COURSE SYLLABUS
SOIL SCIENCE
EEES 4240/5240, Spring, 2015, 3 credit hours

Instructor: Dr. Alison L. Spongberg
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Office Hours: T and Th: 11-1:30 or by appointment, but feel free to stop in my office anytime I'm there.
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Scheduled class time and room: T, Th 11:00-12:15, Bowman-Oddy 1006.

Course Description: Basic principles of soil formation, physics, chemistry and biology with emphasis on their influence on fluid and chemical migration and preservation of soil quality from geological, agricultural and environmental perspectives. [Spring] Prerequisite: CHEM 1240.

Course Objective: The soil is an essential part of our environment and it is important to understand its properties and uses from the engineering, geologic, environmental and biological perspectives. However, very few colleges outside of major agricultural universities offer courses on the basic science of soils. My objective, therefore, is to introduce the science of soils from all of the above mentioned aspects to upper level undergraduate and graduate students so that they can apply this information to their appropriate fields of study.

Required Text: Brady and Weil, The Nature and Properties of Soils, Macmillian Publishing Co.

Web site for addition readings: Blackboard under the Courses link

UNIVERSITY POLICIES

The University is an equal opportunity educational institution. Please read The University's Policy Statement on Nondiscrimination on the Basis of Disability Americans with Disability Act Compliance.)

Academic Accommodations

The University of Toledo is committed to providing equal access to education for all students. If you have a documented disability or you believe you have a disability and would like information regarding academic accommodations/adjustments in this course please contact the Student Disability Services Office.)

Student Learning Outcomes: Upon completion of this course the student should be able to:

Explain how environmental factors (such as climate, geography, time, and organisms) will impact changes within a soil profile.

Explain how chemicals and nutrients move within a soil

Describe how soils from different regions would compare

Describe how the components within a soil/parent material impact physical and chemical properties of a soil.

Grading and test dates (subject to change): There will be three tests given during the semester. The first two will be given during the scheduled class period and will cover the material taught since the last test. Each will be approximately 25% of your final grade. The third test will be the final, given during final exam week at the scheduled time. The final will count 30% of the final grade. Several homework assignments, a field trip, and class participation will constitute the remaining 20% of your grade. Homework is due the following class period after assignment. No late homework will be accepted.

Topical Outline: (appropriate chapters to accompany each topic can be found in the text.

1. Introduction to soils
2. Weathering and soil formation
3. Physical properties of soil
4. Soil mineralogy
5. Soil water and soil aeration
6. Soil colloids and ion exchange
7. Soil classification
8. Soil chemistry (fertility): Macro and micronutrients
9. Soil reaction: Acidity, alkalinity
10. Soil erosion
11. Engineering properties
12. Soil and chemical pollution

There will be at least one field trip during the semester to dig soil pits and view soil horizonation. Expect to get a bit dirty on those days.