Teaching and Examination Regulations

MASTER's Degree Programme

Mathematics

B. Programme-specific section

Academic year 2016-2017

Section B: Programme-specific section

Section B: Programme-specific section

1. General provisions

Article 1.1 Definitions

In addition to the definitions as laid down in article 1 of TER part A, the following abbreviations are also used in TER part B:

Examination	**Abbr.**
Exam	E
Report, essay	R
Presentation	Pres
Practical	Prac
Assignment	A
Field Work	FW

Teaching method	**Abbr.**
Lecture	HC
Tutorial	WC
Study group	WG
Computer Lab	CPR
Practical	PR
Field Work	VW
Excursion	EXC
Training	TR

Article 1.2 Degree programme information

1. The programme in Mathematics (CROHO number 66980) is offered both as a full-time and as a part-time programme. The language of tuition is English.
2. The programme consists of 120 credits.
3. A unit of study comprises 6 EC or a multiple thereof. The units of study listed below have a different size:

Course code	**Course component**	**EC**
X_418083	Advanced Algebraic Geometry*	8
X_418135	Advanced Combinatorics	8
XMM_40000	Advanced Topics in Semidefinite Progr.	8
XMM_40001	Algebraic Geometry 1	8
XMM_40002	Algebraic Geometry 2	8
XMM_40003	Algebraic Methods in Combinatorics	8
X_400324	Algebraic Number Theory	8
X_400600	Algebraic Topology	8
X_400323	Asymptotic Statistics	8
XMM_40004	Bayesian Statistics	8
X_418160	Coding Theory	8
X_418136	Commutative Algebra	8
XMM_40005	Complex Geometry	8
X_405125	Complex Networks	8
XMM_40006	Cryptology	5
O_MFDIDAC_3	Didactiek 3	9
O_MLDIDAC_3	Didactiek 3	9
X_400509	Differential geometry	8
X_400429	Dynamical Systems	8
X_400505	Elliptic Curves	8

X_418138	Ergodic Theory	8
X_418007	Fourier Analysis and Distributions	8
X_400328	Functional Analysis	8
XMM_40007	Galois Representations and Automorphic Forms	8
X_418060	Intuitionistic Mathematics	8
XMM_40008	Lie Groups and Lie Algebras	8
X_400504	Mathematical Biology*	8
X_418096	Mathematical structures for logic	8
X_400244	Measure Theoretic Probability	8
XMM_40010	Nonlinear Waves	8
X_400329	Numerical Linear Algebra	8
X_418010	Numerical Methods for Time-dependent PDE's	8
X_418062	Operator Algebras	8
X_418097	P-adic numbers and applications	8
X_418011	Parallel Algorithms	8
X_400330	Partial Differential Equations	8
O_MLPRAK_2	Praktijk 2	9
O_MFPRAK_2	Praktijk 2	9
O_MFPRAK_3	Praktijk 3	15
O_MLPRAK_3	Praktijk 3	15
O_MLPROZ_1	Praktijkonderzoek 1	3
O_MFPROZ_1	Praktijkonderzoek 1	3
X_418118	Probabilistic and Extremal Combinatorics	8
X_405130	Queues & Levy Fluctuation Theory	8
X_400325	Riemann Surfaces	8
X_400512	Scientific Writing in English BA/M/SFM	3
XMM_40011	Selected Areas in Cryptology	8
X_418035	Set Theory	8
X_400470	Stochastic Integration	8
X_400339	Stochastic Processes	8
X_418036	Symplectic Geometry	8
X_400571	Time series	8
XMM_40012	Topological Methods for Nonlinear Differential Equations	8

Article 1.3 Intake dates

The programme is offered starting in the first semester of the academic year (1 September) and starting in the second semester (1 February). The intake date(s) mentioned in this paragraph ensure(s) that a programme can be completed within the nominal study duration set for the programme.

