

UČNI NAČRT PREDMETA/COURSE SYLLABUS

Predmet:	Okoljska geologija
Course title:	Environmental Geology

Študijski programi in stopnja	Študijska smer	Letnik	Semestri
Geologija, prva stopnja, univerzitetni	Ni členitve (študijski program)	3. letnik	Zimski

Univerzitetna koda predmeta/University course code:

Predavanja	Seminar	Vaje	Klinične vaje	Druge oblike študija	Samostojno delo	ECTS
60	0	0	0	15	75	5

Nosilec predmeta/Lecturer:

Vrsta predmeta/Course type:

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

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:

Pogoj za vključitev v delo je vpis v 3. letnik študija geologije.

Prerequisites:

Condition for inclusion in the work is inscription to a 3rd academic year.

Vsebina:

Temelji okoljske geologije
 Filozofija in osnovni koncepti
 Ekologija in geologija
 Kroženje izbranih prvin in spojin v naravi
 Procesi na Zemlji, ki predstavljajo nevarnost
 Uvod v naravne nesreče
 Obalna erozija
 Vremensko pogojene nevarnosti
 Padci zunajzemeljskih objektov
 Naravni viri in onesnaženje
 Tla in okolje
 Mineralni viri in okolje
 Geokemično kartiranje
 Metode ocenjevanja onesnaženja
 Remediacija
 Uvod v geomedicino
 Fosilna goriva in okolje
 Alternativni energijski viri
 Jedrska energija
 Ravnanje z odpadki in njihova ponovna uporaba
 Organska onesnaževala
 Globalne klimatske spremembe
 Okoljska zakonodaja
 Aktualni okoljski problemi

Content (Syllabus outline):

Foundations of Environmental Geology
 Philosophy and fundamental concepts
 Ecology and Geology
 Selected elements and compound natural cycles
 Hazardous Earth Processes
 Introduction to Natural Hazards
 Coastal Hazards
 Weather induced Hazards
 Impact of Extraterrestrial Objects
 Natural resources and Pollution
 Soils and Environment
 Mineral Resources and Environment
 Geochemical Mapping
 Methods of estimating pollution
 Remediation
 Introduction to Geomedicine
 Fossil Energy resources and Environment
 Alternative Energy resources
 Nuclear energy
 Waste management and reuse
 Organic pollutants
 Global climate change

	Environmental legislation Actual environmental issues
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Temeljna literatura in viri/Readings:

KELLER E. A., 2011, Environmental Geology. PearsonPrentice Hall, 596 pp.
MONTGOMERY, C. W., 2006: Environmental Geology. McGraw&Hill, 540 pp.
VAUGHAN, D.J. & WOGELIUS, R.A., 2000. Environmental Mineralogy, European Mineralogical Union, 434pp.
VAUGHAN, D.J., 2006. Sulfide Mineralogy and Geochemistry (Ed.). Reviews in Mineralogy and Geochemistry, Geochemical Society and Mineralogical Society of America, 714pp.

Cilji in kompetence:

CILJI: Slušatelj obvlada osnovne probleme ter zakonodajo v zvezi z ranljivostjo in varovanjem okolja ter vpetost različnih vej geologije (mineralogija, geokemija, inženirska geologija, hidrogeologija) pri varovanju in sanaciji okolja.
KOMPETENCE: Študent je sposoben spoznati in predvideti okoljske vplive ter predlagati njihovo sanacijo. Zna se povezovati s strokovnjaki drugih strok pri presoji in reševanju okoljskih problemov.

Objectives and competences:

OBJECTIVES: Students manage the basic problems and legislation relating to vulnerability and protecting the environment as well as integration of different branches of geology (mineralogy, geochemistry, engineering geology, hydrogeology) in the protection and rehabilitation of the environment.
COMPETENCES: The student is able to recognize and anticipate environmental impacts and propose their rehabilitation. Knows how to liaise with experts in other fields of expertise in environmental issues.

