

UČNI NAČRT PREDMETA/COURSE SYLLABUS

Predmet:	Mineralne surovine
Course title:	Mineral Deposits

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:

Predavanja	Seminar	Vaje	Klinične vaje	Druge oblike študija	Samostojno delo	ECTS
45	0	30	0	15	90	6

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 letnik študija. Opravljen kolokvij iz mikroskopije in vaj je pogoj za pristop h končnemu izpitu.

Prerequisites:

Condition for student to be included into the work is to be enrolled into the year of studies. Successfully completed test on the Microscopy Lab and Tutorial is obligatory before final examination.

Vsebina:

Vsebina predmeta zajema geološke osnove nastanka nahajališč različnih kovinskih mineralnih surovin. Poudarek je na prepoznavanju procesov nastanka magmatskih, pegmatitskih, pneumatolitskih in hidrotermalnih ter kontaktnometamorfnih rudišč. Pri vajah se študenti seznanijo z makroskopskim prepoznavanjem rude in različnih tipov rudišč ter njenimi teksturnimi in strukturnimi značilnostmi, ki so temeljna informacija za začetek vrednotenja ekonomičnosti nahajališča. Okolje in pogoji za nastanek nahajališč ogljikovodikov. Izor in nastanek kerogenov, njihova identifikacija in sistematika. Migracija nafte in plinov - izvorne in kolektorske plasti sedimentov. Tipi pasti ogljikovodikov. Kemična in izotopska sestava ter klasifikacija nafte. Kemična sestava in klasifikacija zemeljskega plina. Značilna nahajališča nafte in zemeljskega plina (svetovna, slovenska in druga v bližini). Nastanek premogov, njihova delitev, kemična in izotopska sestava. Nahajališča premogov (svetovna in slovenska in druga v bližini). Nekovinske mineralne surovine – delitev. Minerali: grafit, soli, fluorit, barit, magnezit, kreda, sadra,

Content (Syllabus outline):

The course content gives overview of geological bases of the different metal mineral deposits. There is an emphasis on the recognition of genetic processes of magmatic, pegmatite, pneumatolitic and hydrothermal as well as contact-metamorphic mineral deposits. At the Microscopy Lab students get insight into microscopic identification of different ores and mineral deposits and their textural and structural characteristics, which are fundamental information for the start of economic evaluation of mineral deposits. Environment and genetic conditions for the formation of hydrocarbons. Sources of kerogene, their identification and characterisation. Oil and gas migration – source and collecting sedimentary beds. Types of hydrocarbon traps. Chemical and isotopic composition and oil classification. Chemical composition and classification of gas. Type oil and gas fields (world, Slovenia and vicinity). Coal genetic environment, their classification, chemical and isotopic composition. Coal type deposits (world, Slovenia and vicinity). Non-metal mineral materials – classification. Minerals: graphite, salts, fluorite, barite, magnesite,

<p>apatit, lojavec, glinenci.</p> <p>Kamnine: kremenove surovine, apnenec, dolomit, laporovec, glinavci in skrilavci, gline, naravni kamen.</p> <p>Kakovost surovine za predelavo: steklarstvo, apnenice, keramična industrija, cementarne, betonarne, asfaltne baze, proizvodnja izolacijskih in ognjevzdržnih materialov, brusila, livarstvo, gradbeništvo.</p> <p>Procesi predelave.</p> <p>Preverjanje kakovosti izdelka, standardi.</p> <p>Sekundarne surovine: elektrofiltrski pepel, plavžna in jeklarske žindre, gradbeni odpadki, odpadno steklo, silika, odpadne sadre. Možni vplivi deponij na okolje.</p>	<p>chalk, gypsum, apatite, talc, feldspars.</p> <p>Rocks: quartz materials, limestone, dolomite, marl, claystones and slate, clay, architectural stone.</p> <p>Quality of the source material for: glass industry, lime kilns, cement industry, concrete producers, bitumen/agregates producers, isolating and heat resistant materials, abrasives, foundry, civil engineering industry.</p> <p>Industrial processes.</p> <p>Product quality control, standards.</p> <p>Secondary material: electro filter flying ash EFA, iron and different steel slags, building waste, glass waste, silica, gypsum waste. Possible influences of secondary material deponies onto the environment.</p>
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Temeljna literatura in viri/Readings:

DIMKOVSKI, Trajan, ROKAVEC Duška: Nahajališča nekovinskih mineralnih surovin v Sloveniji: površinski kopi. Ljubljana: Geološki zavod Slovenije, 2001. 123 str.

OATES, Joseph A. H.: Lime and limestone: chemistry and technology, production and uses: Weinheim: Wiley-VCH, 1998, 455 str.

DROVENIK, Matija, Nahajališča mineralnih surovin. Ljubljana, Fakulteta za naravoslovje in tehnologijo, 1984, 375 str.

SINTON, Christopher W., Raw materials for glass and ceramics : sources, processes, and quality control. Hoboken : Wiley, 2006. 356 str.

Cilji in kompetence:

Prepoznavanje značilnosti in pogojev nastanka nahajališč različnih rudnih, nekovinskih in organskih mineralnih snovi. Ima sposobnost vrednotenja naravnih mineralnih surovin in sekundarnih surovin in ugotavljanja njihove uporabne vrednosti ter preprečevanja vplivov na okolje.

