



## Subject card

Subject name and code	Mechanics I, PG_00050273						
Field of study	Mechanical Engineering						
Date of commencement of studies	October 2023	Academic year of realisation of subject			2023/2024		
Education level	first-cycle studies	Subject group			Obligatory subject group in the field of study Subject group related to scientific research in the field of study		
Mode of study	Full-time studies	Mode of delivery			at the university		
Year of study	1	Language of instruction			English		
Semester of study	2	ECTS credits			6.0		
Learning profile	general academic profile	Assessment form			exam		
Conducting unit	Zakład Mechaniki Stosowanej i Biomechaniki -> Institute of Mechanics and Machine Design -> Faculty of Mechanical Engineering and Ship Technology						
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Oleksii Nosko					
	Teachers	dr hab. inż. Oleksii Nosko Muhammad Bilal Hafeez					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	30.0	0.0	0.0	0.0	60
	E-learning hours included: 0.0						
Learning activity and number of study hours	Learning activity	Participation in didactic classes included in study plan	Participation in consultation hours		Self-study		SUM
	Number of study hours	60	8.0		82.0		150
Subject objectives	The course provides students with basic knowledge of Classical Mechanics. Terms, assumptions, principles and methods of Statics and Kinematics are treated. The main emphasis is on the development of skills to efficiently schematise, solve and analyse typical problems.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	K6_U01		Ability to obtain information from professional literature, databases and other resources necessary to solve engineering tasks; ability to integrate the obtained information and make their interpretation, as well as draw conclusions and present opinions with justification		[SU4] Assessment of ability to use methods and tools		
	K6_U06		Ability to use mathematical and physical models to analyze the processes and phenomena occurring in mechanical devices in the field of mechanics and selected issues of strength of materials		[SU4] Assessment of ability to use methods and tools		
	K6_W04		Knowledge of mechanics, including the process of modeling mechanical systems of statics and kinematics		[SW1] Assessment of factual knowledge		

Subject contents	<p>Statics. Vectors and matrices. Systems of linear algebraic equations. Equivalent systems of forces. Moment of a force. Equivalent force-couple system. Static equilibrium. Equilibrium of a plane system. Equilibrium of a pin-joint truss. Equilibrium of a spatial system. Distributed forces. Centroid and centre of mass. Systems with distributed forces.</p> <p>Kinematics. Motion of a particle. Path equation. Velocity and acceleration. Path length. Rotational motion. Rotation of a body. Rotation in a mechanism. Plane motion. Plane motion of a body. Plane motion in a mechanism. Relative motion. Plane relative motion.</p>		
Prerequisites and co-requisites	Basics of elementary and linear algebra, geometry, trigonometry, vector calculus, differential calculus, integral calculus.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Exam	50.0%	50.0%
	Practical classes	50.0%	50.0%
Recommended reading	Basic literature	<p>F.P. Beer et al., Vector Mechanics for Engineers: Statics and Dynamics, McGraw Hill, 2012.</p> <p>E. Wittbrodt, S. Sawiak, Mechanika ogólna. Teoria i zadania, Wyd. PG, 2012.</p>	
	Supplementary literature	<p>R.D. Gregory, Classical Mechanics, Cambridge University Press, 2006.</p> <p>I.V. Meshchersky, Collection of Problems in Theoretical Mechanics, The Higher School, 1962.</p> <p>J. Nizioł, Metodyka rozwiązywania zadań z mechaniki, WNT, 2002.</p> <p>S. Sawiak, E. Wittbrodt, Mechanika. Wybrane zagadnienia. Teoria i zadania, Wyd. PG, 2007.</p>	
	eResources addresses	<p>Adresy na platformie eNauczanie:</p> <p>Mechanics I, W/C, ZIIP, sem. 02, lato 23/24 (PG_00050273) - Moodle ID: 37831</p> <p><a href="https://enauczanie.pg.edu.pl/moodle/course/view.php?id=37831">https://enauczanie.pg.edu.pl/moodle/course/view.php?id=37831</a></p>	
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		