FACULTY OF PURE AND APPLIED MATHEMATICS

SUBJECT CARD
Name of subject in Polish: Rezerwy w ubezpieczeniach życiowych i majątkowych
Name of subject in English: Reserves in life and non-life insurance
Main field of study (if applicable): Applied Mathematics
Specialization (if applicable): Financial and Actuarial Mathematics
Profile: academic / practical*
Level and form of studies: 2nd level / full-time /
Kind of subject: optional
Subject code
Group of courses YES

	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				
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
2. Student knows and can apply basic concepts of actuarial mathematics including life and non-life insurance.

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SUBJECT OBJECTIVES
C1 Study of the classical concepts and acquisition of the knowledge of reserving in life and non-life insurance

SUBJECT EDUCATIONAL EFFECTS
relating to knowledge:
PEK_W01 knows the most important concepts of reserving in life and non-life insurance mathematics
PEK_W02 knows principles of stochastic modeling in life and non-life insurance mathematics

relating to skills:

PEK_U01 can construct mathematical models used in reserving in life and non-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 Introduction to the course, survey over provision types.	2
Lec 2 Net reserves in life insurance.	4
Lec 3 Decomposition of the loss random variable (Hattendorff's theorem).	2
Lec 4 Technical gain.	2
Lec 5 Gross reserves in life insurance, Zillmer's reserve	2
Lec 6 Multiple decrement model: net premiums and reserves	4
Lec 7 Multiple life insurance: net premiums and reserves	6
Lec 8 Provisions in non-life insurance, including loss data triangles, chain-ladder method, IBNR, premium reserve	4
Lec 9 Solvency II - technical provisions, best estimate, risk margin, technical provisions for accounting purposes	4
Total hours	**30**
Classes	**Number of hours**
Cl 1 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	Exam

	PEK_K01	
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 at al „Actuarial Mathematics", The Society of Actuaries, Itasca, Illinois 1997.   [2] H. U. Gerber „Life insurance mathematics", Springer-Verlag, Berlin 1997.   [3] M. J. Goovaerts et al. „Effective Actuarial Methods"; North Holland, 1990.   [4] R. Kaas et al. „Modern Actuarial Risk Theory"; Kluwer Academic Publishers, 2001.
SUBJECT SUPERVISOR (NAME AND SURNAME, E-MAIL ADDRESS)
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