

Level: master				
Course title: Experiments in Mechanics and Thermodynamics				
Status: elective				
ECTS: 9				
Requirements: none				
Learning objectives: Integrated approach in certain areas of mechanics and thermodynamics, experimental and data analysis.				
Learning outcomes: Deeper understanding of certain areas of mechanics and thermodynamics in terms of possible experiments that explain them.				
Syllabus				
<i>Theoretical instruction:</i> Study of accelerated motion. Free fall, ramp, Atwood machine. Study of the rotational motion. The determination of the moment of inertia. Non-inertial reference frame. Study of oscillatory motion. Mathematical pendulum. The determination of the moment of inertia by physical pendulum. The determination of the moment of inertia by the torsion pendulum. Damped and forced oscillations. Resonance. Check the law of conservation of mechanical energy. The law of conservation of the momentum. Study of collisions. Temperature measurement. Measuring the temperature using thermocouple. Determine the heat capacity. Specific heat of solid bodies. Transport processes (viscosity of liquids, the determination of the conductivity coefficient of the metal rod). Phase transitions. Determination of the melting point. The determination of the latent heat of evaporation. The determination of the latent heat of melting. The determination of the sound waves velocity in air, fluids and solids.				
<i>Practical instruction:</i> Measurement of the inertial mass. Determination of the gravitational acceleration. Measuring the elastic properties. Rigid body dynamics-moment of inertia. Temperature measurement. Determination specific and latent heat. Aggregate states of water. Mechanical waves, sound, resonance. Seminar on the selected chapters.				
Weekly teaching load				Other:
Lectures: 3	Exercises: 1	Other forms of teaching: 1	Student research:	