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**Examination Regulations (Rules)
of the Faculty of Business, Economics and Social Sciences
at Christian-Albrechts-Universität zu Kiel (Kiel University)
for students of the Quantitative Finance
Master of Science (M.Sc.) degree programme 2021
(Examination Regulations Quantitative Finance M.Sc. - 2021)**

of 25 February 2021

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The previous version of the Examination Regulations can be found under <http://www.studservice.uni-kiel.de/sta/fachpruefungsordnung-quantitative-finance-master-1-fach-2014-englisch.pdf>

Based on § 52 (1) Sentence 1 of the Schleswig-Holstein Higher Education Act (HSG) of 5 February 2016 (GVOBl. Schl.-H. p. 39), most recently amended by Article 8 of the Act of 1 September 2020 (GVOBl. Schl.-H. p. 508), after a resolution was passed by the Convention of the Faculty of Business, Economics and Social Sciences of 27 January 2021 and an urgent decision of the dean of the Faculty of Business, Economics and Social Sciences on 4 February 2021, the following Rules were issued:

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§ 1

Scope of application

- (1) These degree-specific Examination Regulations in conjunction with the Examination Procedure Regulations (Rules) of Christian-Albrechts-Universität zu Kiel for students of Bachelor's and Master's Degree Programmes (PVO) apply to the teaching and assessment of the Master's degree programme "Quantitative Finance".
- (2) For modules offered by other faculties or other institutes of the same faculty, the examination regulations of the respective faculties or institutes apply, in particular regarding admission and examinations.

§ 2

Objective of the degree programme

The Master's degree following on from the Bachelor's degree is a more advanced degree qualifying for a professional career in economic studies. It aims to equip graduates with the ability to assume tasks with a high level of responsibility in companies or in public administration senior service, as well as in organisations and associations or as freelancers and to qualify them for independent scientific work.

§ 3

Academic title

The student is awarded the degree of Master of Science (M.Sc.) by the Faculty of Business, Economics and Social Sciences if he or she has passed the Master's examination.

§ 4

Structure of curriculum

The standard period of study for the Master's degree programme is four semesters. The degree programme encompasses approximately 50 weekly 45-minute teaching units for the duration of one semester of about 12 weeks (Semesterwochenstunden – SWS) and 120 ECTS credits, including 18 ECTS credits or 30 ECTS credits for the Master's thesis. Further details about the course of studies can be found in Annex 1, about the structure of studies in Annex 2.

§ 5

Academic year

- (1) The degree programme governed by these degree-specific Examination Regulations is structured by academic year, beginning with the winter semester. As a general rule, a course will be offered once a year. Courses which, according to the curriculum are planned for an odd-numbered semester, are generally offered in the winter semester. Courses which, according to the curriculum are planned for an even-numbered semester, are generally offered in the summer semester.
- (2) Registrations to the Master's degree programme in Quantitative Finance for both odd and even-numbered semesters are possible in winter and summer semesters. Starting the degree programme in the winter semester is strongly recommended, as the modules in Mathematical Finance, Probability Calculus, and Econometric Methods are only offered in the winter semester. These modules are fundamental for many of the optional modules.

§ 6

Admission to the Master's degree programme

- (1) The admission requirements are fulfilled in the following two cases:
 1. when someone has completed a Bachelor's degree programme with a standard period of study of at least three years at a German or comparable foreign institution of higher education can be admitted to the Master's degree programme. The candidate must have obtained at least 180 ECTS credits, have a minimum grade of 2.5, or passed a comparable final examination. The candidate must produce proof of 35 ECTS credits from courses in Economics, in particular covering micro- and macroeconomic theory, and from courses in Quantitative Basics, in particular covering

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analysis, linear algebra, statistics and econometrics. The contents of these courses must not overlap. Of these 35 ECTS credits mentioned above, at least 20 ECTS credits must come from courses in the field of Quantitative Basics that have imparted knowledge in analysis, algebra, statistics and econometrics. Content-related proof of the required basic knowledge must be provided by submitting an official module handbook or a module description that has been confirmed by the university.

2. when someone has completed a Bachelor's degree programme in accordance with number 1 with a grade of 3.0 or higher can be admitted to the Master's degree programme if he or she can produce proof of at least 35 ECTS credits in accordance with number 1, and if the average grade weighted by ECTS credits from all the achievements that fulfil the requirements for these (at least) 35 ECTS credits is 2.5 or higher.
- (2) The Chair of the Examination Board decides whether the admission requirements of section 1 are met and may impose conditions such as sitting certain examinations in order to quality for admission.
 - (3) The language requirements can be found in the study qualification rules (*Studienqualifikationssatzung*).

