SWS 5050
Soils for Environmental Professionals

Instructor: Dr. Samira Daroub, Professor

- UF Soil and Water Science Department
- Phone: (561) 993-1593 in Belle Glade, Florida
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Email: sdaroub@ufl.edu

Teaching Assistant
Andrés Rodriguez afrodriguez@ufl.edu

Office hours: Always open. Please call or email me. You can reach me in the Ft. Lauderdale campus on Tuesdays and in Belle Glade the rest of the week.

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 Science Department Web site for current tuition information http://soils.ifas.ufl.edu/academics/degree-environscience.shtml

Online meetings /Chat sessions: Mondays from 6-7:30 pm using Adobe Connect. Chat dates and topics are listed on lecture schedule (in this syllabus). We will use the same URL for all chats. No need for password- Log in as a Guest using your full name please. You may participate by typing or using a microphone/webcam. Adobe has a guide for participants that includes a link to their Connect Test page that will check your computer for required plug-ins and connection speed. The guide is at: http://www.adobe.com/content/dam/Adobe/en/products/adobeconnect/pdfs/VQS_Guide_for_Participants.pdf (Links to an external site.)

First chat for spring 2016 will be on Monday Jan. 11 @ 6 pm

URL for all chat sessions for spring semester 2016 is: http://mbreeze.ifas.ufl.edu/r7c2wcjuef8/
**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 following textbook: *The Nature and Properties of Soils* by N.B Brady and R.R. Weil, 14th edition, Prentice-Hall 2007.

**Course Web Site:** [https://lss.at.ufl.edu](https://lss.at.ufl.edu) Login to Canvas using your Gatorlink username and password. If you are registered for the course, you will see it listed under E-learning. 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
**Text**

**Supplemental Reading Materials**

**Students Responsibilities**
Students are expected to study the assigned text sections and lectures prior to lecture coverage in class. Students are expected to actively participate in class chat discussions.

**Absences 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](https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx).

**Exams**
There will be three lecture exams. All exams are on-line. Your final grade will be based on the cumulative score for the three lecture exams, homework assignments and participation in chat sessions and discussions.

3 exams = 300 points
Homework assignments= 120 points
Discussions = 80 points
In addition, there is an opportunity to earn 15 bonus points on an extra discussion at end of semester for a total of 515 points.

A ≥ 450 points;
A- ≥ 440 points
B+ ≥ 425 points
B ≥ 405 points
B- ≥ 395 points
C+ ≥ 380 points
C ≥ 360 points
C- ≥ 335 points
D+ ≥ 315 points
D ≥ 300 points

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

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. Career Resource Center, First Floor JWRU, 392-1601, www.crc.ufl.edu/

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/

Distance Classes:

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-complaints for more details.
Class Schedule for Spring 2016