2. Programme objectives and exit qualifications

Article 2.1 Programme objective

The programme aims to acquire sufficient knowledge, skills and insight within the field of Mathematics, and any related disciplines, to be able to operate as an independent professional at an academic level (including teaching), and to be a suitable candidate for a subsequent course of study leading to a career in scientific research. Another aim of the programme is to develop students' understanding of the interrelationships between academic disciplines, as well as their sense of social responsibility.

Article 2.2 Exit qualifications

The graduate:

- has developed thorough theoretical and practical knowledge in the field of contemporary mathematics;
- has insight into the development and the heuristics of contemporary mathematics, and has gained research experience in a sub-field of mathematics;
- is capable, within a reasonable period of time, of becoming conversant in other sub-fields of mathematics;
- 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;
- has sufficient knowledge of, and insight into, the social role of contemporary mathematics to decide on a responsible choice of profession and professional practice;
- is capable of imparting knowledge to others and of delivering a lecture both to specialists and to a wider audience.

The graduate who focuses on scientific research is able to:
- 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.

The graduate who intends to pursue a career in communication or education:
- is able to acquire new knowledge in the field of communication and education;
- is qualified to teach in pre-university education (if the teacher-training programme has been successfully completed).

The graduate who intends to pursue a career in a business setting or for an organization is able to:
- define a solution-based scientific question from a problem of a quantitative nature in the organization or business;
- implement such questions in the form of targeted research;
- interpret and present data obtained from analyses conducted at different scales and different levels of abstraction.

The graduate who focuses on scientific research in the Life Sciences is able to:
- define a solution-based mathematical question from a problem of a quantitative nature in the Life Sciences;
- contextualize the results and conclusions obtained, within the framework of biomedical research.

3. Further admission requirements

Article 3.1 Admission requirements

1. Applicants will be admitted to the degree programme if they hold a letter of acceptance, issued by or on behalf of the Faculty Board because they have demonstrated that they meet the knowledge, understanding and skills requirements of the final level of attainment in a university Bachelor's degree programme.

2. Requirements for prior education
   3.1.2.1. Registration for the Master's programme in Mathematics is open to anyone who is in possession of a Bachelor's degree in Mathematics or Technical Mathematics from a Dutch university and whose English-language proficiency is at least equivalent to pre-university final-exam level (VWO in the Netherlands).

   3.1.2.2. An applicant with a university Bachelor's degree in a field other than that specified in paragraph 1 may be admitted to the programme by the Examination Board if the following conditions have been met:
   - the applicant's prior education, including any supplementary work, contains at least 90 credits of mathematics;
   - the applicant has reached a final attainment level for stochastics, mathematical analysis or algebra and geometry equivalent to the Bachelor's in Mathematics as taught at VU University Amsterdam;
   - the applicant's prior education meets the qualifications of a university Bachelor's degree programme as defined in the Dublin descriptors;

- the applicant's English-language proficiency is at least equivalent to pre-university final-exam level (VWO in the Netherlands).

3.1.2.3. Notwithstanding the provisions of paragraphs 3.1.2.1 and 3.1.2.2. an applicant may also be admitted to the Biomedical (B) track subject to the following conditions and on the approval of the Examination Board:

- the applicant is in possession of a university Bachelor's degree;
- the applicant's prior education, including any supplementary work, contains at least 60 credits of mathematics and at least 30 credits in the Life Sciences;
- the applicant has demonstrable knowledge of Linear Algebra, Differential Equations and General Statistics;
- the applicant's prior education meets the qualifications of a university Bachelor's degree programme as defined in the Dublin descriptors;
- the applicant's English-language proficiency is at least equivalent to pre-university final-exam level (VWO in the Netherlands).

