



Teaching and Examination Regulations (TER)

Faculty of Science

**Masterprogramme in Stochastics and
Financial Mathematics**

Academic year: 2019-2020

- A: Faculty section
- B1: Programme specific section – general provisions
- B2: Programme specific section – content of programme

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Section A: Faculty Section

1. General provisions

Article 1.1 Applicability of the Regulations

<p>1. These Regulations apply to anyone enrolled for the programme, irrespective of the academic year in which the student was first enrolled for the programme. These Regulations apply to the teaching and examinations for the following Master's degree programmes:</p> <ul style="list-style-type: none"> ▪ Artificial Intelligence ▪ Bioinformatics and System Biology ▪ Biomedical Sciences ▪ Biomolecular Sciences ▪ Business Analytics ▪ Computer Science ▪ Drug Discovery and Safety ▪ Earth Sciences ▪ Ecology ▪ Environment and Resource Management ▪ Global Health (research) ▪ Health Sciences ▪ Hydrology ▪ Information Sciences ▪ Management, Policy Analysis and Entrepreneurship in the Health and Life Sciences ▪ Mathematics ▪ Medical Natural Sciences ▪ Neurosciences (research) ▪ Parallel and Distributed Computer Systems ▪ Science Business and Innovation ▪ Stochastics and Financial Mathematics 	<p>Advice OLC, approval FGV (9.38 ub b)</p>
<p>2. These Regulations enter into force with effect from 1 September 2019.</p>	<p>Advice OLC, approval FGV (9.38 ub b)</p>
<p>3. An amendment to the Teaching and Examination Regulations is only permitted to concern an academic year already in progress if this does not demonstrably damage the interests of students.</p>	<p>Advice OLC, approval FGV (9.38 sub b)</p>

Article 1.2 Definitions

The following definitions are used in these Regulations (*in alphabetical order*):

- a. academic year: the period beginning on 1 September and ending on 31 August of the following calendar year;
- b. CvB: the Executive Board of Vrije Universiteit Amsterdam.
- c. Double degree programme: joint programme in the context of cooperation between Vrije Universiteit Amsterdam and the educational institution within and outside the EU, as to gain a double university degree; of the VU and the educational institution concerned; though not being the same as a 'joint degree programme' according to the art. 7.3c WHW';
- d. EC (European Credit): an EC credit with a workload of 28 hours of study;
- e. educational component: a unit of study of the programme within the meaning of the WHW;
- f. examination: the final examination of the Master's programme;
- g. exemption: Exemption from an examination/ practical/ fieldwork based on an earlier successfully completed examination, or knowledge / skills of a similar content, level and scope gained outside higher education;
- h. FGV: Faculty joint assembly – assembly of the faculty student council and faculty staff

	council;
i. interim examination:	an assessment of the student's knowledge, understanding and skills relating to a course component. The assessment is expressed in terms of a final mark. An interim examination may consist of one or more partial examinations. A resit always covers the same material as the original interim examination;
j. joint degree:	a degree awarded by an institution together with one or more institutions in the Netherlands or abroad, after the student has completed a study programme (a degree programme, a major or a specific curriculum within a degree programme) for which the collaborating institutions are jointly responsible;
k. OLC:	programme committee;
l. period:	a part of a semester;
m. practical exercise:	the participation in a practical training or other educational learning activity, aimed at acquiring certain (academic) skills. Examples of practical exercises are: <ul style="list-style-type: none"> ○ researching and writing a thesis or dissertation ○ carrying out a research assignment ○ taking part in fieldwork or an excursion ○ taking part in another educational learning activity aimed at acquiring specific skills, or ○ participating in and completing a work placement;
n. premaster student	those who enroll in a premaster programme;
o. Programme:	the totality and cohesion of the course components, teaching activities/methods, contact hours, testing and examination methods and recommended literature;
p. SAP/SLM:	the student information system (<i>Student Lifecycle Management</i>);
q. semester:	the first (September - January) or second half (February - August) of an academic year;
r. study guide:	the guide for the study programme that provides further details of the courses, provisions and other information specific to that programme. The Study Guide is available electronically at: https://www.vu.nl/studiegids
s. subject	see 'educational component';
t. substituting course/educational component	see under d (double degree programme). A course obtained at the educational institute, within the context of cooperation, that is mentioned in the diploma supplement as such; not being an 'exemption'.
u. thesis/ internship work placement	a component comprising research into the literature and/or contributing to scientific research, always resulting in a written report;
v. university:	Vrije Universiteit Amsterdam;
w. WHW:	the Dutch Higher Education and Research Act (<i>Wet op het Hoger Onderwijs en Wetenschappelijk Onderzoek</i>);
x. workload:	the workload of the unit of study to which an interim examination applies, expressed in terms of credits = EC credits (ECTS = European Credit and Transfer Accumulation System). The workload for 1 year (1,680 hours) is 60 EC credits.