<table>
<thead>
<tr>
<th>Week</th>
<th>Introduction to Soils</th>
<th>Chat dates</th>
<th>Assessment</th>
<th>Due Date</th>
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</thead>
<tbody>
<tr>
<td>Week 1</td>
<td>Module 1: An Introduction to Soils</td>
<td>Thursdays 6-7:30 pm</td>
<td>Discussion 1</td>
<td>Jan. 17</td>
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<tr>
<td>1) 1/5</td>
<td>• Read in the textbook Chapter 1; Soils around us</td>
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<td>HW 1 Chem Review</td>
<td>Jan. 22</td>
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<td></td>
<td>• Review of chemical Principles Handout</td>
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<tr>
<td>Week 2</td>
<td>Module 2: Soil Physical Properties</td>
<td>Thursdays 6-7:30 pm</td>
<td>Chat 1:</td>
<td>Jan. 29</td>
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<tr>
<td>1) 1/5</td>
<td>• Read Chapter 4; Soil Physical Properties</td>
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<td>HW # 2 Bulk Density</td>
<td>Jan. 29</td>
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<td>2) 1/11</td>
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<tr>
<td>Week 3</td>
<td>Module 3: Soil Formation</td>
<td>Thursdays 6-7:30 pm</td>
<td>Chat 2:</td>
<td>Feb. 5</td>
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<tr>
<td>3) 1/19</td>
<td>• Read Chapter 2; Formation of Soils from Parent Materials</td>
<td></td>
<td>HW # 3 Soil</td>
<td>Feb. 5</td>
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<td></td>
<td>Classification</td>
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<td></td>
<td>No chat Jan 18</td>
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<tr>
<td>Week 4</td>
<td>Module 4: Soil Classification</td>
<td>Thursdays 6-7:30 pm</td>
<td>Chat 3:</td>
<td>Feb 6-8</td>
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<tr>
<td>4) 1/25</td>
<td>• Read Chapter 3; Soil Classification</td>
<td></td>
<td>HW # 4 Soil</td>
<td>Feb 6-8</td>
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<tr>
<td>5) 2/1</td>
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<td>water</td>
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<tr>
<td>No chat 8</td>
<td>Exam 1: Modules 1-4 Feb 6-8</td>
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<td>Feb 6-8</td>
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<tr>
<td>Week 6</td>
<td>Module 5: Soil Water</td>
<td>Thursdays 6-7:30 pm</td>
<td>Chat 4:</td>
<td>Feb. 19</td>
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<tr>
<td>6) 2/8</td>
<td>• Read Chapter 5; Soil Water</td>
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<td>HW# 4</td>
<td>Feb. 19</td>
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<tr>
<td></td>
<td>• Watch video Windows Media Player on How water moves through soil</td>
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<td>Soil water</td>
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<tr>
<td>Weeks 7</td>
<td>Module 6: Soil Colloids and Ion Exchange</td>
<td>Thursdays 6-7:30 pm</td>
<td>Chat 5:</td>
<td>Feb. 26 or March 8</td>
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<tr>
<td>7) 2/15</td>
<td>• Read Chapter 8; Soil Colloids</td>
<td></td>
<td>HW # 5 Soil</td>
<td>Feb. 26 or March 8</td>
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<tr>
<td>8) 2/22</td>
<td>• Study Guides on cation exchange capacity (CEC); Download Practice Problems and Tutorial on CEC</td>
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<td>Soil Colloids and CEC</td>
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<tr>
<td>Week</td>
<td>Spring Break</td>
<td>March 26-28</td>
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<td>10) 3/7</td>
<td><strong>Module 7: Soil Organic Matter</strong>&lt;br&gt;• Read: Chapter 12; Soil organic Matter</td>
<td>Chat 7: March 14 Chapter 12 Discussion 2 March 13</td>
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<td>11) 3/14</td>
<td><strong>Module 8: Nitrogen</strong>&lt;br&gt;• Read: Chapter 13; Soil Nitrogen. pgs 542-57</td>
<td>Chat 8: March 21 Chapter 13 Discussion 3 March 20</td>
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<tr>
<td><strong>No chat March 28</strong></td>
<td><strong>Exam II: Modules 5-8 March 26-28</strong></td>
<td>March 26-28</td>
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<tr>
<td>12) 3/21</td>
<td><strong>Module 9: Phosphorus</strong>&lt;br&gt;• Read Chapter 14; Soil Phosphorus. pgs 594-622.</td>
<td>Chat 9: April 4 Chapter 14 Discussion 4 April 3</td>
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<tr>
<td><strong>Environmental Soil Management</strong></td>
<td><strong>Module 10: Acid Soils</strong>&lt;br&gt;• Read Chapter 9; Soil Acidity&lt;br&gt;• Download liming calculations example handout&lt;br&gt;• Download practice problems on pH, CEC, and liming handout</td>
<td>Chat 10: April 11 Chapter 9 HW # 6 Acid soils and liming calculations April 15</td>
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<tr>
<td>13) 3/28</td>
<td><strong>Module 11: Alkaline and Salt Affected Soils</strong>&lt;br&gt;• Chapter 10; Soils of Dry Regions</td>
<td>Chat 11: April 18 Chapter 10 Discussion 5 salt affected soils April 17</td>
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<td>14) 4/4</td>
<td><strong>Module 12: Soil Aeration and Anaerobic Soils</strong>&lt;br&gt;• Read Chapter 7; Soil Aeration pgs. 266-288</td>
<td>Chat 11 April 18 Chapter 7 Discussion 6 Soil Aeration Wed April 20</td>
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<tr>
<td>15) 4/11</td>
<td>Classes end Wed. April 20 Reading days (no classes) Thursday-Friday April 21-22</td>
<td><strong>Bonus Discussion (15 pts)</strong> Wed April 20</td>
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<tr>
<td>16) 4/18</td>
<td><strong>Exam III: Modules 9-12 April 23-26</strong></td>
<td>April 23-26</td>
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