**Mechanics 1 (ECTS 6)**

Language: the course is offered in Serbian and Hungarian.

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**Course description:**

The course covers the aspects of statics and some basic aspects of kinematics. The definition of physics-mechanics-statics-kinematics is discussed. The vectors are discussed. The principles of statics is discussed. Rigid body is discussed. The state of mechanical equilibrium is discussed in 2d and 3d. Line carriers, lattice carriers, frames are discussed. Friction is discussed. The loading of carriers is discussed. Center of gravity, moments of inertia, main moments of inertia, Steiner theorem, statically determined vs statically undetermined carriers are discussed. The principles of kinematics is discussed. Point in space, velocity and acceleration is discussed. Types of point movements are discussed.

This course would cover the following topics as lectures:

1. Introduction
2. Definition of Mechanics, Vector algebra
3. Rigid body, Force, Momentum, Principles of statics
4. Equilibrium
5. Line carriers
6. Frames,
7. Lattice carriers
8. Loading of carriers
9. Friction
10. Center of gravity, Moments of inertia
11. Main moments of inertia, Steiner theorem
12. Statically determined and undetermined cases
13. Point in space, velocity
14. Acceleration, Types of movements
15. Closing remarks

**Aims:**

The goals are the following: - The students should understand the principle of statics and kinematics, the effects of loads on a rigid body, and basics of movement of a point. They should be able to calculate the loading for different kinds of carriers. They should be able to calculate the center of gravity for complex shapes, and also moments of inertia. They should be able to determine whether the system is statically determined or undetermined. They should be able to determine the position of a point, velocity and acceleration.