3.1.2.4. The Teacher (T) track is only open to applicants with an HBO degree in Mathematics Teacher Training, with Mathematics at the Grade 2 qualification level. Graduates of the T track will receive a Master's degree in Mathematics and a Grade 1 teaching qualification. An applicant may also be admitted to the T track subject to the following conditions and on the approval of the Examination Board:

- the applicant is in possession of an HBO Bachelor's degree from a Mathematics teacher training programme, including a Grade 2 teaching qualification in Mathematics;
- demonstrable mathematical knowledge corresponding to the following subjects (from the VU Bachelor's in Mathematics):
  a. X_401104: Basic Concepts of Mathematics
  b. X_400638: Linear Algebra 1
  c. X_400298: Mathematical Modelling 1
  d. X_400626: Analysis 2B
  e. X_400622: Probability Theory
  f. X_400299: Mathematical Modelling 2
- academic skills at university Bachelor's level, as demonstrated by completing the subjects listed above, for example.
- English-language proficiency is at least equivalent to pre-university final-exam level (VWO in the Netherlands).

3.1.2.5. At the admissions stage, the Examination Board may impose additional requirements on an applicant's final Master's degree assessment for the programme in Mathematics.

3. Those not yet in possession of a Bachelor's degree, but who meet the admission requirements as regards the knowledge, insight and skills specified in paragraph 2, may on request be granted conditional admission to the associated Master's programme, insofar as failure to grant admission would result in undue unfairness.

Article 3.2 Pre-Master's programme

1. Applicants who have a Bachelor's degree in a field that sufficiently corresponds to the field of the Master's programme may request admission to the pre-Master's programme.
2. A certificate stating that the student has successfully completed the pre-Master's programme serves as a letter of acceptance to the associated Master's programme in the next academic year.
3. The letter of acceptance relates exclusively to the academic year following the academic year in which the application for the letter of acceptance was submitted, unless the Executive Board decides otherwise.

Article 3.3 Limited programme capacity

Not applicable

Article 3.4 Final deadline for registration

A candidate must submit a request to be admitted to the programme through Studielink before 1 June

in the case of Dutch students, before 1 April in the case of EU students and before 1 February in the case of non-EU students. Under exceptional circumstances, the Examinations Board may consider a request submitted after this closing date.

Article 3.5 English language requirement for English-language Master's programmes

1. The proficiency requirement in English as the language of instruction can be met by the successful completion of one of the following examinations or an equivalent:
   - IELTS: 6.5
   - TOEFL paper based test: 580
   - TOEFL internet based test: 92-93
   - Cambridge Advanced English: A, B or C.
   - A command of English equivalent to pre-university final-exam level (VWO).
2. Exemption is granted from the examination in English referred to in the first paragraph to students who, within two years of the start of the programme:
   - met the requirements of the VU test in English language proficiency TOEFL ITP, with at least the scores specified in paragraph 1, or
   - had previous education in secondary or tertiary education in an English-speaking country as listed on the VU website, or
   - have an English-language 'international baccalaureate' diploma.

Article 3.6 Free curriculum

1. Subject to certain conditions, the student has the option of compiling a curriculum of his/her own choice which deviates from the curricula prescribed by the programme.
2. The concrete details of such a curriculum must be approved beforehand by the most appropriate Examinations Board.
3. The free curriculum is put together by the student from the units of study offered by Vrije Universiteit Amsterdam or another institution of higher education and must at least have the size, breadth and depth of a regular Master's programme.

4. Curriculum structure

Article 4.1 Composition of programme

1. The programme has a study load of 120 credits and consists of the following components:
   a. compulsory educational units
   b. practical components
   c. optional subjects (electives)
2. Notwithstanding the provisions of paragraph 1, students may compose their own Master's programme under certain circumstances and with the prior approval of the Examination Board.
3. The degree programme has a study load of 120 credits. One credit is equivalent to 28 hours of study.
4. The programme is run jointly with the University of Amsterdam.
5. The program includes a graduation project or a work placement of 36 credits (24 credits in the E or T track), which must include:
   - a research plan;
   - a final report and a scientific lecture.
6. Students enrolled in the BM track will consult with the Master's Programme Coordinator on selecting subjects totalling at least 30 credits from the Life Sciences.
7. The programme of the AG, ADS, and BM and S track includes the Master Seminar (6 credits). Participation in the Master Seminar is mandatory.
8. The programme of the AG, ADS, and BM and S track includes the course on Scientific writing in English (3 credits, X_405012). Participation in this course is mandatory.
9. Before starting a work placement and/or graduation project, the student must have earned all other programme credits. A shortfall of 6 credits is permissible.

