



Subject card

Subject name and code	FINANCIAL MATHEMATICS, PG_00058400						
Field of study	Economics						
Date of commencement of studies	October 2023	Academic year of realisation of subject			2023/2024		
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		Filip Borysewicz				
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_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		
	[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		
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		
	Midterm colloquium		60.0%		60.0%		
	Final test		60.0%		30.0%		
	Additional tasks		0.0%		10.0%		

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: Matematyka Finansowa - Moodle ID: 38338 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=38338
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	