GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	FINANCIAL MATHEMATICS, PG_00058400		
Field of study	Economics		
Date of commencement of studies	October 2024	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	1	Language of instruction	Polish
Semester of study	2	ECTS credits	4.0
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	Filip Borysewicz	
	Teachers		

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	30.0	0.0	0.0	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	10.0	45.0	100

Subject objectives

Identifies mathematical concepts and mathematical tools used in finance and banking

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_W02] demonstrates comprehensive preparation in the field of methods, techniques for formulating and solving problems	selects appropriate methods and mathematical techniques to analyse financial problems	[SW1] Assessment of factual knowledge
[K6_U04] formulates logical solutions to complex or unstructured problems	analyzes the influence of various factors which influence 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 model (SIM), Capital Gains Tax.
Compound interest model (CIM) with annual, sub-period and continuous capitalization.
The calculation of the mathematical and commercial discount.
Valuation of short-term securities.
Real capital value, real interest rate.
The basis for building an investment portfolio.
Annuities - without capitalization, with capitalization, equal, compatible and non-compatible.
Construction of the loan repayment schedule, APRC calculation.
Valuation of long-term securities.
Introduction to the valuation of derivatives using the example of options.

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Additional tasks	0.0%	10.0%
Final test	60.0%	30.0%
Midterm colloquium	60.0%	60.0%

Recommended reading

Basic literature

Kellison, S. G. (2008). Theory of interest. New York: McGraw-Hill.
Piasecki, K., Ronka-Chmielowiec W. (2011). Matematyka finansowa. Warszawa: C.H. Beck.
Podgórska, M., Klimkowska, J. (2022). Matematyka finansowa. Warszawa: Wydawnictwo Naukowe PWN.
Redo, M., Prewysz-Kwinto, P. (2021). Matematyka finansowa. Warszawa: Wydawnictwo Naukowe PWN.

	Supplementary literature	Borowski, J., Golański, R., Kasprzyk, K., Melon, L., Pogórska, M. (2003). Matematyka finansowa: przykłady, zadania, testy, rozwiązania. Wałbrzych: Szkoła Główna Handlowa. Cegłowski, B., Podgórski, B. (2021). Finanse z arkuszem kalkulacyjnym. Warszawa: Wydawnictwo Naukowe PWN. Sobczyk, M. (2011). Matematyka finansowa: podstawy teoretyczne, przykłady, zadania. Warszawa: Agencja Wydawnicza Placet.
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	Calculation of the time value of money. Calculation of the future value of investments. APRC calculation.	
Work placement	Not applicable	