

Soil Chemical Analysis

SWS 5424C

COURSE DESCRIPTION: Principles and practices used in analytical laboratories for analyzing soil and water will be presented.

INSTRUCTOR:

Dr. John Thomas
Soil and Water Science Dept.
University of Florida
2181 McCarty Hall
Gainesville, FL 32611-0290
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TIMES: Spring, all years

CREDIT HOURS: 3 Hours

ENROLLMENT CAP: 9

FORMAT: Laboratory

LOCATION: McCarty "A" G184

TIME: 3 hours/week Fridays, Periods 4-6

DELIVERY MODE:

- Course material is provided via Canvas E-learning <https://lss.at.ufl.edu/> Click on "e-Learning in Canvas" and login with your Gatorlink account credentials.
- Course material will include MS Power Point slides, reading material in pdf format, e-lectures, quizzes, and hyperlinks.
- Email and message (bulletin) board are used for asynchronous communication
- VoiceThread is free and available for student presentations. To access VoiceThread, go to <https://ufl.voicethread.com> and login with your gatorlink username and password. Click for [User guide](#)
- Laboratory instruction to be held once a week in McCarty Hall, room G184 unless instructed otherwise. Lecture room to be announced in McCarty Hall, room G184.

COURSE PREREQUISITES: Computer with high-speed internet access (e.g. DSL, cable modem, or satellite modem). Basic knowledge of soils, chemistry, and mathematics (or by consent of the instructor).

SOFTWARE: Windows operating system, Microsoft Office, and Adobe Reader.

TEXTBOOK: There is no required textbook assigned to this course, however for reference a list of some scientific papers, book chapters, and other reading material will be indicated for particular topics.

Student Responsibilities:

1. Students are expected to study the appropriate text sections and suggested outside readings in anticipation of lecture coverage.
2. Students are expected to actively participate in laboratory sessions.
3. Students are expected to complete all assignments/quizzes when offered. No make-up quizzes will be allowed.
4. Students are expected to give a multi-media asynchronous presentation using VoceThread
5. Students are expected to demonstrate their mastery of presented material by passing written examinations and successfully completing assigned laboratory work.

Student Evaluation:

1. You are expected to attend and be prepared to participate in all sessions. Personal issues with respect to lecture/laboratory sessions or fulfillment of course requirements will be handled on an individual basis. A portion of the grade is based on meaningful class participation, demonstrated student interest, and overall student dedication.
2. Course grades will be determined as follows

3. Grading Scale

A	95% and above	C	73-76.99%
A-	90-94.99%	C-	70-72.99%
B+	87-89.99%	D+	67-69.99%
B	83-86.99%	D	63-66.99%
B-	80-82.99%	D-	60-62.99%
C+	77-79.99%	E	Below 60

Note: The degree-granting college may require a minimum grade of C in particular courses.

**COURSE OUTLINE:
LECTURES & LABS**

WEEK	SUBJECT
1	Laboratory Safety from UF Environmental Health & Safety Officer
2	Basic Laboratory Mathematics – Part 1 (Dilutions, Significant figures, Dimensional analysis)
3	Basic Laboratory Mathematics – Part 2 (MS Excel & rudimentary statistics)
4	Introduction & Basic Laboratory Concepts (QA/QC, Calibration, Precision, Accuracy, LOQ vs LOD)
5	Proper use of Basic Equipment - Theory & Practice (Glassware, balance, hood, ovens, centrifuges & pipets)
6	Theory & Practice of ionometry (pH, redox, ion selective)
7	Theory & Practice of spectroscopy (UV-Vis, IR, NMR, MS)
8	Theory & Practice of chromatography (Liquid, Thin Layer, Ion, Gas)
9	Theory of elemental and ion analysis of C, H, N, O and S (TOC, RFA, Kjeldahl)
10	Theory of metal analysis (AAS, GFAAS, ICP, X-ray)
11	Tour of ARL Facilities
12	Project Training (Students choose an instrument to learn, if permitted)
13	Project Research
14	Project Presentations

Note: Blue letters for Lectures, Black letters for lab work

Recommended (but not required):

Additional handouts and references to specific topics will be given during the semester.

1. M. Pansu, J. Gautheyrou and J-Y Loyer, (2001) *Soil Analysis–Sampling, Instrumentation and Quality Control*, A.A. Balkema Publishers, Netherlands.
2. D.L. Sparks (ed), (1996) *Methods of Soil Analysis, Part 3 – Chemical Methods*, SSSA Book Series 5, Soil Science Society of America, Inc., Madison, WI, USA.
3. A. Greenberg, L. Clesceri, and A. Eaton (eds.), *Standard Methods for the Examination of Water and Wastewater*, American Public Health Association, American Water Works Association, Water Environment Federation, Washington, DC, USA.
4. USEPA SW-846 On-Line Test Methods for Hazardous Wastes
<http://www.epa.gov/osw/hazard/testmethods/sw846/online/>

ACCOMODATIONS FOR STUDENTS WITH DISABILITIES:

If you require classroom accommodation because of a disability, you must first register with the Dean of Students Office (<http://oss.ufl.edu/>). The Dean of Students Office will provide documentation to you, which you then give to the instructor when requesting accommodation. The College is committed to providing reasonable accommodations to assist students in their coursework.

ACADEMIC HONESTY:

As a result of completing the registration form at the University of Florida, every student has signed the following statement: “I understand that the University of Florida expects its students to be honest in all their academic work. I agree to adhere to this commitment to academic honesty, and understand that my failure to comply with this commitment may result in disciplinary action, up to and including expulsion from the University.” Students are expected to act in accordance with the University of Florida policy on academic integrity (see Student Conduct Code, the Graduate Student Handbook or this web site for more details: www.dso.ufl.edu/judicial/procedures/academicguide.php).

UF COUNSELING SERVICES:

Students may occasionally have personal issues that arise in the course of pursuing higher education or that may interfere with their academic performance. If you find yourself facing problems affecting your coursework, you are encouraged to talk with an instructor and to seek confidential assistance at the University of Florida Counseling Center, 352-392-1575, or Student Mental Health Services, 352-392-1171. Visit their web sites for more information: <http://www.counsel.ufl.edu/> or <http://www.health.ufl.edu/shcc/smhs/index.htm#urgent>

The Student Health Care Center at Shands is a satellite clinic of the main Student Health Care Center located on Fletcher Drive on campus. Student Health at Shands offers a variety of clinical services, including primary care, women's health care, immunizations, mental health care, and pharmacy services. The clinic is located on the second floor of the Dental Tower in the Health Science Center. For more information, contact the clinic at 392-0627 or check out the web site at: www.health.ufl.edu/shcc

Crisis intervention is always available 24/7 from:
Alachua County Crisis Center: (352) 264-6789.

BUT – Do not wait until you reach a crisis to come in and talk with us. We have helped many students through stressful situations impacting their academic performance. You are not alone so do not be afraid to ask for assistance.

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.