Podiplomskašola ZRCSAZU
Novi trg 2
1000 Ljubljana
T: +386 1 470 64 51

UČNI NAČRT PREDMETA / COURSE SYLLABUS	
Predmet:	GEOLOGIJA KVARTARJA
Course title:	QUATERNARY GEOLOGY

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	Paleobiologija in sedimentarna geologija		
Earth and environmental sciences, Master study 2nd level	Palaeobiology and Sedimentary geology		

Vrsta predmeta / Course type	Izbirni/ Elective
Univerzitetna koda predmeta / University course code:	MIP02

Predavanja **Lectures**	**Seminar** **Seminar**	**Vaje** **Tutorial**	**Klinične vaje** **work**	**Teren. vaje** **Field work**	**Samost. delo** **Individ. work**	**ECTS**
30	**10**	**30**			**80**	**6**

Nosilec predmeta / Lecturer:	Aleksander Horvat
Jeziki / Languages: **Predavanja / Lectures:**	Slovenščina, angleščina/Slovene, English
Vaje / Tutorial:	Slovenščina, angleščina/Slovene, English

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:	**Prerequisites:**
Končan študijski program 1. stopnje ali dodiplomski študijski program za pridobitev univerzitetne izobrazbe, sprejet pred 11. 6. 2004 s področja naravoslovja.	First-cycle Bologna degree or a university degree in the natural sciences.

Vsebina:	**Content (Syllabus outline):**
• Definicija kvartarja: stratigrafske in podnebne osnove • Podnebne spremembe v kvartarju: vzroki, posledice, klimatski pokazatelji, paleoklimatologija • Vplivi podnebnih sprememb na biosfero • Stratigrafija kvartarja: orodja in metode, izotopska stratigrafija, klimatokronologija, korelacija morske in terestrične stratigrafije, »alpska« stratigrafija	• Definition of Quaternary: stratigraphic and climatic basics • Quaternary climatic changes: causes, consequences, climatic proxies, palaeoclimatology • Quaternary climatic change impact on biosphere • Quaternary Stratigraphy: methods and analytical tools, isotope stratigraphy, climatochronology, correlation of marine and terrestrial sedimentary record, Alpine stratigraphy

● Sedimentacijska okolja v kvartarju: vrste sedimentnih okolij, značilne kamnine in faciesi ● Geomorfološke značilnosti kvartarnih pokrajin ● Holocen: klimatske in okoljske spremembe ● Antropocen: razlogi za in proti novi epohi, antropogeni vpliv na okolje in podnebje, narava antropogenih depozitov in antropogena sprememba pokrajine	● Quaternary sedimentary environments: main facies, rock types and sedimentary environments ● Geomorphology of Quaternary induced landscapes ● Holocene climatic and environmental changes ● Anthropocene: case for and against a new epoch, anthropogenic environmental and climatic impact, nature of anthropogenic deposits and landscape modification

Temeljni literatura in viri / Readings:

Izbrana poglavja/Selected chapters

- Bradley, R. S. (1992): Quaternary paleoclimatology. Chapman & Hall, 4-45, 125-190, 285-336, 357-438, 471-506. .
- Brodwikowsky, K. & van Loon, A. J. (1991): Glacigenic sediments. Developments in sedimentology 49, 19-131. .
- Elias, S. & Mock, C. J. (eds) (2011): Encyclopedia of Quaternary Science. Elsevier - posamezna gesla. .
- Lowe, J.J. & Walker, M. J. C. (1997): Reconstructing Quaternary environments. Prentice Hall, 2nd edition, 1-161, 237-371.
- Williams, M. (2003): Quaternary environments. Arnold, 2nd edition, 1-266.
- Waters, C. N., Zalasiewicz, J. A., Williams, M. Ellis, M. & Snelling, A. M. (eds) (2014): A Stratigraphical Basis for the Anthropocene. – Geol. Soc. London, Spec. Publ. 1-54, 55-142, 211-300.

