GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Intelligent Robots, PG_00047699		
Field of study	Automatic Control, Cybernetics and Robotics		
Date of commencement of studies	October 2020	Academic year of realisation of subject	2022/2023
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 mgr inż. Marek Grzegorek mgr inż. Jan Glinko	

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

<table>
<tr><td>Subject contents</td><td colspan="3">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.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td colspan="3"></td></tr>
<tr><td>Assessment methods and criteria</td><td colspan="3"><table><tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr><tr><td>Exam</td><td>50.0%</td><td>100.0%</td></tr></table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td colspan="2">E. Bekir, Introduction to Modern Navigation Systems, World Scientific Publishing Co 2007</td></tr>
<tr><td>Supplementary literature</td><td colspan="2">D. Cook, Intermediate Robot Building (Technology in Action), Apress 2009</td></tr>
<tr><td>eResources addresses</td><td colspan="2">Adresy na platformie eNauczanie:</td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="3"></td></tr>
<tr><td>Work placement</td><td colspan="3">Not applicable</td></tr>
</table>