



Subject card

Subject name and code	Artificial intelligence, PG_00058310						
Field of study	Automation, Robotics and Control Systems						
Date of commencement of studies	October 2023	Academic year of realisation of subject			2026/2027		
Education level	first-cycle studies	Subject group			Obligatory subject group in the field of study 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	4	Language of instruction			Polish		
Semester of study	7	ECTS credits			1.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Katedra Inteligentnych Systemów Sterowania i Wspomagania Decyzji -> Faculty of Electrical and Control Engineering						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Michał Grochowski				
	Teachers						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	0.0	0.0	15
	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	15	2.0		8.0	25	
Subject objectives	The aim of the course will be to familiarise Students with the current knowledge of the rapidly developing field of Artificial Intelligence and Machine Learning and to indicate its practical applications in control engineering and robotics.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K6_U09] is able to use artificial intelligence methods and understands the advantages and limitations of using this type of tools in engineering		The student proposes a specific artificial intelligence algorithm that can be used to solve a selected engineering task		[SU3] Assessment of ability to use knowledge gained from the subject		
	[K6_W07] has basic knowledge related to control and automation systems		The student is familiar with the artificial intelligence algorithms that are used in automation and robotics.		[SW1] Assessment of factual knowledge		
Subject contents	<p>AI and ML are rapidly gaining popularity due to, among other things, their features that allow efficient and effective information processing in conditions of large amounts of data, their uncertainty and variety. AI and ML find applications wherever the large size of data sets and their nature, make manual analysis impossible, where the system must dynamically and autonomously adapt to changing conditions, and where the problems being analysed are so complex and complicated that no reliable and/or easy-to-implement and analyse theoretical models exist. AI and ML algorithms perform brilliantly in problems such as exploration and extraction of new knowledge from data; decision support or decision-making; signal, image or video processing and analysis; speech processing and analysis; intelligent diagnostic systems; intelligent and adaptive control systems or forecasting. Many of these problems can be found in the field of automation and robotics.</p>						
Prerequisites and co-requisites							

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
		Colloquium	50.0%
Recommended reading	Basic literature	<ul style="list-style-type: none"> • Zhang, Aston and Lipton, Zachary C. and Li, Mu and Smola, Alexander J. Dive into Deep Learning, 2021. • Bonaccorso, G. Algorytmy uczenia maszynowego. Zaawansowane techniki implementacji. Helion, 2019 • Szeliga, M. Data Science i uczenie maszynowe. Wydawnictwo Naukowe PWN, 2017. • Bengio, Y., Courville A., Goodfellow I. Deep Learning. Systemy uczące się. Wydawnictwo Naukowe PWN, 2018. 	
	Supplementary literature	<ul style="list-style-type: none"> • Sejnowski Terrence J. Deep Learning. Głęboka rewolucja. Wydawnictwo Poltext, 2019 • Chollet, F. Deep Learning. Helion, 2019 	
	eResources addresses	Adresy na platformie eNauczenie:	
Example issues/ example questions/ tasks being completed	<ul style="list-style-type: none"> • Wytłumacz różnice pomiędzy uczeniem nadzorowanym, nienadzorowanym i uczeniem ze wzmocnieniem • Wskaż zakres stosowalności, wady i zalety wybranego algorytmu sztucznej inteligencji 		
Work placement	Not applicable		