Cilji in kompetence:

Predmet obravnava podnebne spremembe v zadnji dveh milijonih let Zemljine zgodovine na podlagi raziskav različnih kontinentalnih in morskih sedimentov ter ledu, vzroke zanje, njihovo periodičnost in kronologijo ter antropogeni vpliv na podnebne spremembe. Namen predmeta je časovno in prostorsko razumeti kvartarne okoljske spremembe v odvisnosti od klime, kar se odraža v spremembi v sestavi flore in favne, pojav homininov, njegove kulture in človekov vpliv na naravno okolje. Vsebina predmeta omogoča slušatelju prepoznati, genetsko in procesno opisati kvartarne sedimente ter jih klimatokronološko opredeliti. Znanje bo znal praktično uporabiti za prepoznavanje in razumevanje antropogenih vplivov na naravno okolje.

Objectives and competences:

The course deals with climate change in the last two million years of Earth history based on research of various continental and marine sediments and ice, their causes, periodicity, and anthropogenic impact on climate change. The purpose of the course is to understand the temporal and spatial Quaternary environmental changes in relation to climate change in the composition of flora and fauna, the emergence of hominins, their culture and human impact on the natural environment. The content of the course allows students to recognize, and describe Quaternary sediments in chronological and climatic sense. Students will learn how to recognize and understand anthropogenic impact on natural environment.

Predvideni študijski rezultati:

Znanje in razumevanje:

Intended learning outcomes:

Knowledge and understanding:

Študent pozna osnovne vidike klimatskih sprememb in vpliva le-teh na naravno okolje. Praktično prepozna in interpretira glacigene sedimente. Razume in interpretira geomorfologijo ledeniških pokrajin. Zna praktično uporabiti ustrezna orodja za starostno in klimatsko opredelitev kvartarnih sedimentov.	The student knows the basic aspects of climate change and their interaction on natural environment. He can recognize and interpret glacigenic sediments and Quaternary landscape geomorphology. He knows adequate tools and proxies for age and climatic determination of Quaternary sediments.

Metode poučevanja in učenja:	**Learning and teaching methods:**
● Predavanja ● Seminarji ● Praktične vaje ● Terensko delo	● Lectures ● Seminars ● Practical training ● Field work

Načini ocenjevanja:	Delež (v %) / Weight (in %)	**Assessment:**
Način (pisni izpit, ustno izpraševanje, naloge, projekt)		Type (examination, oral, coursework, project):
- Pisni ali ustni izpit	70	- Written or oral exam
- Seminarska naloga	30	- Written paper

Reference nosilca / Lecturer's references:

1. Moro, A., Horvat, A., Tomić, V., Sremac, J. Bermanec, V. 2018: Facies development and paleoecology of rudists and corals: : an example of Campanian transgressive sediments from northern Croatia, northeastern Slovenia, and northwestern Bosnia. Facies, 62/19, 18-25. DOI: 10.1007/s10347-016-0471-y.
2. Moreau, L., Odar, B., Higham, T., Horvat, A., Pirkmajer, D., Turk, P. 2015: Reassessing the Aurignacian of Slovenia: Techno-economic behaviour and direct dating of osseous projectile points. – Journal of Human Evolution, 78, 158-180.
3. Zupančič, N., Horvat, A., Jarc, S. 2015: Environmental impact of dusting from the Koper port bulk cargo terminal on the agricultural soils – Acta geographica Slovenica, 55/1, 139-158.
4. Turk, J., Horvat, A. 2009: Sedimentological method for determination of palaeoenvironmental conditions at the Ljubljansko barje. Case study: Stare gmajne. – Opera Instituti Archaeologici Sloveniae, 16, 35-48.
5. Verbič, T., Horvat, A. 2006: Quaternary geology of the Apače Valley (NE Slovenia) – Razprave 4. razr. SAZU, 47/2, 133-156.