



Subject card

Subject name and code	Actuarial mathematics, PG_00055429						
Field of study	Mathematics						
Date of commencement of studies	October 2022	Academic year of realisation of subject			2022/2023		
Education level	second-cycle studies	Subject group			Optional subject group 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	Zakład Analizy Nieliniowej -> Instytut Matematyki Stosowanej -> Faculty of Applied Physics and Mathematics						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Marcin Styborski				
	Teachers		mgr Piotr Lebieź				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	30.0	0.0	0.0	0.0	60
	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	60		5.0		35.0	100
Subject objectives	The aim of the course is to familiarize students with the elementary problems of life insurance mathematics.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	K7_U08	The student uses Moivre, Weibull, Gompertz and exponential distributions in the calculation of insurance premiums and reserves.			[SU3] Assessment of ability to use knowledge gained from the subject		
	K7_W07	The student uses the basics of mathematical analysis and probability calculus to calculate net premiums and reserves.			[SW1] Assessment of factual knowledge		
	K7_W02	The student is able to solve selected problems related to insurance mathematics.			[SW1] Assessment of factual knowledge		
	K7_K02	The student presents a solution to the problem related to insurance mathematics. Can explain the significance of the assumptions of the model and discuss the tools used.			[SK5] Assessment of ability to solve problems that arise in practice [SK4] Assessment of communication skills, including language correctness		

Subject contents	<p>During the classes, the following issues are discussed:</p> <ol style="list-style-type: none"> 1. Interest theory 2. Cash flow 3. Annuities 4. Life tables 5. Interpolation of life expectancy distributions 6. Analytical demographic models 7. Insurance policy 8. Net premiums <p>Practical exercises consisting in solving tasks are attached to the theoretical issues.</p>											
Prerequisites and co-requisites	Basics of the probability theory (random variables and their characteristics).											
Assessment methods and criteria	<table border="1" data-bbox="448 649 1497 757"> <thead> <tr> <th data-bbox="448 649 794 683">Subject passing criteria</th> <th data-bbox="794 649 1141 683">Passing threshold</th> <th data-bbox="1141 649 1497 683">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="448 683 794 716">Working in class</td> <td data-bbox="794 683 1141 716">51.0%</td> <td data-bbox="1141 683 1497 716">30.0%</td> </tr> <tr> <td data-bbox="448 716 794 757">End-of-term project</td> <td data-bbox="794 716 1141 757">51.0%</td> <td data-bbox="1141 716 1497 757">70.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	Working in class	51.0%	30.0%	End-of-term project	51.0%	70.0%
Subject passing criteria	Passing threshold	Percentage of the final grade										
Working in class	51.0%	30.0%										
End-of-term project	51.0%	70.0%										
Recommended reading	Basic literature	<ol style="list-style-type: none"> 1. Błaszczyszyn B., Rolski T.: Podstawy matematyki ubezpieczeń na życie. Wydawnictwo Naukowo-Techniczne, Warszawa 2004 2. J. Czarnowska, K. Dziedziul, Ubezpieczenia na życie i ubezpieczenia komunikacyjne, skrypt 										
	Supplementary literature	<ol style="list-style-type: none"> 1. Gerber H.U.: Life insurance mathematics. Berlin, Heidelberg, New York: Springer-Verlag 1995. 2. Skalba M.: Ubezpieczenia na życie. Wydawnictwa Naukowo-Techniczne, Warszawa 2003. 										
	eResources addresses	Adresy na platformie eNauczanie:										
Example issues/ example questions/ tasks being completed												
Work placement	Not applicable											