

Level: bachelor				
Course title: Introduction to geophysics				
Status: obligatory, elective				
ECTS: 6				
Requirements:				
Learning objectives Introducing students to the basic materials and composition of the Earth. Understanding the major internal and external processes occurring on the planet as well as their consequences. The primary objective of the course is that the students get clear picture of the dynamic relationship between matter, nature and processes that occur on the Earth.				
Learning outcomes Upon completion of the course, students should have developed: - General skills: following professional literature; ability to analyse and select the most appropriate solutions; - Subject-specific skills: understanding the specific terminology. Understanding the basic dynamic motion of matter inside the Earth and phenomena that are its consequences. Knowing the elemental composition of the Earth's lithosphere. Recognition of fundamental physical principles behind the natural phenomena. Understanding and ability to predict the flow of the processes that follow certain natural events.				
Syllabus <i>Theoretical instruction</i> The structure and driving forces of movement in the Earth's interior. The main tectonic movements and the theory of tectonic plates. Mineralogical composition of the Earth. The formation, movement and crystallization of magma, igneous rocks. Tectonics in rotational systems. Types of tectonic and metamorphic rocks. Seismology: types and propagation of seismic waves, and seismic measuring devices. Seismic models of the Earth's internal structure (Adams-Viliamson, Bulen, PEM). Spherical analysis: gravimetry, shape and magnetic field of the Earth. Exodinamics: basic characteristics of the hydrosphere, the water cycle, rivers and oceans. Exodinamic work of geological forces. The atmosphere and atmospheric phenomena. Water in the atmosphere, clouds. Heat balance of the planet. <i>Practical instruction</i> Exercises that follow the course content. Seminar papers on topics that either follow or expand this content.				
Literature: 1. W. Jacqueline Kious and Robert I. Tilling, <i>This Dynamic Earth: The story of Plate Tectonics</i> , online edition, 1999, http://pubs.usgs.gov/gip/dynamic/dynamic.html 2. Charles C. Plummer, David McGeary, Diane H. Carlson. <i>Physical geology</i> ,. McGraw Hill, Boston, 2001. 3. Kurt Roth, <i>Soil Physics Lecture Notes</i> , University of Heidelberg, 2006.				
Weekly teaching load				Other:
Lectures: 3	Exercises: 1	Other forms of teaching: 1	Student research:	