

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	SISTEM ZEMLJA
Course title:	THE EARTH SYSTEM

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Vede o Zemlji in okolju, magistrski študij 2. stopnje	vsi	1	1
Earth and Environmental Sciences, Master study 2nd level	all	1	1

Vrsta predmeta / Course type Obvezni/Mandatory

Univerzitetna koda predmeta / University course code: MT002

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje work	Teren. vaje Field work	Samost. delo Individ. work	ECTS
45	30	30			120	9

Nosilec predmeta / Lecturer: Aleksander Horvat

Sodelavci predmeta / coworkers: asist. Tim Cifer, tehnični sodelavec Filip Litera

Jeziki / Predavanja / Lectures: Slovenščina, angleščina/Slovene, English
Languages: Vaje / Tutorial: Slovenščina, angleščina/Slovene, English

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

Končan študijski program 1. stopnje ali dodiplomski študijski program za pridobitev univerzitetne izobrazbe, sprejet pred 11. 6. 2004 s področja naravoslovja.

Prerequisites:

First-cycle Bologna degree or a university degree in the natural sciences.

Vsebina:

- Zemlja kot sistem: koncept sistemov v geoznanostih
- Geosfera, hidrosfera, atmosfera in biosfera
- Globalno kroženje energije
- Cirkulacija atmosfere, oceanov in trdne Zemlje
- Nastanek Zemlje in življenja;
- Minerali in kamnine
- Tektonika plošč, klima in življenje

Content (Syllabus outline):

- Earth as a system: system concepts in geosciences
- Geosphere, hydrosphere, atmosphere and biosphere
- Global exchange of energy
- Circulation of atmosphere, oceans and the solid Earth
- Origin of Earth and of Life
- Rock-forming minerals and rocks
- Plate tectonics, climate and life

- Geološka časovna lestvica in osnove stratigrafije
- Korelacije in datiranje kamnin
- Zgodovina življenja v fanerozoiku
- Množična izumiranja: vzroki in posledice;
- Globalni cikli in spremembe: ogljikov cikel; silicijev cikel, dušikov cikel, recikliranje elementov
- Veliki dogodki v Zemljini zgodovini
- Prispevek sedimentologije in paleontologije k znanosti o sistemu Zemlja
- Klimatske spremembe
- Antropocen: človekov vpliv na sistem Zemlja

- Geologic time scale and concepts of stratigraphy
- Correlation and dating the rock record
- History of life in Phanerozoic
- Mass extinctions: causes and consequences
- Major global cycles and changes: carbon cycle, silicon cycle, nitrogen cycle, recycling of elements
- Major events in Earth history
- Contribution of sedimentology and palaeontology to Earth system science
- Climate changes
- Anthropocene: human impact on Earth system

Temeljni literatura in viri / Readings:

- Cockell, C. 2008: An introduction to Earth-Life System. Cambridge Uni. Press, 61-229..
- Cowen, R. 2013: History of Life. 5th Edition. Blackwell Science, Oxford, 27-46, 63-88, 107363, 389-448.
- Kump, L. R., Kasting, J. F. & Crane, R. G. 2009: The Earth System, 3rd Edition. Prentice Hall, 434 pp.
- Prothero, D. R. & Dott, R. H. 2004: Evolution of the Earth. McGraw Hill Comp., 67-98, 151-498. .
- Stanley, S. M. 2005: Earth system history. W. H. Freeman & Co., 79-538.

Cilji in kompetence:

Namen predmeta je študentom, ki nimajo predznanja iz geoloških ved, priskrbeti temeljno razumevanje kompleksnega sistema planeta Zemlja. Predmet bo obravnaval posamezne teme multidisciplinarnih znanstvenih področij, združenih v znanost o sistemu Zemlja, in predstavil njihovo vlogo v paleobiologiji in sedimentarni geologiji ter povezavo med današnjimi procesi na Zemlji s stratigrafskim zapisom velikih dogodkov v geološki preteklosti.

Objectives and competences:

The course is aimed to providing a fundamental understanding of complexity of the Earth system to students with only rudimentary knowledge of geosciences. The course will tackle the subject of broad multidisciplinary area of Earth system sciences, emphasizing their relevance and relationship with palaeobiology and sedimentary geology, particularly links between present-day processes with the geological record of large-scale events in the Earth history.

Predvideni študijski rezultati:

Znanje in razumevanje:

- Osvojiti znanstvene temelje razumevanja planeta Zemlje kot sistema.
- Raziskati kompleksnost podsistemov (sfer) in njihovo medsebojno povezanost.
- Pridobiti znanje o tektoniki plošč in evoluciji planeta Zemlje.
- Razviti temeljno percepcijo geološkega časa in spremenljivosti časovnih in

Intended learning outcomes:

Knowledge and understanding:

- Acquire a scientific understanding of the entire planet Earth system.
- Explore the complexity and interrelation of major subsystems – spheres.
- Learn about plate tectonics and the evolution of planet Earth.

prostorskih dimenzij pri geoloških procesih in globalnih spremembah.

- Develop a basic understanding of geological time, varying time and spatial scales in geological processes and global changes.

Metode poučevanja in učenja:

- Predavanja
- Seminarji
- Terenske vaje

Learning and teaching methods:

- Lectures
- Seminars
- Field work

Delež (v %) /

Weight (in %)

Načini ocenjevanja:

Assessment:

Način (pisni izpit, ustno izpraševanje, naloge, projekt)

- Pisni ali ustni izpit
- Seminarska naloga

Type (examination, oral, coursework, project):

- Written or oral exam
- Written paper

70
30

Reference nosilca / Lecturer's references:

1. Bohinc, T., Horvat, A., Andrić, G., Pražič Golić, M., Kljajić, P., Trdan, S. 2020: Natural versus synthetic zeolites for controlling the maize weevil (*Sitophilus zeamais*) - like Messi versus Ronaldo?. *Journal of Stored Products Research*, 88, art. no. 101639, str. 1-9.
2. Moro, A., Velić, I., Mikuž, V., Horvat, A. 2018: Microfacies characteristics of carbonate cobble from Campanian of Slovenj Gradec (Slovenia) : implications for determining the Fleuryana adriatica De Castro, Drobne and Gušić paleoniche and extending the biostratigraphic range in the Tethyan realm. *Mining-Geology-Petroleum Engineering Bull.*, 42, 1-13. DOI: 10.17794/rgn.2018.4.1.
3. Goričan, Š., Žibret, L., Košir, A., Kukoč, D., Horvat, A. 2018: Stratigraphic correlation and structural position of Lower Cretaceous flysch-type deposits in the eastern Southern Alps (NW Slovenia). *International journal of earth sciences*, 107/8, 2933-2953.
4. Bartol, M., Mikuž, V., Horvat, A. 2014: Palaeontological evidence of communication between the Central Paratethys and the Mediterranean in the late Badenian/early Serravalian. – *Palaeogeography, Palaeoclimatology, Palaeoecology*, 394, 144-157.
5. Horvat, A. 2004: Middle Miocene siliceous algae of Slovenia : paleontology, stratigraphy, paleoecology, paleobiogeography. Ljubljana: Založba ZRC, ZRC SAZU, 255 pp.