

UČNI NAČRT PREDMETA/COURSE SYLLABUS

Predmet:	Aktivna tektonika
Course title:	Active Tectonics

Študijski programi in stopnja	Študijska smer	Letnik	Semestri
Geologija, druga stopnja, magistrski	Regionalna geologija in paleontologija (modul)	1. letnik, 2. letnik	Zimski

Univerzitetna koda predmeta/University course code:

Predavanja	Seminar	Vaje	Klinične vaje	Druge oblike študija	Samostojno delo	ECTS
45	0	15	0	15	75	5

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:

Prerequisites:

Vsebina:

- Geološke značilnosti potresov: vrste tektonskih deformacij, tektonska okolja na Zemlji, geološki in seizmotektonski parametri potresov, površinski učinki potresov.
- Merske metode: metode datiranja za obdobje kvartarja, geodetske metode za merjenje aktivnih deformacij.
- Tektonska geomorfologija: tektonske deformacije in oblikovanje površja, geomorfni indikatorji aktivne tektonike, vpliv tektonike na rečno mrežo, aktivna orogeneza, odziv površja na tektonske deformacije v različnih časovnih merilih.
- Paleoseizmologija: geomorfni in stratigrafski indikatorji paleopotresov, paleoseizmološke značilnosti različnih tektonskih okolij, metode paleoseizmoloških raziskav.
- Določanje potresnega tveganja: ocena magnitude paleopotresov, določanje hitrosti tektonskih premikov in rekurence potresov, segmentacija prelomov, kvantificiranje tveganja.

Content (Syllabus outline):

- Geological characteristics of earthquakes: types of tectonic deformation, tectonic environments on Earth, geological and seismotectonic characteristics of earthquakes, surface effects of earthquakes.
- Quantitative methods: Quaternary dating methods, geodetic surveying of active deformation.
- Tectonic geomorphology: tectonic deformation and shaping of topography, geomorphic indicators of active tectonics, influence of tectonics on river network, active orogenesis, surface response to tectonic deformation at various timescales.
- Paleoseismology: geomorphic and stratigraphic indicators of paleoearthquakes, paleoseismological characteristics of different tectonic environments, methods of paleoseismological investigation.
- Earthquake risk determination: estimating paleoearthquake magnitude, determining deformation rates and earthquake recurrence, fault segmentation, risk quantification.

Temeljna literatura in viri/Readings:

YEATS R.S., SIEH K.E.: Geology of Earthquakes. Oxford University Press, 1997, 576 str.
 BURBANK D., ANDERSON R.: Tectonic Geomorphology, 2nd ed. Wiley-Blackwell, 2012, 474 str.
 MCCALPIN J.P. (ed.): Paleoseismology, 2nd ed. Academic Press, 2009, 802 str.

<p>Cilji in kompetence:</p> <p>CILJI: Namen predmeta je študente vpeljati v področje preučevanja aktivnih tektonskih procesov in jih seznaniti z raziskovalnimi metodami in pristopi, ki so specifični za to področje.</p> <p>KOMPETENCE: Študenti znajo prepoznati znake za aktivne tektonske deformacije. Kvalitativno in kvantitativno znajo ovrednotiti učinke aktivnih tektonskih deformacij in njihove hitrosti. Ovrednotiti znajo potresno tveganje.</p>	<p>Objectives and competences:</p> <p>OBJECTIVES: Main course objective is to introduce students to the discipline of investigating active tectonic processes and to acquaint them with the specific research techniques and approaches used in this discipline.</p> <p>COMPETENCES: Students are able to recognize indications for active tectonic deformation. They are able to qualitatively and quantitatively evaluate the effects of active tectonic deformation and can quantify deformation rates. They can assess earthquake risk.</p>
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<p>Predvideni študijski rezultati:</p> <ul style="list-style-type: none"> - Študenti poznajo manifestacije aktivnih tektonskih deformacij v vseh poglavitnih tektonskih okoljih. - Razumejo zvezo med tektonskimi deformacijami in njihovimi učinki v različnih časovnih merilih na oblikovanje površja in stratigrafskega zapisa. - Poznajo merske metode za merjenje hitrosti in magnitude aktivnih tektonskih premikov in znajo interpretirati njihove rezultate. 	<p>Intended learning outcomes:</p> <ul style="list-style-type: none"> - Students know manifestations of active tectonic deformations in all major tectonic environments. - They understand the relationship, at various timescales, between tectonic deformation and shaping of surface and stratigraphic record. - They are familiar with measurement techniques for characterising rates and magnitudes of active tectonic deformation, and are able to interpret their results.
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<p>Metode poučevanja in učenja:</p> <p>Predavanja, kabinetne vaje. Terenske vaje obsegajo 3 dni dela na terenu.</p>	<p>Learning and teaching methods:</p> <p>Lectures, lab sessions. Course includes 3 days of fieldwork.</p>
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Načini ocenjevanja:	Delež/Weight	Assessment:
Pisni izpit	100,00 %	Written examination
Za pozitivno oceno mora biti pravih vsaj 50% odgovorov. Ocenjevalna lestvica: 51-60% (6); 61-70% (7); 71-80% (8); 81-90% (9); 91-100% (10) ob upoštevanju Statuta UL in fakultetnih pravil.		A score of at least 50% is required to pass the exam. Grading: 51-60% (6); 61-70% (7); 71-80% (8); 81-90% (9); 91-100% (10) according to the UL Statute and faculty rules.

<p>Reference nosilca/Lecturer's references:</p> <p>GOSAR, Andrej 2005: Seismic reflection investigations for gas storage in aquifers (Mura Depression, NE Slovenia). <i>Geologica Carpathica</i>, 56/3, 285-294.</p> <p>GOSAR, Andrej 2007: Microtremor HVSr study for assessing site effects in the Bovec basin (NW Slovenia) related to 1998 Mw5.6 and 2004 Mw5.2 earthquakes. <i>Engineering geology</i>, 91, 178-193.</p> <p>GOSAR, Andrej 2008: Site effects study in shallow glaciofluvial basin using H/V spectral ratios from ambient noise and earthquake data; the case of Bovec basin (NW Slovenia). <i>Journal of Earthquake Engineering</i>, 12, 17-35.; TROBEC, Ana, ŠMUC, Andrej, POGLAJEN, Sašo, VRABEC, Marko. Submerged and buried Pleistocene river channels in the Gulf of Trieste (Northern Adriatic Sea) : geomorphic, stratigraphic and tectonic inferences. <i>Geomorphology</i>, 2017, vol. 286, str. 110-120.</p> <p>JAMŠEK RUPNIK, Petra, BENEDETTI, Lucilla, PREUSSER, Frank, BAVEC, Miloš, VRABEC, Marko. Geomorphic evidence of recent activity along the Vodice thrust fault in the Ljubljana Basin (Slovenia): a preliminary study. <i>Annals of geophysics</i>, vol. 56, 8 str.</p> <p>KASTELIC, Vanja, VRABEC, Marko, CUNNINGHAM, Dickson, GOSAR, Andrej. Neo - Alpine structural evolution and present day tectonic activity of the eastern Southern Alps: the case of the Ravne Fault, NW Slovenia. <i>J. Struct. Geol.</i>, 2008, vol. 30, str. 963-975.</p> <p>VRABEC, Marko. Evidence of Quaternary faulting in the Idrija fault zone, Učja canyon, NW Slovenia. <i>RMZ - Materials and geoenvironment</i>, 2012, vol. 59, str. 285-298.</p>
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