Soil use and protection (Borut Vrščaj, Ph.D., Associate Prof.)

Subject code: SP
Academic year: 2.
Lectures: 20
Seminars: 20
ECTS: 4

Aims of the course:

The purpose of the subject is to raise awareness and to upgrade the knowledge of the importance of soil as a significant natural resource that enables life of terrestrial ecosystems. Soil heterogeneity, as a consequence of various different physical and chemical properties intertwined with other spatial features and phenomena (relief, climate, position, etc.) has a fundamental impact on the land use. Soil use in the past followed natural features and conditions much more than today. A more recent development and relatively poor knowledge of spatial factors have resulted in irrational soil use, harmful to the environment, and soil degradation. Environmental protection and focusing more on sustainable spatial development depend to a greater extent on rational use, sustainable management and protection of soil.
Participants of the KRT (abbr. for Useful Soil Use) learn about the basic properties of soil and circulation of different substances, the elementary knowledge about physical and chemical properties of soil, the legality of soil use, soil degradation, and the needs for adequate use and protection of soil. An additional emphasis is put on ethics of soil protection and sustainable use of natural resources.

Subject content:

The subject focuses on the introductory content of geology; such as plate tectonics, minerals and rocks, the chemical structure of rocks, rock weathering and its consequences for soil pedogenesis. The second part of the lectures focuses on the basics of pedology (the study of soil) comprising the soil structure as a natural body, the basics of chemical and physical properties of soil horizons (structure, texture, OS, pH, cations, porosity, groundwater, etc.), properties of nutrients, circulation of nutrients, fertilisation. Basic soil biotas are presented during the course. In the following, an overview of different soil types in Slovenia is presented by means of the Slovenian soil classification. In the last part of the lectures the students are acquainted with pedosequences of Slovenia and their fundamental soil types; with environmental features, peculiarities and threats of pedosequences. Some environmental hazards of various soil uses are discussed and analysed during the lectures, and also the main threats of soil and land degradation which are primary or most common in an individual pedosequence. The subject content also comprises some necessary environmental activities in terms of agricultural and urban soil use (settlements, industry, traffic, recreation).

Teaching methods:

Lectures, overview of rock and soil specimens, seminar paper, active teaching and discussion

Study obligations

Regular presence at seminars, seminar paper (structure, presentation and defence), and written and oral exam

Literature

1. Krajina, krajinski sistemi, Raba in varstvo tal v Sloveniji (*Landscape, Provincial Systems, Use and Protection of Soil*) Albin Stritar, Ljubljana, 1990;
2. Pedologija (Pedology), (Kompendij), Albin Stritar (Biotehniška fakulteta, Agronomski oddelek) 1991
3. Sistematika tla / zemljišta; nastanak, svojstva, i plodnost, Husnija Resulović, Hamid Čustović, Izet Čengić, Sarajevo, 2008
4. Pedologija (Pedology), Husnija Resulović, Hamid Čustović, I. Opći dio,
5. KRT materials available on ŠIS website.
6.