



## Subject card

Subject name and code	Robotics for Human Health and Performance, E:41050W0						
Field of study	Space and Satellite Technologies						
Date of commencement of studies	February 2024		Academic year of realisation of subject		2023/2024		
Education level	second-cycle studies		Subject group				
Mode of study	Full-time studies		Mode of delivery		at the university		
Year of study	1		Language of instruction		English		
Semester of study	1		ECTS credits		3.0		
Learning profile			Assessment form		assessment		
Conducting unit	Institute Of Mechanics And Machine Design -> Faculty Of Mechanical Engineering And Ship Technology -> Wydział Politechniki Gdańskiej						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Wiktor Sieklicki				
	Teachers		dr inż. Wiktor Sieklicki				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	15.0	15.0	0.0	45
	E-learning hours included: 0.0						
	Address on the e-learning platform: <a href="https://enauczanie.pg.edu.pl/moodle/course/view.php?id=15781">https://enauczanie.pg.edu.pl/moodle/course/view.php?id=15781</a>						
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	45		0.0		0.0	45
Subject objectives	<div>1. Provide students with knowledge in area of biomechanics necessary to design instrumentation for human health and performance monitoring and assessment</div> <div>2. Provide students with basic knowledge in area of automatics necessary to design simple instrumentation for human health and performance monitoring and assessment</div> <div>3. Provide students with knowledge in area of sensors and signal acquisition necessary to assess human mobility</div> <div>4. Evoke discussion between students about human-robot interface</div>						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K7_K03] Can analyse and implement assigned tasks while maintaining high technical standards. Is able to work and interact in a group, taking on different roles. Adheres to the principles of professional ethics and respects the diversity of views and cultures.		He implements tasks in the field of designing devices for monitoring human health and performance, while maintaining high technical standards.		[SK2] Assessment of progress of work		
	K7_U08		Student is able to design devices for monitoring human health and performance using appropriate methods and tools.		[SU1] Assessment of task fulfilment		
	K7_W03		Student has knowledge of biomechanics and automation necessary to design devices for monitoring human health and performance.		[SW1] Assessment of factual knowledge		
Subject contents	<div>1. Introduction to biomechanics</div> <div>2. Introduction to sensors and signals: bio-signal sensors, holter-based measuring devices,</div> <div>3. Introduction to robotic devices for human rehabilitation</div>						

Prerequisites and co-requisites	basic knowlege in mathematics, mechanics, programming and automatics		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	design	56.0%	50.0%
	exam	56.0%	50.0%
Recommended reading	Basic literature	Introduction to Biomedical Engineering, Third Edition, y John Enderle, Joseph Bronzino, Academic Press Series in Biomedical Engineering, Elsevier 2012Giralt G., Hirzinger G., Robotic Research, Springer Press, 1996Arkin R., Behavior-Bassed Robotics, MIT Press, 1998Bishop R.,The Mechatronics Handbook. CRC Press 2002Siciliano B, Khatib O, editors. Springer Handbook of Robotics. New York: Springer; 2016.Patton MQ. Qualitative Research & Evaluation Methods: Integrating Theory and Practice. 4th Edition. Thousand Oaks: Sage Publications; 2015.	
	Supplementary literature	<a href="https://www.nasa.gov/hrp">https://www.nasa.gov/hrp</a>	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	Robotics and Medical robots  Biomechanics of human hand, biomechnics of gait  Devices for monitoring body temperature, body movements, electrodermal activity		
Work placement	Not applicable		

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