



COURSE DATASHEET

Semester:	2014/15/1
Course:	Geochemistry
Code:	VEMKFTM143G
Responsible department:	Department of Earth and Environmental Sciences
Department code:	MKFT
Responsible instructor:	dr. Mihály Pósfai

Course objectives:

Overview of the principles of the distributions of chemical elements on and near the surface of the Earth. An understanding of geochemistry and its research tools is necessary for the evaluation of natural processes that shape our global and regional environment, and for an assessment of anthropogenic impacts on the environment.

Course content:

? The principles of geochemistry, understanding geological and cosmochemical processes through the analysis of the distribution of chemical elements; the tools of geochemical research. ? Introduction to the thermodynamics of solids; phase equilibria at high temperatures and pressures; thermodynamics of solutions; kinetics of processes in aqueous solutions. ? Geochemical classification of the elements. ? Composition and differentiation of the Earth (fractionation of the metal core and the „silicate Earth”). ? Principles of the distributions of trace elements, radiogenic and stable isotopes; geochronology; isotopic abundances as environmental indicators. ? Environmentally important surficial geochemical processes: – weathering of rocks, formation of soils – compositions of rivers and lakes and their sediments – ocean chemistry and marine sediments – atmospheric geochemistry (interactions between the atmosphere and the crust and oceans). ? Case studies in environmental geochemistry in Hungary (subsurface water and thermal water composition, soil types, geochemical issues of earth resources exploitation).

Requirements, evaluation and grading:

Seminars: participation is mandatory. Lectures: oral examination during the end-of-semester test period. Grading is based on the oral exam.

Required and recommended readings:

Grasselly Gy.: A geokémia alapjai. Tankönyvkiadó, Budapest, 1982. White, W. M.: Geochemistry. Cornell University, www.imwa.info/Geochemie/Chapters.HTML, 2005. Holland, D., Turekian, K. K.: Treatise on Geochemistry, Volume 9 (Environmental Geochemistry). Elsevier, 2007.