AALBORG UNIVERSITET

MASTER OF SCIENCE IN MATHEMATICS-ECONOMICS, 2018

MASTER OF SCIENCE (MSC)
AALBORG

Link to this studyline

Link(s) to other versions of the same line:

MSc in Mathematics-Economics, 2017

TABLE OF CONTENTS

§ 1: PREFACE

Pursuant to Act 261 of March 18, 2015 on Universities (the University Act) with subsequent changes, the following curriculum is established. The programme also follows the Joint Programme Regulations and the Examination Policies and Procedures for The Faculty.

§ 2: BASIS IN MINISTERIAL ORDERS

The Master's programme is organised in accordance with the Ministry of Higher Education and Science's Order no. 1328 of November 15, 2016 on Bachelor's and Master's Programmes at Universities (the Ministerial Order of the Study Programmes) and Ministerial Order no. 1062 of June 30, 2016 on University Examinations (the Examination Order). Further reference is made to Ministerial Order no. 111 of January 30, 2017 (the Admission Order) and Ministerial Order no. 114 of February 3, 2015 (the Grading Scale Order) with subsequent changes.

§ 3: CAMPUS

The programme is offered in Aalborg.

§ 4: FACULTY AFFILIATION

The Master's programme falls under The Faculty of Engineering and Science, Aalborg University.

§ 5: STUDY BOARD AFFILIATION

The Master's programme falls under Study Board of Mathematical Sciences

§ 6: AFFILIATION TO CORPS OF EXTERNAL EXAMINERS

The Master's programme is associated with the external examiners corps on Mathematics.

(Censorkorpset for matematik)

§ 7: ADMISSION REQUIREMENTS

Applicants with a legal right of admission (retskrav)

- Bachelor of Science (BSc) in Mathematics-Economics, Aalborg University

Applicants without legal right of admission

- Bachelor of Science (BSc) in Mathematics-Economics, Aarhus University (AU)
- Bachelor of Science (BSc) in Mathematics-Economics, Copenhagen University (KU)
- Bachelor of Science (BSc) in Mathematics-Economics, Southern Danish University (SDU)

§ 8: THE PROGRAMME TITLE IN DANISH AND ENGLISH

The Master's programme entitles the graduate to the Danish designation Cand.scient.oecon.. The English designation is: Master of Science (MSc) in Mathematics-Economics.

§ 9: PROGRAMME SPECIFICATIONS IN ECTS CREDITS

The Master's programme is a 2-year, research-based, full-time study programme. The programme is set to 120 ECTS credits.

§ 10: RULES CONCERNING CREDIT TRANSFER (MERIT), INCLUDING THE POSSIBILITY FOR CHOICE OF MODULES THAT ARE PART OF ANOTHER PROGRAMME AT A UNIVERSITY IN DENMARK OR ABROAD

The Study Board can approve successfully completed (passed) programme elements from other Master's programmes in lieu of programme elements in this programme (credit transfer). The Study Board can also approve successfully

completed (passed) programme elements from another Danish programme or a programme outside of Denmark at the same level in lieu of programme elements within this curriculum. Decisions on credit transfer are made by the Study Board based on an academic assessment. See the Joint Programme Regulations for the rules on credit transfer.

§ 11: EXEMPTIONS

In exceptional circumstances, the Study Board study can grant exemption from those parts of the curriculum that are not stipulated by law or ministerial order. Exemption regarding an examination applies to the immediate examination.

§ 12: RULES FOR EXAMINATIONS

The rules for examinations are stated in the Examination Policies and Procedures published by the faculty on their website.

§ 13: RULES CONCERNING WRITTEN WORK, INCLUDING THE MASTER'S THESIS

In the assessment of all written work, regardless of the language it is written in, weight is also given to the student's formulation and spelling ability, in addition to the academic content. Orthographic and grammatical correctness as well as stylistic proficiency are taken as a basis for the evaluation of language performance. Language performance must always be included as an independent dimension of the total evaluation. However, no examination can be assessed as 'Pass' on the basis of good language performance alone; similarly, an examination normally cannot be assessed as 'Fail' on the basis of poor language performance alone.

The Study Board can grant exemption from this in special cases (e.g., dyslexia or a native language other than Danish).