The other terms have the meanings ascribed to them by the WHW.

2. Study programme structure

Article 2.1 Structure of academic year and educational components

1. The study programme will be offered in a year divided into two semesters.	Ordinance CvB, see appendix 3
2. Every semester consists of three consecutive periods of eight, eight and four weeks.	Ordinance CvB, see appendix 3
3. An educational component comprises 6 EC or a multiple thereof.	Ordinance CvB,

	see appendix 3
4. By way of exception to paragraph 3, Section B may stipulate that a unit of study comprises 3 EC or a multiple thereof. The Faculty Board requests permission from the Executive Board.	Ordinance CvB, see appendix 3

Article 2.2 Refusal or termination of registration / (iudicium abeundi)

1. Pursuant to the provisions of Article 7.42a of the Act, the Faculty Board or the Examination Board may, in exceptional circumstances, request the Executive Board to terminate or refuse a student's registration on a programme. This may be the case if the student's conduct or statements demonstrate his or her unsuitability to work in the relevant field or discipline, or to take part in the programme's practical training component.	WHW
2. If a student is suspected of being unsuitable as described in paragraph 1, the Examination Board or the Faculty Board will examine the case, and the student will be informed of this immediately. The Examination Board or the Faculty Board will only issue a recommendation after careful consideration of the interests involved and following a hearing with the student concerned.	WHW

3. Assessment and Examination

Article 3.1 Signing up for education and interim examinations

1. Every student must sign up to participate in the educational components of the programme, the examinations and resits. The procedure for signing up is described in an annex to the Student Charter.	Ordinance CvB, see appendix 3
2. Signing up may only take place in the designated periods.	Ordinance CvB, see appendix 3
3. If a student does not pass the examination and the resit of a component, he/ she is obliged to take the whole component again. This rule does not apply to practical exercises and programmes that make use of component marks that retain their validity. For further regulations see Section B of the programme involved.	Advice OLC, approval FGV (7.13 x)

Article 3.2 Type of examination

1. At the student's request, the Examination Board may permit a different form of interim examination than that stipulated in the course catalogue. If applicable, more detailed regulations on this are included in the Rules and Guidelines for the Examination Board.	Advice OLC, Approval FGV (7.13 l)
2. In an educational component is no longer offered in the academic year following its termination, at least one opportunity will be provided to sit the interim examination(s) or parts thereof and a transitional arrangement will be included in the programme-specific section for the subsequent period.	Advice OLC, approval FGV (7.13 j)

Article 3.3 Oral interim examinations

1. An oral assessment is public unless the Examinations Board on request determines otherwise.	Advice OLC; approval FGV (7.13 l and n)
2. An oral examination will be taken in the presence of a second examiner.	Advice OLC, approval FGV (art. 9.38 par. b)

Article 3.4 Determining and announcing results

1. The examiner determines the result of a written interim examination as soon as possible, but at the latest within fifteen working days. By way of departure from that stipulated in the first clause, the marking deadline for theses, internships / work placements and final assignments is no longer than twenty working days. The examiner will then immediately ensure that the marks are registered and also ensures that the student is immediately notified of the mark, taking due account of the applicable confidentiality standards.	Ordinance CvB, see appendix 3
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<p>2. a. The examiner determines the result (i.e. mark) of an oral examination as soon as possible, though within one working day, after the examination has finished and informs the student accordingly. The third clause of the first paragraph applies.</p> <p>b. The examiner determines the result of an interim examination no later than five working days before the next (interim) examination will be held.</p>	Advice OLC; approval FGV (7.13 o)
<p>3. In the case of alternative forms of oral or written examinations, the Examination Board determines in advance how and by what deadline the student will be informed of the results.</p>	Advice OLC; approval FGV (7.13 o)
<p>4. A student can submit a request for reassessment to the examiner. A request for reassessment does not affect the time period for lodging an appeal.</p>	Advice OLC; approval FGV (9.38 sub b)
<p>5. Together with the result of an examination, the student's attention will also be drawn to their right to inspect the assessed work and have a post-examination discussion as stipulated in Art. 3.9, as well as his/her option to lodge a complaint before the Examination Board, and if necessary, to appeal to the Examinations Appeals Board (in Dutch: COBEX).</p>	

