



## 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

This course cannot be part of a degree in combination with another course in which the content fully or partly correspond 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.