Department of Mathematics
(incl. Math. Statistics)

Stockholm University

Education plan

for

Master's Programme in Financial Mathematics and Finance
Masterprogram i finansmatematik och finansiell ekonomi

120.0 Higher Education Credits
120.0 ECTS credits

Programme code:	NFIMO
Valid from:	Autumn 2008
Date of approval:	2006-10-18
Changed:	2008-10-13
Department:	Department of Mathematics (incl. Math. Statistics)

Decision

This syllabus has been approved by the Board of the Faculty of Science at Stockholm University, 2006-10-18, and reviewed 2007-10-15, 2008-10-13.

Prerequisites and special admittance requirements

A Bachelor's degree with 45 ECTS in Mathematics and 60 ECTS in Mathematical Statistics is required for admission to the programme. (60 ECTS is equivalent to one year full-time studies.) Second level courses in probability theory and stochastic processes and an introductory course in financial mathematics are recommended. Swedish upper secondary school course English B or equivalent or one of the following tests. Cambridge CPE och CAE: Pass. IELTS : 6.0 (with no part of the test below 5.0). TOEFL (paper based): 550 (with minimum grade 4 on the written test part). TOEFL (computer based): 213. TOEFL (internet based): 79.

Programme structure

The Master's Programme in Financial Mathematics and Finance is an education that leans towards students who want to provide deeper knowledge within mathematical statistics, especially within financial mathematics and finances.
The programme is a two year full-time study programme that is composed of courses in mathematics, mathematical statistics, business and national economy on the second level. The education covers 120 credits. One course in mathematical economics (7.5 credits), one course in financial mathematics (7.5 credits) and two courses in finances (enclosed 15 credits) are compulsory courses. Other courses are elective within fields: mathematical statistics, business and national economy. The education ends with a degree project in financial mathematics for 30 credits. Prerequisites are a knowledge equivalent to courses Probability Theory II, FC, 7.5 hp (MT5002), Stochastic Processes and Simulation II, FC, 7.5 hp (MT5004) and Introduction to Finance Mathematics, FC, 7.5 hp (MT5009). A student who does not have these prerequisites is recommended to study them within facultative block.

Goals

The main field of study is mathematical statistics.
For a Degree of Master students must
- demonstrate knowledge and understanding in their main field of study, especially financial mathematics and finance, both broad knowledge in the field and substantially deeper knowledge of certain parts of the field, together with a deeper insight into current research and development work,
- demonstrate deeper methodological knowledge within financial mathematics and finance,
- demonstrate an ability to critically and systematically integrate knowledge and analyse, assess and deal with complex phenomina, issues and situations, even when limited information is available,

- demonstrate an ability to critically, independently and creatively identify and formulate issues and to plan, and in using appropriate methods, carry out advanced tasks within specified time limits, so as to contribute to the development of knowledge and to evaluate this work,
- demonstrate an ability to clearly present and discuss their conclusions and the knowledge and arguments behind them, in a dialogue with different groups, orally and in writing, in national and international contexts,

- demonstrate the skill required to participate in research and development work or to work independently in other advanced contexts,
- demonstrate an ability to make assessments in the main field of study, taking into account relevant scientific, social and ethical aspects, and demonstrate an awareness of ethical aspects of research and development work,
- demonstrate insight into the potential and limitations of science, its role in society and people's responsibility for how it is used, and
- demonstrate an ability to identify their need of further knowledge and to take responsibility for developing their knowledge.

Courses

Ms is stated for courses within mathematical statistics.
Compulsory courses: 1. Advanced Finance Mathematics, SC, 7.5 hp (MT7010)(Ms) 2. Mathematical Economics, SC, 7.5 hp (MM7011) 3. Advanced Financial Theory, SC, 7.5 hp (given by School of Business and Deapertment of Economics) 4. Financial Institutions Management, SC, 7.5 hp (given by School of Business) 5. Finance Mathematics, Degree Project, SC, 30 hp (MT9005)(Ms).
Elective courses: The collection of elective courses is decided by the department board. The list of elective courses is brought up to date every new academic year. Before every new start of a programme there will be a list showing a minimal amount of elective courses that will be guaranted during the time of the programme.
Example of current elective courses:
Courses in mathematical ststistics:
1.Probability Theory III, SC, 7.5 hp (MT7001)(Ms) 2.Statistical models, SC, 7.5 hp (MT7002)(Ms) 3.Stochastic processes III, SC, 7.5 hp (MT7023)(Ms) 4.Martingale Theory and Stochastic Integration, SC, 7.5 hp (MT8002)(Ms)5.Financial Derivatives, SC, 7.5 (MT7011)(Ms) 6.Economics for Actuaries, SC, 7.5 hp (Ms)(given by Department of Economics) 7.Insurance Accounting, SC, 7.5 hp (MT7015)(Ms) 8. Mathematical Methods in Life Assurance I, SC, 7.5 hp (MT7012)(Ms) 9.Mathematical Methods in Life Assurance II, SC, 7.5 hp (MT8003)(Ms) 10.Mathematical Methods in General Insurance I, SC, 7.5 hp, (MT7013)(Ms) 11.Mathematical Methods in General Insurance II, SC, 7.5 hp (MT7014)(Ms)
Courses in economics and business:
1.Advanced Financial Empirical Research, SC, 7.5 hp (given by School of Business and Department of Economics) 2.Fixed Income Securities, SC, 7.5 hp (given by School of Business) 3.Intermediate Macroeconomics, SC, 7.5 hp (given by Department of Economics 4.Intermediate Microeconomics, SC, 7.5 hp (given by Department of Economics) 5.Money and Finance, SC, 7.5 hp (giben by Department of Economics). The minimum amount of credits that has to be studied in elective courses is 22.5 credits in mathematical statistics and 15 credits in economics or business. Optional courses 22.5 credits.

Degree

Master's Degree

Misc

Students, admitted to the program and not having finished it within two years, may request that they be allowed to finish the program even after it has ceased to apply. By this the limitations given in the syllabi of the courses in the program must be taken into consideration.
Programme in cooperation with School of Business and Department of Economics.