Article 4.2 Compulsory units of study

Abbreviations of teaching method and examination format are defined in Article 1.1.

The compulsory units of study are:

Algebra and Geometry Track
Compulsory courses (45 EC required)

Course code	Course component	EC	Period	Teaching method	Examination format	Level
XMU_41011	Master Seminar in Algebra and Geometry	6	1+2, 4+5			400
X_400512	Scientific Writing in English BA/M/SFM	3	4	HC	A	400
X_400355	Master Project Mathematics	36	Ac. Year		-	600

Analysis and Dynamical Systems track
Compulsory courses (45 EC required)

Course code	Course component	EC	Period	Teaching method	Examination format	Level
XM_41013	Master Seminar in Analysis and Dynamical Systems	6	2+3, 4+5			400
X_400512	Scientific Writing in English BA/M/SFM	3	4	HC	A	400
X_400355	Master Project Mathematics	36	Ac. Year		-	600

Biomedical Mathematics track
Compulsory courses (61 EC required)

Course code	Course component	EC	Period	Teaching method	Examination format	Level
X_400429	Dynamical Systems	8	1+2	HC	E, A	400
X_400418	Statistical Models	6	1+2	HC	E, A	400
X_400512	Scientific Writing in English BA/M/SFM	3	4	HC	A	400
X_400504	Mathematical Biology*	8	-	HC	R, Pres	400
X_400355	Master Project Mathematics	36	Ac. Year		-	600

*The course is taught once every two years, the next opportunity will be in study year 2017-2018

Education Track
Master Leraar VHO Wiskunde (60 EC required)

Course code	Course component	EC	Period	Teaching method	Examination format	Level
O_MLDIDAC_1	Didactiek 1	6	1	WG, HC		400
O_MLPRAK_1	Praktijk 1	6	1	WG		400
O_MLPROZ_1	Praktijkonderzoek 1	3	3	HC, WG		400
O_MFDIDAC_1	Didactiek 1	6	4	WG, HC		400
O_MFPRAK_1	Praktijk 1	6	4	WG		400
O_MFPROZ_1	Praktijkonderzoek 1	3	6	HC, WG		400
O_MFDIDAC_3	Didactiek 3	9	1+2+3	HC		400
O_MFPRAK_3	Praktijk 3	15	1+2+3	WG		400
O_MFPROZ_2	Praktijkonderzoek 2	6	1+2+3	WC, HC		400
O_MLPEERGR_1	Peergroup 1		1+2+3, 4+5+6	WG		400
O_MLDIDAC_2	Didactiek 2	6	2+3	HC, WG		400
O_MLPRAK_2	Praktijk 2	9	2+3	WG		400
O_MLPEERGR_2	Peergroup 2		3+4+5	WG		400
O_MLDIDAC_3	Didactiek 3	9	4+5+6	WG, HC		400
O_MLPRAK_3	Praktijk 3	15	4+5+6			400
O_MLPROZ_2	Praktijkonderzoek 2	6	4+5+6	WC, HC		400
O_MFDIDAC_2	Didactiek 2	6	5+6	WG, HC		400
O_MFPRAK_2	Praktijk 2	9	5+6			400

Compulsory course Mathematics (24 EC required)

Course code	Course component	EC	Period	Teaching method	Examination format	Level
X_405037	Master Project Mathematics (T,E track)	24	Ac. Year		R, Pres	600

Stochastics track

Compulsory courses (69 EC required)

