



Subject card

Subject name and code	Integrated Decision Systems II, PG_00047710						
Field of study	Automatic Control, Cybernetics and Robotics						
Date of commencement of studies	October 2021	Academic year of realisation of subject			2024/2025		
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	4	Language of instruction			Polish		
Semester of study	7	ECTS credits			1.0		
Learning profile	general academic profile	Assessment form			assessment		
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	0.0	0.0	0.0	15.0	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	1.0		9.0	25	
Subject objectives	The aim of the course is to enable students to independently perform a large system project. The projects are closely related to the fusion of various kinds of measurement data and making decisions based on them. Student groups consist of approximately 8 people. Leader of the group is responsible for the division of labor and group management. Programming code (for different devices) is stored in a control version system.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K6_U21] can individually carry out an analysis of a managing and controlling problem and is able to individually design, tune and operate automatic regulation and control systems, and use computers to control and monitor dynamic systems	The student develops the ability to design integrated systems that make decisions. In particular, it can combine vision systems with control systems, as well as with AVR and VR.			[SU4] Assessment of ability to use methods and tools		
	[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	The student combines the skills of data analysis and design decision systems. and effectively develops knowledge of high-level programming languages.			[SU1] Assessment of task fulfilment		
Subject contents	The course will discussed control version systems and methods of their use, how to manage medium ICT project.						

Prerequisites and co-requisites	<ul style="list-style-type: none"> • Programming languages such as C, C ++, Python, C #. • Knowledge of the signal processing. • Knowledge of sensors and transducers. • Knowledge of embedded system design. 														
Assessment methods and criteria	<table border="1"> <thead> <tr> <th data-bbox="453 331 790 360">Subject passing criteria</th> <th data-bbox="793 331 1139 360">Passing threshold</th> <th data-bbox="1142 331 1489 360">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="453 365 790 394">Project</td> <td data-bbox="793 365 1139 394">60.0%</td> <td data-bbox="1142 365 1489 394">30.0%</td> </tr> <tr> <td data-bbox="453 398 790 427">Group</td> <td data-bbox="793 398 1139 427">60.0%</td> <td data-bbox="1142 398 1489 427">50.0%</td> </tr> <tr> <td data-bbox="453 432 790 461">Leader</td> <td data-bbox="793 432 1139 461">60.0%</td> <td data-bbox="1142 432 1489 461">20.0%</td> </tr> </tbody> </table>	Subject passing criteria	Passing threshold	Percentage of the final grade	Project	60.0%	30.0%	Group	60.0%	50.0%	Leader	60.0%	20.0%		
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Group	60.0%	50.0%													
Leader	60.0%	20.0%													
Recommended reading	Basic literature	Siegwart, R., Nourbakhsh, I. R., & Scaramuzza, D. (2011). <i>Introduction to autonomous mobile robots</i> . MIT press.													
	Supplementary literature	Kerzner, Harold. <i>Advanced project management: edycja polska</i> . Ed. Paweł Dąbrowski. Helion, 2005. Liggins II, Martin, David Hall, and James Llinas, eds. <i>Handbook of multisensor data fusion: theory and practice</i> . CRC press, 2017.													
	eResources addresses	Adresy na platformie eNauczenie:													
Example issues/ example questions/ tasks being completed	<ul style="list-style-type: none"> • Street View of WETI corridor using a mobile robot • Solving the problem of rendez-vous in a virtual environment • Integration of sensory data for scheduling trains • Construction and control mobile robot follower for tag • Construction and control of a mobile robot mapping environment 														
Work placement	Not applicable														