

Introduction to Soils in the Environment

SWS 5050

Time: Monday, Wednesday, Friday 4th period
Fall 2022

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Office Hours: Monday, Wednesday 4:00 – 4:45 pm, Thursday 10:00-11:00.

Canvas Website: <http://lss.at.ufl.edu>

Course Description:

This course emphasizes soil physical, chemical, and biological properties in relation to plant growth, the environment, and the soil's place in our daily lives. The course is intended to acquaint students with the importance of soils to humans and the environment through study of their morphology, physical and chemical properties, their distribution, and their biological significance. Each student who successfully completes the course should have a practical understanding of the following:

- Properties common to all or most soils on various scales.
- Vocabulary to communicate with agricultural and environmental professionals.
- Management strategies for different soils.
- Problem solving skills to manage soils effectively.
- The importance of soils in sustaining life.
- The impact of soils on environmental quality

Course Objectives:

1. Evaluation of how physical properties of soils influence the behavior, function, and productivity of soils in environmental and agricultural settings.
2. Analysis and computation of how water and chemicals move through soils.
3. Formulation and critical evaluation of hypotheses related to the interaction of soil solution constituents with the soil solid phase.
4. Identification of the major classes of soil organisms and how they influence the cycling of carbon and nutrients in soils.
5. Definition and synthesis of the fundamental elements of soil morphology and taxonomy to communicate important concepts related to soils in the environment.

Student Learning Outcomes

This course also will assess Student Learning Outcomes which can be defined as.

Student Learning Outcomes: Content and Skills

Content: Students demonstrate competence in the terminology, concepts, and methodologies used within the discipline

Communication: Students communicate knowledge, ideas, and reasoning clearly and effectively in written and oral forms appropriate to the discipline.

Critical Thinking: Students analyze information carefully and logically from multiple perspectives using discipline-specific methods and develop reasoned solutions to problems.

The Student Learning Outcomes will be assessed through ongoing evaluation. Content will be tested using three objective exams, ten multiple choice and True/False quizzes, and 8 written homework assignments incorporating fundamental concept knowledge and computations relevant to course material. Communication will occur through discussion during assigned meeting times, web-based discussion posts, and short answer as well as computation-based homework assignments related to soil processes. Critical thinking will be assessed through computation, analysis, and application of data/results to issues related to soil management.

Course Schedule

- Module 1** **Course Introduction – Syllabus, Online Course Guidelines**
- Module 2** **Introduction to Soils, Soil Function, Soil Formation, Soil Horizons**
Reading: Chapter 1, pages 1 – 26,
Chapter 2, pages 52 – 56
Chapter 4, page 97 and referenced plates (photos)
Quiz I Soil Function, Soil Formation, Soil Horizons Due Wednesday 9-7
- Module 3** **Soil Color, Soil Texture, Soil Density**
Reading: Chapter 4, pages 96-122
Quiz II Soil Color and Texture Due on Wednesday 9-14
Assignment I: Soil Horizons, Texture, and Color Due Wednesday 9-14
- Module 4** **Introduction to Soil Water**
Reading: Chapter 5, pages 133-149 (weeks 3 and 4)
Assignment II Basic Water Calculations Due Wednesday 9-21
Quiz III Due Wednesday 9-21
- Module 5** **Soil Water Continued: Movement and Retention**
Quiz IV Due Wednesday 9-28
Assignment III Soil Water Potential Due Wednesday 9-28
- Exam I** **Exam I and Review: Modules 2 through 5**
Review Monday 10-3
Exam I Due Friday 10-7
- Module 6** **Introduction to the Soil Mineral Fraction**
Reading: Chapter 8, pages 235-255 (weeks 6 and 7)
Quiz V Due Wednesday 10-12
- Module 7** **Reactions of Soil Aluminosilicate Minerals, Fe and Al Oxides**
Reading: Chapter 8, pages 236-256
Quiz VI Due Wednesday 10-19
Assignment IV Soil Reactivity Due Wednesday 10-19
- Module 8** **Organic Matter Reactions**
Reading: Chapter 8, pages 248-261
Quiz VII Due Wednesday 10-26
- Exam II** **Exam II and Review: Modules 6 through 8**
Review Monday 10-24
Exam II Due Friday 10-28

Module 9 Soil Acidity, Alkalinity, and pH
Reading: Chapter 9, pages 269-298
Quiz VIII Due Wednesday 11-9
Assignment V Soil Acidity and Base Saturation Due 11-9

Module 10 Soil Morphology and Classification
Reading: Chapter 3, pages 58-93
Quiz IX Due Wednesday 11-16
Assignment VI Web Soil Survey Due 11-16

Module 11 Organisms and Carbon Cycling, Nitrogen Cycling
Reading: Chapter 8, pages 261-263
Reading: Chapter 12, pages 397-4-11
Quiz X Due Wednesday 11-23

Module 12 Soil Phosphorus
Reading: Chapter 12, pages 420-432, 433-438
Assignment VII Synthesis of Concepts Due MONDAY 12-5

Exam III Exam III Modules 9-12
Review Monday 12-5
Exam III Due Friday 12-9

Textbook:

Brady, N.C. and Weil, R.R. Elements of the Nature and Properties of Soils. 3rd Edition New Jersey:
Pearson Prentice Hall. ISBN – 0-13-501433-6

Course Grading

Grading will be based on Weekly Quizzes, Homework Assignments, and three Exams.