The Master's Thesis must include an English summary (or another foreign language: French, Spanish or German upon approval by the Study Board). If the project is written in English, the summary must be in Danish (The Study Board can grant exemption from this). The summary must be at least 1 page and not more than 2 pages (this is not included in any fixed minimum and maximum number of pages per student). The summary is included in the evaluation of the project as a whole.

§ 14: REQUIREMENTS REGARDING THE READING OF TEXTS IN A FOREIGN LANGUAGE

It is assumed that the student can read academic texts in his or her native language as well as in English and use reference works etc. in other European languages.

§ 15: COMPETENCE PROFILE ON THE DIPLOMA

The following competence profile will appear on the diploma:

A Candidatus graduate has the following competency profile:

A Candidatus graduate has competencies that have been acquired via a course of study that has taken place in a research environment.

A Candidatus graduate is qualified for employment on the labour market based on his or her academic discipline as well as for further research (PhD programmes). A Candidatus graduate has, compared to a Bachelor, developed his or her academic knowledge and independence so as to be able to apply scientific theory and method on an independent basis within both an academic and a professional context.

§ 16: COMPETENCE PROFILE OF THE PROGRAMME

The graduate of the Master's programme

Knowledge

- are well-oriented in the foundations of key mathematical-economics disciplines including econometrics, stochastic processes, quantitative finance, operations research.

Skills

- are able to independently identify, formulate, and analyse mathematical-economics problems employing theory and methodology from the mathematical and quantitative economics sciences
- are able to independently choose relevant methods and tools from various mathematical and quantitative economics areas and to motivate this choice

- are able to disseminate scientific knowledge and to discuss applications of methods from the mathematical and quantitative economics sciences
- are able to choose relevant mathematical theories to problems that originate in, for example economics, to develop them and to make use of them in the original applied context

Competencies

- are able to ponder about central mathematical and quantitative economics insights, methods and tools and to identify problems amenable to mathematical treatment
- are able to manage complex work and development scenarios that may require new strategies in order to make progress
- are able to independently take responsibility for professional development and specialization

§ 17: STRUCTURE AND CONTENTS OF THE PROGRAMME

The programme is structured in modules and organized as a problem-based study. A module is a programme element or a group of programme elements, which aims to give students a set of professional skills within a fixed time frame specified in ECTS credits, and concluding with one or more examinations within specific exam periods. Examinations are defined in the curriculum. The programme is based on a combination of academic, problem-oriented and interdisciplinary approaches and organized based on the following work and evaluation methods that combine skills and reflection:

- lectures
- classroom instruction
- project work
- workshops
- exercises (individually and in groups)
- teacher feedback
- reflection
- portfolio work

General provisions concerning elective courses:
- Only a limited number of elective courses from the list of courses will be offered at each semester.

- Students can only participate once in a course with a given title. In particular, they cannot follow a course if they have previously participated in a course with the same title as part of a bachelor programme.

Overview of the programmes:
All modules are assessed through individual grading according to the 7-point scale or Pass/Fail. All modules are assessed by external examination (external grading) or internal examination (internal grading or by assessment by the supervisor only).

§ 18: OVERVIEW OF THE PROGRAMME

Offered as: 1-professional Study programme: Mathematics-Economics					
Module name	Course type	ECTS	Applied grading scale	Evaluation method	Assessment method
1 SEMESTER					
Projects on the 1'st semester	Project	15			

Measure Theory and Stochastic Processes	Course	5	Passed/Not Passed	Internal examination	Written or oral exam
Elective courses on the 1'st semester	Course	10			
2 SEMESTER					
Projects on the 2'nd semester	Project	15			
Elective courses on the 2'nd semester	Course	15			
3 SEMESTER					
Advanced Topics with Applications	Project	20	7-point grading scale	Internal examination	Oral exam based on a project
Elective courses on the 3'rd semester	Course	10			
3-4 SEMESTER					
Long Master's Thesis. 50 ECTS	Project	50	7-point grading scale	External examination	Oral exam based on a project
Elective courses on the 3'rd semester	Course	10			
Long Master's Thesis. 60 ECTS	Project	60	7-point grading scale	External examination	Oral exam based on a project
4 SEMESTER					
Master's Thesis, 30 ECTS	Project	30	7-point grading scale	External examination	Master's thesis/final project