Course code	Course component	EC	Period	Teaching method	Examination format	Level
X_400355	Master Project Mathematics	36	Ac. Year		-	600
X_400323	Asymptotic Statistics	8	1+2			500
X_400244	Measure Theoretic Probability	8	1+2	HC		400
X_400512	Scientific Writing in English BA/M/SFM	3	4	HC	A	400
XM_41011	Master Seminar in Stochastics	6	4+5			400
X_400339	Stochastic Processes	8	4+5	HC		400

Teachers track

Compulsory courses (66 EC required)

Course code	Course component	EC	Period	Teaching method	Examination format	Level
X_400627	Analyse 3	6	1+2	WC, HC	T, O	300
X_400637	Dynamische Systemen	6	1+2	WC, HC	T, O	300
X_401028	Measure Theory	6	1+2	WC, HC	E, A	300
X_400004	Statistics	6	1+2	WC, HC	E	200
X_400386	Complexe analyse	6	4+5	WC, HC	T	300
X_401039	Numerical Methods	6	4+5	WC, HC	A	300
X_401029	Statistical Data Analysis	6	4+5	WC, HC	E, R	300
X_405037	Master Project Mathematics (T,E track)	24	Ac. Year		R, Pres	600

Article 4.3 Practical exercise

Except for those practical components incorporated in the compulsory units of study above and in relevant electives, the programme has no separate practical exercise.

Article 4.4 Electives

Abbreviations of teaching method and examination format are defined in Article 1.1.

The student can take of the following electives:

Algebra and Geometry Track

Compulsory choice 2 out of 9 (12 EC required)

Course code	Course component	EC	Period	Teaching method	Examination format	Level
X_418083	Advanced Algebraic Geometry*	8	-	HC		400
XMU_41012	Characteristic Classes	6	1+2			500
XMM_40005	Complex Geometry	8	1+2			500
XMM_40007	Galois Representations and Automorphic Forms	8	1+2			500
X_418142	Mirror Symmetry	6	1+2			600
XMM_40002	Algebraic Geometry 2	8	4+5			500
XMU_41013	Derived Categories	6	4+5			500
X_418099	Non-commutative geometry	6	4+5			400
X_418036	Symplectic Geometry	8	4+5	HC		400

*The course is taught once every two years, the next opportunity will be in study year 2017-2018

Compulsory choice 3 out of 4 (24 EC required)

Course code	Course component	EC	Period	Teaching method	Examination format	Level
XMM_40001	Algebraic Geometry 1	8	1+2			500
X_400600	Algebraic Topology	8	1+2	WC, HC		400
XMM_40008	Lie Groups and Lie Algebras	8	4+5			500
X_400325	Riemann Surfaces	8	4+5	HC		400

Suggested elective Courses (24 EC required)

Course code	Course component	EC	Period	Teaching method	Examination format	Level
X_405041	Coding and Cryptography	6	1	HC	E, A	500
X_418135	Advanced Combinatorics	8	1+2			500
XMM_40001	Algebraic Geometry 1	8	1+2			500
X_400324	Algebraic Number Theory	8	1+2	HC		400

