

表 GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	, PG_00056099							
Field of study	Mechanical and Medical Engineering							
Date of commencement of studies	October 2023		Academic year of realisation of subject		2025/2026			
Education level	first-cycle studies		Subject group					
Mode of study	Full-time studies		Mode of delivery			at the university		
Year of study	3		Language of instruction			Polish		
Semester of study	6		ECTS credits			4.0		
Learning profile	general academic profile		Assessment form			assessment		
Conducting unit	Institute of Mechanics and Machine Design -> Faculty of Mechanical Engineering and Ship Technology							
Name and surname	Subject supervisor		dr hab. inż. Wiktoria Wojnicz					
of lecturer (lecturers)	Teachers							
Lesson types and methods	Lesson type	Lecture	Tutorial	Laboratory	Project So		Seminar	SUM
of instruction	Number of study hours	15.0	0.0	30.0	0.0	0.0		45
	E-learning hours inclu	ided: 0.0						
Learning activity and number of study hours	Learning activity	Participation in classes includ plan	n didactic ed in study	Participation in consultation hours		Self-st	udy	SUM
	Number of study hours	45	0.0		0.0		45	
Subject objectives	The aim of the study is to acquire knowledge about methods and tools used in applied biomechanics							
Learning outcomes	Course outcome Subject outcome Method of verification							
	[K6_U05] he/she is able to use analytic and modelling methods to formulate and solve engineering tasks related to the mechanical- medical area		Student can state problem related to mechanical-medical area by using analytical methods and define engineering tools than should be applied to solve a problem			[SU1] Assessment of task fulfilment [SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools [SU5] Assessment of ability to present the results of task		
	[K6_U03] he/she is able to use information-communication skills to solve typical engineering tasks related to design, production and utilization		Student can solve problem related to mechanical-medical area by using engineering tools			[SU1] Assessment of task fulfilment [SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools [SU5] Assessment of ability to present the results of task		
	[K6_U08] he/she is able to assess whether proposed methods and tools can be used in practice to solve simple engineering task related to machine design, manufacturing and utilization		Student can choose and apply measurement methods and engineering tools to solve a problem related to mechanical- medical area			[SU1] Assessment of task fulfilment [SU2] Assessment of ability to analyse information [SU4] Assessment of ability to use methods and tools		
	[K6_W09] he/she has basic knowledge related to numerical methods and engineering software used to analyze, model and design a given mechanical system		Student can formulate steps of solution related to the given mechanical-medical problem by using engineering approach			[SW1] Assessment of factual knowledge [SW2] Assessment of knowledge contained in presentation		

Subject contents	Lecture (15h)						
,							
	1. Biomechanical analysis in postural research						
	2. Biomechanical analysis in postural disease research						
	3. Gait analysis: gait parameters in normal gait.						
	4. Gait analysis: gait parameters in disturbed gait.						
	5. Mechanical testing of tissues						
	6. Mechanical testing of systems applied in osteosynthesis						
	Labs (30h)						
	Health and safety regulations in biomechanical studies						
	Assessment of MVC of the chosen muscular groups						
	Biomechanical analysis in postural research						
	Biomechanical analysis in gait research						
	Estimation of mechanical properties of tissues						
	Estimation of mechanical properties of systems applied in osteosynthesis						
	Test						
	Repeat test						
Prerequisites and co-requisites	Fundamentals of maths, mechanics,	, strength of materials and biomecha	nics				
Assessment methods	Subject passing criteria	Passing threshold	Percentage of the final grade				
and criteria	lecture passing	50.0%	50.0%				
	lab passing	50.0%	50.0%				
Recommended reading	Basic literature	/skretne w analizie dynamiki mięśni amię. Wydawnictwo Politechniki 8-83-7348-424-5					
		Wojnicz W., Biomechaniczne modele układu mięśniowo-szkieletowego człowieka. Wydawnictwo Politechniki Gdańskiej, 2018, s.1-209, ISBN 978-83-7348-727-7 Mrozowski J., Awrejcewicz J: Podstawy biomechaniki. Wyd. Politechniki Łódzkiej, Łódź, 2004					
		Konrad P., ABC-EMG Praktyczne w kinezjologicznej, Technomex, Gliwio	vprowadzenie do elektromiografii ce 2007				

	Supplementary literature	A.Chapman - Biomechanical analysis of fundamental human movements - Human Kinetics (2008)		
		A.Tozeren - Human body dynamics - Classical mechanics and human movement - Springer (2000)		
	eResources addresses	Adresy na platformie eNauczanie:		
Example issues/ example questions/ tasks being completed	Describe parameters of normal gait and disturbed gait			
Work placement	Not applicable			