

Agronomy 370 - Soil Profile Description and Interpretation
Fall 2008

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Purpose/Content: To gain practical experience with soils and landscapes in the field; interpret soil properties for land use; understand soil formation processes and determining factors; appreciate significance of soil as a natural resource and its role in environmental quality and conservation; learn about soils and land use in different regions by participating in soil judging contests.

Approach:

- Field trips and indoor labs emphasizing hands-on experience in soils. Travel to different Midwest and U.S. regions to take part in American Society of Agronomy soil judging contests hosted by other universities. Typically one week-long trip per semester.
- Reading/source material: handouts; use of soil survey reports and related information sources.
- Evaluation: No exams; students graded on the basis of participation, homework, and individual progress; soil judging contests also provide evaluative feedback to students.

Learning Objectives:

- Technical: soil identification, description, and classification; soil interpretation for agriculture, engineering, ecology, and environmental quality; geologic materials and stratigraphy; soil-landscape relationships and geography.
- Communications: Practice in oral communication and group decision-making.

Course Topic Outline:

- Introduction to soil profile description and interpretation
- Soil morphology and horizon identification
 - Soil horizons and horizon boundaries
 - Color
 - Redoximorphic features (gley colors and mottles) in soils affected by wetness
 - Texture and rock fragments
 - Structure and Consistence
 - Coatings, carbonates, and other soil mineralogical/chemical properties
- Soil - water - plant relationships
 - Soil water infiltration and hydraulic conductivity
 - Soil drainage
 - Plant rooting depth
 - Available water for plants
- Soil landscapes and geology
 - Landforms
 - Soil parent materials
 - Slope and other topographic measurements
 - Erosion and surface runoff
- Soil classification (U.S. Soil Taxonomy)
- Soil evaluation for agricultural and engineering land use

Soil Judging Team photos and website:

<http://www.agron.iastate.edu/academic/undergraduate/judging-teams.aspx>

Upcoming Soil Contest in Fall 2008:

September 21-26, 2008 - American Society of Agronomy Region 5 Soil Judging Contest, hosted by the University of Minnesota, at the Cloquet Forestry Center west of Duluth (<http://cfc.cfans.umn.edu/>).