Article 3.5 Examination opportunities

<p>1. a. Per academic year, two opportunities to take examinations per educational component will be offered.</p> <p>b. The options for retaking practical components, work placements and theses are detailed in the relevant work placement manual, teaching regulations or graduation regulations.</p>	Ordinance CvB, see appendix 3
<p>2. The most recent mark will apply in the event of a resit. A retake is allowed for both passed and failed units of study.</p>	Ordinance CvB, see appendix 3
<p>3. The resit for a (partial) interim examination must not take place within ten working days of the announcement of the result of the (partial) examination being resat.</p>	Advice OLC; approval FGV (7.13 j)
<p>4. The Examination Board may allow a student an extra opportunity to sit an examination if that student:</p> <p>a) is lacking only those credits to qualify for his or her degree;</p> <p>b) has failed the examination during all the previously offered attempts, unless participation in an examination was not possible for compelling reasons.</p> <p>The extra opportunity can only be offered if it concerns a written examination, a paper or a take home examination. This provision excludes the practical assignments and the Master's thesis. Requests for an additional examination opportunity must be submitted to the Examination Board no later than 15 July. If necessary, the method of examination may deviate from the provisions in the study guide.</p>	Ordinance CvB, see appendix 3

Article 3.6 Marks

<p>1. Marks are given on a scale from 1 to 10 with no more than one decimal point.</p>	Ordinance CvB, see appendix 3															
<p>2. The final marks are given in whole or half points.</p>	Ordinance CvB, see appendix 3															
<p>3. Final marks between 5 and 6 will be rounded off to whole marks: up to 5.5 rounded down; from 5.5 rounded up. To pass a course, a 6 or higher is required.</p> <p>In case the examination of a component consists of two or more parts, each of which are graded separately, the (weighted) mean of these marks (meaning: the final mark) must be rounded off using the following table:</p> <table border="1" data-bbox="448 1883 983 2087"> <thead> <tr> <th>From</th> <th>Up to</th> <th>Grade</th> </tr> </thead> <tbody> <tr> <td>1,00</td> <td>1,25</td> <td>1</td> </tr> <tr> <td>1,25</td> <td>1,75</td> <td>1,5</td> </tr> <tr> <td>1,75</td> <td>2,25</td> <td>2,0</td> </tr> <tr> <td>2,25</td> <td>2,75</td> <td>2,5</td> </tr> </tbody> </table>	From	Up to	Grade	1,00	1,25	1	1,25	1,75	1,5	1,75	2,25	2,0	2,25	2,75	2,5	Ordinance CvB, see appendix 3
From	Up to	Grade														
1,00	1,25	1														
1,25	1,75	1,5														
1,75	2,25	2,0														
2,25	2,75	2,5														

	2,75	3,25	3,0		
	3,25	3,75	3,5		
	3,75	4,25	4,0		
	4,25	4,75	4,5		
	4,75	5,50	5,0		
	5,50	6,25	6,0		
	6,25	6,75	6,5		
	6,75	7,25	7,0		
	7,25	7,75	7,5		
	7,75	8,25	8,0		
	8,25	8,75	8,5		
	8,75	9,25	9,0		
	9,25	9,75	9,5		
	9,75	10,0	10		
4. The Examination Board can allow to use symbols rather than numbers, such as: pass, fail, (un)satisfactory, good, VRS (exemption). In case a student does not take part in any (interim) examination, the examiner will register the mark 'ns' (c.q. no show).					Ordinance CvB, see appendix 3

Article 3.7 Exemption

1. At the written request of the student, the Examination Board may exempt the student from taking one or more examination components, if the student: <ul style="list-style-type: none"> a) has passed a course component of a university or higher professional education programme that is equivalent in terms of content and level; b) has demonstrated through his/her work and/or professional experience that he/she has sufficient knowledge and skills with regard to the relevant course component. The Examination Board will make a decision within six weeks after receiving the request.	Advice OLC; approval FGV (7.13 r)
2. The Master's thesis, the final work placement (c.q. internship) and the final project (c.q. final paper) are excluded from this exemption possibility.	Advice OLC; approval FGV (9.38 sub b)
3. A maximum of 18 EC for a one one-year master programme and 36 EC for a one two-year master programme can be accumulated through granted exemption. The substituting courses (educational components) are not included.	Advice OLC, approval FGV (art. 7.13 par. 2, under r WHW jo art. 9.38 par. b)

Article 3.8 Validity period for results

1. The validity period of interim examinations passed and exemption from interim examinations is unlimited, unless otherwise specified in Section B.	WHW
2. The validity period of a partial examination is limited to the academic year in which it was sat or until the end of the unit of study concerned, as stipulated for the relevant unit of study in Section B.	Advice OLC; approval FGV (9.38 sub b)

Article 3.9 Right of inspection and post-examination discussion

1. For twenty working days after the announcement of the results of a written interim examination, the student can, on request, inspect his or her assessed work, the questions and assignments set in it, as well as the standards applied for marking. The place and time referred to in the previous clause will be announced at the time of the interim examination on VUnet or Canvas.	Advice OLC; approval FGV (7.13 p en q)
2. If a collective post-examination discussion has been organized, individual post-examination discussions will be held only if the student has attended the collective	Advice OLC; approval FGV (7.13 q)

discussion or if the student was unable to attend the collective discussion through no fault of his or her own.	
3. Students who meet the requirements stipulated in paragraph 1 can submit a request for an individual post-examination discussion to the relevant examiner. The discussion shall take place at a time and location to be determined by the examiner.	Advice OLC; approval FGV (7.13 p en q)

