

# **Student handbook**

of the M. Sc. degree programme in

# **Mathematical Finance**



Christian-Albrechts-Universität zu Kiel

Mathematisch-  
Naturwissenschaftliche Fakultät

**Date: April 29, 2015**

# 1. General information

## Overview of the degree programme

### Degree

The master's degree programme in *Mathematical Finance* offers a scientifically orientated and research-led education. Working languages are English and German. However, German is not mandatory in order to successfully complete the programme. The master's degree programme is designed for four semesters (2 years). Over the course 120 ECTS credit points have to be achieved. Succeeding in the master's examination the student will be granted the academic title Master of Science (M.Sc.).

### Students' advisory

**For German speaking students** the Student Advisory Service offers general information on the Master programmes:

Zentrale Studienberatung

Christian-Albrechts-Platz 5 (Anbau Uni-Hochhaus)

Office hours: Mon. and Wed.: 9.00 - 11.30 am and 2.00 - 4.00 pm

Thu.: 9.00 - 11.30 am

Phone office hours: Mon. - Thu.: 9.00 – 11.30 am

Phone: +49 431 880-7440

Postal address: Zentrale Studienberatung der Christian-Albrechts-Universität zu Kiel

24098 Kiel

Email: [zbs@uv.uni-kiel.de](mailto:zbs@uv.uni-kiel.de)

Internet: <http://www.zbs.uni-kiel.de/>

**International students** please contact the International Center for general information on the master programme and further assistance:

International Center of Kiel University, 24098 Kiel

Visitor's address:

Westring 400, Ground Floor

24118 Kiel

Ms. Angelika Koslowski

Phone: +49 431 880-5330

Email: [akoslowski@uv.uni-kiel.de](mailto:akoslowski@uv.uni-kiel.de)

Ms. Veronika Langner

Phone: +49 431 880-3718

Email: [vlangner@uv.uni-kiel.de](mailto:vlangner@uv.uni-kiel.de)

Internet: <http://www.uni-kiel.de/international/>

**Questions regarding the examination:**

-Examination office of the Department of Mathematics:

Ms. Christine Krüger 880-3440

Ludewig-Meyn-Straße 4

Office hours: Mon. - Fri.: 12.30 -1.45 pm.

Email: [pruefungsamt@math.uni-kiel.de](mailto:pruefungsamt@math.uni-kiel.de)

Internet: <http://www.math.uni-kiel.de/de/einrichtungen-und-gremien/pruefungsamt>

-Head of examination board *Mathematical Finance*:

Prof. Dr. Jan Kallsen 880-2783

Westring 383

Office hours: Thu.: 4.00-5.00 pm and by arrangement.

Email: [kallsen@math.uni-kiel.de](mailto:kallsen@math.uni-kiel.de)

-Examination office Faculty of Business, Economics and Social Sciences:

Frau Schrader 880-3381

Frau Schoer 880-3358

Frau Rathmann 880-7109

Office hours: Tuesday and Thursdays, 8.30 am – 11.30 am.

Internet: <http://www.bwl.uni-kiel.de/pruefamt>

## **Programme admission**

### **Admission requirements:**

#### **Degree specific admission and examination regulations:**

"Fachprüfungsordnung, §16" (in German, to be translated):

<http://www.studservice.uni-kiel.de/sta/fachpruefungsordnung-mathematik-und-finanzmathematik-bachelor-master-1-fach.pdf>

#### **Main requirements:**

- Bachelor (180 ETCS credit points) in Mathematics with grade 3.0 or better (provided that contents, extent, scientific level comparable to BSc. in Mathematics from CAU)
- Bachelors (180 ETCS credit points) in other subjects with grade 2.5 or better can be admitted if they have at least 30 ETCS credit points in analysis, linear algebra, probability theory and statistics, again with grade 2.5 or better, If necessary, admission may be granted conditionally on taking additional bachelor courses in the first two semesters.

In any case, be aware that the **mathematical level** in the masters programme *Mathematical Finance* is **very high**. The Faculty of Business, Economics and Social Sciences offers a closely related Msc programme *Quantitative Finance* with a stronger emphasis on economics rather than mathematics.

### **Language requirements:**

Due to the fact that the programme is taught primarily in English, the following requirements concerning the level of language command have to be met:

- Good reading skills (C1 in CEF) in English, evidenced by the school certificate (minimum of 4 years of English at least with grade „satisfactory“ (07)) **or**
- TOEFL-Test 550 (Paper-based Testing) or equivalent test result **or**
- Bachelor's degree with English as language of instruction.

