

# SWS 4715/5716 - Pedology - Spring Semester, 2015

## Syllabus for Campus Students

**INSTRUCTOR:**

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Office Hours: 10:00 - 11:30 am, Tuesday and Thursday

**LECTURE:**

Monday and Wednesday

Period 4, 10:40 -11:30 am; McCarty Hall 1108

**LABORATORY:**

Wednesday, Periods 6-9, 12:50– 4:55 pm

Conducted via field excursions (see lab outline, below)

McCarty Hall 3108 on rainy days, or as announced

**COURSE OBJECTIVES:**

1. Become familiar with conceptual issues involved in the study of soils at landscape scales.
2. Learn to interpret (make practical predictions about) and classify soils from soil descriptions.
3. Understand processes involved in soil development.
4. Understand how soils are affected by parent material, vegetation, landscape, climate, and time.

**STUDENT RESPONSIBILITIES:** Students will be tested on materials presented in class and on assigned readings. Grades will be based on test scores and other criteria approximately as follows:

|                               | (5716) | (4715)                     |
|-------------------------------|--------|----------------------------|
| Midterm Exam:                 | 30%    | 30%                        |
| Final Exam:                   | 30%    | 35%                        |
| Lab Courtesy and Punctuality: | 5%     | 5%                         |
| Lab Exercises and Attendance: | 15%    | 15%                        |
| Mock Soil Survey Exercise:    | 15%    | 15%                        |
| Article Interpretation:       | 5%     | optional, for extra credit |

**TEXT & READINGS:** No traditional textbook will be used. However, readings will be assigned from USDA materials, including Soil Taxonomy and the Soil Survey Manual. These and other materials will be provided on a webpage (see below) that will be used to post notes and provide links to useful information. Other readings (e.g., journal articles, etc.) will also be assigned via the UF library course reserves. I am in the process of getting this class set up under it.

**WEBPAGE ADDRESS:** <http://soils.ifas.ufl.edu/wgharris/SEED/PEDOLOGY.HTM>

**GRADE SCALE:**

|    |             |
|----|-------------|
| A  | = 90 to 100 |
| B+ | = 86 to 89  |
| B  | = 80 to 85  |
| C+ | = 76 to 79  |
| C  | = 70 to 75  |
| D+ | = 66 to 69  |
| D  | = 60 to 65  |

## **GRADUATE AND UNDERGRADUATE ACCOUNTABILITY:**

All students will be presented with the same materials and experiences. However, graduate students will be evaluated more rigorously on tests and assignments. Tests will have certain questions that are mandatory for graduate students but optional for undergraduates. The mandatory questions will pertain to challenging aspects of pedology that invoke graduate-level understanding of basic sciences, particularly chemistry. Graduate students will also be required to interpret articles in the recent literature. I used the word "accountability" rather than "expectation" because I don't discount or assume any limit on the talent of undergraduates.

## **LECTURE OUTLINE:**

### **I. Introduction**

- A. Course objectives and subject matter
- B. Definitions

### **II. Soil morphology**

- A. Properties used in describing soil layers
- B. Soil horizon designations
- C. Concepts relating to the description, sampling, and mapping of soils
- D. Genetic and interpretive significance of soil morphology

### **III. Introduction to soil components**

- A. Organics (<http://www.ar.wroc.pl/~weber/humic.htm>)
- B. Minerals

### **IV. Weathering and soil formation**

- A. Physical and chemical weathering processes
- B. Mineral weathering reactions and sequences

### **V. Processes of horizon development**

- A. Surface horizons
- B. Translocation of Fe, Al, and organic carbon
- C. Colloidal translocation
- D. Densification and induration
- E. Al and Fe oxide and hydrous oxide accumulation
- F. Carbonate and salt accumulation
- G. Redox influences

### **VI. Soil classification**

- A. Introduction
  - 1. Rationale and history
  - 2. Philosophical issues
- B. USDA soil taxonomic system (Chapter 2)
  - 1. Categories, classes, and nomenclature
  - 2. Diagnostic horizons
  - 3. Other definitive features
  - 4. Application to soil mapping and correlation
  - 5. Discussion of strengths and weaknesses
  - 7. Overview of soil orders
- C. Other approaches to soil classification (if time permits)

## **VII. Environmental factors of soil formation**

- A. Introduction
- B. Parent material
- C. Time
- D. Relief
- E. Climate
- F. Organisms

## **LABORATORY OUTLINE:**

Notes:

1. ***Please consider field laboratory attendance a requirement*** for this course. Failure to attend in the absence of an acceptable excuse will result in a grade penalty. I normally avoid setting a strict attendance policy for classes, but I'm using one for this course because field experience is essential to developing pedologic skills and understanding.
2. Laboratory field excursions will begin at 12:50 pm on Wednesdays, generally from the breezeway in front of the McCarty Hall Auditorium entrance. ***PLEASE BE PUNCTUAL!*** We can't afford to wait for stragglers.

### **I. Soil morphology: description and interpretation of soils** (approximately 3 lab periods)

- A. Demonstration of standard equipment and techniques
- B. Practice in field description and interpretation

### **II. Examining soil-landscape-hydrology-vegetation relationships** (approximately 3 lab periods)

- A. Genetic interpretations
- B. Land-use interpretations

### **III. Soil classification** (encompassing description, sampling, etc.; approximately 2 lab periods)

### **IV. Soil survey and mapping**

- A. Nature and use of soil survey  
(1 lab period)
- B. Field exercise in use of soil survey report  
(1 lab period)
- C. Field mapping demonstration/exercise (approximately 2 lab periods)

### **V. Analytical techniques used in soil characterization** (1 lab period)

### **VI. Pedological applications to environmental and engineering issues**

- A. Wetlands delineation & hydric soils ID
- B. On-site waste disposal
- C. Building construction
- D. Other, as time permits

## **Academic Honesty, Software Use, UF Counseling Services, Services for Students with Disabilities**

### **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: <https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>

### **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 wellbeing are encouraged to utilize the university's counseling resources. The UF Counseling and 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. The Center is located at 3190 Radio Road.

- *Career Resource Center*, CR-100 JWRU, 392-1601, [www.crc.ufl.edu/](http://www.crc.ufl.edu/)
- *Student Health Care Center*, 392-1161, <http://shcc.ufl.edu/>
- *University Counseling & Wellness Center*, 352-392-1575, <http://www.counseling.ufl.edu/cwc/>

### **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, 392-8565, <http://www.dso.ufl.edu/drc/>