Article 3.10 Fraud and plagiarism

1. The provisions of the Rules and Guidelines for the Examination Board apply in full.	Ordinance CvB
2. Electronic detection software programmes may be used to detect plagiarism in texts. In submitting a text, the student implicitly consents to the text being saved in the database of the detection programme concerned.	Ordinance CvB

4. Academic student counselling and study progress

Article 4.1 Administration of study progress and academic student counselling

1. The faculty board is responsible for the correct registration of the students' study results. After the assessment of an educational component has been registered, every student has the right to inspect the result for that component and also has a list of the results achieved at his or her disposal in VUnet.	Advice OLC; approval FGV (7.13 u)
2. Enrolled students are eligible for academic student counselling. Academic student counselling is in any case provided by: <ol style="list-style-type: none"> a. The Student General Counselling Service b. Student psychologists c. Faculty academic advisors 	Advice OLC; approval FGV (7.13 u)

Article 4.2 Adaptations for students with a disability

1. A student with a disability can, at the moment of submission to VUnet, or at a later instance, submit a request to qualify for special adaptations with regard to teaching, practical training and interim examinations. These adaptations will accommodate the student's individual disability as much as possible, but may not alter the quality or degree of difficulty of a unit of study or an examination. In all cases, the student must fulfil the exit qualifications for the study programme.	Advice OLC; approval FGV (7.13 m)
2. The request referred to in the first paragraph must be accompanied by a statement from a doctor or psychologist. If possible, an estimate should be given of the potential impact on the student's study progress. In case of a chronic disability a single (one time) request suffices.	Advice OLC; approval FGV (7.13 m)
3. Students who have been diagnosed with dyslexia must provide a statement from a BIG, NIP or NVO registered professional who is qualified to conduct psychological evaluation.	Advice OLC; approval FGV (7.13 m)
4. The faculty board, or on behalf of the faculty board, the educational director, or the programme director, decides on the adaptations concerning the teaching facilities and logistics. The Examination Board will rule on requests for adaptations with regard to examinations.	Advice OLC; approval FGV (7.13 m)
5. In the event of a positive decision in response to a request as referred to in paragraph 1, the student will make an appointment with the study adviser to discuss the details of the provisions.	Advice OLC; approval FGV (7.13 m)
6. A request for adaptations will be refused if it would place a disproportionate burden on the organization or the resources of the faculty or university were it upheld.	Advice OLC; approval FGV (7.13 m)
7. If the disability justifies an extension of the interim examination time, the Examination Board will grant permission testifying to this entitlement to an extension. If a disability justifies other measures to be taken, the Examination Board will advise the Faculty Board on the necessary measures to be taken.	Advice OLC; approval FGV (7.13 m)
8. The decision as referred to in paragraph 7, is valid for a maximum period of one year with	Advice OLC; approval FGV

the exception for the chronic diseases and disabilities.	(7.13 m)
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5. Hardship clause

Article 5.1 Hardship clause

In instances not regulated by the Teaching and Examination Regulations or in the event of demonstrable extreme unreasonableness and unfairness, the faculty board responsible for the study programme will decide, unless the matter concerned is the responsibility of the Examinations Board.	Advice OLC; approval FGV (9.38 sub b)
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Article 5.2. Publication

1. The faculty board will ensure the appropriate publication of these Regulations and any amendments to them.	WHW
2. The Teaching and Examination Regulations will be posted in the study guide or on VUnet.	WHW

Approved by authorized representative advisory body FGOV of the Faculty of Science on 3 September 2019.

Adopted by the Faculty Board on 30 August 2019.

Section B1: Programme specific – general provisions

6. General programme information and characteristics

Article 6.1 Study programme information

1. The programme Stochastics and Financial Mathematics CROHO number 60801 is offered on a full-time and part-time basis.	Advice OLC; approval FGV (7.13 i)
1a. The language of instruction is English	Advice OLC; approval FGV (9.38 b)

Article 6.1a. Deviant size of educational component

By way of derogation from art. 2.1 par. 3, the courses Scientific Writing in English and Master Seminar in SFM have a deviant size of: 3 EC. Also units offered by Mastermath may have a deviant size of: 5 or 8 EC.	Approval OLC (art. 7.13 lid 2, under e), approval CvB
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Article 6.2 Teaching formats used and modes of assessment

1. The programme uses the teaching formats as specified in the Study Guide.	Advice OLC; approval FGV (7.13 x)
2. The modes of assessment used per educational component are specified in the Study Guide.	Advice OLC; approval FGV (7.13 l)