### **Admission and enrolment:**

#### **a) Candidates holding a Bachelor's degree in Mathematics from Kiel University**

simply register at the *Studierendenservice* with their degree certificate or transcript of records.

#### **b) Candidates holding a Bachelor's degree from a German University:** cf.

<http://www.studium.uni-kiel.de/de/bewerbung-einschreibung/einschreibung/master/absolventen-andere-hochschulen>

#### **c) For graduates from international universities:**

application is done via "uni-assist", cf.

[http://www.international.uni-kiel.de/en/application-admission/application-admission/english-master?set\\_language=en](http://www.international.uni-kiel.de/en/application-admission/application-admission/english-master?set_language=en)

In any case, please turn to the international center for advice and assistance

<http://www.international.uni-kiel.de/en/application-admission>

The contact person is

Ms. Angelika Koslowski

Phone: +49 431 880-5330

Email: [akoslowski@uv.uni-kiel.de](mailto:akoslowski@uv.uni-kiel.de)

Beginning of studies: winter term, starting in October

## **2. Master's examination**

The relevant legal documents are the degree-specific examination regulations (Fachprüfungsordnung) and the examination procedure regulations (Prüfungsverfahrensordnung). These German documents are to be translated into English soon. The German version is legally binding.

The study-accompanying module examinations are graded. A module examination will be successfully passed if at least grade „sufficient“(4.0) is achieved. **Passed examinations cannot be repeated.** Examinations which were not successfully passed can be repeated twice.

If the third examination trial is graded „insufficient“ but a necessary condition for the successful completion of the module, neither the respective module nor the whole master's examination will be passed.

# Curriculum Master of Science „Mathematical Finance“

	Module	Type <sup>1</sup>	Hours <sup>2</sup>	Exam <sup>3</sup>	CP <sup>4</sup>	CP/ Year
<b>Semester 1</b>	Mathematical Finance	L/T	4/2	o or w	9	
	Advanced Mathematics <sup>5,6</sup>	L/T	4/2	o or w	9	
	Financial Economics I <sup>7</sup>	L/T	2/1	w	5	
	Econometrics I or Advanced Statistics II	L/T	2/2 or 2/1	w	5	
				<b>Σ 19 or 18</b>		
<b>Semester 2</b>	Computational Finance	L/T	4/2	o or w	9	
	Mathematical Finance and Stochastic Integration	L/T	4/2	o or w	9	
	Financial Economics II <sup>7</sup>	L/T	2/1	w	5	
	(Econometrics for Financial Markets or Multivariate Time Series Analysis and Forecasting or Univariate Time Series Analysis) <sup>8</sup>	(L/T)	(2/1)	(w)	(4)	
	Seminar <sup>9</sup>	S	2	p	4	
	Internship <sup>10</sup>	I	x	ru	4	
			<b>Σ 17 + x or 20</b>		<b>Σ 31</b>	<b>Σ 59</b>
<b>Semester 3</b>	Advanced Mathematics <sup>5,6</sup>	L/T	4/2	o or w	9	
	Advanced Mathematical Finance <sup>11</sup>	L/T	2 x 2/1	o or w	10	
	Financial Economics III <sup>7</sup>	L/T	2/1	w	5	
	Statistics for Financial Markets <sup>8</sup>	L/T	2/1	w	4	
	Seminar <sup>9</sup>	S	2	p	4	
				<b>Σ 20 or 17+ x</b>		
<b>Semester 4</b>	Research Seminar <sup>12</sup>	S	2	pu	3	
	Master Thesis <sup>13</sup>	T	x	t	26	
				<b>Σ 2+x</b>		

## Explanation:

<sup>1</sup> L=lecture, T=tutorial, S=seminar, I=internship, T=thesis

<sup>2</sup> weekly hours (=45 minutes each) during the semester

<sup>3</sup> o=oral, w=written, p=presentation, r=report, t=thesis, u=unmarked

<sup>4</sup> credit points

<sup>5</sup> Can be split into 1-3 modules of altogether 6 hours (L+T)

<sup>6</sup> Can be chosen from the modules in applied and pure mathematics. At least one of the modules is to be chosen from applied (rather than pure) mathematics. Modules are typically taught in English upon request. Suggested courses are Mathematical Statistics (Mathematische Statistik) and Numerics of Differential Equations (Numerik von Differentialgleichungen).

