COURSE SYLLABUS
SWS 5050 DE
Soils for Environmental Professionals
3 Credits

Instructor: Todd Z. Osborne-Whitney Laboratory for Marine Bioscience, 9505 N Ocean Shore Blvd. St. Augustine, FL 32080  (office) 904-461-4047  (cell) 352-256-3826 osbornet@ufl.edu

Graduate Teaching Assistant: Eron Raines  hmsbeagle@ufl.edu

Course Overview
The course is intended for those preparing to be professional environmentalists and who have minimal knowledge of soil science. Thus, the primary emphasis of the course is defining and describing soil properties and processes that determine the fundamental role soils play in the environment. The instructor will assign additional readings to supplement the text and to add material depth and critical thinking exercises. An optional, associated laboratory (SWS 5050L, 1 credit) and demonstration exercises experientially reinforce the concepts presented in lecture.

Part I (sections # 1-2) of the course describes soil functions and soil formation. Part II (sections # 3-9) describes/analyzes physical, chemical, and biological soil properties and processes, and soil classification. Parts III and IV (sections # 10-15) deal with specific soil types/situations where the previously described terms and processes are integrated to address environmental management issues.

Course Objectives – Students successfully completing the course will be able to:
1. Describe the soil as a dynamic multi-phased medium, and distinguish it from an inert body by characterizing various soil processes and their relationships to the environment.
2. Demonstrate a practical understanding of: a) properties common to all or most soils, b) vocabulary sufficient to communicate with others in soil science and management, c) the different management strategies required for problem soils, d) problem-solving skills to manage soil effectively, and e) an appreciation of the importance of soils in agriculture, the environment, and our daily lives.

Prerequisites: Graduate student status.

Course Format: pre-recorded lectures and weekly live chat session on WEDNESDAY evenings at 8pm

Frequency: Yearly, Fall semester.


Representative Supplemental Readings:
2. Course website: lots of additional information, Home Works, Study Questions, Student Outlines – visit frequently. (Address provided in class).

**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 chat session discussions. **Chat session attendance and engagement is strongly recommended** (and is rewarded – see below).

3. Students are expected to demonstrate their mastery of presented material by passing written examinations and successfully completing assigned homework.

**Student Evaluation:**
1. Two examinations will be given; a mid-term (100 points) and a comprehensive final (200 points). **Make-up exams are only authorized by instructor and must be justified and authenticated.** See UF policies at https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx.

2. Homework sets will be assigned regularly, and will be graded (total scaled value 100 points). Late homework assignments are penalized 20% per day. **You cannot pass the course unless you complete each course requirement.**

**Grading Scale:**
Course grades will be determined by summing all scores and dividing by the maximum score possible (400 points) x 100 to obtain a percentage score: 100-92 = A, 91-90 = A-, 89-88 = B+, 87-81 = B, 80-79 = B-, 78-70 = C, 69-60 = D, <60 = Fail. The instructor reserves the right to **add 0-3 points to the final percentage score** on the basis of meaningful class participation, demonstrated student interest, and overall student dedication. See UF policies at https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx

**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/

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. The University encourages students with disabilities to follow these procedures as early as possible in the semester.