7. Further admission requirements

Article 7.1 Intake date(s)

The programme starts twice a year: on September 1 and on February 1.	Advice OLC; approval FGV (9.38 b)
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Article 7.2 Admission requirements

<p>1. Admission to the Master's programme is possible for an applicant who has obtained a Bachelor's degree at an institution of academic higher education, which demonstrates the following knowledge, understanding and skills:</p> <p>a. equivalent to a Bachelor's degree in Mathematics or Technical Mathematics or (with sufficient mathematical content) in Business Analytics or Econometrics or Actuarial Sciences, and whose English-language proficiency is at least equivalent to pre-university final exam level (VWO in the Netherlands).</p> <p>b. An applicant with a university degree in a field other than specified in part a may be admitted to the programme if the following conditions are met:</p> <p>i. The applicant's prior education, including any supplementary work, contains at least 90 credits of mathematics;</p> <p>ii. The applicant has reached a final attainment level in stochastics equivalent to the Bachelor's degree in Mathematics as taught at VU University Amsterdam;</p> <p>iii. The applicant's prior education meets the qualification of a university Bachelor's degree programme as defined in the Dublin descriptors;</p> <p>iv. The applicant's English language proficiency is at least equivalent to pre-university final exam level (VWO in the Netherlands).</p>	Partly legal provision & ordinance CvB, see appendix 3. Admission requirements excepted from participation in WHW
2. The Admissions Board will investigate whether the applicant meets the admission requirements.	Legal provision

Article 7.3 Pre-Master's programme

1. a) Students with a Bachelor's degree of a university of applied science (HBO) in a field that corresponds to a sufficient extent with the subject area covered by the Master's programme can request admission to the pre-Master's programme. b) Students with a Bachelor's degree from an institution of academic higher education in a field that does not sufficiently corresponds with the subject area covered by the Master's programme can request admission to the pre-Master's programme.	Advice OLC; approval FGV (9.38 b)
2. The pre-Master's programme comprises at most 30 EC and is made up on an individual basis.	Advice OLC; approval FGV (9.38 b)
3. A successfully completed pre-Master's programme serves as proof of admission to the specified Master's programme in the subsequent academic year.	Legal provision
4. A candidate can only participate in one pre-Master's programme at the Vrije Universiteit.	Ordinance CvB, see appendix 3

8. Interim examinations and results**Article 8.1 Sequence of interim examinations**

Before starting the Master Project Stochastics and Mathematics (XM_400502), the student must have earned all other programme credits. A shortfall of 8 credits is permissible.	Advice OLC; approval FGV (7.13 h, s & t)
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Article 8.2 Validity period for results

See Article 3.8 of the Teaching and Examination Regulations, section A. No further specific provisions.	Advice OLC; approval FGV (7.13 k)
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Article 8.3 Maximum Exemption(s)

A maximum of 36 EC of the curriculum can be accumulated through granted exemptions, based on previous results within other master's programmes, with the exception of <i>short track programs</i> , for which a maximum of 48 EC exemptions are allowed.	Advice OLC, approval FGV (7.13 par. 2, under r jo art. 9.38 sub b)
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Article 8.4. Degree

Degree Students who have successfully completed their Master's final Examination are awarded a Master of Science degree (MSc). The degree awarded is stated on the diploma.	Legal provision, WHW
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Section B2: Programme specific – content of programme

9. Programme objectives, specializations and exit qualifications

Article 9.1 Workload

1. The programme has a workload of 120 EC.	Advice OLC; (7.13 a)
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Article 9.2 Specializations

The programme has the following specializations: A. Financial Mathematics; B. Data Science.	Advice OLC; (7.13 a)
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Article 9.3 Programme objective

The programme aims are for the student to acquire sufficient knowledge, skills and insight within the field of Stochastics and Financial Mathematics, and any related disciplines, to be able to operate as an independent professional at an academic level, and to be a suitable candidate for a subsequent course of study leading to a career in research or development. Another aim of the programme is to develop students' understanding of the interrelationships between academic disciplines, as well as their sense of social responsibility.	Advice OLC; (7.13 a)
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Article 9.4 Exit qualifications

