

UČNI NAČRT PREDMETA/COURSE SYLLABUS

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|----------------------|---------------------|
| Predmet: | Geologija kvartarja |
| Course title: | Quaternary Geology |

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

Univerzitetna koda predmeta/University course code:

| Predavanja | Seminar | Vaje | Klinične vaje | Druge oblike študija | Samostojno delo | ECTS |
|------------|---------|------|---------------|----------------------|-----------------|------|
| 30 | 0 | 0 | 0 | 15 | 45 | 3 |

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:

Vpis v 2. letnik študija.
Priporočljivo - opravljene obveznosti pri predmetih
Paleontologija, Sedimentna petrologija, Stratigrafija.

Prerequisites:

2nd year student.
Recommended - passed exams: Paleontology,
Sedimentary petrology, Stratigraphy.

Vsebina:

Definicija kvartarja
Klimatske spremembe v kvartarju: vzroki, pokazatelji, vplivi klimatskih sprememb na razvoj živalstva in rastlinstva
Stratigrafija kvartarja: »alpska« stratigrafija; izotopska stratigrafija; klimatokronologija, korelacija morske in terestrične stratigrafije; orodja in metode: relativne metode (stratigrafske, paleontološke, geomorfološke, pedološke, petrografske, sedimentološke)
absolutne metode v kvartarnih študijah: osnovni principi, možnosti uporabe, materiali
Glavna sedimentacijska okolja v kvartarju: vrste sedim. okolij, značilne kamnine in faciesi, geomorfološke značilnosti; glacialna okolja: ledeniki (obseg, dinamika, ...); glaciofluvialni zasipi; periglacialna okolja; jamska okolja; kvartarna okolja v Sloveniji
Razvoj človeka in pleistocenska arheologija, korelacija geološke in arheološke stratigrafije
Antropogeni vpliv na okolje in klimatske spremembe
Aplikacije kvartarnih študij

Content (Syllabus outline):

Definition of the Quaternary
Climatic changes in the Quaternary: reasons, proxies, impact of climatic changes on evolution of fauna and flora
Quaternary stratigraphy: »alpine« stratigraphy, isotope stratigraphy, climatochronology, correlation of marine and terrestrial stratigraphy, tools and methods
Relative methods (stratigraphic, paleontological, geomorphological, pedological, petrographical, sedimentological)
Absolute methods in Quaternary studies: basic concepts, usability, materials
Main sedimentary environments in Quaternary: classification, characteristic rocks and facies, geomorphological characteristics, glacial environments, glaciers (volumes, dynamics,...), glaciofluvial deposits; periglacial environments, cave environments, Quaternary environments of Slovenia
Evolution of Human and Pleistocene archeology, correlation of geological and archeological stratigraphy
Anthropogenic impact on environment and climatic changes
Application of Quaternary studies

Temeljna literatura in viri/Readings:

BRADLEY, R.S.: Quaternary paleoclimatology. Chapman & Hall, 1992, 472 pp., ISBN: 0-412-53100-3.
 BRODWIKOWSKY, K. & van LOON, A.J.: Glacigenic sediments. Developments in sedimentology 49, 1991, 674 pp., ISBN: 0-444-88307-X.
 EHLERS & GIBBARD: Quaternary glaciations extent and chronology. Part I: Europe. Elsevier, 2004, 475 pp., ISBN: 0-444-51462-7.
 LOWE, J.J. & WALKER, M.J.C.: Reconstructing Quaternary environments. Prentice Hall, 2nd edition, 1997, 446 pp., ISBN: 0-582-10116-2.
 MENZIES, J.: Modern glacial environments. Processes, dynamics and sediments. Butterworth - Heinemann Ltd., 1995, 621 pp., ISBN: 0-7506-2351-9.
 WILLIAMS, M et al.: Quaternary environments. Arnold, 2nd edition, 2003, 329 pp., ISBN: 0-340-69151-4.

Cilji in kompetence:

CILJI: predmet obravnava klimatske 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 klimatske spremembe. Namen predmeta je časovno in prostorsko razumeti kvartarne okoljske spremembe v odvisnosti klime, spremembe v sestavi flore in favne, pojav človeka in njegove kulture. KOMPETENCE: vsebina predmeta omogoča slušatelju prepoznati, genetsko in procesno opisati kvartarne sedimente ter jih starostno in klimatokronološko opredeliti.

Objectives and competences:

OBJECTIVES: subject deals with climatic changes in the last 2 Ma of Earth's history on the basis of research of diverse continental as well as marine sediments, ice, the reasons for them, their periodicity and chronology and anthropogenic influence. The goal of the subject is to gain temporal and spatial understanding of Quaternary environmental changes in dependence of climate, changes in the composition of flora and fauna, appearance of human and its culture. COMPETENCES: contents enables recognition and description in the light of genesis and processes of Quaternary sediments and furthermore to define their stratigraphy and climatochronology.

