3)	<ul style="list-style-type: none"> • Environmental Laboratory Techniques and Practices I <ul style="list-style-type: none"> ○ Laboratory requirements and good laboratory practices ○ Common laboratory methods for water analysis • Assignment 7 (due 3/31) • Field report (due TBD)
Week 13 (4/4-4/10)	<ul style="list-style-type: none"> • Environmental Laboratory Techniques and Practices II <ul style="list-style-type: none"> ○ Laboratory analysis for soil and vegetation samples ○ Quality assurance and quality control in the laboratory • Assignment 8 (due 4/7)

Week 14 (4/11-4/17)	<ul style="list-style-type: none"> • Data Analysis <ul style="list-style-type: none"> ○ Introduction to existing data resources ○ Data verification, validation, and quality assessment • Data Analysis and Interpretation <ul style="list-style-type: none"> ○ Graphical data analysis ○ Common statistical analyses ○ Use of GIS in environmental data analysis ○ Use of models in environmental monitoring • Ethics in Environmental Monitoring • Assignment 9 (due 4/14)
Week 15 (4/18-4/21)	<ul style="list-style-type: none"> • Review • Peer review of project (TBD)
Week 15/16	FINAL EXAM Open book, open notes timed exam. Once you start the exam, you must finish it within the time allotted. The exam is available over a 4-day period (4/24 - 4/27).

Field Trip

A field trip to demonstrate course concepts is planned at the UF Whitney Laboratory in St. Augustine, FL. Tentative dates scheduled are March 20-21 (Saturday-Sunday).

Grading Point Evaluation/Scale:

Criteria	SWS4800	SWS5805
Assignments	25%	25%
Field exercise and report	15%	15%
Project, SWS4800	20%	--
Project report, SWS5805	--	20%
Midterm exam	20%	20%
Final exam	20%	20%

Grading Scale:

Course grades will be determined by summing all scores and dividing by the maximum score possible (400 points) x 100 to obtain a percentage score: 100-92 = A, 91-90 = A-, 89-88 = B+, 87-81 = B, 80-79 = B-, 78-70 = C, 69-60 = D, <60 = Fail.

The instructor reserves the right to **add 0-3 points to the final percentage score** on the basis of meaningful chat participation, demonstrated student interest, and overall student dedication.

For information on current UF policies for assigning grade points, see <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Attendance, Late Assignments, and Make-up Exam Policy:

Weekly chat attendance is expected. Attendance is based on the student's confirmation of completion of weekly materials and submission of weekly assignment. Attendance for the field trip is highly encouraged. In the event a student cannot make the field trip portion, an alternative assignment is allowed that consists of spending a day with an environmental monitoring professional in their local area. Any attendance issues, including the alternative assignment for the field trip, must be arranged with your instructor in advance (and preferably during the first week of classes).

Late assignments are accepted only with a valid reason. Assignments submitted more than 2 weeks from due date will not be accepted unless arranged with the instructor. Make-up exam maybe given only in extreme circumstances, as determined by instructor.

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/ugrad/current/regulations/info/attendance.aspx>.

Honesty Policy – 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>.

COVID Response: Our class sessions and chat sessions may be audio visually recorded for students in the class to refer back and for enrolled students who are unable to attend live. Students who participate with their camera engaged or utilize a profile image are agreeing 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.

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/>.

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, Online Course: <http://www.distance.ufl.edu/student-complaint-process>

Each online distance learning program has a process for, and will make every attempt to resolve, student complaints within its academic and administrative departments at the program level

Accommodating students' religious observances: Students and faculty must work together to allow students the opportunity to observe the holy days of his or her faith. A student needs to inform the faculty member of the religious observances of his or her faith that will conflict with class attendance, with tests or examinations, or with other class activities prior to the class or occurrence of that test or activity. The faculty member is then obligated to accommodate that particular student's religious observances. Because our students represent a myriad of cultures and many faiths, the University of Florida is not able to assure that scheduled academic activities do not conflict with the holy days of all religious groups. We, therefore, rely on individual students to make their need for an excused absence known in advance of the scheduled activities.

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.