

**BIOGEOCHEMISTRY**

<b>Course Title</b>	<b>Credits</b>	<b>Last Offered</b>	<b>Emphasis Area</b>	<b>Description</b>
*AGRY 385 Environmental Soil Chemistry	4	F18	Soil Chemistry	Designed as an upper level introductory course covering environmental soil chemistry concepts in framework most applicable to inorganic and organic chemical contamination of soil and water resources and intended for students in environmental science fields that may not have a strong chemistry and/or math background.
AGRY 540 Soil Chemistry	3	S19	Soil Chemistry	Basic principles of soil chemistry and mineralogy.
AGRY 544 Environmental Organic Chemistry	3	F17	Soil & Water Chemistry	The fundamental properties and processes responsible for the fate of organic chemicals in the environment, with emphasis on soil and water chemistry. Areas to be addressed will include both conceptual and theoretical aspects of processes relevant to environmental fate of contaminants; measurement, estimation, correlation, and application of the parameters most commonly used to assess various chemodynamic properties in soil-water systems.

AGRY 565 Soils and Landscapes	3	F18	Water Chemistry	Principles of physical, quantitative, organic, and inorganic chemistry applied to the analysis and distribution of the chemical composition of natural waters and engineered water systems. Lecture and laboratory topics include acid/base, complexation, precipitation/dissolution, sorption, and redox reactions. Laboratory procedures include routine and advanced analytical techniques.
AGRY 585 Soils and land use	3	F16		This course will provide an introduction to the physical and microbial processes governing the cycling of photosynthetically-produced organic matter on land and in streams and rivers. Organic geochemical transformations in the soil and litter will be highlighted along with methods of characterization of the organic constituents. Biogeochemical concepts of stabilization and destabilization of soil organic matter and stress response of terrestrial ecosystems will be reinforced through manipulation of actual data sets. Permission of instructor required.
AGRY 598 Greenhouse Measurement of Gas	3	F18	Soil Biogeochemistry	Introduction to tools and techniques for measuring greenhouse gas emissions in the environment

AGRY 650 Clay mineralogy	3	F17	Soils	This course has required class trips. Students will pay individual lodging or meal expenses where necessary. The soil as a natural body; its characteristics and processes of formation; the principal soils of Indiana; their adaptations, limitations, productivity, and use; soil survey methods and airphoto interpretation of soil patterns.
CE 597 Water Chemistry in Environmental Engineering	4	S17	Soils	Principles of crystal chemistry, survey of clay mineral structures, and identification of clay minerals by X-ray diffraction, chemical methods, differential thermal analysis, infrared spectroscopy, and specific surface area measurements. Role of clay minerals in the natural environment. Offered in alternate years.
CHM 581/EAPS 521 Atmospheric Chemistry	3	S18	Soils	Soils as a resource in development planning; soil properties affecting land use; use of soil survey, aerial photos, topographic maps, and other resource data in land-use allocation; nonengineering aspects of site selection for various land uses, water conservation, waste disposal, and erosion control.

EAPS 518 Soil Biogeochemistry	3	F18	Atmospheric Chemistry	An introduction to the chemistry of the earth's atmosphere. Covers evolution of the earth's atmosphere, its physical and chemical structure, its natural chemical composition and oxidative properties, and human impacts, including increasing tropospheric ozone, decreasing stratospheric ozone, climate change, and acidic deposition.
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\*Students can have up to 6 credits of 300-400 level courses applied to their plan of study.