

Agronomy 559

Environmental Soil and Water Chemistry (Dual-listed with 459) (3-0) Cr. 3. Alt F. offered 2003. Prereq.: Agron. 354, Chem 210 or 211. Tabatabai. An introduction to the chemical properties of soils, chemical reactions and transformations occurring in soils and their impacts on the environment. Topics include composition of soils, acid-base equilibria, buffer systems, mineral dissolution and precipitation, speciation, ion exchange, redox reactions, adsorption phenomena and soil pollution.

Course Outline:

1. Soil Environmental Chemistry: An Overview
 - Evolution of Soil Chemistry
 - Modern Environmental Movement
 - Contaminants in Water and Soils
 - Water Quality
 - Pesticides
 - Acid Deposition
 - Trace Elements
 - Hazardous Wastes
 - Case Study of Pollution of Soils and Waters
 - In-Situ Methods
 - Non-in-Situ Methods
2. Inorganic Soil Components
3. Chemistry of Soil Organic Matter
4. Soil Solution-Solid Phase Equilibria
5. Sorption Phenomena on Soils
6. Ion Exchange Processes
7. Kinetic of Soil Chemical Processes
8. Redox Chemistry of Soils
9. The Chemistry of Soil Acidity
10. The Chemistry of Saline and Sodic Soils