Course - title:	**Physics I**	**Kod:**	**O131**
Course - type:	**I**		
Course of studies:			
Level:			
Type of studies:	**full-time**		
Type of course:	**Lectures 30 hours**		

Lecturer:	**Michał Marzantowicz, dr inż. ;** **Wojciech Wróbel, dr inż.**

Brief conspectus:	
Lecture:	(1) Introduction; physical quantities, SI units, coordinate system, calculations with vectors and units, estimates and oders of magnitude (2) Motion along a straight line and in two or three dimentions. Displacement, distance, velocity, acceleration. (3) Newton's laws of motion. Momentum and impulse. Work and energy. Definition and calculation of work. (4) Gravitational and elastic potential energy. Kinetic energy. Conservation of energy and momentum in mechanics. (5) Rotation of rigid bodies. Relating linear and angular kinematics. Energy in rotational motion. Dynamics of rotational motion, conservation of angular momentum. Kepler's laws of planetary motion. (6) Hydrostatics; density and pressure. Pascal's law, hydraulic systems. Buoyancy. (7) Hydrodynamics; fluid flow, continuity equation and Bernoulli's equation. The properties of real fluids - viscosity and turbulence, dynamic resistance and coefficient of resistance, the Magnus effect. (8) Thermodynamics; Kinetic theory of gases. Temperature, heat, laws of thermodynamics. Basic thermodynamic processes. Equations of state. Heat engines. Entropy . (9) Heat transfer, thermal resistance. Thermal expansion of solids and liquids.