CRSS(GEOL) 4540/6540-4540L/6540L
Soil Morphology, Genesis & Classification (Pedology)
Spring 2016

Lecture: WF 10:10-11:00 3203 Miller Plant Sciences
Lab: M 2:30-5:30 1201 Miller Plant Sciences

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Office hours: by appointment (email ahead, please)

Course Description:

This is a 3-credit hour junior/senior level course emphasizing soils as a natural component of ecosystems, including morphology, landscape distribution, formation, identification of diagnostic horizons and features, interpretation, and classification. Undergraduate prerequisite: CRSS(FANR) 3060-3060L.

Overall Course Objectives:

To be able to describe, using proper terminology, the morphological characteristics of soils as they are found in their natural setting.

To understand basic principles of landscape development and relationships between soils and landscape features

To understand processes and factors important to the formation and distribution of soils.

To understand the rationale and structure of Soil Taxonomy and be able to classify soils using the system.

To be able to interpret soil behavior and understand proper soil use and management based on a soils morphology, landscape setting, and classification.

Topical Outline:

I. Pedological concepts and definitions
II. Soil Morphology
III. Site characteristics
IV. Soil interpretations
V. Soils and geomorphology
VI. Processes of pedogenesis
VII. State factor model of pedogenesis
VIII. Soil survey
IX. Soil Classification (Soil Taxonomy)

Course Resources:

There is no required text; reading assignments are available on the course web site (soils.uga.edu), or will be passed out in class. PowerPoint presentations used in lecture will be available on the web site, with associated text files. Lab and homework assignments will also be posted on the web site, as well as updates to the lab schedule. Please check this website regularly for assignments, notices, and announcements related to the lab and course in general.
The NRCS website has a wealth of soils information we will use in this class. We will use the following documents extensively:

Soil Survey Staff. 1999. Soil Taxonomy - A basic system of soil classification for making and interpreting soil surveys. USDA-SCS. Agric. Handbook 436. http://soils.usda.gov/technical/classification/taxonomy/

Soil Survey Staff. 2014. An Illustrated Guide to Soil Taxonomy.
http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/survey/class/

Soil Survey Staff. 2014. Keys to Soil Taxonomy. Twelvth Edition.
http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/survey/class/

Field Book for Describing and Sampling Soils:
http://soils.usda.gov/technical/fieldbook/

Required Reading (pdf available on web site):

Wilding et al. 2000. “Classification of Soils” Ch. E-6, pp. E175-E392. In M. E. Sumner (Ed.) Handbook of Soil Science. CRC Press, Boca Raton FL.

The following sites will also be of interest in this class:

Field Indicators of Hydric Soils in the United States:
ftp://ftp-fc.sc.egov.usda.gov/NSSC/Hydric_Soils/FieldIndicators_v6_0.pdf

Official Series Descriptions (OSD): http://soils.usda.gov/technical/classification/osd/index.html

Web Soil Survey: http://websoilsurvey.nrcs.usda.gov/

Other References: (available in the library)

Buol, S.W., F.D. Hole, R.J. McCracken, and R.J. Southard. 1997. Soil Genesis and Classification. 4th edition. Iowa State University Press. Ames, IA.

Schaetzl, R., and Sharon Anderson. 2007. Soils: Genesis and Geomorphology. Cambridge Univ. Press.

Wilding, L.P., N.E. Smeck, and G.F. Hall (eds.). 1983. Pedogenesis and soil taxonomy: I. Concepts and interactions. Elsevier, Amsterdam.

Wilding, L.P., N.E. Smeck, and G.F. Hall (eds.). 1983. Pedogenesis and soil taxonomy: II. The soil orders. Elsevier, Amsterdam.

Homework:

There will be a number of homework assignments, posted on web site. Homework will generally be assigned on Friday and will be due the following Friday. The grade on homework assignments will be reduced by 10% for each day past the due date. Homework will not be accepted more than one week past the due date. One homework grade will be dropped in calculation of final course grades.

Laboratory:

Laboratories primarily will involve observing and describing soils in the field and interpreting soil suitability for various uses. Grades for these laboratories will be based on short reports including a completed soil pedon description and possibly assessing the suitability of the soil for a selected use. For laboratories that do not involve soil description, other types of written reports may be assigned.

The lab reports will be graded on 1) inclusion of an accurate and properly formatted description of the soil, 2) technical accuracy of the suitability assessment, and 3) style, grammar, punctuation, etc. of the report. Laboratory reports will generally be due the next week following the Monday lab. The grade on laboratory reports will be reduced by 10% for each day past the due date. The report should be double spaced.

The laboratory may also include an extended field trip, lasting either ½ day or one full day, to a location outside the Piedmont, date to be announced. You will be given assistance in exempting other classes that may be missed. No written report will be required for these field trips.

Graduate Students:

A 5-8 page review paper will be required for graduate students, with the topic cleared with the instructor before the semester midpoint. A 15 minute presentation to the class may also be required.

Grading:

Midterm exam	20%
Laboratory write-ups	20%
Homeworks	10%
Attendance	20%
Final exam	30%

Final grades will be based on a 90-80-70-60% of course points corresponding to A, B, C, D, and F. Plus/minus grades will be given for course percentages within +/-2% of the above cuttoffs.

Attendance:

Attendance in both lecture and lab is part of the course grade, and is particularly important for the lab**.** If you need to miss class (especially a lab), please email me *beforehand* with a reasonable explanation.

Academic Honesty:

The UGA Student Honor Code states: “I will be academically honest in all of my academic work and will not tolerate academic dishonesty of others.” *A Culture of Honesty*, the University’s policy and procedures for handling cases of suspected dishonesty, can be found at http://ovpi.uga.edu/academic-honesty. Students in this course are expected to adhere to this Policy without exception.

Access Policy:

Students with special needs are invited and encouraged to discuss them with the instructor.

This syllabus represents a general plan for this class; deviations may be necessary.

Laboratory Schedule

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Spring 2016

Week	Mon date	Lecture	Lab Topic/Location	
1	Jan 11	Soil properties	Course Introduction	
2	Jan 18	Horizons & nomenclature	Soil properties and horizons: PS Bldg	
3	Jan 25	Profile descriptions	MLK day—No lab	
4	Feb 1	Site characteristics	Field: Whitehall Forest	
5	Feb 8	Interpretations	Field: Whitehall Forest	
6	Feb 15	Weathering & soil formation	Field: IH Farm	
7	Feb 22	State factor model	Soil survey reports: PS Bldg	(Order may vary
8	Feb 29	Soil survey & mapping	Web soil survey: PS Bldg	depending on
--	Mar 7	***Spring Break***	None	weather)
9	Mar 14	Soil classification	Field: IH Farm	
10	Mar 21	Diagnostic horizons	Field: JPC Farm	
11	Mar 38	Diagnostic horizons	Field: JPC Farm	
12	Apr 4	Class cancelled	*None*	
13	Apr 11	Soil orders	Field: JPC Farm	
14	Apr 18	Lower levels of taxonomy	Working with Taxonomy: PS Bldg	
15	Apr 25	Lower levels of taxonomy	Working with Taxonomy: PS Bldg	
	May 2	Last day of class (review during lab)		
	Fri, May 6, 8:00 am	Final Exam		

PS Bldg: Rm. 1201 Plant Sci Bldg, campus
Whitehall Forest: WSFNR facility, S. Millegde Ave
IH Farm: Iron Horse Farm, Greene Co., Hwy 15S
JPC Farm: Campbell Farm, Hog Mt Rd, W'ville