

UČNI NAČRT PREDMETA/COURSE SYLLABUS

Predmet:	Petrogeokemija
Course title:	Petrogeochemistry

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

Univerzitetna koda predmeta/University course code: 11290

Predavanja	Seminar	Vaje	Klinične vaje	Druge oblike študija	Samostojno delo	ECTS
30	15	30	0	15	90	6

Nosilec predmeta/Lecturer: Matej Dolenc, Mirijam Vrabc, Nastja Rogan Šmuc

Vrsta predmeta/Course type: Izbirni / Elective

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

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

Pogoji za vključitev v delo je vpis v 2. ali 3. letnik študija geologije.
Priporočljivo - opravljeni izpiti iz Mineralogije, Petrologije magmatskih in metamorfnih kamnin, Sedimentne petrologije in Geokemije za pristop k izpitu.

Prerequisites:

Condition for inclusion in the work is inscription to the 2nd or 3rd academic year.
Recommended - passed exams from Mineralogy, Igneous and metamorphic petrology, Sedimentary petrology and Geochemistry to take an exam.

Vsebina:

Splošno: sestava Zemljskega plašča in skorje, povprečna sestava kontinentalne skorje, globalna razporeditev elementov, procesi koncentriranja elementov
Poglobljena geokemija magmatskih kamnin: ORB, OIB in alkalne serije, kontinentalni poplavni bazalti, orogeni andeziti
Posebni kemični različki: redke zemelje, karbonatiti, natrijevi in kalijeви graniti, lamprofirji, riolitni trahiti in fonoliti, arhaiski metabazalti in metaandeziti
Poglobljena geokemija metamorfnih kamnin
Poglobljene geokemične lastnosti sedimentov in sedimentnih kamnin
Zunajzemeljska geokemija: Lunarni bazalti in anortoziti, Mars in Venera, Tektiti, Drugi meteoriti

Content (Syllabus outline):

General: Composition of the Earth's Mantle and Crust, The Average Composition of the Earth's Continental Crust, Global Element Distribution, Element Concentration Processes
Advanced Geochemistry of Igneous Rocks: Oceanic Ridge Basalts (ORBs), Oceanic Island Basalts (OIBs) & Alkaline Series, Continental Flood Basalts, Orogenic Andesites
Special Chemical Types: Rare Earths, Carbonatites, Sodic and Potassic Granites, Lamprophyres, Rhyolites Trachytes and Phonolites, Archaean MetaBasalts and MetaAndesites, Isotopes
Advanced Geochemistry of Metamorphic Rocks
Advanced Geochemical characteristics of Sediments and Sedimentary Rocks
Extraterrestrial geochemistry: Lunar Basalts and Anorthosites, Mars and Venus, Tektites, Other Meteorites

Temeljna literatura in viri/Readings:

CARLSON, R. W. (Ed.), 2005: Treatise on geochemistry: The mantle and core, Elsevier, 586 p.
LENTZ, D. R. (Ed.), 2003: Geochemistry of sediments and sedimentary rocks: evolutionary considerations to mineral deposit-forming environments, Geological Association of Canada, 184 p.
RUDNICK, R. L. (Ed.), 2005: Treatise on geochemistry: The crust, Elsevier, 683 p.

Cilji in kompetence:	Objectives and competences:
CILJI: Slušatelj pridobi razširjeno znanje o geokemičnih značilnostih magmatskih, metamorfnih, sedimentnih in zunajzemeljskih kamnin. KOMPETENCE: Slušatelj je sposoben opisati, analizirati in razumeti geokemične značilnosti večine Zemeljskih in lunarnih kamnin. Seznanjen je z njihovo regionalno razporeditvijo, klasifikacijo in primeri njihovih geokemičnih trendov.	OBJECTIVES: Students acquire advanced knowledge of geochemical characteristics of igneous, metamorphic, sedimentary, and extraterrestrial rocks. COMPETENCES: The student is able to describe, analyse and understand geochemical characteristics of most types of terrestrial and lunar rocks. He is familiar with their regional distribution, classification, and examples of their geochemical trends and "geochemical fingerprints".

Predvideni študijski rezultati:	Intended learning outcomes:
Študent razume in prepozna geokemične značilnosti Zemeljskih in izvenzemeljskih kamnin. Pozna geokemične karakteristike posameznih tipov kamnin in njihovo razprostranjenost v globalnem smislu. Sposoben je pridobiti in analizirati geokemične podatke ter interpretirati geokemične značilnosti in trende.	The student understands and recognizes the geochemical characteristics of terrestrial and extraterrestrial rocks. He is familiar with geochemical characteristics of individual rock types and their distribution in a global context. He is able to obtain and analyze data and interpret geochemical characteristics and trends.

