SOIL 362/562 – SOIL GENESIS, MORPHOLOGY, AND CLASSIFICATION

SYLLABUS

Instructor

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TNR 278 (office hours: Tuesday and Thursday at 11-12 pm or when my door is open)
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Catalog description

3 cr. Origin, characteristics and taxonomic groupings of soils; soil orders, mapping and interpretations also covered. Two hours lecture and two hours laboratory per week. Prerequisites are Natural Resources 251 or instructor consent.

Course overview

This course covering soil genesis, morphology, and classification is designed for upper level undergraduate and graduate students in soils, natural resources, biological sciences, and related fields. The course is taught through a combination of lectures and hands-on laboratory and field activities. The course is broken into four major sections: soil morphology, soil formation, soil classification, and the soil orders. Required readings for each lecture and laboratory are from the listed chapters in the text and other supplemental sources posted on the course website. Competency in the course material will be assessed with via examinations and other methods listed in this syllabus.

Course objectives

The objectives of the course are such by the end of the semester the students should be able to:

1. Understand and interpret soil morphological characteristics
2. Understand the factors and processes that lead to the formation of soils
3. Understand and utilize the principles of soil classification
4. Understand the key characteristics of soils in the 12 soil orders of US Soil Taxonomy

Textbooks

- Buol, S.W., Southard, R.J., Graham, R.C. and P.A. McDaniel. 2011. Soil Genesis and Classification. 6th Edition. John Wiley & Sons, Inc. West Sussex, UK.

Additional references

- Keys to Soil Taxonomy. 2014. Soil Survey Staff. Twelfth Edition. USDA-NRCS. Washington, D.C.
- Illustrated Guide to Soil Taxonomy. 2014. Soil Survey Staff. First Edition. USDA-NRCS. Washington, D.C.
- Soil Taxonomy - A Basic System of Soil Classification for Making and Interpreting Soil Surveys. 1999. Soil Survey Staff. Second Edition. USDA-NRCS. Washington, D.C.

Evaluation and grading

A variety of methods will be used for student evaluation. These include performance in written examinations, pop quizzes, laboratory exercises, and soil profile exercises. Grading will be based upon quality of work with components weighted as follows.

• Laboratory exercises	24 points
• Soil profiles of the day (SPOD)	10 points
• Soil profile quizzes	8 points
• Exams	54 points
• Participation, professionalism, and pop quizzes	4 points
• Total	100 points

Grading scale

A = 93-100; A- = 90-92; B+ = 87-89; B = 83-86; B- = 80-82; C+ = 77-79; C = 73-76; C- = 70-72; D+ = 67-69; D = 60-66; F = <60

Extra credit

Extra credit opportunities may be available at the discretion of the instructor.

Graduate credit

Students enrolled in Soil 562 will meet with instructor during the first couple weeks of the course. The instructor and student will design additional activities to be completed by the graduate student for fulfillment of the requirements for graduate credit.

Meeting times and locations

The lectures are on Tuesday and Thursday at 1000-1051 in TNR120. Laboratory section 1 meets on Monday at 0900-1050 in TNR262. Laboratory section 2 meets on Monday at 1400-1550 in TNR262. Laboratory section 3 meets on Thursday at 1500-1650 in TNR262.

Lecture schedule*

WK	DATE	TOPIC (points)	REQUIRED READING
1	1/21	Introduction	Ch 1: 3-8; 12-23; 29-34
	1/23	History	Ch 1: 8-11; 22-29
2	1/28	Morphology	Ch 2: 35-45; 76-87
	1/30	Characterization	Ch 2: 62-76
3	2/4	Horizons	Ch 2: 45-50
	2/6	Diagnostic horizons and materials	Ch 2: 51-62
4	2/11	Soil materials and weathering	Ch 4: 141-161
	2/13	Soil processes	Ch 5: 163-179
5	2/18	**EXAM 1** (18 pts)	
	2/20	Soil forming factors (parent material)	Ch 3: 89-102
6	2/25	Soil forming factors (climate)	Ch 3: 102-112
	2/27	Soil forming factors (organisms)	Ch 3: 118-129
7	3/3	Soil forming factors (relief)	Ch 3: 113-118
	3/5	Soil forming factors (time)	Ch 3: 129-140
8	3/10	Soil classification systems	Ch 6: 181-205
	3/12	US Soil Taxonomy	Ch 7: 207-232
9	3/17	**SPRING BREAK**	
	3/19		
10	3/24	***Review and/or make up time***	
	3/26	**EXAM 2** (18 pts)	
11	3/31	Entisols	Ch 11: 283-292
	4/2	Inceptisols	Ch 14: 321-330
12	4/7	Andisols	Ch 9: 249-264
	4/9	Vertisols	Ch 19: 385-396
13	4/14	Histosols	Ch 13: 307-320
	4/16	Aridisols	Ch 10: 265-282
14	4/21	Gelisols	Ch 12: 293-306
	4/23	Mollisols	Ch 15: 331-348
15	4/28	Alfisols	Ch 8: 233-248
	4/30	Spodosols	Ch 17: 361-374
16	5/5	Ultisols	Ch 18: 375-384
	5/7	Oxisols	Ch 16: 349-360
F	5/14	**EXAM 3** (18 pts) [during final exam period at 1445-1645]	