<sup>7</sup> Financial Economics I-III can be chosen from "Economics of Risk and Uncertainty" and from the lectures in the group Financial Economics, i.e. at present 1. International Financial Markets, 2. Theory of Financial Markets, 3. Pricing in Derivative Markets, 4. Foreign Exchange Markets – Theory and Empirics, 5. Applied Econometrics of Foreign Exchange Markets, 6. Advanced Topics in Financial Economics

<sup>8</sup> One can choose either Econometrics for Financial Markets/Multivariate Time Series Analysis and Forecasting/Univariate Time Series Analysis in Semester 2 or Statistics for Financial Markets in Semester 3

<sup>9</sup> Seminar in applied mathematics. At least one seminar must be in the area of Mathematical Finance. One of the seminars can be chosen from the Master's programme Quantitative Finance, subject to admission by the examination board and the organizer.

<sup>10</sup> Can be moved to Semester 3 (depending e.g. on the choice Econometrics vs. Statistics for Financial Markets)<sup>8</sup> typically in the term break

<sup>11</sup> Advanced Courses in Mathematical Finance as e.g. Risk Management, Interest Rate Theory, Optimization in Mathematical Finance

<sup>12</sup> Research seminar in the area of the Master thesis

<sup>13</sup> The master thesis is supposed to be closely connected to Mathematical Finance. It may be supervised by a professor involved in the Master's programme Quantitative Finance from the faculty of Business, Economics and Social Sciences.

**(Non-binding translation of the official German version, date: April 29, 2015)**

## Dates of module examinations

An examination has to be passed for each course.

The examination for a lecture or a seminar usually takes place in the examination period at the end of the semester.

The re-examination for a lecture takes place in the examination period before or shortly after the beginning of the following semester.

The dates are announced at the beginning of the semester in the *Univis*:

<http://univis.uni-kiel.de/form>

## Registration for module examinations

The following website announces the **period for registration and examination** of the semester:

<http://www.pamt.uni-kiel.de/pas/vzp/downloads/info>

In order to take an examination a **registration for this exam is required**. A registration is also mandatory for taking part in the re-examination.

You have to register for examination via the student's online function on the homepage of QIS

<https://qis.zentr-verw.uni-kiel.de/uki/rds?state=user&type=0>

In order to do so, you have to active your stu-account first:

<https://www.rz.uni-kiel.de/de/studinet/aktivieren>

There is no possibility to take the examination if you are not registered for it. In order to take the examination you have to bring your **ID-card**. An examination will be graded „insufficient“ if the student fails to appear without valid reason though being registered for the examination or retreats after the exam begun.

The results of the examination can be reviewed via the QIS. Dates for revision frequently are announced jointly with the results of the exam.

## Participation in seminars

During the master you have to attend two seminars. A seminar in mathematics usually involves an introductory meeting at the end of the previous semester where the topics will be assigned. You need to perform a 90 minutes talk about your topic during the seminar.

Some hints for seminars by Prof.Kallsen (german version) can be found here:

<http://www.math.uni-kiel.de/numerik/kallsen/personen/kallsen/pub/Vortrag2.pdf>

Students have to register during the first registration period for the seminars via the QIS.

If you want to attend a seminar in the masters programme *Quantitative Finance*, cf.

[http://www.wiso.uni-kiel.de/de/studium/dateien-studienfaecher/studienfuehrer/StudentHandbook\\_MSc\\_QFin.pdf](http://www.wiso.uni-kiel.de/de/studium/dateien-studienfaecher/studienfuehrer/StudentHandbook_MSc_QFin.pdf)

## Oral exams

The registration for the oral exams take place during the official period of registration, however students and examiners agree individually upon the exact dates for the examination. Usually, they take place after the period of examination.

## Master's thesis

Before registration to the master's thesis please agree upon the topic of your thesis with your chosen first examiner. Usually, the first examiner suggests a second examiner. Please inquire about topic

proposals of the corresponding chair and the available examiners.

The topic may only be issued if the applicant has attained **at least 60 credit points** from modules which have already been completed.

The usual timeframe for the master's thesis is six months. The topic may be changed once in the first six weeks during the thesis.

The form of application for the admission to the master's thesis and further information on the administrative process can be found at the examination office of the Department of Mathematics.