Metode poučevanja in učenja:	Learning and teaching methods:
Predavanja, seminar, vaje in 2 dni terenskega dela. Študenti izdelajo terensko poročilo in seminarsko nalogo na dogovorjeno temo.	Lectures, seminar, lab work and 2 days of fieldwork. Students will prepare a fieldwork report and seminar work on an agreed topic.

Načini ocenjevanja:	Delež/Weight	Assessment:
Pisni izpit in/ali oddane domače naloge	60,00 %	Written exam and/or given homework
Seminarska naloga	25,00 %	Seminar work
Poročilo terenskega dela	10,00 %	Fieldwork report
Aktivno sodelovanje pri predavanjih	5,00 %	Active participation in lectures

Reference nosilca/Lecturer's references:
<p>ŽVAB ROŽIČ, Petra, DOLENEC, Tadej, BAŽDARIĆ, Branimir, KARAMARKO, Vatroslav, KNIEWALD, Goran, DOLENEC, Matej. Element levels in cultured and wild sea bass (<i>Dicentrarchus labrax</i>) and gilthead sea bream (<i>Sparus aurata</i>) from the Adriatic Sea and potential risk assessment. <i>Environ. geochem. health</i>, 2013, doi: 10.1007/s10653-013-9516-0.</p> <p>VRHOVNIK, Petra, ROGAN ŠMUC, Nastja, DOLENEC, Tadej, SERAFIMOVSKI, Todor, DOLENEC, Matej. An evaluation of trace metal distribution and environmental risk in sediments from the Lake Kalimanci (FYR Macedonia). <i>Environmental earth sciences</i>, 2012, doi: 10.1007/s12665-012-2166-1.</p> <p>ŽVAB ROŽIČ, Petra, DOLENEC, Tadej, BAŽDARIĆ, Branimir, KARAMARKO, Vatroslav, KNIEWALD, Goran, DOLENEC, Matej. Major, minor and trace element content derived from aquacultural activity of marine sediments (Central Adriatic, Croatia). <i>Environ. sci. pollut. res. int.</i> [Print ed.], 2012, vol. 19, no. 7, str. 2708-2721, doi: 10.1007/s11356-012-0769-4.</p> <p>VRABEC, Mirijam, JANÁK, Marian, FROITZHEIM, Nikolaus, DE HOOG, J.C.M. Phase relations during peak metamorphism and decompression of the UHP kyanite eclogites, Pohorje Mountains (Eastern Alps, Slovenia). <i>Lithos</i>, 2012, vol. 144-145, str. 40-55, doi: dx.doi.org/10.1016/j.lithos.2012.04.004.</p> <p>HOOG, J.C.M. De, JANAK, Marian, VRABEC, Mirijam, FROITZHEIM, Nikolaus. Serpentinised peridotites from an ultrahigh-pressure terrane in the Pohorje Mts. (Eastern Alps, Slovenia): Geochemical constraints on petrogenesis and tectonic setting. <i>Lithos</i>, 2009, vol. 109, iss. 3-4, str. 209-222, doi: 10.1016/j.lithos.2008.05.006.</p> <p>VRABEC, Mirijam, HOOG, J.C.M. De, JANAK, Marian. Origin of UHP garnet lherzolite and serpentinised harzburgites from Pohorje, Eastern Alps, Slovenia : [presented at 17th Annual V. M. Goldschmidt Conference Cologne, Germany August 2007]. <i>Geochim. cosmochim. acta.</i> [Print ed.], 2007, vol. 71, no. 15S, str. A1075.</p> <p>KRAMAR, Sabina, LUX, Judita, MLADENOVIC, Ana, PRISTACZ, Helmut, MIRTIC, Breda, SAGADIN, Milan, ROGAN ŠMUC, Nastja. Mineralogical and geochemical characteristics of Roman pottery from an archaeological site near Mošnje (Slovenia). <i>Appl. clay sci.</i> [Print ed.], 2012, vol. 57, str. 39-48, doi: 10.1016/j.clay.2011.12.00.</p> <p>ROGAN ŠMUC, Nastja, DOLENEC, Tadej, SERAFIMOVSKI, Todor, DOLENEC, Matej, VRHOVNIK, Petra. Geochemical characteristics of rare earth elements (REEs) in the paddy soil and rice (<i>Oryza sativa</i> L.) system of Kočani Field,</p>

Republic of Macedonia. Geoderma. [Print ed.], 2012, vol. 183-184, str. 1-11, doi:

[dx.doi.org/10.1016/j.geoderma.2012.03.009](https://doi.org/10.1016/j.geoderma.2012.03.009).

VRHOVNIK, Petra, ROGAN ŠMUC, Nastja, DOLENEC, Tadej, SERAFIMOVSKI, Todor, DOLENEC, Matej. The distribution of rare earth elements (REE) in surficial lake sediments before and after tailings dam failure (FYR Macedonia). Global advanced research journal of environmental science and toxicology. Online ed., 2012, vol. 1, iss. 5, str. 97-109.