

## 。 GDAŃSK UNIVERSITY OF TECHNOLOGY

## Subject card

Subject name and code	Foundations of Capital Markets Analysis, PG_00047414							
Field of study	Informatics							
Date of commencement of studies	February 2026		Academic year of realisation of subject		2025/2026			
Education level	second-cycle studies		Subject group			Obligatory subject group in the field of study		
						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		1.0			
Learning profile	general academic profile		Assessment form		assessment			
Conducting unit	Department Of Metrology And Optoelectronics -> Faculty Of Electronics Telecommunications And Informatics -> Wydziały Politechniki Gdańskiej							
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Marcin Gnyba					
	Teachers		dr hab. inż. Marcin Gnyba					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Projec	t	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	0.0		0.0	15
	E-learning hours included: 0.0							
Learning activity and number of study hours	Learning activity	tivity Participation ir classes includ plan		I didacticParticipationed in studyconsultation		Self-st	udy	SUM
	Number of study hours	15		2.0		8.0		25
Subject objectives	Students will posses some knowledge in the area of approximation theory for the analysis and comparison of quotation from financial markets, and construction of indicators for investment purposes.							

Learning outcomes Course outcome		Subject outcome Method of verification				
	[K7_W01] knows and understands, to an increased extent, mathematics to the extent necessary to formulate and solve complex issues related to the field of study	The student knows and understands selected mathematical tools used to determine trends in capital and FOREX markets.	[SW1] Assessment of factual knowledge			
	[K7_W04] knows and understands, to an increased extent, the principles, methods and techniques of programming and the principles of computer software development or programming devices or controllers using microprocessors or other elements or programmable devices specific to the field of study, and organization of work of systems using computers or such devices	Student is capable of deriving trends in capital and FOREX markets. He understands basic principles of investing.	[SW1] Assessment of factual knowledge			
	[K7_W10] knows and understands, to an increased extent, the basic processes occurring in the life cycle of equipment, objects and technical systems, as well as methods of supporting processes and functions, specific to the field of study	The student knows and understands the processes taking place on capital and FOREX markets, as well as selected methods to support the analysis of these capital markets and the prediction of trends occurring there.	[SW1] Assessment of factual knowledge			
	[K7_W11] knows and understands, to an increased extent, the general principles of creation and development of forms of individual entrepreneurship and the economic, legal and other conditions of various types of activities related to the awarded qualification, including the principles of protection of industrial property and copyright law	The student knows and understands in-depth the principles of operation of capital markets and FOREX markets, in particular the stock exchange.	[SW1] Assessment of factual knowledge			
Subject contents	<ol> <li>Introduction to capital markets</li> <li>Return rate, effective return</li> <li>Classification of financial instruments</li> <li>Standard methods of market analysis</li> <li>Foundations of approximation theory</li> <li>Complete and incomplete system for vectors</li> <li>Scalar product, properties, interpretation</li> <li>Scalar product for signals, orthogonality</li> <li>Norms of error in linear space, properties</li> <li>Correlation and covariance coefficient, normalization in L2</li> <li>Approximation in L2 space</li> <li>Properties of solution in L2</li> <li>Fourier series in capital markets</li> <li>Autocorrelation function acf and cross-correlation function ccf</li> <li>Strategies of investing in capital markets</li> </ol>					
Prerequisites and co-requisites	No requirements					
Assessment methods	Subject passing criteria	Passing threshold	Percentage of the final grade			
	Colloquium	51.0%	100.0%			
Recommended reading	Basic literature	[1] any manual on numerical analysis [2] J.W. Tadion, Deciphering the Market WILEY 1996.				
	[3] Manual for Matlab programming language					
		[4] any manual on approximation theory				
	[5] John, J. Murphy "Technical Analysis of Financial Mark York Institute of Finance, 1999					
	Supplementary literature	No requirements				

	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	1. Fundamental Analysis of Markets	
	2. Technical Analysis of Markets	
Work placement	Not applicable	

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