



Halmstad University

Phone +46 35 16 71 00 - www.hh.se

School of Information Science, Computer and Electrical Engineering

Study Programme

-translated from Swedish

Page I (2)

Code: NAFIM / 2, I

Master's Programme (60 credits) in Financial Mathematics, 60 credits

Magisterprogram i finansiell matematik, (60 hp)

Study Programme approved by the Academic Board of the School of Information Science, Computer and Electrical Engineering (2006-12-22). Study Programme adopted by the Education Committee (2007-03-19), effective starting Autumn semester 2008.

Degree Programme Objectives

The programme is intended to provide the knowledge and abilities needed for working with modern mathematical models in the area of Finance. Recent development in the financial market has made possible highly advanced mathematical models based on stochastic differential equations, non-linear partial differential equations and other mathematical theories. Calculations within these models are performed using both numerical and analytical methods.

The courses will provide the needed knowledge in mathematics, economy and financial derivatives, and the programme as a whole needed tools for successful work with financial derivatives.

Upon completion of the programme the students shall be able to:

- discuss and apply modern mathematical models from the financial area.
- discuss research and development within the area Financial mathematics.
- collect and assemble information in a structured way, independently search for solutions to real, technically complex research tasks, assess scientific papers and use advanced methods of analysis and computation.
- relate his own work to other research within its area.
- orally as well as in writing, present and defend own work.
- assess and evaluate work of research and development from technical as well as social aspects, based on own experience

Degree Programme Primary Contents and Planning

The master's program entails 60 credits. The program is intended for full time studies over two semesters. Important mathematical models of financial derivatives are treated in the programme. A substantial part of each course is training in problem solving. Instruction is generally in the form of lectures, seminars, consultation and project work. Several courses have compulsory assignments that shall be presented both in writing and orally. Instruction in all courses will

be conducted in English.

The following courses are part of the degree programme:

Compulsory courses:

- Differential equations in financial mathematics, 7.5 credits (Second level)
- Foundation of financial markets, 7.5 credits (Second level)
- Geometrical properties of differential equations, 7.5 credits (Second level)
- Numerical methods in finance, 7.5 credits (Second level)
- Stochastic models, 7.5 credits (Second level)
- Thesis, 15 credits (Second level)

Elective courses:

- Lie algebras in application to differential equations, 7.5 credits (Second level)
- Mathematical methods of portfolio optimization, 7.5 credits (Second level)
- Theory of pricing in stochastic financial models, 7.5 credits (Second level)

At the start of the programme each student chooses courses for the first two semesters. Thereafter, this choice may be altered if there are places available at the courses. The university reserves the right to cancel courses chosen by less than 12 students. In order to be admitted to postgraduate studies you need 60 credits on second level.

A student who takes part of the education at another university, for example as part of an exchange programme, may include other, equivalent courses from the other university for the degree.

Prerequisites and Conditions of Admission

Bachelor of Science degree (or equivalent) based on computational methods that are useful in Financial mathematics. This can for example be degrees in Mathematics, Engineering, Physics or Economy.

Courses in mathematics of at least 60 credits.

Degrees from other countries than Sweden must be at the same level as a Swedish Bachelor's degree in computer or electrical engineering.

Applicants must also have written and verbal command of the English language.

This can be proved by grades from English education or by such tests as TOEFL

(550/213) or IELTS 5.5 (TOEFL - Test Of

English as a Foreign Language).

There are further prerequisites for some of the courses within the programme.

Degree Title

Upon completion of the degree programme, a degree certificate will be issued bearing the degree programme title

Degree of Master of Science (One Year).

Appendices

In addition to the syllabus there is also Appendix 1 which shows the sequential order of the programme's sub-component courses. In cases where the programme leads to the award of a degree, there is also Appendix 2 which states which courses fulfill nationally-established degree objectives.

These appendices can be obtained from the School of Information Science, Computer and Electrical Engineering.