




**SWS 5050**  
**Soils for Environmental Professionals**  
**Spring 2021**

**Instructor:** Dr. Samira Daroub, Professor

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<b>Teaching Assistants</b>	
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**Course Prerequisites:** Good knowledge of chemistry. Graduate Student status or instructor approval.

**Credit Hours:** 3 credits

**Times:** Class is offered Spring semester every year.

**Enrollment Cap:** 25

**Delivery Method:** Web

Out-of-state students should consult the UF Soil and Water Sciences Department Web site for current tuition information <https://soils.ifas.ufl.edu/sws-online/ms-environmental-science-track/>

**Textbook**

The Nature and Properties of Soils by Ray R. Weil and Nyle C. Brady ,2017 **15<sup>th</sup> edition**. ISBN13: 978-0133254488. The 14<sup>th</sup> Edition, published by Prentice-Hall, Inc. in 2007 (ISBN-13: 9780132279383) is okay to use. You may order the book from UF bookstore OR on line at <https://www.pearsonhighered.com/>. Additional reading materials will be posted on class website.

**Online meetings /Chat sessions:** Mondays from 6-7:30 pm ET using Zoom. Chat dates are listed on lecture schedule (in this syllabus). Chat topics and questions are listed under the "Chat" tab on main banner on class website. You may participate by typing or using a microphone/webcam. To test your audio and video connections, please check detailed information on class website under "Start Here". All chats are recorded and posted on Zoom conferences/ Cloud Recordings. We will be using the same Zoom Meeting URL for all chat sessions. You can access call in information in Canvas under Zoom conferences

**First chat for spring 2021 is on Monday Jan. 11 @ 6 pm ET**

Our chat sessions are 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.

**Course Requirements:** Students must have a UF e-mail account, high speed Internet access, access to a computer that meets the [University of Florida computer standards](#), and purchase the textbook.

**Course Web Site:** <http://elearning.ufl.edu/> Login to Canvas using your Gatorlink username and password. If you are registered for the course, you should see the class listed. Class is available Jan 11, 2021. Students must login to class website within the first week of class.

\*\* This course is approved for the Employee Education Program \*\*

**Course Overview:**

The course is an introductory class in soil science intended for graduate students and professionals in the environmental science area with little or no background in soil science. The course will describe soil physical, chemical and biological properties and processes that determine the fundamental role soils play in the environment.

**COURSE GOALS**

- a. To gain an overall understanding of the soil physical, chemical and biological properties that impact plant growth and the environment
- b. To recognize the different soil processes that occur in soils whether is related to water retention, cation exchange capacity or adsorption.
- c. To gain a general understanding of nutrient cycles

## **COURSE OBJECTIVES**

*After finishing this class, students are able to:*

1. Discuss the importance of soil physical properties (soil texture, structure, bulk density and aggregation) on the function of soils
2. Classify and categorize the different soil orders according to their horizons and physical and chemical properties and their suitability of use in various cropping systems.
3. Debate differences in water holding capacity in various soils and solve for water content.
4. Discuss the differences in cation exchange capacity (CEC) and adsorption in various soils and solve for CEC problems.
5. Identify the essential elements (N& P), their functions in the plant and deficiency symptoms
6. Discuss the environmental impacts and Best Management Practices for N & P
7. Debate the management practices of acid, salt-affected and anaerobic soils and solve for liming problems

## **Students Responsibilities**

Students are expected to study the assigned text chapters and lectures prior to lecture coverage during chat time. Students are expected to actively participate in class chat discussions. Chat questions are posted for every week under the "Chat" tab. Please come prepared to discuss the posted questions, but also bring in your questions. In addition, we have graded discussions that are posted on class website.

## **Exams / HW/ Discussions**

There will be three lecture exams, 7 HW and 5 discussions. Exams are administered online. Please note due dates for HW and discussions and submit on-time using the Assignment or the Discussions tab. *HW drop box remains open for 48 hours after due date for a 5% penalty in grade.* Your final grade will be based on the cumulative score for the three lecture exams, homework assignments and participation in chat sessions and discussions. Please do not email HW or discussions- these will not be accepted.

## **GRADES AND GRADE POINTS**

3 exams = 300 points; 7 Homework assignments= 130 points; 5 Discussions = 70 points for a total of 500 points. In addition, there are opportunities to earn 10 bonus points on two extra discussions for a total of 510 points.

A ≥ 460 pts	C+ ≥ 380 pts
A- ≥ 450 pts	C ≥ 360 pts
B+ ≥ 435 pts	C- ≥ 335 pts
B ≥ 415 pts	D+ ≥ 315 pts
B- ≥ 395 pts	D ≥ 300 pts

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

### **Attendance and Make-Up Work**

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.ua.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.ua.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.

**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/](http://www.dso.ufl.edu/drc/)

**Campus 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/)*
- ◆ *U Matter We Care, [www.umatter.ufl.edu/](http://www.umatter.ufl.edu/) 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.*
- ◆ *Career Resource Center, First Floor JWRU, 392-1601, <https://career.ufl.edu/>*

**Student Complaints:**

Residential Course: <https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/>

Online Course: 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://www.distance.ufl.edu/student-complaint-process> for more details.



