



## Subject card

Subject name and code	Financial Mathematics, PG_00044439						
Field of study	Engineering Management						
Date of commencement of studies	October 2020		Academic year of realisation of subject		2021/2022		
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	Part-time studies		Mode of delivery		at the university		
Year of study	2		Language of instruction		Polish		
Semester of study	4		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	16.0	0.0	0.0	0.0	16
	E-learning hours included: 0.0						
	Adresy na platformie eNauczanie:						
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	16		6.0		53.0	75
Subject objectives	To acquaint students with the basic concepts and mathematical tools used in finance and banking.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K6_U02] analyses economic problems, including financial ones in various areas of the organisation's functioning, also when formulating and solving engineering tasks		The student analyzes the influence of selected factors on the value of the investment. The student chooses the optimal loan offer. The student calculates the APRC. The student builds an optimal investment portfolio.		[SU2] Assessment of ability to analyse information		
	[K6_W11] has the basic knowledge of mathematics, physics and chemistry necessary to solve technical problems		The student notices the need to expand knowledge and is able to develop it.		[SW3] Assessment of knowledge contained in written work and projects		
	[K6_W06] has a basic knowledge of methods and tools for conducting research and analyses related to particular areas of the enterprise's operations and its environment		The student identifies the methods of valuation of money in time.		[SW1] Assessment of factual knowledge		
Subject contents	Simple interest, discount rate, compound interest, continuous capitalization; Nominal, equivalent, effective and average interest rates; Inflation rate and real interest rate; Construction of an optimal investment portfolio; Valuation of short-term debt securities (bills and other debt securities); Post and upfront installment models; Perpetual installment; Equal installment models with capitalization more frequent and less frequent than installments; Debt repayment; Valuation of long-term debt securities; Introduction to the valuation of derivatives.						

Prerequisites and co-requisites	Basic math skills.		
	Knowledge of the value of money and the functioning of basic market mechanisms.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Final test	60.0%	30.0%
	Additional tasks	0.0%	10.0%
	Test during semester	60.0%	60.0%
Recommended reading	Basic literature	<ol style="list-style-type: none"><li>1. Kellison S. G., The Theory of Interest, McGraw-Hill, 2008;</li><li>2. Podgórska M., Klimkowska J., Matematyka finansowa, Wydawnictwo Naukowe PWN, Warszawa 2013;</li><li>3. Ceglowski B., Podgórski B., <i>Finanse z arkuszem kalkulacyjnym</i>, Wydawnictwo Naukowe PWN, Warszawa 2014.</li><li>4. Kowalczyk P., Poprawska E., Ronka-Chmielowiec W., Metody aktuarialne, Wydawnictwo Naukowe PWN, Warszawa 2013.</li></ol>	
	Supplementary literature	<ol style="list-style-type: none"><li>1. Borowski J., Golański R., Kasprzyk K., Melon L., Pogórska M., Matematyka finansowa: przykłady, zadania, testy, rozwiązania, SGH, Warszawa 2003;</li><li>2. Piasecki K., Ronka-Chmielowiec W., <i>Matematyka finansowa</i>, C. H. Beck, Warszawa 2011.</li><li>3. Błaszczyszyn B., Rolski T., <i>Podstawy matematyki ubezpieczeń na życie</i>, WNT 2004.</li><li>4. Hull J., <i>Kontrakty terminowe i opcje. Wprowadzenie</i>, WIG Press, Warszawa 1998.</li><li>5. Sobczyk M., Matematyka finansowa: podstawy teoretyczne, przykłady, zadania, Agencja Wydawnicza Placet, Warszawa 2011</li></ol>	
	eResources addresses		
	Example issues/ example questions/ tasks being completed		
Work placement	Not applicable		