FACULTY OF PURE AND APPLIED MATHEMATICS

SUBJECT CARD

Name of subject in Polish: MODELE UBEZPIECZEŃ ŻYCIOWYCH
Name of subject in English: Life insurance models
Main field of study (if applicable): APPLIED MATHEMATICS
Specialization (if applicable): Financial and Actuarial Mathematics
Profile: academic / ~~practical~~*
Level and form of studies: 1st/ 2nd level, uniform magister studies*, full-time / part-time*
Kind of subject: obligatory / optional / university-wide*
Subject code
Group of courses YES / NO*

	Lecture	Classes	Laboratory	Project	Seminar
Number of hours of organized classes in University (ZZU)	30	30			
Number of hours of total student workload (CNPS)	90	60			
Form of crediting	Examination / ~~crediting with grade~~*				
For group of courses mark (X) final course	X				
Number of ECTS points	3	2			
including number of ECTS points for practical classes (P)	2	2			
including number of ECTS points corresponding to classes that require direct participation of lecturers and other academics (BU)	1,5	1,5			

*delete as not necessary

PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES

1. Student knows and can apply basic concepts of the probability theory

SUBJECT OBJECTIVES

C1 Study of the classical concepts and acquisition of the knowledge of life insurance mathematics

SUBJECT EDUCATIONAL EFFECTS

relating to knowledge:
PEK_W01 knows the most important concepts of life insurance mathematics
PEK_W02 knows principles of stochastic modeling in life insurance mathematics

relating to skills:
PEK_U01 can construct mathematical models used in life insurance mathematics

relating to social competences: PEK_K01 can, without assistance, search for necessary information in the literature, also in foreign languages

PROGRAMME CONTENT		
Lecture		**Number of hours**
Lec 1	Fundamental concepts of life insurance mathematics	6
Lec 2	Introduction to the course, survey over provision types.	2
Lec 3	Net reserves in life insurance.	4
Lec 4	Decomposition of the loss random variable (Hattendorff's theorem).	2
Lec 5	Technical gain.	3
Lec 6	Gross reserves in life insurance, Zillmer's reserve	2
Lec 7	Multiple decrement model: net premiums and reserves	3
Lec 8	Multiple life insurance: net premiums and reserves	6
Lec 9	Solvency II - technical provisions, best estimate, risk margin, technical provisions for accounting purposes	2
	Total hours	**30**

Classes	**Number of hours**
Solving of problems illustrating theory given in the lectures, solving of problems from actuarial exams	**30**
Total hours	**30**

TEACHING TOOLS USED
N1. Lecture – traditional method. N2. Problem-solving classes. N3. Consultations. N4. Student's self-work – preparation for the classes.

EVALUATION OF SUBJECT LEARNING OUTCOMES ACHIEVEMENT

Evaluation (F – forming during semester), P – concluding (at semester end)	Learning outcomes code	Way of evaluating learning outcomes achievement
F1	PEK_W01 PEK_W02 PEK_K01	exam
F2	PEK_U01 PEK_K01	oral presentations, tests
P=0.5*F1+0.5*F2		

PRIMARY AND SECONDARY LITERATURE
PRIMARY LITERATURE:
[1] N. L. Bowers i inni „Actuarial Mathematics", The Society of Actuaries, Itasca, Illinois 1997 [2] H. U. Gerber „Life insurance mathematics", Springer-Verlag, Berlin 1997 [3] D. Dickson, M. Hardy, H. Waters „Actuarial mathematics for life contingent risks" 2nd ed.; Cambridge University Press, Cambridge 2013
SUBJECT SUPERVISOR (NAME AND SURNAME, E-MAIL ADDRESS)
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