§ 7

Restriction of admission to courses

- (1) The number of places available for the individual compulsory or optional courses is determined by the Faculty Convention. If more students initially register for the seminars and practical exercises than there are places available, the module coordinator determines whether the remaining students can be accommodated through other or additional courses.
- (2) If it is not possible to accommodate the remaining students, the Module Coordinator will select the students among those who are registered for a degree programme in which the course is envisaged as part of the curriculum, who have registered in due time before the deadline set by the Module Coordinator and who satisfy the conditions for participation. They will be selected as follows: Half of the places available are assigned based on the length of the waiting time. Preference is to be given to those students, whose number of semesters would be increased by non-admission. The remaining places are assigned by drawing lots. In order to avoid cases of hardship, the Module Coordinator may deviate from this order upon request.

§ 8

Purpose of the examination

The purpose of the Master's examination is to determine whether the candidate:

1. can explain and interpret the basic concepts and methods in quantitative financial economics;
2. has obtained a broad, in-depth, critical and up-to-date knowledge in several sub-branches of quantitative financial economics;
3. is capable of independently acquiring new knowledge and skills;
4. is able to evaluate the central research methods in economics;
5. is capable of developing and applying his/her own ideas;
6. is capable of working independently and scientifically.

§ 9

Teaching and examination language

Lectures and examinations will be held in English. Lectures and examinations for the compulsory elective courses may be held in German.

§ 10

Examination Board

The tasks of the Examination Board result from the Examination Procedure Regulations (PVO).

§ 11

Study subjects and ECTS credits

- (1) In total, 120 ECTS credits must be achieved. In addition to the Master's thesis of 18 or 30 ECTS credits, modules in the following subject areas to the extent stated must be completed.
 1. Compulsory Section Statistics and Econometrics 24 ECTS
 2. Compulsory Section Mathematical Finance 24 ECTS
 3. Compulsory Elective Section Specialization in Mathematical Finance 6 to 24 ECTS
 4. Compulsory Elective Section Financial Economics & Corporate Finance 15 to 48 ECTS
 5. Compulsory Elective Section Seminar 5 to 12 ECTS
 6. Compulsory Elective Section Supplementary Subjects 0 to 13 ECTS
- (2) The modules of the Compulsory Section according to section 1 can be found in Annex 2.
- (3) The modules selectable for the Compulsory Elective Section according to section 1 will be announced in time and in a suitable manner.
- (4) In the Compulsory Elective Section Specialization in Mathematical Finance, at least one module and at maximum of four must be completed.
- (5) In the Compulsory Elective Section Financial Economics & Corporate Finance, at least three and at maximum eight lecture modules must be completed.
- (6) In the Compulsory Elective Section Seminar, one or two seminar modules need to be completed from the areas Financial Economics & Corporate Finance and/or Mathematical Finance and/or Applied Empirical Methods.
- (7) In the Compulsory Elective Section Supplementary Subjects, lecture modules in Economics and/or in Applied Empirical Methods and/or external Supplementary Subjects need to be completed.

§ 12

Examinations

- (1) The type and number of module examinations required as part of the modules can be found in Annex 2. If a module examination is mentioned, the specific examination performance shall be determined in accordance with paragraph 2.
- (2) A module examination can consist either of an individual examination based on the following catalogue or of one examination of two composite parts with interlocking contents, based on the following catalogue:
 1. Written Examination
 2. Oral Examination
 3. Colloquium
 4. Project
 5. Online Test
 6. Take-Home-Examination
 7. Portfolio
 8. Empirical Project
 9. Protocol
 10. Assignment
 11. Seminar Paper
 12. Critical Analysis of a Seminar Paper
 13. Leading a Discussion
 14. Programming Tasks
 15. Data Collection
 16. Data Analysis
 17. Essay

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Details about the examinations for each module, in particular the exact examination, will be determined by the Module Coordinator and announced up to two weeks before the start of classes in a suitable manner.