X_400600	Algebraic Topology	8	1+2	WC, HC		400
X_400076	Applied Analysis: Financial Mathematics	6	1+2	HC	E, A	400
X_400392	Applied Stochastic Modeling	6	1+2	WC, HC	E, A	400
X_400323	Asymptotic Statistics	8	1+2			500
X_418136	Commutative Algebra	8	1+2			400
XMM_40005	Complex Geometry	8	1+2			500
X_405125	Complex Networks	8	1+2	HC		400
X_400446	Continuous Optimization	6	1+2			400
XMM_40006	Cryptology	5	1+2			400
X_400509	Differential geometry	8	1+2	HC		400
X_400445	Discrete Optimization	6	1+2			400
X_400429	Dynamical Systems	8	1+2	HC	E, A	400
X_418138	Ergodic Theory	8	1+2	HC		500
X_418007	Fourier Analysis and Distributions	8	1+2	HC		400
X_400328	Functional Analysis	8	1+2	HC		500
XMM_40007	Galois Representations and Automorphic Forms	8	1+2			500
XM_41012	Hamiltonian Mechanics	6	1+2			500
X_418006	Heuristic Methods in Operations Research	6	1+2			400
X_418091	Interest Rate Models	6	1+2	HC		500
X_418060	Intuitionistic Mathematics	8	1+2			400
X_400244	Measure Theoretic Probability	8	1+2	HC		400
X_418142	Mirror Symmetry	6	1+2			600
X_400329	Numerical Linear Algebra	8	1+2			400
X_418097	P-adic numbers and applications	8	1+2	HC	E, A	400
X_418011	Parallel Algorithms	8	1+2			400
X_400535	Portfolio Theory	6	1+2			500
X_418118	Probabilistic and Extremal Combinatorics	8	1+2	HC		400
X_405130	Queues & Levy Fluctuation Theory	8	1+2	HC		400
X_400258	Simulation Methods in Statistics	6	1+2			400
X_400418	Statistical Models	6	1+2	HC	E, A	400
X_405110	Statistics for Networks	6	1+2	HC	A, Pres	600
X_400336	Stochastic Optimization	6	1+2	HC	E, A	400
X_400352	Stochastic Processes for Finance	6	1+2	WC, HC	E, A	400
X_400332	Systems and Control	6	1+2			400
X_400326	Advanced Linear Programming	6	4+5			400
XMM_40000	Advanced Topics in Semidefinite Progr.	8	4+5			500
XMM_40002	Algebraic Geometry 2	8	4+5			500
XMM_40003	Algebraic Methods in Combinatorics	8	4+5			400
X_400453	Applied Finite Elements	6	4+5			400
X_400452	Applied Statistics	6	4+5			400
XMM_40004	Bayesian Statistics	8	4+5			400
X_418160	Coding Theory	8	4+5			400
X_400505	Elliptic Curves	8	4+5	HC		400
XMM_40008	Lie Groups and Lie Algebras	8	4+5			500
X_418096	Mathematical structures for logic	8	4+5			400
XMM_40009	Network Dynamics	6	4+5			400
X_418099	Non-commutative geometry	6	4+5			400
XMM_40010	Nonlinear Waves	8	4+5			500
X_418010	Numerical Methods for Time-dependent PDE's	8	4+5	HC		500
X_418062	Operator Algebras	8	4+5			400
X_400422	Optimization of Business Processes	6	4+5	HC	E, A, Pres	400
X_400330	Partial Differential Equations	8	4+5	HC		500
X_400397	Queueing Theory	6	4+5			400
X_400325	Riemann Surfaces	8	4+5	HC		400
X_400396	Scheduling	6	4+5			400
XMM_40011	Selected Areas in Cryptology	8	4+5			500
X_418035	Set Theory	8	4+5	HC		400
X_401029	Statistical Data Analysis	6	4+5	WC, HC	E, R	300
XMU_41015	Statistical Theory for High- and Infinite-Dimensional models	6	4+5			500
X_400454	Stochastic Differential Equations	6	4+5			500
X_400470	Stochastic Integration	8	4+5			400

X_400339	Stochastic Processes	8	4+5	HC		400
X_418036	Symplectic Geometry	8	4+5	HC		400
X_400571	Time series	8	4+5	HC		500
XMM_40012	Topological Methods for Nonlinear Differential Equations	8	4+5			500
X_418083	Advanced Algebraic Geometry*	8	-	HC		400
X_400504	Mathematical Biology*	8	-	HC	R, Pres	400

*The course is taught once every two years, the next opportunity will be in study year 2017-2018

Analysis and Dynamical Systems track

Compulsoy choice 2 out of 4 (Advanced courses ADS - 14 EC required)

Course code	Course component	EC	Period	Teaching method	Examination format	Level
XM_41012	Hamiltonian Mechanics	6	1+2			500
X_418010	Numerical Methods for Time-dependent PDE's	8	4+5	HC		500
X_418036	Symplectic Geometry	8	4+5	HC		400
XMM_40012	Topological Methods for Nonlinear Differential Equations	8	4+5			500

