



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						
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: https://enauczanie.pg.edu.pl/moodle/course/view.php?id=15781						
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	<ol style="list-style-type: none">1. Provide students with knowledge in area of biomechanics necessary to design instrumentation for human health and performance monitoring and assessment2. Provide students with basic knowledge in area of automatics necessary to design simple instrumentation for human health and performance monitoring and assessment3. Provide students with knowledge in area of sensors and signal acquisition necessary to assess human mobility4. Evoke discussion between students about human-robot interface						
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	<ol style="list-style-type: none">1. Introduction to biomechanics2. Introduction to sensors and signals: bio-signal sensors, holter-based measuring devices,3. Introduction to robotic devices for human rehabilitation						
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	<p>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.</p>	
	Supplementary literature	https://www.nasa.gov/hrp	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	<p>Robotics and Medical robots</p> <p>Biomechanics of human hand, biomechanics of gait</p> <p>Devices for monitoring body temperature, body movements, electrodermal activity</p>		
Work placement	Not applicable		