

UČNI NAČRT PREDMETA/COURSE SYLLABUS

Predmet:	Tektonika
Course title:	Tectonics

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

Univerzitetna koda predmeta/University course code: 741

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

Nosilec predmeta/Lecturer: Marko Vrabec

Vrsta predmeta/Course type: Obvezni / Compulsory

Jeziki/Languages:	Predavanja/Lectures:	Angleščina, Slovenščina
	Vaje/Tutorial:	Angleščina, Slovenščina

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:	Prerequisites:
Ni pogojev.	No prerequisites.

Vsebina:

Tektonika plošč: zgradba litosfere, litosferske plošče, geološki dokazi za premikanje plošč, kinematika plošč na sferični Zemlji, absolutni in relativni premiki plošč, vrste stikov, trojne točke, gonilni mehanizmi premikanja plošč. Glavna tektonska okolja na Zemlji: sredoceanski hrbti in transformni prelomi, kontinentalna ekstenzijska območja (rifti), kontinentalni transformni in zmični prelomi, subdukcijske cone, kolizijske cone in orogeni. Litosferska mehanika: reologija Zemljine skorje in plašča, deformacijski mehanizmi v kamninah, lomne in duktilne deformacije kamnin, sile in napetostna stanja v litosferi, toplotni tok, prevajanje toplote v litosferi, geoterme v litosferi, P-T pogoji v litosferi, metamorfizem. Dinamični procesi v litosferi: mehanika prelomov, litosferska ekstenzija, fleksura litosfere, nastanek sedimentnih bazenov, kontinentalna kolizija, orogenski kolaps.

Content (Syllabus outline):

Plate tectonics theory: composition of the lithosphere, lithospheric plates, geological evidence for plate motion, plate kinematic on spherical Earth, absolute and relative plate motions, plate boundaries, triple junctions, mechanisms of plate motion. Principal tectonic environments on Earth: oceanic ridges and transform faults, continental extensional provinces (rifts), continental transform and strike-slip faults, subduction zones, collisional zones and orogens. Lithosphere mechanics: crustal and mantle rheology, deformational mechanisms in rocks, brittle and ductile deformation, forces and stress states in the lithosphere, heat flow, transfer of heat in the lithosphere, geotherms, P-T conditions in the lithosphere, metamorphism. Dynamical processes in the lithosphere: fault mechanics, lithospheric extension, lithospheric flexure, formation of sedimentary basins, continental collision, orogenic collapse.

Temeljna literatura in viri/Readings:

STÜWE, K., 2007, Geodynamics of the Lithosphere, 2nd ed., Springer Verlag, 493 str.
KEAREY, P., KLEPEIS, K.A., VINE, F.J., 2009, Global Tectonics, 3rd ed., Wiley-Blackwell, 496 str.
ALLEN, P.A., ALLEN, J.R., 2005: Basin Analysis, 2nd ed., Wiley-Blackwell, 560 str.
MOORES, E.M., TWISS, R.J., 1995, Tectonics, W. H. Freeman, 415 str.

<p>Cilji in kompetence:</p> <p>CILJI: Študenti se spoznajo z geometrijo, nastankom in kinematiko regionalnih strukturnih sistemov v glavnih tektonskih okoljih Zemlje. S poglobljeno obravnavo teorije tektonike plošč nadgradijo znanje iz prve stopnje študija. Seznanijo se s fizikalnimi koncepti in procesi v geodinamiki litosfere, s poudarkom na mehanskem, reološkem in termičnem odzivu litosfere pri deformacijah.</p> <p>KOMPETENCE:</p> <ul style="list-style-type: none"> - Sposobnost raziskovanja in interpretacije fosilnih in aktivnih tektonskih sistemov. - Sposobnost interpretacije tektonskega razvoja ozemlja in fizikalnih pogojev deformiranja. - Sposobnost kvantitativne obravnave procesov in mehanizmov deformacij v litosferi. 	<p>Objectives and competences:</p> <p>OBJECTIVES:</p> <p>Students get acquainted with geometry, evolution and kinematics of regional-scale structural systems in the principal tectonic environments on Earth. They extend and deepen their understanding of the Plate tectonics theory. They get familiar with physical concepts and processes in lithosphere geodynamics, with emphasis on mechanical, rheological and thermal response of the lithosphere to deformation.</p> <p>COMPETENCES:</p> <ul style="list-style-type: none"> - Ability to investigate and interpret past and modern tectonic systems. - Ability to interpret tectonic evolution of a given region and the physical conditions during deformation. - Ability to quantitatively assess processes and mechanisms of lithospheric deformation.
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<p>Predvideni študijski rezultati:</p> <p>Razumevanje tektonskega razvoja strukturnih sistemov v ekstenzijskih, konvergentnih in zmičnih območjih. Poznavanje nastanka in razvoja sedimentnih bazenov. Osvojene spretnosti za zbiranje, prikaz, analizo in interpretacijo geofizikalnih podatkov.</p>	<p>Intended learning outcomes:</p> <p>Understanding of structural systems evolution in extensional, convergent and strike-slip environments. Knowledge of the origin and evolution of sedimentary basins. Acquired skills in data collection, analysis, presentation and interpretation.</p>
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<p>Metode poučevanja in učenja:</p> <p>Predavanja. Vaje potekajo v obliki vodenih seminarских vaj. Terenske vaje obsegajo 3 dni dela na terenu.</p>	<p>Learning and teaching methods:</p> <p>Lectures. Guided seminar tutorials. Course includes 3 days of fieldwork and field trips.</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>FODOR, Laszlo, JELEN, Bogomir, MARTON, Emö, SKABERNE, Dragomir, ČAR, Jože, VRABEC, Marko. Miocene - Pliocene tectonic evolution of the Slovenian Periadriatic fault: implications for Alpine - Carpathian extrusion models. Tectonics, 1998, vol. 17, str. 690-709.</p> <p>VRABEC Marko, PAVLOVČIČ PREŠEREN Polona, STOPAR Bojan. GPS study (1996-2002) of active deformation along the Periadriatic fault system in northeastern Slovenia: tectonic model. Geol. Carpath., 2006, vol. 57, str. 57-65.</p> <p>WEBER, John, VRABEC, Marko, PAVLOVČIČ PREŠEREN, Polona, DIXON, Tim, JIANG, Yan, STOPAR, Bojan. GPS-derived motion of the Adriatic microplate from Istria Peninsula and Po Plain sites and geodynamic implications. Tectonophysics, 2010, vol. 483, str. 214-222.</p>
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