0001 Reid Hall, 352-392-8565, www.dso.ufl.edu/drc/
**SWS 5050 DE**  
**TOPIC OUTLINE BY SECTION / WEEK**

<table>
<thead>
<tr>
<th>TOPIC</th>
<th># LECTURES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>I. Overview of Soils (Week 1-2)</strong></td>
<td>5</td>
</tr>
<tr>
<td>Section 1. An Introduction to Soils</td>
<td>3</td>
</tr>
<tr>
<td>A. Functions of soils in the environment</td>
<td></td>
</tr>
<tr>
<td>B. Soil: the interface of air, water, minerals, and life</td>
<td></td>
</tr>
<tr>
<td>Section 2. Soil Formation</td>
<td>2</td>
</tr>
<tr>
<td>A. Weathering</td>
<td></td>
</tr>
<tr>
<td>B. Soil forming factors</td>
<td></td>
</tr>
<tr>
<td><strong>II. Soil Properties/Processes (Week 3-9)</strong></td>
<td>22</td>
</tr>
<tr>
<td>Section 3. Physical properties</td>
<td>3</td>
</tr>
<tr>
<td>A. Texture</td>
<td></td>
</tr>
<tr>
<td>B. Structure</td>
<td></td>
</tr>
<tr>
<td>Section 4. Soil Water and Hydrology</td>
<td>6</td>
</tr>
<tr>
<td>A. Water movement</td>
<td></td>
</tr>
<tr>
<td>B. Solute transport</td>
<td></td>
</tr>
<tr>
<td>Section 5. Soil Aeration</td>
<td>1</td>
</tr>
<tr>
<td>A. Aeration mechanisms and impacts</td>
<td></td>
</tr>
<tr>
<td>Section 6. Soil Colloids</td>
<td>5</td>
</tr>
<tr>
<td>A. Colloid types and properties</td>
<td></td>
</tr>
<tr>
<td>B. Cation and anion exchange</td>
<td></td>
</tr>
<tr>
<td>Section 7. The Soil Solution</td>
<td>2</td>
</tr>
<tr>
<td>A. Importance and Composition</td>
<td></td>
</tr>
<tr>
<td>B. Sampling</td>
<td></td>
</tr>
<tr>
<td>Section 8. Soil Organisms</td>
<td>3</td>
</tr>
<tr>
<td>A. Classification and abundance</td>
<td></td>
</tr>
<tr>
<td>B. Impacts on soil properties/processes</td>
<td></td>
</tr>
<tr>
<td>Section 9. Soil Classification</td>
<td>2</td>
</tr>
<tr>
<td><strong>EXAM # 1</strong></td>
<td></td>
</tr>
<tr>
<td><strong>III. Environmental Soils and Management Issues (week 10-13)</strong></td>
<td>9</td>
</tr>
<tr>
<td>Section 10. Soil Acidity</td>
<td>3</td>
</tr>
<tr>
<td>A. Development</td>
<td></td>
</tr>
<tr>
<td>B. Consequences</td>
<td></td>
</tr>
<tr>
<td>C. Management</td>
<td></td>
</tr>
<tr>
<td>Section 11. Saline and Sodic Soils</td>
<td>2</td>
</tr>
<tr>
<td>A. Development</td>
<td></td>
</tr>
<tr>
<td>B. Consequences</td>
<td></td>
</tr>
<tr>
<td>C. Management</td>
<td></td>
</tr>
<tr>
<td>Section 12. Anaerobic Soils</td>
<td>2</td>
</tr>
<tr>
<td>A. Development</td>
<td></td>
</tr>
<tr>
<td>B. Characteristics</td>
<td></td>
</tr>
<tr>
<td>Section 13. Soil Pollution</td>
<td>2</td>
</tr>
<tr>
<td><strong>IV. Exemplary Biogeochemical Reactions (Week 14-15)</strong></td>
<td>6</td>
</tr>
<tr>
<td>Section 14. Nitrogen</td>
<td>3</td>
</tr>
<tr>
<td>Section 15. Phosphorus</td>
<td>3</td>
</tr>
</tbody>
</table>
Week 1
Section I. Introduction to Soils
Chat Session 1 8/26 at 8pm

Week 2
Section II. Soil Formation
Chat Session 2 9/2 at 8pm

Week 3
Section III. Physical Properties
Chat Session 3 9/9 at 8pm

Week 4
Section IV. Soil Water/Hydrology
Chat Session 4 9/16 at 8pm

Week 5
Section IV Soil Water/Hydrology Continued
Chat Session 5 9/23 at 8pm

Week 6
Section V. Soil Aeration
Section VI. Soil Colloids
Chat Session 6 9/30 at 8pm

Week 7
Section VI. Soil Colloids Continued
Chat Session 8 10/7 at 9pm

Week 8
Section VII. Soil Solution
Section IX. Soil Classification
Chat Session 8 10/14 at 8pm

Week 9
Section IX. Soil Classification Continued
Section VIII. Soil Organisms
Chat Session 9 10/21 at 8pm
Week 10
Section X Soil Acidity
Chat Session 10  10/28 at 8pm

**Mid-term Exam On-Line Oct 29-Nov 3, Due Nov 3**

Week 11
Section XI. Soil Salinity
Chat Session 11  11/4 at 8pm

Week 12
Section XII. Anaerobic Soils
Chat Session 12  11/11 at 8pm

Week 13
Section XIII. Soil Pollution
Chat Session 13  11/18 at 8pm

Week 14
Section XIV. Nitrogen
Chat Session 14  11/25 at 8pm

Week 15
Section XV. Phosphorus
Chat Session 15  12/2 at 8pm

Final Exam
*(Take Home, Dec 12-14, Due Dec 14)*