SF2701 Financial Mathematics, Basic Course 7.5 credits

Finansiell matematik, grundkurs

This is a translation of the Swedish, legally binding, course syllabus.

If the course is discontinued, students may request to be examined during the following two academic years

Establishment

The course syllabus is valid from Spring 2022 according to the school principal's decision: S-2022-0529 Decision date: 2022-02-24

Grading scale

A, B, C, D, E, FX, F

Education cycle

Second cycle

Main field of study

Mathematics

Specific prerequisites

English B / English 6
Completed basic course in probability theory and mathematical statistics (SF1918, SF1922 or equivalent).

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

After completion of the course the student should be able to:

- formulate and motivate basic concepts and results within mathematical finance and describe relations between them.
- apply basic concepts, methods and results within mathematical finance in order to model and analyse models of financial markets.
- apply basic concepts, methods, and results within mathematical finance in order to adequately price financial derivatives.

Course contents

The content of the course aims at making the student familiar with fundamental principles and methods for modelling of financial markets and for pricing of financial derivatives. The main focus is on models in discrete time and simpler continuous time models.

More precisely the following is part of the course:

- Binomial models in one and multiple periods
- Modelling of arbitrage free financial markets in discrete time
- Replication and arbitrage free pricing of financial derivatives in discrete time
- The first and second fundamental theorems for asset pricing (FTAP)
- Basic financial derivatives and products such as forwards and futures
- Black Scholes model in continuous time and the Black Scholes pricing formula
- Modelling of interest rate markets and pricing of interest rate derivatives

Examination

- TEN1 - Examination, 7.5 credits, grading scale: A, B, C, D, E, FX, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.

- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.