



Subject card

Subject name and code	Random Processes - Theory for Practitioners, PG_00064536						
Field of study	Automatic Control, Cybernetics and Robotics						
Date of commencement of studies	February 2026		Academic year of realisation of subject		2025/2026		
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		English		
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 -> Wydziały Politechniki Gdańskiej						
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_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		
	[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.		[SU3] Assessment of ability to use knowledge gained from the subject [SU1] Assessment of task fulfilment		

Subject contents	1. Scalar random variables and their characteristics2. Central limit theorem3. Selected classes of random variables (uniformly distributed, Gaussian, Laplace, Cauchy variables)4. Pairs of random variables and their characteristics5. Basics of independent component analysis6. Vector random variables7. Examples of random processes8. Characteristics of random processes9. Ergodicity of random processes10. Spectral analysis of random processes11. Linear transformations of random processes12. Removing noise from signals - spectral subtraction method		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Project	50.0%	30.0%
	Computer exercises	50.0%	0.0%
	Exam	50.0%	70.0%
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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