- (3) The duration of an oral examination must be at least 15 minutes, but must not exceed 45 minutes. The duration of a written test must be at least 30 minutes and no longer than 120 minutes.
- (4) Bonus achievements can be offered in addition to the final examination in all lecture modules. These bonus achievements are only considered when calculating the module grade if they would lead to a better module grade. It must generally be possible to achieve the best grade even without bonus points. The module supervisor informs the students about the type and scope of bonus achievements, as well as their evaluation and offsetting with the examination grade in a suitable manner at the start of the course. Bonus achievements may only be taken into account for the two examinations offered directly after the module is completed (1st and 2nd examination period for the respective semester). They expire afterwards.
- (5) In seminar modules, the grade is calculated from the performance in a seminar contribution, which generally consists of two examination elements whose contents are related (assignment and seminar paper), but can also consist of other interrelated achievements (for example critical analysis of a seminar paper (Ko-Referat), leading discussions, concept paper). Details will be set by the Module Coordinator at least two weeks before the end of the registration period for the seminar and announced in a suitable manner.
- (6) The deadlines for the assessment of examination performances are based on the Examination Procedure Regulations (PVO).

§ 13

Regular attendance at lectures

- (1) In the economic and statistical-econometric seminars, in addition to the examination of the module regular attendance as an academic achievement is necessary for awarding the ECTS credits, as students' regular attendance is necessary to gain basic subject-specific methodology and competence acquisition is dependent on the presence of the other students. The seminars require the joint reading, analysis and interpretation of literature that is relevant to the research, as well as scientific discussions between the students themselves and with lecturers, in addition to individual seminar papers by the students. The seminars are not mainly designed for the lecturers to pass on the knowledge, instead they primarily serve to teach students expert discourse, both in terms of conveying research findings, discourse over research strategies and methods, as well as the economic policy consequences of economic research findings.
- (2) Attendance is considered regular if the student does not miss more than 25% of the attendance time.

§ 14

Resitting examinations

The possibilities to resit examinations result from the Examination Procedure Regulations (PVO).

§ 15

Master's thesis

- (1) Any candidate who has obtained at least 60 ECTS credits from module examinations in this degree programme may be admitted to the Master's thesis.
- (2) The necessary academic degree of the supervisor as well as their necessary faculty affiliation are based on the Examination Procedure Regulations (PVO).
- (3) The candidate may suggest a first examiner. The Chair of the Examination Board determines the first examiner and determines furthermore the second examiner. If this

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results in a particular burden on individual reviewers, an essentially equal burden may be provided for at their request.

- (4) The topic of the Master's thesis is determined by the first examiner and issued by the Chair of the Examination Board. The candidate may suggest a topic to the first examiner; however, this does not give rise to any claims of consideration of the proposal.
- (5) The Master's thesis may be written in one of the Supplementary Subjects. If the topic is not taken from Supplementary Subjects offered by the faculty, it shall demonstrate reference to business studies.
- (6) Based on the suggestion by the candidate and agreement of the examiner, the Master's thesis will be registered for either 18 ECTS or 30 ECTS credits.
- (7) The period from when the topic is issued until the Master's thesis is submitted is 15 weeks for the 18 ECTS credits and six months for the 30 ECTS credits. An extension of the deadline is possible according to the specifications of the Examination Procedure Regulations (PVO).
- (8) The topic of the Master's thesis may be handed back only once and only within the first five weeks for a Master's thesis of the extent of 18 ECTS credits and within the first two months for a Master's thesis of the extent of 30 ECTS credits.
- (9) The Master's thesis must not exceed 40 pages. In special cases, particularly for empirical studies, the extent can be increased to 80 pages, if the first examiner agrees. The Examination Board decides on more detailed regulations on the Master's thesis and announces them in an appropriate manner. The Master's thesis is to be written in English. The thesis may also be written in German with the approval of the first examiner.
- (10) The Master's thesis is to be submitted on time to the Examination Office of the Faculty of Business, Economics and Social Sciences in the form of two hard copies and additionally one copy saved in a medium suitable for electronic data processing. For empirical studies, the first examiner may require that the procedure is documented in such a way that both a repetition of the data collection and a reproduction of the results are possible.
- (11) The thesis will be assessed within six weeks after its submission.

§ 16

Calculation of the final grade

- (1) The grade of the Master's thesis and the grades of graded modules weighted according to ECTS credits are included in the overall grade.
- (2) If a candidate has passed more modules in a section than the curriculum requires, those module examinations which the candidate passed first and which enable graduation are used when calculating the final grade. This also applies for achievements to be credited in accordance with the Recognition Rules (Anerkennungssatzung).

§ 17

Recognition of examinations

The provisions regarding recognition in the Recognition Rules apply.

§ 18

Transitional provisions

- (1) For students who are enrolled at Kiel University for the course of study Quantitative Finance with a Master's of Science degree at the time of the entry into force of these Rules, graduation according to the old Rules expired according to § 19 (2) is possible until the end of the winter semester 2023/24. Students who continue their studies according to the old Rules automatically change to the new rules at the start of the summer semester 2024.

