

。 GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Outlinet a sure sure deside	Risk Processor, PC, 000/4/128								
Subject name and code	KISK Processes, PG_UUU44138								
Field of study	Mathematics								
Date of commencement of studies	October 2024		Academic year of realisation of subject			2024/2025			
Education level	second-cycle studies		Subject group						
Mode of study	Full-time studies		Mode of delivery			at the university			
Year of study	1		Language of instruction			Polish			
Semester of study	2		ECTS credits			5.0			
Learning profile	general academic profile		Assessment form			exam			
Conducting unit	Divison of Dynamical Systems -> Institute of Applied Mathematics -> Faculty of Applied Physics and Mathematics								
Name and surname	Subject supervisor		dr hab. Sergey Kryzhevich						
of lecturer (lecturers)	Teachers	ichers		dr hab. Sergey Kryzhevich					
Lesson types and methods	Lesson type	Lecture	Tutorial	Laboratory	Projec	t	Seminar	SUM	
of instruction	Number of study hours	30.0	0.0	0.0	0.0		30.0	60	
	E-learning hours included: 0.0								
Learning activity and number of study hours	Learning activity	Participation in classes includ plan	n didactic led in study	Participation in consultation hours		Self-study		SUM	
	Number of study hours	60		5.0		60.0		125	
Subject objectives	Introduction of basic mathematical tools related to risk modeling in terms of stochastic (Markov) processes and stochastic differential equations.								
Learning outcomes	Course outcome		Subject outcome			Method of verification			
Subject contents	Markovian processes with discrete time. Elements of the Itô integral. Stochastic differential equations. Standard risk models in terms of stochastic differential equations. The Heath, Jarrow and Morton model. Reduced insolvency risk model. During the seminars accompanying the lecture, students will present issues related to survival analysis.								
Prerequisites and co-requisites	Assessment in the following subjects: probability calculus, stochastic processes								
Assessment methods	Subject passing criteria		Passing threshold			Percentage of the final grade			
and criteria	Project		51.0%			50.0%			
	Exam		51.0%			50.0%			
Recommended reading	Basic literature		 Steven E. Time Mod Robert A. Martingal D.G. Klein (2rd Edition) 	. Shreve, Stocl dels. Springer, Jarrow, Conti e-Based Appro	nastic C 2004. nuous-T bach. Sp in, Survi	alculus ⁻ ime As pringer, ival Ana	for Finance II. set Pricing Th 2018. alysis, A Self-L	Continuous- eory. A earning Text,	
			3. D.G. Klein (3rd Editio	nbaum, M. Kle on), Springer	in, Surv	ival Ana	alysis, A Self-L	earning ⁻	

	Supplementary literature	Olav Kallenerg, Foundations of Modern Probability. Springer, 2002.				
		 Ioannis Karatzas and Steven E. Shreve. Brownian Motion and 				
		Stochastic Calculus. Springer, 1991.				
		 Tomasz R. Bielecki, Marek Rutkowski, Credit Risk: Modeling, 				
		Valuation and Hedging, Springer, 2004.				
	eResources addresses	Podstawowe				
		https://enauczanie.pg.edu.pl/moodle/course/view.php?id=38042 - The Risk Processes course at e-nauczanie platform				
		Adresy na platformie eNauczanie:				
Example issues/ example questions/ tasks being completed						
Work placement	Not applicable					

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