



Subject card

Subject name and code	Intelligent Robots, PG_00047699						
Field of study	Automatic Control, Cybernetics and Robotics						
Date of commencement of studies	October 2021		Academic year of realisation of subject		2023/2024		
Education level	first-cycle studies		Subject group		Optional subject group 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	3		Language of instruction		Polish		
Semester of study	6		ECTS credits		3.0		
Learning profile	general academic profile		Assessment form		exam		
Conducting unit	Department of Decision Systems and Robotics -> Faculty of Electronics, Telecommunications and Informatics						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Michał Czubenko				
	Teachers		dr inż. Michał Czubenko				
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						
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		3.0		27.0	75
Subject objectives	The aim of the subject is to teach students about robot navigation, algorithms of path planning and the problems of SLAM.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K6_U05] can plan and conduct experiments related to the field of study, including computer simulations and measurements; interpret obtained results and draw conclusions		student got familiar with algorithms for navigation of intelligent robots		[SU1] Assessment of task fulfilment		
	[K6_W03] Knows and understands, to an advanced extent, the construction and operating principles of components and systems related to the field of study, including theories, methods and complex relationships between them and selected specific issues - appropriate for the curriculum		student got familiar with the issues on robot control		[SW1] Assessment of factual knowledge		
	[K6_U03] can design, according to required specifications, and make a simple device, facility, system or carry out a process, specific to the field of study, using suitable methods, techniques, tools and materials, following engineering standards and norms, applying technologies specific to the field of study and experience gained in the professional engineering environment		student learned how mobile robots can be used to perform the selected tasks		[SU1] Assessment of task fulfilment		
Subject contents	The content of the subject includes problems of robot navigation, patch planning algorithms. It concerns SLAM problem for a single robot as well as a group of robots. For this matter the group strategies for robots, formation making and group cooperation are discussed. This includes intelligent methods (e.g. decision trees, fuzzy logic, map interactions) and their usage in intelligent robots.						

Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Exam	50.0%	100.0%
Recommended reading	Basic literature	E. Bekir, Introduction to Modern Navigation Systems, World Scientific Publishing Co 2007	
	Supplementary literature	D. Cook, Intermediate Robot Building (Technology in Action), Apress 2009	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		