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- (2) Students can apply once until 30 September 2021 to the examination office of the WiSo Faculty to change from the old to the new Examination Regulations for the winter semester 2021/22.
- (3) Examinations completed under the previous degree-specific examination regulations are recognised in accordance with the Recognition Rules (Anerkennungssatzung). Module examinations which have been completed and passed in full at the time of the change according to the previous degree-specific Examination Regulations will remain valid. The Subject Examination Board determines for which modules of these examination regulations the completed modules will be recognized. If a student has completed and passed independent parts of a module examination, and the remaining parts are no longer available, the Subject Examination Board determines which supplementary examinations are necessary to complete the module, with regard to the learning objectives of the module and the ECTS credits to be obtained.
- (4) Examinations failed under the old Examination Regulations will be set off against the number of attempts in accordance with the new Examination Regulations, provided the structure of the new module examinations permits recognition.
- (5) If compulsory modules and examinations from the Examination Regulations in accordance with § 19 (2) are no longer offered, the Examination Board will name replacement modules and examinations. If modules and examinations are offered in a different form, these must be completed under the new version. The Chair of the Examination Board determines any adjustments which may be necessary regarding the learning objectives and the ECTS credits to be obtained.
- (6) The Examination Board decides regarding special cases of hardship for which the student is not responsible.

§ 19

Entry into force and expiry

- (1) These Examination Regulations enter into force at the day of their announcement and apply to all individuals applying for and registering at Kiel University for the winter semester 2021/22 or later for the Quantitative Finance degree programme resulting in a Master of Science degree.
- (2) At the same time, the Examination Regulations (Rules) of the Faculty of Business, Economics and Social Sciences at the Kiel University for students of the course of studies Environmental and Resource Economics with the Master of Science (M.Sc.) degree of 6 February 2014 (NBI. HS MBW Schl.-H. p. 34), most recently amended by the regulations of 14 February 2020 (NBI. HS MBWK Schl.-H. p. 14), will cease to be in force.

The University Board at Kiel University granted its approval in accordance with Section 52 (1) of the Schleswig-Holstein Higher Education Act in its letter dated 24 February 2021.

Kiel, 25 February 2021

Professor Dr. Kai Carstensen
Dean of the Faculty of Business, Economics and Social Sciences
of Kiel University

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Annex 1: Study Schedule for the Master's degree in Quantitative Finance (example)

This study schedule represents one possible example. All courses of study that comply with the regulations in § 11 are possible. This example represents the case in which 12 ECTS credits of modules from the Supplementary Subjects area are taken. These can be completely replaced by modules from the Compulsory Elective Sections (within the framework of the regulations of § 11). In addition, some Supplementary Subjects modules, unlike those shown here, have more or less than 6 ECTS credits. The modules in Financial Economics & Corporate Finance as well as the seminar module either have 5 or 6 ECTS.

1st Semester	Mathematical Finance (12 ECTS)		Compulsory Elective Financial Economics & Corporate Finance (6 ECTS)	Probability Calculus (6 ECTS)	Econometric Methods (6 ECTS)	
2nd Semester	Computational Finance (12 ECTS)		Compulsory Elective Financial Economics & Corporate Finance (6 ECTS)	Inferential Statistics (6 ECTS)	Time Series Econometrics (6 ECTS)	
3rd Semester*	Compulsory Elective Specialization in Mathematical Finance (6 ECTS)	Compulsory Elective Seminar ** (6 ECTS)	Compulsory Elective Financial Economics & Corporate Finance (6 ECTS)	Compulsory Elective Financial Economics & Corporate Finance (6 ECTS)	Compulsory Elective Supplementary Subjects (6 ECTS) ****	
4th Semester	Master's Thesis (18 ECTS) ***			Compulsory Elective Financial Economics & Corporate Finance (6 ECTS) ***	Compulsory Elective Supplementary Subjects (6 ECTS) ***/****	Option 1
	Master's Thesis (30 ECTS) ***					Option 2

* = Mobility window (suitable for semesters abroad)

**= The Seminar(s) can be taken in Mathematical Finance or Financial Economics & Corporate Finance or in Applied Empirical Methods. / Seminare können in Mathematical Finance oder Financial Economics & Corporate Finance oder in Applied Empirical Methods belegt werden.

***= There are two options two options for the Master's thesis. Option 1: The Master's thesis is completed with 18 ECTS credits and two further modules from the Compulsory Elective Section Economics and/or the Supplementary Studies are completed (according to the regulations in § 11). Option 2: The Master's thesis is completed with 30 ECTS credits.