# Course Schedule

Download FREE [Flash Player](#), [Adobe Acrobat Reader](#), and [PowerPoint Viewer](#)

- ◆ *Chat sessions are on Mondays from 6-7:30 pm ET*
- ◆ *All HW are due on Fridays @ 11:59 pm ET with 48 h grace period for a 5% penalty in grade (unless otherwise indicated)*
- ◆ *Discussions' first post is due on Fridays @11:59 pm ET; replies and comments due following Monday*
- ◆ *Exams are open Saturday @ 6 am thru Monday @ 11:59pm ET*

## Tentative Class Schedule for Spring 2021

Week	<u>Introduction to Soils</u>	Chat Mondays 6-7:30 pm	Assessment	Due Date
Week 1  1/11	<b>Module 1: An Introduction to Soils</b> <ul style="list-style-type: none"> <li>• Read in the textbook Chapter 1; Soils around us</li> <li>• Review of chemical Principles Handout</li> </ul>	<u>Welcome chat</u>  Jan 11	Discussion: Introduction  HW 1 Chem Review	Jan. 15  Jan.22
Week 1& 2  1/11 1/19	<b>Module 2: Soil Physical Properties</b> <ul style="list-style-type: none"> <li>• Read Chapter 4; Soil Physical Properties <i>No chat Jan 20 MLK JR Holiday</i></li> </ul>	<u>Chat 1</u>  Jan 25	HW # 2 Bulk Density	Jan. 29
Week 3  1/25	<b>Module 3: Soil Formation</b> <ul style="list-style-type: none"> <li>• Read Chapter 2; Formation of Soils from Parent Materials</li> </ul>	<u>Chat 2</u>  Feb 1		
Week 4 & 5 2/1 2/8	<b>Module 4: Soil Classification</b> <ul style="list-style-type: none"> <li>• Read Chapter 3; Soil Classification</li> </ul>	<u>Chat 3</u> Feb 8	HW # 3 Soil Classification	Feb. 12 (No grace period)
	<b>Exam 1: Modules 1-4 Feb 13-15, 2021</b>	<i>No chat Feb 15</i>		
Week 6  2/15	<b>Module 5: Soil Water</b> <ul style="list-style-type: none"> <li>• Read Chapter 5; Soil Water</li> <li>• Watch <b>video</b> Windows Media Player on How water moves through soil</li> </ul>	<u>Chat 4</u>  Feb 22	HW# 4 Soil water	Feb. 26
Weeks 7 & 8  2/22 3/1	<b>Module 6: Soil Colloids and Ion Exchange</b> <ul style="list-style-type: none"> <li>• Read Chapter 8; Soil Colloids</li> <li>• Study Guides on cation exchange capacity (CEC): Download Practice Problems and Tutorial on CEC</li> </ul>	<u>Chat 5:</u> March 1 <u>Chat 6:</u> March 8	HW # 5  Soil Colloids and CEC	March 5

Week 9 3/8	<b>Module 7: Soil Organic Matter</b>  • Read Chapter 12; Soil organic Matter	Chat 7 &8  March 15	Discussion 1  HW #6	March 12  March 19 <i>(no grace period)</i>
	<b><u>Nutrient Cycles</u></b>			
Week 10  3/15	<b>Module 8: Nitrogen</b>  • Read Chapter 13; Soil Nitrogen. pgs 542-57	Chat 8 March 15	Discussion 2	March 19
	<b>Exam II: Modules 5-8 March 20-22, 2021</b>	<i>No chat March 22</i>		
	<b><i>No assignments due March 23- 31</i></b>			
Week 11  3/22	<b>Module 9: Phosphorus</b>  • Read <b>Chapter 14; Soil Phosphorus.</b> pgs 594-622.	Chat 9  March 29	Discussion 3	April 2
	<b><u>Environmental Soil Management</u></b>			
Week 12  3/29	<b>Module 10: Acid Soils</b>  • Read Chapter 9; Soil Acidity • Download liming calculations example handout • Download practice problems on pH, CEC, and liming handout	Chat 10  April 5	HW # 7  Acid soils and liming calculations	April 9
Week 13  4/5	<b>Module 11: Alkaline and Salt Affected Soils</b>  • Read Chapter 10; Soils of Dry Regions	Chat 11  April 12	Discussion 4 salt affected soils	April 16
Week 14  4/12	<b>Module 12: Soil Aeration and Anaerobic Soils</b>  • Read Chapter 7; Soil Aeration pgs. 266-288	Chat 12:  April 19	Discussion 5  Soil Aeration	April 21
Week 15  4/19	<b>Classes end Wed. April 21 Reading days (no classes) Thursday-Friday April 22-23</b>		Bonus Discussion	Wed April 21
	<b>Exam III: Modules 9-12 April 24-26, 2021</b>			