COURSE DESCRIPTION

Title of the course:	Mechanics. Statics and Kinematics
Lecture hours:	30
Study period: (summer/winter semester)	Summer or winter semester
Number of credits:	5
Assessment methods:	Lectures, Exercises, Presentations
Language of instruction:	ENGLISH
Prerequisites:	Basic competencies in the analysis of algorithms and linear algebra. Foundations of vector calculus. Foundations of differential calculus and mathematical analysis
Course content:	**1. Basis of vector calculus** 1.1. Fundamental properties of vectors, their representation, and applications 1.2. Scalar and vectorial multiplication of vectors **2. Statics** 2.1. Basic concepts and principles of Mechanics 2.2. Friction and Friction and relative motion, Friction Models 2.3. Concurrent, parallel, non-concurrent or non-parallel system of forces in plane 2.4. Concurrent, parallel, non-concurrent or non-parallel system of forces in 3D space 2.5. Trusses, solving methods, method of cutting out of knots, Ritter method, **3. Kinematics** 3.1. Selected Problems of a Particle, Rectilinear Motion, Rectilinear Harmonic Motion, and Special Cases of Plane Curvilinear Motion. Radius Vector and Rectangular and Curvilinear Coordinates in Space. 3.2. Particle Velocity and acceleration 3.3. Description of relative motion 3.4. Kinematics of a Rigid Body 3.5. Planar and Composite Motion of Rigid Body
Learning outcomes:	It is expected that after the course student will gain experience in solving basic engineering problems in technics. The aims of this course are: to present the importance of classical mechanics in understanding and; knowing the basic concepts and fundamentals of mathematical apparatus applied in the description of mechanical problems of technical mechanics, to deliver the basic methods and practical skills in solving simple engineering problems related to technical mechanics.
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