<p>The graduate:</p> <ul style="list-style-type: none"> □ has thorough theoretical and practical knowledge of the fields of Modern Probability, Statistics and Stochastic Operations Research and their application in financial mathematics, the life sciences or in industry, for example; □ has insight into the development and the heuristics of modern mathematics, especially Stochastics, and has gained research experience in an area of Stochastics; □ is capable of becoming conversant in other sub-fields of Stochastics within a reasonable period of time; □ is capable of formulating a plan for a research project based on a broad research question; □ is capable of analysing and formulating research results, and of drawing conclusions from them; □ is capable of writing a report and of participating in a discussion on a topic related to the field of study; □ is capable of studying the professional literature (including international publications) in relevant sub-fields, and of utilizing the relevant content; □ is capable of applying knowledge of Stochastics in a broader (multidisciplinary) context, and has experience of using probabilistic models to examine problems in fields such as economics, biology or physics; □ has sufficient knowledge of, and insight into, the social role of Stochastics and Financial Mathematics to decide on a responsible choice of profession and professional practice; □ is capable of cooperating with others, of imparting knowledge to others, and of delivering a lecture both to specialists and to a wider audience. <p>The graduate who focuses on scientific research is able to:</p> <ul style="list-style-type: none"> □ study and combine mathematical literature from various sources, and augment the field of mathematics with contributions of their own; □ contextualize the results and conclusions obtained, within the framework of results obtained by others. 	Approval OLC (7.13 c)
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The graduate who focuses on applications of Stochastics in a business setting or for an organization is able to:	
x define a solution-based scientific question from problems of a quantitative and/or stochastic nature in the organization or business;	
x implement such questions in the form of targeted research;	
x • interpret and present data obtained from analyses conducted on different scales and at various levels of abstraction.	

10. Curriculum structure

Article 10.1 Composition of the programme

1. The programme comprises at least a package of compulsory components and an individual Master's thesis or academic internship.	Ordinance CvB, see appendix 3
2. Additionally the programme can offer: <ul style="list-style-type: none"> - Practical exercises; - Electives 	Advice OLC; (7.13 a)
3. Educational components are categorized as specialized (400), research oriented (500) and highly specialized (600) level.	Ordinance CvB, see appendix 3

Article 10.2 Compulsory educational components

A detailed description per educational component can be found in the Study Guide.

Educational component	course code	nr of EC	level	Advice OLC; (7.13 a)
Master Project Stochastics and Financial Mathematics	XM_400502	36	600	
Measure Theoretic Probability	X_400244	8	400	
Master Seminar Stochastics and Financial Mathematics	XM_0056	3	400	
Scientific Writing in English	X_400512	3	400	

Article 10.3 Elective educational components

Students may choose elective courses subject to restrictions. They must choose at least 2 Advanced SFM courses and either 2 Financial Mathematics courses or 2 Data Science courses. The remaining electives must be chosen from the list of Designated SFM courses. Students are free to choose at most 12 EC of other electives (for example outside Mathematics). Course in red are not available in 2019 – 2020.	Advice OLC; (7.13 a)
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Article 10.3a | Financial Mathematics Track

Constrained choice Financial Mathematics 2 out of 4 (12 EC required)				Advice OLC; (7.13 a)
Name of educational component	course code	nr of EC	level	
Interest Rate Models	X_418091	6	500	
Portfolio Theory	X_400535	6	500	
Stochastic Processes for Finance	X_400352	6	400	
Computational Finance	XMU_418045	6	400	

Article 10.3b | Data Science Track

Constrained choice Data Science 2 out of 4 (12 EC required)				Advice OLC; (7.13 a)
Name of educational component	course code	nr of EC	level	
Advanced Machine Learning	XM_0010	6	400	
Stochastic Optimization	X_400336	6	400	
Statistical Models	X_400418	6	400	
Planning and Reinforcement Learning	XM_0055	6	400	

Article 10.3c | Advanced SFM courses

Constrained choice Advanced SFM course (at least 2)				Advice OLC; (7.13 a)
Name of educational component	course code	nr of EC	level	
Advanced Machine Learning	XM_0010	6	400	
Advanced Topics in Stochastic Analysis	XMU_0019	6	400	
Data-driven Decision Making in Operations Research	XMU_0026	6	400	
Interest Rate Models	X_418091	6	500	
Portfolio Theory	X_400535	6	500	
Queues and Levy Fluctuation Theory	XMU_0002	6	400	
Statistical Theory for High-and Infinite Dimensional Models (not in 19/20)	XMM_0008	8	500	
Stochastic Networks	XMU_0018	6	400	
Stochastic Simulation	XMU_0001	6	400	

Article 10.3d | Designated SFM courses

Designated SFM courses – Mastermath courses				Advice OLC; (7.13 a)
Name of educational component	course code	nr of EC	level	
Asymptotic Statistics	X_400323	8	500	
Bayesian Statistics (not in 19/20)	XMM_40004	8	500	
Complex Networks	X_405125	8	400	
Forensic Probability and Statistics	XMM_0005	8	400	
Functional Analysis	X_400328	8	500	
Heuristic Methods in Operations Research (not in 19/20)	X_418006	6	400	
Machine Learning Theory	XMM_0002	8	400	
Nonparametric Statistics	X_400519	6	400	
Partial Differential Equations	X_400330	8	500	
Percolation: from Introduction to Frontiers of Current Research	XMM_0012	8	500	
Probabilistic and Extremal Combinatorics	X_418118	8	400	
Random Walks	XMM_0033	8	500	
Statistical Theory for High- and Infinite-Dimensional Models not in (19/20)	XM_0008	8	500	
Statistics for Stochastic Processes	XMM_0034	8	500	
Stochastic Differential Equations (not in 19/20)	X_400454	6	500	
Stochastic Processes	X_400339	8	400	
Topological Data Analysis	XMM_0036	8	400	

