



## Subject card

Subject name and code	Biomechanics, PG_00047815						
Field of study	Biomedical Engineering, Biomedical Engineering, Biomedical Engineering						
Date of commencement of studies	October 2022	Academic year of realisation of subject				2022/2023	
Education level	second-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				Polish	
Semester of study	1	ECTS credits				1.0	
Learning profile	general academic profile	Assessment form				assessment	
Conducting unit	Department of Mechanics and Mechatronics -> Faculty of Mechanical Engineering and Ship Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Wiktor Sieklicki				
	Teachers						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	0.0	0.0	15
	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	15	5.0		5.0		25
Subject objectives	basic knowledge in biomechanics, motoric functions, walking, and tissue biomechanics.						
Learning outcomes	Course outcome		Subject outcome			Method of verification	
	[K7_W02] Knows and understands, to an increased extent, selected laws of physics and physical phenomena, as well as methods and theories explaining the complex relationships between them, constituting advanced general knowledge in the field of technical sciences related to the field of study						
	[K7_W08] Knows and understands, to an increased extent, the fundamental dilemmas of modern civilisation, the main development trends of scientific disciplines relevant to the field of education.						
Subject contents	<ul style="list-style-type: none"> <li>• basic information about biomechanics, mass-geometrical identification of human body segments</li> <li>• defining the center point of mass of body segments</li> <li>• body dynamics in the translational and rotational movement, body inertia</li> <li>• kinematic pairs, manipulator mobility, levers in biomechanics</li> <li>• muscle biomechanics</li> <li>• mechanical characterisation of human body tissues, spring-elastic behavior, cyclic movement</li> <li>• bone structures, bones adaptation scheme</li> <li>• tissues loading schemes, anisotropy of tissues,</li> <li>• bones biomechanics,</li> <li>• modelling in biomechanics,</li> <li>• arm biomechanical model,</li> <li>• nerve system biomechanics.</li> </ul>						

Prerequisites and co-requisites	<p>strength of the materials basics</p> <p>material science</p> <p>basics of mechanics</p> <p>human anatomy</p>											
Assessment methods and criteria	<table border="1"> <thead> <tr> <th data-bbox="459 394 794 427">Subject passing criteria</th> <th data-bbox="802 394 1137 427">Passing threshold</th> <th data-bbox="1145 394 1481 427">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="459 439 794 461">lecture - presence</td> <td data-bbox="802 439 1137 461">85.0%</td> <td data-bbox="1145 439 1481 461">30.0%</td> </tr> <tr> <td data-bbox="459 472 794 495">lecture - tests</td> <td data-bbox="802 472 1137 495">56.0%</td> <td data-bbox="1145 472 1481 495">70.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	lecture - presence	85.0%	30.0%	lecture - tests	56.0%	70.0%
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Example issues/ example questions/ tasks being completed	<p>what are the body planes, directions of movement, center point of mass, define a common mass of a set of bodies, what is an anatomical position, inertia forces, central momentum of inertia, Steiner's theorem, Hooke's law, Young modulus,</p>											
Work placement	<p>Not applicable</p>											