Predvideni študijski rezultati:

Študent razume in prepozna okoljsko problematiko v širšem družbenem in naravoslovnem kontekstu. Pozna zakonske osnove varovanja okolja. Pozna dejavnike geohazarda in razume procese onesnaževanja ter posegov v okolje. Slušatelj je sposoben predstaviti vlogo geološkega znanja pri reševanju okoljske problematike ter poiskati ustrezne rešitve za preprečevanje in remediacijo škodljivih vplivov na okolje. Iz različnih vej geologije je sposoben izluščiti potrebna znanja za razumevanje in reševanje okoljske problematike ter predvideti škodljive posege v okolje ter predlagati njihovo sanacijo z vidika geološke stroke. Pri delu je sposoben sodelovati s strokovnjaki iz ostalih področij (gradbeniki, biologi, kemiki...), uporabljati domačo in tujo strokovno literaturo.

Intended learning outcomes:

The student understands and recognizes environmental issues in a broader social and natural science context. Knows the legal basics of environmental protection. Knows the geohazard factors and understands the processes of pollution and environmental interventions. The student is able to present the role of geological knowledge in solving environmental problems and to find appropriate solutions for the prevention and remediation of harmful effects on the environment. He is able to use the necessary knowledge from various branches of geology to understand and solve environmental problems, to anticipate harmful interventions in the environment and to propose their remediation from the perspective of the geological profession. He is able to work with experts in other fields (builders, biologists, chemists, etc.), use domestic and foreign professional literature.

Metode poučevanja in učenja:

Predavanja in dva dni obiska terena. V okviru predavanj študentje izdelajo eno seminarsko nalogo, ki jo javno predstavijo.

Learning and teaching methods:

Lectures and two days of field visits. Within the lectures students will prepare and present a seminar work.

Načini ocenjevanja:

Delež/Weight

Assessment:

Pisni izpit ali oddane domače naloge	90,00 %	Written exam or given homework
Predstavitve seminarske naloge	5,00 %	Presentation of seminar
Aktivno sodelovanje pri predavanjih	5,00 %	Active participation in lectures

Reference nosilca/Lecturer's references:

OPRČKAL, Primož, MLADENVIČ, Ana, ZUPANČIČ, Nina, ŠČANČAR, Janez, MILAČIČ, Radmila, ZALAR SERJUN, Vesna. Remediation of contaminated soil by red mud and paper ash. Journal of cleaner production, 2020, str. 1-33.

MLADENVIČ, Ana, HAMLER, Sandra, ZUPANČIČ, Nina. Environmental characterisation of sewage sludge/paper ash-based composites in relation to their possible use in civil engineering. *Environmental science and pollution research international*, 2017, vol. 24, iss. 1, str. 1030-1041.

ZUPANČIČ, Nina. Influence of climate factors on soil heavy metal content in Slovenia. *Journal of soils and sediments : protection, risk assessment and remediation*, ISSN 1439-0108, 2017, vol. 17, iss. 4, str. 1073-1083.

ROGAN ŠMUC, Nastja, DOLENEC, Matej, KRAMAR, Sabina, MLADENVIČ, Ana, Geochemical equilibrium and processes in seawater. Heavy metal signature and environmental assessment of nearshore sediments: Port of Koper (Northern Adriatic Sea). *Geosciences*, ISSN 2076-3263, 2018, vol. 8, iss. 11, 18 str., doi: 10.3390/geosciences8110398.

KOVAČ, Nives, GLAVAŠ, Neli, RAMŠAK, Teja, DOLENEC, Matej, ROGAN ŠMUC, Nastja. Metal(oid) mobility in a hypersaline salt marsh sediment (Sečovlje Salina, northern Adriatic, Slovenia). *Science of the total environment*, ISSN 0048-9697, 2018, vol. 644, str. 350-359, doi: 10.1016/j.scitotenv.2018.06.252.

GLAVAŠ, Neli, MOURELLE, Lourdes Maria, GÓMEZ, Carmen P., LEGIDO, José Luis, ROGAN ŠMUC, Nastja, DOLENEC, Matej, KOVAČ, Nives. The mineralogical, geochemical, and thermophysical characterization of healing saline mud for use in pelotherapy. *Applied clay science*, ISSN 0169-1317. [Print ed.], 2017, vol. 135, str. 119-128, doi: 10.1016/j.clay.2016.09.013.