

Study program: Road Traffic			
Subject name: Mechanics 2			
Teacher: mr Miodrag B. Stanković			
Subject status: Compulsory			
Number of ECTS: 6			
Conditions: None			
Subject objective Studying various forms of motion and complex movements of points and bodies, determination of trajectory, path, speed and acceleration. Studying basic and complex movements of a material point, body and material system.			
Subject outcome Mastering kinematic and dynamic analysis of movement on mechanisms and technical systems.			
Subject content			
<i>Theory classes</i>			
Introduction. Point kinematics. Rectilinear motion of a point, law of motion, determination of velocity and acceleration in Cartesian coordinate system. Curvilinear motion of a point. Describing motion, equation of motion, determining trajectory, velocity and acceleration. Describing the motion of a point in a natural coordinate system. Special cases of rectilinear and curvilinear motion of a point. Translational body motion. Rotational movement of the body around a fixed axis. Straight motion of a rigid body. Determining the path, speed and acceleration of the body. Complex movement of points and bodies. The law of momentum, the law of momentum and the law of kinetic energy. Determination of bond reaction. Dalambert's principle. Oscillatory point movements. Moments of inertia, radius of inertia, Steiner's theorem. Experimental determination of moments of inertia. Internal and external forces, differential equation of motion of the system, law of motion of the center of mass of the material system. Law on change and maintenance of the amount of movement of the material system. Law of change of momentum and change of kinetic energy. Translational and rotational motion of a rigid body. Physical pendulum. Straight motion of a rigid body. Dalambert principle for bound material system. The main moment of the force of inertia.			
<i>Practice classes</i>			
Solving problems in point kinematics, determining trajectory, speed and acceleration. Solving problems of curvilinear motion of a point. Determination of tangential and normal acceleration. Solving problems of circular and harmonic oscillatory motion of a point. Solving the tasks of translational and rotational body motion. Solving problems in the field of equal motion of a rigid body. Solving problems of complex motion of a point and a body. Solving problems of curvilinear motion of a point, quantity of motion and laws of kinetic energy. Solving the problems of forced and oscillatory motion of a point. Determination of moments of inertia of some homogeneous bodies. Solving problems of material system dynamics. Solving problems of rigid body dynamics.			
Literature:			
1. С. Стефановић, „Механика 2“, Висока школа примењених струковних студија, Врање, 2009.			
2. Д. Рашковић, „Механика II, III“, Грађевинска књига, Београд, 1964.			
3. Ј. Русов, „Механика – кинематика и динамика“, Научна књига Београд, 1974.			
4. С. Стаменковић, „Кинематика – Динамика“, Виша техничка школа, Ниш, 2004.			
Number of active classes	Theory classes: 30	Practice classes: 30	
Teaching methods			
Oral presentation method, conversation method, graphic work method and demonstration method.			
Knowledge assessment (maximum number of points 100)			
Pre-exam obligations	points	Final exam	points
activity during the lectures	5	written exam	30
practice classes	5	oral exam	-
colloquium/s	50		
seminar/s	10		