**Program of the course "Actuarial Calculations in Risk Insurance"**

1 year course, 20 lectures 20 seminars

The course partially reflects the syllabus of the following Core Examina-

tions of The Faculty of of Actuaries and The Institute of Actuaries:

1. CT1 - Financial Mathematics

2. CT3 - Probability and Mathematical Statistics

3. CT4 - Models

4. CT5 - Contingencies

5. CT6 - Statistical Methods

and provides a solid background for a future career in insurance, Many prob-

lems and practical examples are borrowed from the Past Examination Papers

of the Institute of Actuaries.

1. Single Life insurance.

Specific topics: Actuarial Tables, commutation functions

2. Premium principles.

Endowment, term insurance and other types of contracts.

3. Joint Life Insurance.

Specific topics: Actuarial Tables, commutation functions Specific topics:

4. Reserves.

Specific topics: Markov chains and Tiele's equations

5. Reinsurance.

Specific topics: stop-loss and proportional re-insurance

6, Collective Risk models.

Specific topics: distribution of total claim amount

7. Ruin theory.

Specific topics: ruin probabilities and Lundberg's inequality

8. Credibility theory.

Specific topics: Bayes estimation, Buhlmann model

References

1. Formulae and Tables for Examinations of Faculty and Institute of Actu-

aries. The Faculty of of Actuaries and The Institute of Actuaries, 2002

2. Bowers N.L., Gerber H.U., Hickman J.C., Actuarial Mathematics. Society

of Actuaries, 1997

3. Mikosch T., Non-Life Insurance Mathematics. A Primer. Springer 2006

4. Gerber H.U., An Introduction to Mathematical Risk Theory. Irwin: IL,

1979

5. Kaas R., Goovaerts M., Dhaene J., Denuit M., Modern Actuarial Risk

Theory, Kluwer: 2002

Assessment rules for "Actuarial Calculations"

The total mark (TM) will be computed via the following formula:

TM = 0:7 \_ ACC + 0:3 \_ ASS

where ACC stands for the accumulated mark and ASS stands fo the assessment

mark.

The accumulation may be achieved via two possible paths:

(1) Problem solving with the maximal possible score 150 points

or

(2) Submission of a manuscript in English (at least 10 pages long) addressing

some interesting aspects of actuarial science and its presentation in English. The

maximal possible score for a manuscript is 100 points.

The written assessment will be in English only.