Designated SFM courses - VU local courses				Advice OLC; (7.13 a)
Name of educational component	course code	nr of EC	level	
Advanced Machine Learning	XM_0010	6	400	
Applied Analysis: Financial Mathematics	X_00076	6	400	
Applied Stochastic Modeling	X_400392	6	400	
Entrepreneurship in Data Science and Analytics	X_405122	6	400	
Mathematical Optimization	XM_0051	6	400	
Optimization of Business Processes	X_400422	6	400	
Performance of Networked Systems	X_405105	6	400	
Statistical Models	X_400418	6	400	
Statistics for High Dimensional Data	X_405113	6	400	
Statistics for Networks (not in 19/20)	X_405110	6	600	
Stochastic Optimization	X_400336	6	400	

Stochastic Processes for Finance	X_440352	6	400	
Designated SFM courses - UvA local courses				Advice OLC; (7.13 a)
Name of educational component	course code	nr of EC	level	
Advanced Topics in Stochastic Analysis	XMU_0019	6	400	
Data-driven Decision Making in Operations Research	XMU_0026	6	400	
Internship Stochastics and Financial Mathematics	<i>UvA – course code</i>	3	???	
Interest Rate Models	X_418091	6	500	
Portfolio Theory	X_400535	6	500	
Queues and Levy Fluctuation Theory	XMU_0002	6	400	
Simulation Methods in Statistics	X_400258	6	400	
Stochastic Integration	X_400470	8	400	
Stochastic Networks	XMU_0018	6	400	
Stochastic Simulation	XMU_0001	6	400	
Uncertainty Quantification and Data Assimilation	XMU_0022	6	400	
From other programmes (Msc Comp. Sc.)				
Computational Finance	XMU_418045	6	400	

Article 10.4 Practical exercise

Not applicable.	Approval OLC (7.13 d)
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Article 10.5 Participation in practical exercise

Not applicable.	Approval OLC (7.13 d)
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11. Evaluation and transitional provisions

Article 11.1 Evaluation of the education

The education provided in this programme is evaluated in accordance with the (attached) evaluation plan. The faculty evaluation plan offers the framework.	Approval OLC (7.13 a1)
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Article 11.2 Transitional provisions

By way of departure from the Teaching and Examination Regulations currently in force, the following transitional provisions apply for students who started the programme under a previous set of Teaching and Examination Regulations: <i>Not applicable.</i>	Advice OLC (7.13 a)
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Advice and approval by the Programme Committee of MSc Stochastics and Financial Mathematics, on 28 June 2019.

Approved by the Faculty Joint Assembly, on 3 September 2019.

Adopted by the board of the Faculty of Science on 30 August 2019.

Appendix I Overview of articles that must be included in the OER

Based on Section 7.13, paragraph 2, of the WHW and other Sections of the Act.

Section B1: Programme specific – general provisions

6. General programme information and characteristics	
Article 6.1 Study programme information	7.13 paragraph 2 sub i, r
Article 6.2 Teaching formats used and modes of assessment	7.13 paragraph 2 sub l, x
[option:] Article 6.3 Academic student counselling	7.13 paragraph 2 sub u
7. Further admission requirements	
Article 7.2 Admission requirements	7.30b paragraph 2
8. Interim examinations and results	
Article 8.1 Sequence of interim examinations	7.13 paragraph 2 sub h, s, t
[option 1:] Article 8.2 Validity period for results	7.13 paragraph 2 sub k
[option 2:] Article 8.2 Validity period for results	7.13 paragraph 2 sub k

Section B2: Programme specific – content of programme

9. Programme objectives, specializations and exit qualifications	
Article 9.1 Workload	7.13 paragraph 2 sub g
Article 9.2 Specializations	7.13 paragraph 2 sub a
Article 9.3 Programme objective	7.13 paragraph 2 sub a
Article 9.4 Exit qualifications	7.13 paragraph 2 sub b, c
10. Curriculum structure	
Article 10.1 Composition of the programme	7.13 paragraph 2 sub a
Article 10.2 Compulsory educational components	7.13 paragraph 2 sub a
[Optional] Article 10.3 Elective educational components	7.13 paragraph 2 sub a
[Optional] Article 10.4 Practical exercise	7.13 paragraph 2 sub d
Article 10.5 Participation in practical training and tutorials	7.13 paragraph 2 sub d
11. Evaluation and transitional provisions	
Article 11.1 Evaluation of the education	7.13 paragraph 2 sub a l
Article 11.2 Transitional provisions	7.13 paragraph 2 sub a