Compulsory choice 3 out of 4 (22 EC required)

Course code	Course component	EC	Period	Teaching method	Examination format	Level
X_400429	Dynamical Systems	8	1+2	HC	E, A	400
X_400328	Functional Analysis	8	1+2	HC		500
XMU_41014	Finite Element Methods for Partial Differential Equations	6	4+5			400
X_400330	Partial Differential Equations	8	4+5	HC		500

Suggested elective courses (24 EC required)

Course code	Course component	EC	Period	Teaching method	Examination format	Level
X_405041	Coding and Cryptography	6	1	HC	E, A	500
XMU_420067	Statistical Data Analysis	6	1			400
X_418135	Advanced Combinatorics	8	1+2			500
XMM_40001	Algebraic Geometry 1	8	1+2			500
X_400324	Algebraic Number Theory	8	1+2	HC		400
X_400600	Algebraic Topology	8	1+2	WC, HC		400
X_400076	Applied Analysis: Financial Math	6	1+2	HC	E, A	400
X_400392	Applied Stochastic Modeling	6	1+2	WC, HC	E, A	400
X_400323	Asymptotic Statistics	8	1+2			500
XMU_41012	Characteristic Classes	6	1+2			500
X_418136	Commutative Algebra	8	1+2			400
XMM_40005	Complex Geometry	8	1+2			500
X_405125	Complex Networks	8	1+2	HC		400
X_400446	Continuous Optimization	6	1+2	WC, WG, HC		400
XMM_40006	Cryptology	5	1+2			400
X_400509	Differential geometry	8	1+2	HC		400
X_400445	Discrete Optimization	6	1+2			400
X_400429	Dynamical Systems	8	1+2	HC	E, A	400
X_418138	Ergodic Theory	8	1+2	HC		500
X_418007	Fourier Analysis and Distributions	8	1+2	HC		400
X_400328	Functional Analysis	8	1+2	HC		500
XMM_40007	Galois Representations and Automorphic Forms	8	1+2			500
XM_41012	Hamiltonian Mechanics	6	1+2			500
X_418006	Heuristic Methods in Operations Research	6	1+2			400
X_418091	Interest Rate Models	6	1+2	HC		500
X_418060	Intuitionistic Mathematics	8	1+2			400
X_400244	Measure Theoretic Probability	8	1+2	HC		400
X_418142	Mirror Symmetry	6	1+2			600
X_418124	Nonparametric Bayesian Statistics	6	1+2			500
X_400329	Numerical Linear Algebra	8	1+2			400
X_418097	P-adic numbers and applications	8	1+2	HC	E, A	400
X_418011	Parallel Algorithms	8	1+2			400