Objectives and competences:

The student is able to identify the characteristics and conditions of formation of various mineral deposits, non-metallic mineral and organic substances. Student has the ability to evaluate natural minerals and secondary raw materials and their use value assessment and prevention of environmental impacts.

Predvideni študijski rezultati:

Študent je sposoben makroskopsko določiti strukturne in teksturne načilnosti rude ter prepoznati glavne rudne minerale. Pozna glavne značilnosti in teorijo nastanka nafte in premoga. Študent spozna najpomembnejše nekovinske mineralne surovine in njihovo uporabno vrednost v nekovinski predelovalni industriji. Razume parametre, ki določajo njegovo uporabno vrednost. Spozna tudi možnost uporabe mineralnih odpadkov kot sekundarne surovine.

Študent z osvojenim znanjem lahko sodeluje pri ovrednotenju nahajališč mineralnih surovin in pri določanju njihove uporabne vrednosti. Poznavanje mineralnih snovi in sposobnost ugotavljanja njihovih mineraloških, kemičnih in strukturnih karakteristik študentu omogoča karakterizacijo kovinskih, nekovinskih in organskih mineralnih surovin. organskih mineralnih surovin omogoča študentu modeliranje obnašanja le-te pri procesu predelave in omogoči predvideti lastnosti končnega mineralnega izdelka. Poznavanje lastnosti kovinskih, nekovinskih in Prenosljive spretnosti: sposobnost izbire in uporabe ustrezne domače in tuje literature iz področja mineralnih surovin.

Intended learning outcomes:

The student is able to determine the macroscopic structural and textural features of ore and to identify the main ore minerals. Knows the main characteristics and theory of the formation of oil and coal. Students learn about the most important non-metallic minerals and their applications in metal processing industry. Understand the parameters that determine its value. He also possibility to use mineral wastes as secondary raw material. The student with the acquired knowledge is able to participate in the evaluation of mineral deposits and in determining their utility value. Knowledge of minerals and their ability to identify mineralogic, chemical and structural characteristics allows to student allows the characterization of metallic, organic and non-metallic minerals. Knowledge of the properties of metallic, organic and non-metallic minerals allowing the students modeling of their behavior in the recovery process and allow them to prognose properties of the final mineral product. Transferable skills: use of different literature data from use of mineral raw materials. Ability of analysis and synthesis of particular data.

Metode poučevanja in učenja:	Learning and teaching methods:
Predavanja - 45 ur, vaje -10 ur, laboratorijske vaje (mikroskopirnica) - 20 ur, seminarska naloga.	Lectures - 45 hours, tutorial - 10 hours, microscopy lab - 20 hours, seminar work.

Načini ocenjevanja:	Delež/Weight	Assessment:
kolokvij in mikroskopija	30,00 %	test on the microscopy and tutorial work
seminarska naloga	30,00 %	seminar work
pisni izpit	40,00 %	written examination
Ocena je sestavljena iz: kolokvij in mikroskopija (po 1/3 vsebine iz kovinskih, nekovinskih in organskih mineralnih snovi); seminarska naloga; pisni izpit (po 1/3 vsebine iz kovinskih, nekovinskih in organskih mineralnih snovi). Ocenjevalna lestvica: (6-10) pozitivno, ob upoštevanju Statuta UL in fakultetnih pravil.		The rating consists of: test on the microscopy and tutorial work (1/3 of the content from metal, non-metal and organic mineral materials); seminar work; written examination (1/3 of the content from metal, non-metal, and organic mineral materials). Grades: (6-10) positive assessment, according to University Statute and Faculty Acts.

Reference nosilca/Lecturer's references:

<p>ROGAN ŠMUC, Nastja, DOLENEC, Tadej, SERAFIMOVSKI, Todor, TASEV, Goran, DOLENEC, Matej, VRHOVNIK, Petra. Heavy metal characteristics in Kočani Field plant system (Republic of Macedonia). Environ. geochem. health, 2012, vol. 34, iss. 4, str. 513-526.</p> <p>ROGAN ŠMUC, Nastja, SERAFIMOVSKI, Todor, TASEV, Goran, DOLENEC, Tadej, DOLENEC, Matej. Distribution of Pb and Zn and their chemical speciations in the paddy soils from the Kočani field (Macedonia). Geol. Maced., 2009, vol. 23, str. 55-62.</p> <p>DOLENEC, Tadej, SERAFIMOVSKI, Todor, TASEV, Goran, DOBNIKAR, Meta, DOLENEC, Matej, ROGAN, Nastja. Major and trace elements in paddy soil contaminated by Pb-ZN mining: a case study of Kočani field, Macedonia. Environ. geochem. health, 2007, vol. 29, no. 1, str. 21-32.;HERLEC, Uroš, SPANGENBERG, Jorge E., LAVRIČ, Jošt Valentin. Sulfur isotope variations from orebody to hand-specimen scale at the Mežica lead-zinc deposit, Slovenia: a predominantly biogenic pattern. Mineralium Deposita, ISSN 0026-4598, 2010, vol. 45, no. 6, str. 531-547.</p>
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