Predvideni študijski rezultati:

Predmet pomaga slušatelju razumeti klimatske spremembe in vzroke zanje, izbrati primerna orodja, metode in tehnike za reševanje različnih problemov v kvartarnih študijah. Slušatelj bo s pomočjo pridobljenega znanja znal izbrati in kritično vrednotiti relevantne terenske podatke ter na osnovi njih rekonstruirati in interpretirati nekdanja okolja in klimatske spremembe. Predmet omogoča slušatelju razmislek o povezanosti vseh procesov, ki so povzročili pojav in periodičnost ledenih dob v zadnjih dveh milijonih let Zemljine zgodovine ter njihovo povezanost z današnjimi klimatskimi spremembami. Slušatelj se seznani s praktičnimi aplikacijami pridobljenega znanja na druga področja (pedologija, neotektonika, arheologija, inženirska geologija).

Intended learning outcomes:

Subject helps the student to understand climatic changes and reasons for them, to choose appropriate tools, methods and techniques for resolution of diverse problems in the Quaternary studies. Gaining the knowledge, student will be able to critically evaluate relevant fieldwork data and on their basis reconstruct and interpret former environments and climatic changes. Subject enables students rethinking about connection of processes that forced the origin and periodicity of ice-ages in the last 2Ma of Earth's history and their connection to present-day climatic changes. Additionally, Student becomes familiar with practical applications of gained knowledge on others scientific fields (pedology, archeology, engineering geology).

Metode poučevanja in učenja:

Predavanja, terensko delo.

Learning and teaching methods:

Lectures, field work.

Načini ocenjevanja:

| | Delež/Weight | Assessment: |
|-----------------------------|--------------|-----------------------|
| Pisni izpit | 80,00 % | Examination |
| Poročilo iz terenskega dela | 20,00 % | Reports of field work |

Reference nosilca/Lecturer's references:

ŠMUC, Andrej, ROŽIČ, Boštjan. Tectonic geomorphology of the Triglav Lakes Valley (easternmost Southern Alps, NW Slovenia). Geomorphology (Amst.). [Print ed.], 2009, issue 4, vol. 103, str. 597-604.
 VRABEC, Marko, ŠMUC, Andrej, PLENIČAR, Mario, BUSER, Stanko. Geološki razvoj Slovenije - Povzetek = Geological evolution of Slovenia - An Overview. V: PLENIČAR, Mario (ur.), OGORELEC, Bojan (ur.), NOVAK, Matevž (ur.). Geologija

Slovenije. Ljubljana: Geološki zavod Slovenije, 2009, str. 23-40.

ROŽIČ, Boštjan, ŠMUC, Andrej. Gravity-flow deposits in the Toarcian Perbla formation (Slovenian basin, NW Slovenia). Riv. ital. paleontol. stratigr., 2011, vol. 117, no. 2, str. 283-294.

ŠMUC, Andrej. Sedimentološke raziskave slovenskih Alpskih jezer. V: Dolgoročne spremembe okolja 2013 : 7. 5. 2013, Prešernova dvorana SAZU, Novi trg 4, 1000 Ljubljana : poročilo s konference in izvlečki. Ljubljana:

Znanstvenoraziskovalni center Slovenske akademije znanosti in umetnosti, 2013, str. 4.

ŠMUC, Andrej, SKABERNE, Dragomir, MURI, Gregor, VREČA, Polona, JAČIMOVIĆ, Radojko, ČERMELJ, Branko, TURŠIČ, Janja. Influence of geomorphic setting on sedimentation of two adjacent alpine lakes, Triglav Lakes Valley (Julian Alps, NW Slovenia). V: European Geosciences Union, General Assembly 2013, Vienna, Austria, 07-12 April 2013, (Geophysical Research Abstracts, Vol. 15). München: European Geosciences Union, 2013, [1] str.

POPIT, Tomislav, KOŠIR, Adrijan, ŠMUC, Andrej. Sedimentological characteristics of Quarternary deposits of the Rebrnice slope area (SW Slovenia). V: Knjiga sažetka : 3. znanstveni skup Geologija kvartara u Hrvatskoj s međunarodnim sudjelovanjem, povodom 130 godina rođenja akademika Marijana Salopeka i u spomen znanstvenici Maji Paunović na 10. obljetnicu smrti, Zagreb, 21.-23. ožujka 2013. Zagreb: HAZU, 2013, f. 45.

POPIT, Tomislav, ROŽIČ, Boštjan, KOKALJ, Žiga, ŠMUC, Andrej, VERBOVŠEK, Timotej. A LiDAR and GIS application for studies of ravine evolution in Upper Vipava valley, NW Slovenia. V: Wavelength : conference 2013, Glasgow, Scotland, 11 - 13th March 2013. Glasgow: RSPSoc, 2013, str. 29.