



# SF2975 Financial Derivatives 7.5 credits

## Finansiella derivat

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

Course syllabus for SF2975 valid from Spring 2014

## Grading scale

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

## Education cycle

Second cycle

## Main field of study

Industrial Management, Mathematics

## Specific prerequisites

150 university credits (hp) whereas 45 university credits (hp) in mathematics. Including knowledge in Martingales and Stochastic Integrals (for example course SF2970) and documented proficiency in English corresponding to English B.

## Language of instruction

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

## Intended learning outcomes

To pass the course, the student should be able to do the following:

- explain the properties and determine the price of the most common financial derivatives, such as call and put options, bonds and forwards and futures.
- define martingale measures and use them for pricing financial derivatives.
- explain and analyse the following models (the assumptions behind them and the limitations these imply) and be able to use them for pricing
  - Black-Scholes model and its extensions, for example to several currencies and to assets paying dividends.
  - Short rate models (especially those with an affine term structure)
  - Forward rate models
  - LIBOR market models
  - Swap rate models
- use the change of numeraire technique to price financial derivatives

To receive the highest grade, the student should in addition be able to do the following:

- Combine all the concepts and methods mentioned above in order to solve more complex problems.

## Course contents

The martingale approach to arbitrage pricing of financial derivatives. Black-Scholes model and extensions thereof. Short rate models. Forward rate models. LIBOR market models. Pricing using the change of numeraire technique.

## Course literature

Björk, T.: Arbitrage Theory in Continuous Time, 3:rd Ed., Oxford University Press.

## Examination

- OVN1 - Assignments, 3.0 credits, grading scale: P, F
- TEN1 - Examination, 4.5 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.

## Other requirements for final grade

A written examination, 4,5 credits and assignments, 3.0 credits

## **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.