



Course syllabus

Faculty of Technology

Department of Mathematics

4MA502 Försäkringsmatematik, 7,5 högskolepoäng

Insurance Mathematics, 7.5 credits

Main field of study

Mathematics

Subject Group

Mathematics

Level of classification

Second Level

Progression

A1F

Date of Ratification

Approved by Faculty of Technology 2014-10-03

The course syllabus is valid from autumn semester 2015

Prerequisites

4MA501 Foundations of probability, 7.5 credits, or equivalent.

Objectives

The student should be able to:

- understand and explain the basic concepts in life and non life insurance mathematics as well as risk theory
- apply and evaluate the various methods of computing in life and non life insurance, analyze and interpret the results
- justify the choice of tools made in a coherent and concise manner
- relate the basic notions introduced in the course and apply the relation to more complex problems
- interpret, communicate on and lead an argument in topics of insurance mathematics.
- differentiate alternative risk models and premium principles and evaluate the influence of reinsurance
- assess the mathematical possibilities and limitations of risk modelling and its impact on society, e.g. solvency and climatic changes.

Content

The course contains:

- premium principles
- introduction to utility theory
- individual and collective risk models for insurance portfolios
- risk models including reinsurance
- insurance risk theory, e.g. risk processes and ruin probabilities
- introduction to life insurance mathematics (equivalence principles, Hattendorff's theorem).

Type of Instruction

Lectures and seminars. Compulsory assignments may be given during the course.

Examination

The course is assessed with the grades A, B, C, D, E, Fx or F.

The grade A constitutes the highest grade on the scale and the remaining grades follow in descending order where the grade E is the lowest grade on the scale that will result in a pass. The grade F means that the student's performance is assessed as fail (i.e. received the grade F).

Assessment of how well the student fulfills the objectives is achieved through

- written assignments
- written examination?
- oral examination

Course Evaluation

After the course a written evaluation of the course will take place according to the University guidelines.

Credit Overlap

The course cannot be included in a degree along with the following course/courses of which the content fully, or partly, corresponds to the content of this course: 4MA202 Insurance Mathematics, 7.5 credits

Other

Grade criteria for the A–F scale are communicated to the student through a special document. The student is to be informed about the grade criteria for the course by the start of the course at the latest.

Required Reading and Additional Study Material

Required reading

Kaas, R., Goovaerts, M., Dhaene, J., Denuit, M.; *Modern Actuarial Risk Theory*, 1st edition, Springer, Berlin. 306 pages

DFM, *Compendium*. Linnaeus University, present year.