



Subject card

Subject name and code	Intelligent Robots, PG_00047699						
Field of study	Automatic Control, Cybernetics and Robotics						
Date of commencement of studies	October 2024	Academic year of realisation of subject			2026/2027		
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_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		
	[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_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		
Subject contents	The content of the subject includes problems of robot navigation, path 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		