UČNI NAČRT PREDMETA/COURSE SYLLABUS

Predmet:	Pedologija
Course title:	Pedology

Študijski programi in stopnja	Študijska smer	Letnik	Semestri
Geologija, prva stopnja, univerzitetni	Ni členitve (študijski program)	2. letnik	Zimski

Univerzitetna koda predmeta/University course code: 955

Predavanja	Seminar	Vaje	Klinične vaje	Druge oblike študija	Samostojno delo	ECTS
30	0	15	0	0	45	3

Nosilec predmeta/Lecturer: Helena Grčman

Vrsta predmeta/Course type: Obvezni / Compulsory

Jeziki/Languages:	Predavanja/Lectures:	Angleščina, Slovenščina
	Vaje/Tutorial:	Angleščina, Slovenščina

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:	Prerequisites:
Vpis v 2. letnik študija geologije.	Inscription to the Course.

Vsebina:	Content (Syllabus outline):
Zgradba tal; tla kot trifazni sistem z vertikalno in horizontalno variabilnostjo. Tlotvorni dejavniki ter nastanek in razvoj tal: Matična podlaga: preperevanje kamnin, nastanek mineralnega dela tal. Relief: pobočni procesi, catene. Klima: odvisnost razvoja tal in talnih lastnosti od podnebnih parametrov. Organizmi v tleh: kopičenje in razgradnja organske snovi, sinteza humusa, lastnosti humusa in pomen za tla. Čas: razvoj tal in talne lastnosti v odvisnosti od časa. Morfološke, fizikalne in kemijske lastnosti tal: tekstura, struktura, gostota, poroznost, konsistenca, barva, novotvorbe, vodne lastnosti tal, zrak v tleh, toplotne lastnosti tal, zgradba talnih koloidov in sorpcijske lastnosti, lastnosti talne raztopine. Biogeokemično kroženje elementov (N, P ,K, Ca, Mg). Osnovna pedološka analitika. Prepoznavanje in označevanje diagnostičnih horizontov, slovenska klasifikacija tal, tla Slovenije, osnove WRB klasifikacije, talni informacijski sistem. Degradacije tal.	Soil structure; vertical and horizontal variability of soil properties. Soil forming factors and soil development: Parent material: weathering processes and mineral constituents of soil. Topography – soil relations with time, soil catenas Climate: influence of climatic parameters on soil soil development and soil properties. Soil organisms: accumulation and decomposition of organic residues, humus synthesis and its importance for soil properties. Time: weathering and soil development with time. Morphological, physical and chemical properties of soil: soil texture and structure, density, porosity, color; soil water, soil air and temperature, soil colloids, anion and cation sorption capacity, soil solution. Biogeochemical cycles of elements (N, P, K, Ca, Mg). Basic methods of soil analyses. Diagnostic soil horizons, Slovenian soil classification, soils of Slovenia, basis of WRB soil classification, soil information system. Soil degradation processes.

Temeljna literatura in viri/Readings:

Izbrana poglavja/selected chapters: BIRKELAND, P., 1999, Soils and Geomorphology. Oxford Univ. Press, 430 s.
Izbrana poglavja/selected chapters: BRADY C. N., WEIL R.R. 2008. The Nature and Propreties of Soils, Prentice Hall ,

New Jersey, 121-676 str., ISBN: 0-13-016763-0.
GRČMAN H., ZUPAN M. Navodila za vaje iz pedologije. [Ljubljana: Biotehniška fakulteta Oddelek za agronomiijo, 2008]. 46 str., ilustr. [COBISS.SI-ID 6221945].

Cilji in kompetence:	**Objectives and competences:**
CILJI: Slušatelj osvoji znanje o nastanku, zgradbi, lastnostih tal in procesih v tleh. V okviru vaj spozna osnovne metode pedološke analitike in klasifikacije tal. KOMPETENCE: Študent je sposoben opisati talni profil, prepoznati vrsto tal in korektno interpertirati rezultate pedoloških analiz.	OBJECTIVES: Student learns about the formation and structure of soil, soil properties and processes in soil. Within the practical work he/she learns the basic soil analyses and principals of soil classification. COMPETENCES: The student is able to describe the soil profile, to identify/classify soils and to correct interpret results of soil analyses.

Predvideni študijski rezultati:	**Intended learning outcomes:**
Slušatelj razume zakonitosti nastajanja tal ter fizikalnih, kemijskih in biotičnih procesov v tleh. Zna prepoznati talne horizonte, poimenovati in razvrščati tla. Pozna metode osnovne pedološke analitike. Slušatelj je sposoben kritično interpretirati rezultate pedoloških analiz in uporabljati pedološke karte različnih meril. Sposoben je preprečevati degradacijske procese na osnovi poznavanja lastnosti tal. Slušatelj je sposoben na osnovi poznanih tlotvornih dejavnikov (matična podlaga, relief, odcednost) razumeti nastanek in lastnosti tal. Na osnovi fizikalnih, kemijskih in biotičnih lastnosti tal razumeti ranljivost tal ter predvideti ustrezne ukrepe. Pri delu je sposoben sodelovati s strokovnjaki iz ostalih področij (gradbeniki, biologi, kemiki, agronomi, gozdarji…), uporabljati domačo in tujo strokovno in znanstveno literaturo.	Knowledge and Understanding: The student understands the principles of soil formation and physical, chemical and biological processes in soil. He/she knows how to recognise soil properties, how to identify soil horizons and how to classify soils; knows the basic methods of soil analyses. The student is able to interpret the results of soil analyses, to use soil maps of different scales and to prevent degradaton processe, on the basis of known soil properties. The student is able to understand the formation and properties of soil on the basis of known soil forming factors (parent material, topography, and water regime).Furthermore, the student understands the vulnerability of soil and use the knowledge of physical, chemical and biological properties of soil in selecting preventive measures. The student is able to work with professionals from other fields (civil engineers, biologists, chemists, agronomists, ...), he is able to use domestic and foreign professional and scientific literature.

Metode poučevanja in učenja:	**Learning and teaching methods:**
Predavanja, vaje in 1 dan terenskega dela. V okviru predavanj študentje izdelajo eno seminarsko nalogo, ki jo javno predstavijo.	Lectures, practical work and 1 day of field work. Within the lectures students will prepare and present a seminar work.

Načini ocenjevanja:	**Delež/Weight**	**Assessment:**
Pisni izpit	85,00 %	Written exam
Predstavitev seminarske naloge	15,00 %	Presentation of seminar

Reference nosilca/Lecturer's references:

GRČMAN H. , Vodnik D., Velikonja Bolta Š., Leštan D. Ethylenediaminedissuccinate as a new chelate for environmentally safe enhanced lead phytoextraction. J. environ. qual., 2003, vol. 32, str. 500-506.
GRČMAN H., Velikonja Bolta Š., Vodnik D., Kos B., Leštan D. EDTA enhanced heavy metal phytoextraction: metal accumulation, leaching and toxicity. Plant soil. [Print ed.], 2001, 235, str. 105-114.
Ajmone Marsan F., Biasioli M., Kralj T., GRČMAN H., Davidson C., Hursthouse A., Madrid L., Rodrigues Sonia. Metals in particle-size fractions of the soils of five European cities. Environ. pollut. (1987). [Print ed.], 2008, vol. 152, no. 1, str. 73-81.