SWS 5424C
Soil Chemical Analysis

Instructors: Dr. Jonathan Judy, Assistant Professor, Soil, Water and Ecosystem Sciences Department; Francisca Hinz, PhD Student, Soil, Water and Ecosystems Sciences Department; Dr. Chris Wilson, Professor, Soil, Water and Ecosystem Sciences Department
Office location: 3169 McCarty Hall A (Judy), 3167 McCarty Hall A (Wilson)
Office hours: Please call or email for an appointment.
Course Prerequisites: Instructor permission.
Credit Hours: 3 credits
Delivery Method: Classroom, Fall semester every odd year
Enrollment Cap: 10 Graduate Students

Meetings: Friday, periods 3-5 (9:35 AM to 12:35 PM)

Course Overview:
The course will cover key techniques related to the execution of research in soil and water chemistry.

Course Objectives:
In this course, we will work to develop the skills required to conduct rigorous and productive research in soil and water chemistry.

After finishing this class, you will be able to:
1. Properly record laboratory activity in lab notebooks and compose reasonably clear Excel files organizing data.
2. Execute basic laboratory activities such as pH measurement, pipetting and gravimetric analysis.
3. Describe the importance of methodological/analytical QA/QC and how to incorporate necessary QA/QC samples into various analyses.
4. Detail approaches to validating and troubleshooting methods
5. Describe operation of instrumentation related to key analyses (i.e., XRD, ICP, LC-MS, UV-VIS) and be able to prepare samples (including QA/QC) for these analyses

Course Requirements: Students must have an e-mail account, Internet access, access to a computer that meets the University of Florida computer standards.

Course Web Site: Course grades and discussions will be posted on Canvas. Go to http://elearning.ufl.edu/, log on using your Gatorlink. You need to have a Gatorlink account http://www.gatorlink.ufl.edu/ to be able to log on to the class. Please note that E-learning needs Java to work properly. You can download Java from the same website.

Students Responsibilities:
Students are expected to actively participate in and be prepared for class.

HW, Class Discussions and Exams:
This class has 10 total assignments (which include 6 lab practical assignments, 1 for every module), each worth 20 points, as well as a final lab practical worth an additional 50 points. Your final grade will be based on the cumulative score as outlined in the table below:

Grade	Points Required
A	230
A-	223
B+	216
B	203
B-	198
C+	191
C	173

See also UF policies at: https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx.

Make-Up Work and Absences
Make up exams are rarely authorized and must be medically justified and authenticated**.**

Homework assignments will be assigned regularly and will be graded. A *10% per day* lateness deduction will be assessed for any assignments (not just homework) turned in late. Work more than a week late *will not be accepted*.

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.

Online Course Evaluation Process
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/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.

In-Class Recording Policy:
Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A “class lecture” is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To "publish" means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct 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, **www.dso.ufl.edu/drc/**

Campus Helping Resources:
Students experiencing crises 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.

1. *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
2. U Matter We Care, **www.umatter.ufl.edu/**
3. *Career Resource Center,* First Floor JWRU, 392-1601, **www.crc.ufl.edu/**

Student Complaints:

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. See http://distance.ufl.edu/student-complaint-process/ for more details.

Tentative Weekly Schedule

Week #	Week of	Topic
1	18-Aug	Lab Mathematics and Lab Safety: Record keeping/Notebooks, EH&S risk Assessment; Compressed Gases, Regulators
2	25-Aug	Data Quality: Analysis sensitivity, accuracy, precision and detection limits
3	1-Sep	Liquid Operations: Solutions, pipetting, pipette calibration; Reagent water, Sample preservation
4	8-Sep	Basic Analyses: pH, hardness, alkalinity, titration, EC
5	15-Sep	Basics of X-ray Diffraction and XRD Data Analysis
6	22-Sep	Operationally-defined soil extractions; Soil extractions for P determination
7	29-Sep	UV-VIS for P determination, Beer's Law
8	6-Oct	Soil Textural Analysis: Hydrometer, Laser diffraction, BC cylinder etc
9	13-Oct	Chromatography
10	20-Oct	Chromatography Extractions
11	27-Oct	Data Analysis; How to deal with BDL values and outliers; R case study
12	3-Nov	Metals Analysis Method QA/QC; Hotblock digestion, Microwave digestion
13	10-Nov	TBD (SSSA)
14	17-Nov	Metals Analysis: Analytical QA/QC, ICP
15	24-Nov	NO CLASS (Thanksgiving Break)
16	1-Dec	NO CLASS (Class period falls on reading days)
17	12-Dec	NO CLASS; Week of final exams