



Subject card

Subject name and code	Random Processes - Theory for Practitioners, PG_00064516						
Field of study	Automatic Control, Cybernetics and Robotics						
Date of commencement of studies	February 2025	Academic year of realisation of subject			2024/2025		
Education level	second-cycle studies	Subject group			Optional subject group Specialty 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	1	Language of instruction			Polish		
Semester of study	1	ECTS credits			3.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Department of Automatic Control -> Faculty of Electronics, Telecommunications and Informatics						
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Marcin Ciolek					
	Teachers	dr inż. Marcin Ciolek					
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	6.0		24.0	75	
Subject objectives	Basic methods of describing and analyzing random processes, as well as with selected practical applications of these methods.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K7_U03] can design, according to required specifications, and make a complex 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	Students can describe random processes			[SU4] Assessment of ability to use methods and tools [SU3] Assessment of ability to use knowledge gained from the subject		
	[K7_W02] knows and understands, to an increased extent, selected laws of physics and physical phenomena, as well as methods and theories explaining the complex relationships between them, constituting advanced general knowledge in the field of technical sciences related to the field of study	Students can describe random processes			[SW1] Assessment of factual knowledge		

Subject contents	<p>1. Scalar random variables and their characteristics 2. Central limit theorem 3. Selected classes of random variables (uniformly distributed, Gaussian, Laplace, Cauchy variables) 4. Pairs of random variables and their characteristics 5. Basics of independent component analysis 6. Vector random variables 7. Examples of random processes 8. Characteristics of random processes 9. Ergodicity of random processes 10. Spectral analysis of random processes 11. Linear transformations of random processes 12. Removing noise from signals - spectral subtraction method</p>		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Exam	50.0%	70.0%
	Computer Exercises	50.0%	0.0%
	Project	50.0%	30.0%
Recommended reading	Basic literature	S.L. Miller, D.G. Childers: "Probability and random processes", Academic Press, 2004.	
	Supplementary literature	S.L. Miller, D.G. Childers: "Probability and random processes", Academic Press, 2004.	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		

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