



Course Announcement:

GEOS 531

Environmental Geochemistry

Will be offered Spring Semester 2010, 4 credits

Instructor: Dr. Heiko Langner, 243-6553, heiko.langner@umontana.edu
Office: CHCB 367

Times: M & W 2 – 4 pm

Prerequisite: CHEM 161/162 (College Chemistry) or equivalent

Subjects:

- Chemical and biological processes at the interface between lithosphere, hydrosphere and atmosphere,
- Understanding and predicting the behavior of contaminants in the environment,
- Geochemical approaches to environmental problems.

Course Detail:

The course will be taught as a combination of lectures and hands-on laboratory work later in the semester. Students will also work on an independent project and present their results to the class.

The course will help students understand and predict chemical and biological processes that are important in surface and subsurface environments such as soils, sediments, wetlands, aquifers, rivers, lakes, mine drainage, and the ocean. We will start with a review of thermodynamic principles that drive all chemical and biological processes on earth. The next section will deal with ion equilibria in aqueous systems. Students will learn how to determine the chemical forms and distribution of elements in various environments. We will show how the mobility and biological effects of chemicals may be governed by solid phase interactions or the formation of soluble complexes. We will take a thorough look at biotic and abiotic redox systems that are important in the environment. Other topics include sorption, weathering, and the global cycling of carbon and other elements. Using environmentally relevant examples, we will learn to use geochemical computer models that are widely accepted by government, environmental science and engineering (e.g. MINTEQ, CXTFIT).

[For additional information, please contact Heiko Langner.](#)