

## Theoretical Mechanics

<b>Unit Title</b>	Theoretical Mechanics		
<b>Level of Study</b>			
<b>Credit Value</b>		<b>ECTS Value</b>	
<b>Home Department</b>	Department of Theoretical Physics		
<b>Home Faculty</b>	Physics Faculty		
<b>Unit Co-ordinator</b>	Vitaly A. Demin		
<b>Key Words</b>	Classical Newtonian mechanics, Lagrangian and Hamiltonian formalisms, dimensional motion, Kepler's problem, conservations laws, oscillations of mechanical systems, dynamics of rigid body.		
<b>Brief Summary</b>	The course of theoretical mechanics is devoted to the foundation of classical Newtonian mechanics.		
<b>Indicative Content</b>	<p>The course deals with Lagrangian and Hamiltonian formalisms for the solution of mechanical problems. One-dimensional motion, Kepler's problem, conservations laws, oscillations of mechanical systems, dynamics of rigid body are considered by the methods which are based on the fundamental principles. In addition the concomitant problems, actual in other branches of science, are solved with the help of Lagrangian approach (like a scattering phenomenon). Also the limiting passage from the quantum mechanics to the classical one is analyzed. The analogy between the Schrödinger and Hamilton-Jacobi equations is drawn. The Lagrangian technique is propagated on the continuous systems.</p>		