Appendix II Overview of rights to prior consultation (advice) and rights to approve OLC and FGV

(Dutch only)

Onderwerpen Onderwijs – en Examenregeling (OER) 7.13 paragraaf 2 WHW	FGV		OplC	
	I	A	I	A
a. de inhoud van de opleiding en van de daaraan verbonden examens				
a1. de wijze waarop het onderwijs in de desbetreffende opleiding wordt geëvalueerd				
b. de inhoud van de afstudeerrichtingen binnen een opleiding				
c. de kwaliteiten op het gebied van kennis, inzicht en vaardigheden die een student zich bij beëindiging van de opleiding moet hebben verworven				
d. waar nodig, de inrichting van praktische oefeningen				
e. de studielast van de opleiding en van elk van de daarvan deel uitmakende onderwijseenheden				
f. de nadere regels, bedoeld in de artikelen 7.8b, zesde lid, en 7.9, vijfde lid (BSA)				
g. ten aanzien van welke masteropleidingen toepassing is gegeven aan artikel 7.4a, achtste lid (verhoogde studielast)				
h. het aantal en de volgtijdelijkheid van de tentamens alsmede de momenten waarop deze afgelegd kunnen worden				
i. de voltijdse, deeltijdse of duale inrichting van de opleiding				
j. waar nodig, de volgorde waarin, de tijdvakken waarbinnen en het aantal malen per studiejaar dat de gelegenheid wordt geboden tot het afleggen van de tentamens en examens				
k. waar nodig, de geldigheidsduur van met goed gevolg afgelegde tentamens, behoudens de bevoegdheid van de examencommissie die geldigheidsduur te verlengen				
l. of de tentamens mondeling, schriftelijk of op een andere wijze worden afgelegd, behoudens de bevoegdheid van de examencommissie in bijzondere gevallen anders te bepalen				
m. de wijze waarop studenten met een handicap of chronische ziekte redelijkerwijs in de gelegenheid worden gesteld de tentamens af te leggen				
n. de openbaarheid van mondeling af te nemen tentamens, behoudens de bevoegdheid van de examencommissie in bijzondere gevallen anders te bepalen				
o. de termijn waarbinnen de uitslag van een tentamen bekend wordt gemaakt alsmede of en op welke wijze van deze termijn kan worden afgeweken				
p. de wijze waarop en de termijn gedurende welke degene die een schriftelijk tentamen heeft afgelegd, inzage verkrijgt in zijn beoordeelde werk				
q. de wijze waarop en de termijn gedurende welke kennis genomen kan worden van vragen en opdrachten, gesteld of gegeven in het kader van een schriftelijk afgenomen tentamen en van de normen aan de hand waarvan de beoordeling heeft plaatsgevonden				
r. de gronden waarop de examencommissie voor eerder met goed gevolg afgelegde tentamens of examens in het hoger onderwijs, dan wel voor buiten het hoger onderwijs opgedane kennis of vaardigheden, vrijstelling kan verlenen van het afleggen van een of meer tentamens				
s. waar nodig, dat het met goed gevolg afgelegd hebben van tentamens voorwaarde is voor de toelating tot het afleggen van andere tentamens				
t. waar nodig, de verplichting tot het deelnemen aan praktische oefeningen met het oog op de toelating tot het afleggen van het desbetreffende tentamen, behoudens de bevoegdheid van de examencommissie vrijstelling van die verplichting te verlenen, al dan niet onder oplegging van vervangende eisen				
u. de bewaking van studievoortgang en de individuele studiebegeleiding				
v. indien van toepassing: de wijze waarop de selectie van studenten voor een speciaal traject binnen een opleiding, bedoeld in artikel 7.9b, plaatsvindt (<i>excellentietraject binnen een opleiding</i>)				
x. de feitelijke vormgeving van het onderwijs				
<i>alle overige onderwerpen die in de OER zijn geregeld maar die niet als zodanig zijn genoemd in art. 7.13 WHW onder a t/m x.</i>				

De lettering komt overeen met de lettering van artikel 7.13 lid 2 WHW

Appendix III Ordinances VU CvB and Binding Guidelines (richtlijn)

Section B1, article:	Concerns:	CvB ordinance / guideline
7.2.1	Admission criteria; at least WO Bachelor's degree	Richtlijn Bachelor en Masteronderwijs, revised on 6 June 2017
7.2.3	Additional admission criteria; type of criteria	Richtlijn Bachelor en Masteronderwijs, revised on 6 June 2017
Section B1, article:	Concerns:	CvB ordinance / guideline
10.1	Composition programme	Richtlijn Bachelor en Masteronderwijs, revised on 6 June 2017
10.2	Categorization of components	Richtlijn Bachelor en Masteronderwijs, revised on 6 June 2017