Assignment	Percentage of Grade
Exams	40%
Quizzes	30%
Assignments	30%
TOTAL	100%

<u>Letter Grade</u>	<u>Numerical Grade*</u>	<u>GPA Points</u>
A	92-100 %	4.0
A-	90-91.9	3.67
B+	86-89.9	3.33
B	83-85.9	3.0
B-	79-82.9	2.67
C+	77-78.9	2.33
C	72-76.9	2.0
C-	70-71.9	1.67
D+	66-69.9	1.33
D	63-65.9	1.0
D-	59-62.9	0.67
E	<59	0

*Multiply the Numerical grade by 10 to determine points need to achieve a given letter grade.

The homeworks, quizzes, and lecture questions are explained below. They can have a significant positive impact on your overall grade. Please do not discount their importance.

BASIC COURSE REQUIREMENTS:

1. **Exams** consist of objective and interpretive multiple choice and true/false questions. Study guides and review sessions will be provided prior to each exam. Exams will be administered during regular class hours.
2. **Homeworks** will address current and historic topics of soils in the environment as well as basic assignments related to class lectures and problem solving. Due dates are indicated above. Submission will be on the course management site; emailed assignments are not permitted. **One homework drop is permitted.**
3. **Quizzes** will be conducted online in the course management system. Each quiz usually will consist of 10 questions randomly selected from a large bank of questions. You may take the quiz twice during the prescribed period indicated in the course schedule above. **One Quiz drop is permitted**

GENERAL POLICIES

Lecture notes will be posted on the course management site following each lecture.

Homework submissions: All work is expected to be the product of each individual member of the class. Assignment submissions must be clearly presented **and the product of each individual student's work. Copying information verbatim from the web, books, articles, etc. requires proper attribution, but is discouraged.**

Late Work: Submission of assignments is expected on time. Late work will not be accepted. Please do not email late work to the instructor.

Make-up Exams: Contact the instructor or teaching assistant as early as possible if you must legitimately miss a scheduled exam. If an emergency arises immediately before an exam, notify the instructor or teaching assistant as soon as the emergency is resolved. Make-up exams are scheduled as indicated in the course schedule above. Only students with appropriate documentation may take the make-up exam.

Students are expected to arrive and be prepared to commence on time. Please be considerate to the instructor and your fellow students and avoid talking, texting, or other disruptive behavior. **Use of electronic devices of any kind is not permitted in class unless indicated by the instructor.** Students also are expected to remain in class for the duration of the lecture. If you must leave early, inform the instructor prior to commencement of class.

Students Requiring Accommodations

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, www.dso.ufl.edu/drc/) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

Course Evaluation

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at <https://evaluations.ufl.edu>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/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.

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.

- *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 JWRU, 392-1601,

www.crc.ufl.edu/

In-Class Recording:

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

Campus Resources:

Health and Wellness

U Matter, We Care: If you or someone you know is in distress, please contact umatter@ufl.edu, 352-392-1575, or visit U Matter, We Care website to refer or report a concern and a team member will reach out to the student in distress.

Counseling and Wellness Center: Visit the Counseling and Wellness Center website or call 352-392-1575 for information on crisis services as well as non-crisis services.

Student Health Care Center:

Call 352-392-1161 for 24/7 information to help you find the

care you need, or visit the Student Health Care Center website.
University Police Department: Visit UF Police Department website or call 352-392-1111 (or 9-1-1 for emergencies).

UF Health Shands Emergency Room / Trauma Center:

For immediate medical care call 352-733-0111 or go to the emergency room at 1515 SW Archer Road, Gainesville, FL 32608; Visit the UF Health Emergency Room and Trauma Center website.

Academic Resources

E-learning technical support:

Contact the UF Computing Help Desk at 352-392-4357 or via e-mail at helpdesk@ufl.edu.

Career Connections Center:

Reitz Union Suite 1300, 352-392-1601. Career assistance and counseling services.

Library Support: Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center:

Broward Hall, 352-392-2010 or to make an appointment 352-392-6420. General study skills and tutoring.

Writing Studio: 2215 Turlington Hall, 352-846-1138. Help brainstorming, formatting, and writing papers.

Student Complaints On-Campus:

Visit the Student Honor Code and Student Conduct Code webpage for more information.

On-Line Students Complaints: View the Distance Learning Student Complaint