****= The Supplementary Subjects can completely be replaced by modules of the other Compulsory Elective areas (within the framework of the regulations of § 11).

Annex 2 Curriculum for the Master's degree in Quantitative Finance

	Section	Module (Module Code)	Exam Type	Contact Time per week and Course Type	ECTS Module	ECTS Section	ECTS
Compulsory Section	Statistics and Econometrics	Probability Calculus (VWLaemPrCa-02a)	W	2V + 2Ü + 1PC	6	24	48
		Econometric Methods (VWLaemEcoMe-02a)	W	2V + 2Ü + 1PC	6		
		Inferential Statistics (VWLaemInSta-02a)	W	2V + 1Ü + 1PC	6		
		Time Series Econometrics (VWLaemTSEco-02a)	W	2V + 1Ü + 1PC	6		
	Mathematical Finance	Mathematical Finance (MNFmathFinmath1QF-01a)	W***	4V + 2Ü	12	24	
		Computational Finance (MNFmathCompfinQF-01a)	W***	4V + 2Ü	12		
Compulsory Elective Section	Specialization in Mathematical Finance	Module 1	W***	2V + Ü	6	6 - 24	42 or 54
		(Module 2 **)	W***	2V + Ü	6)		
		(Module 3 **)	W***	2V + Ü	6)		
		(Module 4 **)	W***	2V + Ü	6)		
	Financial Economics & Corporate Finance	Lecture 1	M	2V + 1-2Ü	5 or 6	15 - 48	
		Lecture 2	M	2V + 1-2Ü	5 or 6		
		Lecture 3	M	2V + 1-2Ü	5 or 6		
		(Lecture 4*)	M	2V + 1-2Ü	5 or 6)		
		(Lecture 5*)	M	2V + 1-2Ü	5 or 6)		
		(Lecture 6**)	M	2V + 1-2Ü	5 or 6)		
		(Lecture 7**)	M	2V + 1-2Ü	5 or 6)		
	(Lecture 8**)	M	2V + 1-2Ü	5 or 6)			
	Seminar	Seminar Financial Economics & Corporate Finance or	S****	2 S	5 oder 6	5 - 12	
Seminar Mathematical Finance or							
Seminar in Applied Empirical Methods		(S****	2 S	5 oder 6)			
Supplementary Subjects */**	The modules that can be selected will be announced in time and in an appropriate manner.					0 - 13	
Master's Thesis *						18 or 30	18 or 30
Sum						120	120

Exam Type (according to § 12): W=written examination, S=seminar contribution, M = Module Examination
Course Type: V=lecture, Ü=tutorial, PC=computer tutorial, S=seminar

* = There are two options for the Master's thesis. Option 1: The Master's thesis is completed with 18 ECTS credits and two further modules from the Compulsory Elective Section Economics are completed (according to the regulations in § 11). Option 2: The Master's thesis is completed with 30 ECTS credits.

** = The Supplementary Subjects can completely be replaced by modules from Financial Economics & Corporate Finance or Specialization in Mathematical Finance.

*** = As a prerequisite for participation in the examination, regular attendance and prior examination performance may be required in accordance with the FPO Mathematics and Financial Mathematics BaMa 1-Subject 2017 § 4a.

**** = Regular attendance according to § 13 is required.

Appendix: Module overview for the Master's degree programme Quantitative Finance (not part of the Rules)

Please find the following Sections

Section 1 Compulsory Section Statistics and Econometrics

Section 2 Compulsory Section Mathematical Finance

Section 3 Compulsory Elective Section Specialization in Mathematical Finance

Section 4 Compulsory Elective Section Financial Economics & Corporate Finance

Section 5 Compulsory Elective Section Seminar

Section 6 Compulsory Elective Section Supplementary Subjects

Section 5.1 Economics

Section 5.3 Applied Empirical Methods

Section 5.4 Business Administration (Betriebswirtschaftslehre)

Section 5.5 International Comparative Sociology (International vergleichende Soziologie)

Section 5.6 Political Science (Politikwissenschaft)

Section 5.7 Agricultural Economics (Agrarökonomik)

Section 5.8 Business Information Technology (Wirtschaftsinformatik)

Section 5.9 Computer Science (Informatik)

Section 5.10 Mathematics (Mathematik)

in the German original: <http://www.studservice.uni-kiel.de/sta/fachpruefungsordnung-quantitative-finance-master-1-fach.pdf>