Zał. nr 4 do ZW 64/2012

FACULTY OF PURE AND APPLIED MATHEMATICS
SUBJECT CARD

Name in Polish: REZERWY W UBEZPIECZENIACH ŻYCIOWYCH I MAJĄTKOWYCH
Name in English: Reserves in life and non-life insurance
Main field of study (if applicable): Applied Mathematics
Specialization (if applicable): Financial and Actuarial Mathematics
Level and form of studies: ~~1st~~/ 2nd* level, full-time / ~~part-time~~*
Kind of subject: ~~obligatory~~ / optional / ~~university-wide~~*
Subject code MAT001568
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)	150				
Form of crediting	Examination / ~~crediting with grade*~~	Examination / crediting with grade*	Examination / crediting with grade*	Examination / crediting with grade*	Examination / crediting with grade*
For group of courses mark (X) final course	X				
Number of ECTS points	5				
including number of ECTS points for practical (P) classes	2	2			
including number of ECTS points for direct teacher-student contact (BK) classes	1.5	1.5			

*delete as applicable

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

Form of classes - 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**

Form of classes - class		**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 EDUCATIONAL EFFECTS ACHIEVEMENT

Evaluation (F – forming (during semester), P – concluding (at semester end)	Educational effect number	Way of evaluating educational effect achievement
F1	PEK_W01	exam

	PEK_W02 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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Dr inż. Marek Teuerle (Marek.Teuerle@pwr.edu.pl)

MATRIX OF CORRELATION BETWEEN EDUCATIONAL EFFECTS FOR SUBJECT

RESERVES IN LIFE AND NONLIFE INSURANCE MAT001568

AND EDUCATIONAL EFFECTS FOR MAIN FIELD OF STUDY

APPLIED MATHEMATICS

AND SPECIALIZATION

FINANCIAL AND ACTUARIAL MATHEMATICS

Subject educational effect	Correlation between subject educational effect and educational effects defined for main field of study and specialization (if applicable)**	Subject objectives***	Programme content***	Teaching tool number***
PEK_W01 (knowledge)	K2MST_W03 K2MST_fam_W01	C1	Lec 1- Lec 8	1,3
PEK_W02	K2MST_W09 K2MST_fam_W02 K2MST_fam_W03	C1	Lec 1- Lec 8	1,3
PEK_U01 (skills)	K2MST_U15 K2MST_U24 K2MST_U25 K2MST_fam_U01 K2MST_fam_U02 K2MST_fam_U03	C1	Cl 1	2,3,4
PEK_K01 (competences)	K2MST_K06 K2MST_fam_K01 K2MST_fam_K02	C1	Lec 1- Lec 8, Cl 1	1,2,3,4

** - enter symbols for main-field-of-study/specialization educational effects

*** - from table above