Projects on the 1'st semester					
Module name	Course type	ECTS	Applied grading scale	Evaluation Method	Assessment method
Empirical Financial Modelling and Applied Econometrics	Project	15	7-point grading scale	Internal examination	Oral exam based on a project
Operations Research. Project	Project	15	7-point grading scale	Internal examination	Oral exam based on a project

Elective courses on the 1'st semester					
Module name	Course type	ECTS	Applied grading scale	Evaluation Method	Assessment method
Financial Econometrics and Quantitative Methods in Finance	Course	5	7-point grading scale	Internal examination	Written or oral exam
Numerical Analysis	Course	5	Passed/Not Passed	Internal examination	Oral exam
Topics in Operations Research	Course	5	7-point grading scale	Internal examination	Written or oral exam
Advanced Operations Management	Course	5	7-point grading scale	Internal examination	Written or oral exam
Flexible Manufacturing	Course	5	7-point grading scale	Internal examination	Written or oral exam

Topics in Statistical Sciences I	Course	5	7-point grading scale	Internal examination	Written or oral exam
Topics in Statistical Science II	Course	5	7-point grading scale	Internal examination	Written or oral exam
Statistics for Duration Data	Course	5	Passed/Not Passed	Internal examination	Active participation/continuous evaluation

Projects on the 2'nd semester					
Module name	Course type	ECTS	Applied grading scale	Evaluation Method	Assessment method
In-depth Study of Financial Engineering	Project	15	7-point grading scale	External examination	Oral exam based on a project
Supply Chain Operations and Analysis	Project	15	7-point grading scale	External examination	Oral exam based on a project

Elective courses on the 2'nd semester					
Module name	Course type	ECTS	Applied grading scale	Evaluation Method	Assessment method
Quantitative Finance and Computational Statistics	Course	5	Passed/Not Passed	Internal examination	Written or oral exam
Continuous Time Finance	Course	5	Passed/Not Passed	Internal examination	Written or oral exam
Data Mining	Course	5	Passed/Not Passed	Internal examination	Written or oral exam
Manufacturing and Supply Chain Systems	Course	5	7-point grading scale	Internal examination	Written or oral exam
Business Intelligence and Analytics	Course	5	7-point grading scale	Internal examination	Written or oral exam
Spatial Statistics and Markov Chain Monte Carlo Methods	Course	5	Passed/Not Passed	Internal examination	Written or oral exam

Elective courses on the 3'rd semester					
Module name	Course type	ECTS	Applied grading scale	Evaluation Method	Assessment method
Financial Econometrics and Quantitative Methods in Finance	Course	5	7-point grading scale	Internal examination	Written or oral exam
Numerical Analysis	Course	5	Passed/Not Passed	Internal examination	Oral exam
Topics in Statistical Sciences I	Course	5	7-point grading scale	Internal examination	Written or oral exam
Topics in Statistical Science II	Course	5	7-point grading scale	Internal examination	Written or oral exam
Statistics for Duration Data	Course	5	Passed/Not Passed	Internal examination	Active participation/continuous evaluation

Flexible Manufacturing	Course	5	7-point grading scale	Internal examination	Written or oral exam
Topics in Operations Research	Course	5	7-point grading scale	Internal examination	Written or oral exam
Advanced Operations Management	Course	5	7-point grading scale	Internal examination	Written or oral exam

Study abroad

On the 3'rd semester the student also has the possibility to study at another Danish or international university (study abroad). Study at another university must be approved by the Study Board.

§ 19: ADDITIONAL INFORMATION

All students who have not participated in Aalborg University's PBL introductory course during their Bachelor's degree must attend the introductory course "Problem-based Learning and Project Management". The introductory course must be approved before the student can participate in the project exam. For further information, please see the School of Engineering and Science' website.

§ 20: COMMENCEMENT AND TRANSITIONAL RULES

The curriculum is approved by the Dean and enters into force as of September 2018.

Students who wish to complete their studies under the previous curriculum from 2017 must conclude their education by the summer examination period 2019 at the latest, since examinations under the previous curriculum are not offered after this time.

§ 21: AMENDMENTS TO THE CURRICULUM AND REGULATIONS