

## **Introduction to Soils in the Environment**

SWS 3022

MWF 1:55 pm CSE 101

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**Office Hours:** Monday, Wednesday, Friday 4:00-4:45

**Canvas Website:** [elearning.ufl.edu](http://elearning.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 and ecosystem function

### **Course Objectives:**

Physical science courses provide instruction in the basic concepts, theories and terms of the scientific method in the context of the physical sciences. Courses focus on major scientific developments and their impacts on society, science and the environment, and the relevant processes that govern physical systems.

These general education objectives will be accomplished through

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 conditions 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 6 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 and applications.

## Course Schedule

- Module 1**      **Course Introduction – Syllabus, Course Guidelines**
- Module 2**      **Introduction to Soils, Soil Function, Soil Formation, Soil Horizons**  
Reading: Chapter 1, Chapter 2  
**Quiz I Soil Function, Soil Formation, Soil Horizons Due Wednesday 9-3**
- Module 3**      **Soil Color, Soil Texture, Soil Density**  
Reading: Chapter 4  
**Quiz II Soil Color and Texture Due on Wednesday 9-10**  
**Assignment I: Soil Horizons, Texture, and Color Due Wednesday 9-10**
- Module 4**      **Introduction to Soil Water**  
Reading: Chapter 5 (modules 4 and 5)  
**Assignment II Basic Water Calculations Due Wednesday 9-17**  
**Quiz III Due Wednesday 9-17**
- Module 5**      **Soil Water Continued: Movement and Retention**  
**Quiz IV Due Wednesday 9-24**  
**Assignment III Soil Water Potential Due Wednesday 9-24**
- Exam I**        **Exam I and Review: Modules 2 through 5**  
Review Monday 9-22  
**Exam I Due Wednesday 9-24**
- Module 6**      **Introduction to the Soil Mineral Fraction**  
Reading: Chapter 8 (Modules 6 and 7)  
**Quiz V Due Wednesday 10-8**
- Module 7**      **Reactions of Soil Aluminosilicate Minerals, Fe and Al Oxides**  
Reading: Chapter 8  
**Quiz VI Due Wednesday 10-15**  
**Assignment IV Soil Reactivity Due Wednesday 10-15**
- Module 8**      **Soil Organic Matter**  
Reading: Chapter 8, Chapter 11  
**Quiz VII Due Wednesday 10-22**
- Exam II**        **Exam II and Review: Modules 6 through 8**  
Review Monday 10-20  
**Exam II Due Wed 10-22**

**Module 9      Soil Acidity, Alkalinity, and pH**  
Reading: Chapter 9  
**Quiz VIII Due Wednesday 11-5**  
**Assignment V Soil Acidity and Base Saturation Due Wednesday 11-5**

**Module 10    Soil Morphology and Classification**  
Reading: Chapter 3  
**Quiz IX Due Sunday 11-12**  
**Assignment VI Web Soil Survey Due Wednesday 11-12**

**Module 11    Organisms and Carbon Cycling, Nitrogen Cycling**  
Reading: Chapter 10, Chapter 12  
**Quiz X Due Wednesday 11-19**

**Module 12    Soil Phosphorus**  
Reading: Chapter 12

### **Thanksgiving Holiday**

**Exam III      Exam III Modules 9-12**  
Review Monday 12-1  
**Exam III Due Friday 12-5**

### **Textbook:**

#### Paperback Abridged:

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

Brady, N.C. and Weil, R.R. Elements of the Nature and Properties of Soils. 4<sup>th</sup> Edition New Jersey: Pearson Prentice Hall. ISBN-13: 9780137504831

#### Hardcover Unabridged:

Nature and Properties of Soils, The 15th Edition by R. R. Weil and N.C. Brady New Jersey: Pearson Prentice Hall ISBN-13: 9780137516933

### **Course Grading**

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

<u>Assignment</u>	<u>Percentage of Grade</u>
<b>Exams</b>	<b>50%</b>
<b>Lecture Quizzes</b>	<b>10%</b>
<b>Quizzes</b>	<b>20%</b>
<b>Assignments</b>	<b>20%</b>
<b>TOTAL</b>	<b>100%</b>

<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

### **BASIC COURSE REQUIREMENTS AND GENERAL POLICIES**

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.
2. **Assignments** will address current and historic topics of soils in the environment as well as basic assignments related to class lectures and problem solving. Assignment due dates are indicated above. Submission will be on the course management site; emailed assignments are not permitted. **One Assignment drop is permitted.**
3. **Quizzes** will be conducted online in the course management system. Each quiz will consist of 10 questions randomly selected from a large bank of questions. **You are permitted 2 quiz drops without penalty.**

### **GENERAL POLICIES**

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

**Assignment submissions:** Assignments submissions must be clearly presented **and the product of each individual student's work. Copying information verbatim from the web, books, articles, etc. requires appropriate citation, but is strongly discouraged.**

**Late Work:** Submission of assignments is expected on time. Late work will not be accepted. Students may apply for an exception to this rule by supplying appropriate documentation.

**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.

**Class Meetings: Non-mandatory online meetings will be held on Wednesday evenings. Time TBD**

### **Students Requiring Accommodations**

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, [www.dso.ufl.edu/drc/](http://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/](http://www.counseling.ufl.edu/cwc/)

Counseling Services

Groups and Workshops

Outreach and Consultation

Self-Help Library

Training Programs

Community Provider Database

[www.crc.ufl.edu/](http://www.crc.ufl.edu/)

*Career Resource Center, First Floor JWRU, 392-1601,*

**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](mailto: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](mailto: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