



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 2027	Academic year of realisation of subject				2026/2027	
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 -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Marcin Ciołek					
	Teachers	dr inż. Marcin Ciołek					
Lesson types	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.			[SU1] Assessment of task fulfilment [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>Course content – lecture</p> <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	<table border="1"> <thead> <tr> <th data-bbox="456 533 794 562">Subject passing criteria</th> <th data-bbox="798 533 1136 562">Passing threshold</th> <th data-bbox="1139 533 1479 562">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="456 566 794 595">Exam</td> <td data-bbox="798 566 1136 595">50.0%</td> <td data-bbox="1139 566 1479 595">70.0%</td> </tr> <tr> <td data-bbox="456 600 794 629">Computer exercises</td> <td data-bbox="798 600 1136 629">50.0%</td> <td data-bbox="1139 600 1479 629">0.0%</td> </tr> <tr> <td data-bbox="456 633 794 663">Project</td> <td data-bbox="798 633 1136 663">50.0%</td> <td data-bbox="1139 633 1479 663">30.0%</td> </tr> </tbody> </table>			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%
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	<table border="1"> <tbody> <tr> <td data-bbox="456 678 794 725">Basic literature</td> <td colspan="2" data-bbox="798 678 1479 725">S.L. Miller, D.G. Childers: "Probability and random processes", Academic Press, 2004.</td> </tr> <tr> <td data-bbox="456 730 794 777">Supplementary literature</td> <td colspan="2" data-bbox="798 730 1479 777">S.L. Miller, D.G. Childers: "Probability and random processes", Academic Press, 2004.</td> </tr> <tr> <td data-bbox="456 781 794 815">eResources addresses</td> <td colspan="2" data-bbox="798 781 1479 815"></td> </tr> </tbody> </table>			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					
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															
Example issues/ example questions/ tasks being completed															
Practical activities within the subject	Not applicable														

Document generated electronically. Does not require a seal or signature.