GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	FINANCIAL MATHEMATICS, PG_00061176		
Field of study	Management		
Date of commencement of studies	October 2023	Academic year of realisation of subject	2024/2025
Education level	first-cycle studies	Subject group	Obligatory subject group in the field of study 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	English
Semester of study	3	ECTS credits	3.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Economic Analysis and Finance -> Faculty of Management and Economics		
Name and surname of lecturer (lecturers)	Subject supervisor	dr Piotr Kasprzak	
	Teachers	dr Piotr Kasprzak	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	0.0	30.0	0.0	0.0	0.0	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	40.0	75

Subject objectives

Identifies concepts and mathematical tools used in finance and banking

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_W02] demonstrates comprehensive preparation in terms of methods, techniques for formulating and solving problems	selects appropriate mathematical methods and techniques to analyze financial problems	[SW1] Assessment of factual knowledge
[K6_U04] formulates logical solutions to complex or unstructured problems	analyzes the impact of various factors influencing the studied phenomenon, striving to obtain an optimal solution	[SU2] Assessment of ability to analyse information

Subject contents

Time value of money introduction
Simple interest, discount rate, compound interest, continuous capitalization
Nominal, equivalent, effective and average interest rate
Inflation rate and real interest rate
Valuation of short-term debt securities (bills and other debt securities
Models of installments payable in arrears and in advance
Perpetual installment
Models of equal installments with capitalization more frequent and less frequent than installments
Models of installments increasing according to arithmetic and geometric progression
Debt repayment
Ratios in credit assessment
Investment profitability analysis
Valuation of long-term debt securities
Introduction to the valuation of derivatives
The use of a spreadsheet in financial mathematics

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Final test	60.0%	20.0%
Tests during the semester	60.0%	80.0%

Recommended reading	Basic literature	A. Pascucci, W. J. RunggaldierFinancial Mathematics: Theory and Problems for Multi-period Models (UNITEXT) 2012th Edition, Springer 2012 S. Chandra, S. Dharmaraja, Aparna Mehra, R. Khemchandani, Financial Mathematics: An Introduction 1st Edition, Alpha Science International, 2013 D.G. Saari, Mathematics of Finance: An Intuitive Introduction (Undergraduate Texts in Mathematics) 1st ed. 2019 Edition, Springer, 2019 M. B. Miller, Mathematics and Statistics for Financial Risk Management 2nd Edition, Wiley Finance Series, 2018
	Supplementary literature	D.R. Chambers, Q. Lu, Introduction to Financial Mathematics With Computer Applications, Chapman and Hall/CRC, 2021 K. J. Hastings, Introduction to Financial Mathematic, Chapman and Hall/CRC, 2015
	eResources addresses	Adresy na platformie eNauczanie: Financial mathematics (exercises) STACJONARNE LATO 2024 - Moodle ID: 36501 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=36501
Example issues/ example questions/ tasks being completed	Calculation of the future value of deposits, loan installments, and the expected size of a pension	
Work placement	Not applicable	

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