



Subject card

Subject name and code	FM Seminar, PG_00023810						
Field of study	Mathematics						
Date of commencement of studies	October 2022	Academic year of realisation of subject			2023/2024		
Education level	second-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	2	Language of instruction			Polish		
Semester of study	3	ECTS credits			2.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Department of Nonlinear Analysis and Statistics -> Faculty of Applied Physics and Mathematics						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. Zdzisław Dzedzej				
	Teachers		dr hab. Zdzisław Dzedzej				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	0.0	0.0	30.0	30
	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	30		5.0		15.0	50
Subject objectives	The aim of the seminar is to familiarize students with monetary risk measures from the point of view of functional analysis.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	K7_U10	The student is able to use the functional analysis apparatus in the proofs of monetary risk theorems.			[SU5] Assessment of ability to present the results of task [SU4] Assessment of ability to use methods and tools [SU1] Assessment of task fulfilment		
	K7_U01	The student is able to make evidence of convex risk measures. Is able to construct counter-examples in issues related to risk measures.			[SU5] Assessment of ability to present the results of task [SU4] Assessment of ability to use methods and tools		
	K7_K01	On the basis of the literature, students in the team can prepare a paper in writing and for presentation.			[SK1] Assessment of group work skills		
Subject contents	1. Convexity. 2. Absolutely continuous probability measures. 3. Quantile functions. 4. Risk measures and their acceptance sets. 5. Robust representation of convex risk measures. 6. Convex risk measures on L^∞ . 7. Value at Risk.						
Prerequisites and co-requisites	credits for the subjects: 1. Calculus I and II 2. Probability and statistics 3. Functional analysis.						
Assessment methods and criteria	Subject passing criteria		Passing threshold		Percentage of the final grade		
	Presentation		50.0%		50.0%		
	Report		50.0%		50.0%		

Recommended reading	Basic literature	1. Hans Follmer, Alexander Schied, <i>Stochastic Finance</i> , 3RD edition, De Gruyter, 2011.
	Supplementary literature	1. M. Jeanblanc, M. Yor, M. Chesney, <i>Mathematical Methods for Financial Markets</i> , Springer 2009.
	eResources addresses	Adresy na platformie eNauzanie: Seminarium MF AD 23/24 - Moodle ID: 33332 https://enauzanie.pg.edu.pl/moodle/course/view.php?id=33332
Example issues/ example questions/ tasks being completed	<ol style="list-style-type: none"> 1. Risk measures. 2. Representation of convex risk measures. 3. Convex risk measures on L^∞ 	
Work placement	Not applicable	