Laboratory schedule*

WK	DATE	TOPIC (points)	SPOD (points)
1	1/20 or 1/23	***Classes begin 1/21, so no meeting*** ☹	
2	1/27 or 1/33	Properties and horizons (2 pts)	SPOD-1 (1 pt)
3	2/3 or 2/6	Diagnostic horizons (2 pts)	SPOD-2 (1 pt)
4	2/10 or 2/13	Parent materials – rocks (2 pts)	SPOD-3 (1 pt)
5	2/17 or 2/20	Parent materials – minerals (2 pts)	SPOD-4 (1 pt)
6	2/24 or 2/27	Climate (2 pts)	SPOD-5 (1 pt)
7	3/2 or 3/5	Classification (2 pts)	**SPOD QUIZ 1** (4 pts)
8	3/9 or 3/12	Soil mapping with GIS (2 pts)	-
9	3/16 or 3/19	***SPRING BREAK***	
10	3/23 or 3/26	***Review and/or make up time***	SPOD-6 (1 pt)
11	3/30 or 4/2	Relief (2 pts)[2]	SPOD-7 (1 pt)
12	4/6 or 4/9	Organisms (2 pts)[2]	SPOD-8 (1 pt)
13	4/13 or 4/16	Soil mapping[2]	SPOD-9 (1 pt)
14	4/20 or 4/23	***National Soil Judging – SPOD only***	SPOD-10 (1 pt)
15	4/27 or 4/30	Soil mapping[1,2]	-
16	5/4 or 5/7	Soil mapping[1] (6 pts)	**SPOD QUIZ 2** (4 pts)

[1]Computer lab schedule and locations listed below. [2]Fieldtrip, meeting location to be announced.

Computer laboratory meeting days and locations

WK	DATE	SECTION AND TIME	BUILDING AND ROOM
8	3/9	Lab 1: 0900-1050	TNR 322 (ACL)
		Lab 2: 1400-1550	TNR 322 (ACL)
	3/12	Lab 3: 1500-1650	TNR 356
15	4/27	Lab 1: 0900-1050	TNR 322 (ACL)
		Lab 2: 1400-1550	TNR 322 (ACL)
	4/30	Lab 3: 1500-1650	TNR 356
16	5/4	Lab 1: 0900-1050	TNR 322 (ACL)
		Lab 2: 1400-1550	TNR 322 (ACL)
	5/7	Lab 3: 1500-1650	TNR 356

***Lecture and laboratory schedules are subject to modification. The instructor will inform students if, and when schedule alterations occur.**

Professionalism and participation

Students must be professional, committed to learning, and participate in class. You are expected to maintain integrity in your behavior in and out of the classroom. Students must preview the lectures, laboratory exercises, and read the assigned readings prior to class. Pop quizzes will be given throughout the semester to encourage students to prepare for class. Any deviation from these expectations will affect your participation and professionalism grade for the course.

Cheating

Cheating and/or plagiarism will not be tolerated under any circumstance. Any student found guilty of either will be prosecuted following UWSP Academic Honesty Policy and Procedures.

Attendance and late assignments

Students are responsible for all assigned readings, course lectures, and laboratory sessions. Laboratory exercises and soil profiles of the day will not be accepted from students missing laboratory sessions without an excused absence. Exercises and assignments submitted to the instructor late without prior approval will not be accepted and scored a zero. Scheduling of make-up examinations will be done if an absence is due to personal illness, accident, death in the family, or a circumstance deemed legitimate by the instructor. Prior approval is required for make-up examinations. Make-ups for field trips are not available. Students wishing to attend alternate laboratory sections must have prior approval from the instructor.

Instructor feedback

Your opinions matter. I am always willing to hear your thoughts on the course content and my teaching methods. Please feel free to provide feedback to me at any time and using whatever methods you are most comfortable with. Student feedback will be solicited throughout the semester to improve the course and my teaching.

Emergency procedures

In the event of a medical emergency, call 911 or use the red emergency phones located throughout the campus. Offer assistance if trained and willing to do so. Guide emergency responders to victim. In the event of a tornado warning, proceed to the lowest level interior room without window exposure. Avoid wide-span rooms and buildings. In the event of a fire alarm, evacuate the building in a calm manner and meet outside the building. Notify instructor or emergency command personnel of any missing individuals. In the event of an active shooter, run, escape, hide and fight. If trapped hide, lock doors, turn off lights, spread out and remain quiet. Follow instructions of emergency responders. See UW-Stevens Point Emergency Management Plan at www.uwsp.edu/rmgt for details on all emergency response at UW-Stevens Point.