

<b>Study programmes:</b> PhD studies - Astronomy and Astrophysics				
<b>Course name:</b> Selected topics in astronomy				
<b>Lecturers:</b> Nadežda Pejović				
<b>Status:</b> Optional				
<b>ECTS:</b> 9				
<b>Attendance prerequisites:</b> None				
<b>Course aims:</b> Obtaining advanced and specific knowledge of the rotation of our planet, Earth and its complicated motions.				
<b>Course outcome:</b> After completing the course, student has advanced knowledge in the field of Earth motions and rotation and is capable to do independent scientific research, and to make computer simulations.				
<b>Course content:</b> Precession, nutation of Earth axis and movement of Earth's poles. Dynamics: fundamental principles. Love numbers and associated coefficients. The secular Love numbers. Observations of latitude: history, methods. Observations of the longitude. Seasonal and other short-period variations. Tides. Distributions of air and water. Winds and currents. Chandler Wobble. The concept of an instantaneous Chandler period. The Love number $k$ . Tidal dissipation: evidence, problem. Earth models. General laws and the dynamics of a particle. Kinematics of reference systems. Investigations of the equations of motion. Rigid bodies: geometry, kinematics, dynamics. Lagrangian mechanics. Oscillations. Linearization. Small oscillations. Behavior of characteristic frequencies. Parametric resonance. Motion in moving coordinate system. Hamiltonian mechanics. Symplectic Manifolds. Canonical perturbation theory.				
<b>Literature</b> 1. Munk, W.H., MacDonald, G.T.F., 1960, <i>The rotation of the Earth. A geophysical discussion</i> , Cambridge, Univ. Press 2. Lambeck, K., 1980, <i>The Earth's variable rotation: geophysical causes and consequences</i> , Cambridge Univ. Press, 3. Moritz, H., 1980, <i>Advanced physical geodesy</i> , Abacus Press Turnbridge Wells Kent 4. Milutin Milanković, <i>Nebeska mehanika, Beograd</i> , 1937				
<b>Number of hours: 10</b>		<b>Lectures: 4</b>	<b>Tutorials: 6</b>	
<b>Teaching and learning methods:</b> Frontal, group, practical work				
<b>Assessment (maximal 100 points)</b>				
<b>Course assignments</b>		<b>points</b>	<b>Final exam</b>	<b>points</b>
Lectures		-	Written exam	-
Exercises / Tutorials		-	Oral exam	50
Colloquia		-	Written-oral exam	-
Essay / Project		50		