X_400535	Portfolio Theory	6	1+2			500
X_418118	Probabilistic and Extremal Combinatorics	8	1+2	HC		400
X_405130	Queues & Levy Fluctuation Theory	8	1+2	HC		400
X_400258	Simulation Methods in Statistics	6	1+2			400
X_400418	Statistical Models	6	1+2	HC	E, A	400
X_400336	Stochastic Optimization	6	1+2	HC	E, A	400
X_400352	Stochastic Processes for Finance	6	1+2	WC, HC	E, A	400
X_400332	Systems and Control	6	1+2			400
X_400326	Advanced Linear Programming	6	4+5			400
XMM_40000	Advanced Topics in Semidefinite Progr.	8	4+5			500
XMM_40002	Algebraic Geometry 2	8	4+5			500
XMM_40003	Algebraic Methods in Combinatorics	8	4+5			400
X_400453	Applied Finite Elements	6	4+5			400
X_400452	Applied Statistics	6	4+5			400
XMM_40004	Bayesian Statistics	8	4+5			400
X_418160	Coding Theory	8	4+5			400
XMU_41013	Derived Categories	6	4+5			500
X_400505	Elliptic Curves	8	4+5	HC		400
XMU_41014	Finite Element Methods for Part Diff Equ	6	4+5			400
XMM_40008	Lie Groups and Lie Algebras	8	4+5			500
X_418096	Mathematical structures for logic	8	4+5			400
XMM_40009	Network Dynamics	6	4+5			400
X_418099	Non-commutative geometry	6	4+5			400
XMM_40010	Nonlinear Waves	8	4+5			500
X_418010	Numerical Meth. for Time-dependent PDE's	8	4+5	HC		500
X_418062	Operator Algebras	8	4+5			400
X_400422	Optimization of Business Processes	6	4+5	HC	E, A, Pres	400
X_400330	Partial Differential Equations	8	4+5	HC		500
X_400397	Queueing Theory	6	4+5			400
X_400325	Riemann Surfaces	8	4+5	HC		400
X_400396	Scheduling	6	4+5			400
XMM_40011	Selected Areas in Cryptology	8	4+5			500
X_418035	Set Theory	8	4+5	HC		400
XMU_41015	Statistical Theory for High- and Infinite-Dimensional models	6	4+5			500
X_400454	Stochastic Differential Equations	6	4+5			500
X_400470	Stochastic Integration	8	4+5			400
X_400339	Stochastic Processes	8	4+5	HC		400
X_418036	Symplectic Geometry	8	4+5	HC		400
X_400571	Time series	8	4+5	HC		500
XMM_40012	Topological Methods for Nonlinear Differential Equations	8	4+5			500

Biomedical Mathematics track

Recommended choice Life Science courses (30 EC required)

Course code	Course component	EC	Period	Teaching method	Examination format	Level
X_405050	Algorithms in Sequence Analysis	6	2	WC, HC	E, A, Prac	400
X_422589	Mechanics and thermodynamics in the cell	6	2	WC	E	400
AM_1007	Neurogenomics	6	3	CPR, WG, HC	E, Prac, Pres	500
X_418154	Basic Models of Biological Networks	6	4	WC, CPR, HC	E, A	400
X_418155	Advanced Modeling in Systems Biology	6	6	WC, CPR, HC	E, A	500

Compulsory choice 1 out of 2 (6 EC required)

Course code	Course component	EC	Period	Teaching method	Examination format	Level
XM_41013	Master Seminar in ADS	6	2+3, 4+5			400
XM_41011	Master Seminar in Stochastics	6	4+5			400

Recommended choice Mathematics courses (22 EC required)

Course code	Course component	EC	Period	Teaching method	Examination format	Level
X_405041	Coding and Cryptography	6	1	HC	E, A	500

X_418135	Advanced Combinatorics	8	1+2			500
XMM_40001	Algebraic Geometry 1	8	1+2			500
X_400324	Algebraic Number Theory	8	1+2	HC		400
X_400600	Algebraic Topology	8	1+2	WC, HC		400
X_400076	Applied Analysis: Financial Math	6	1+2	HC	E, A	400
X_400392	Applied Stochastic Modeling	6	1+2	WC, HC	E, A	400
X_400323	Asymptotic Statistics	8	1+2			500
XMU_41012	Characteristic Classes	6	1+2			500
X_418136	Commutative Algebra	8	1+2			400
XMM_40005	Complex Geometry	8	1+2			500
X_405125	Complex Networks	8	1+2	HC		400
X_400446	Continuous Optimization	6	1+2			400
XMM_40006	Cryptology	5	1+2			400
X_400509	Differential geometry	8	1+2	HC		400
X_400445	Discrete Optimization	6	1+2			400
X_418138	Ergodic Theory	8	1+2	HC		500
X_418007	Fourier Analysis and Distributions	8	1+2	HC		400
X_400328	Functional Analysis	8	1+2	HC		500
XMM_40007	Galois Representations and Automorphic Forms	8	1+2			500
XM_41012	Hamiltonian Mechanics	6	1+2			500
X_418006	Heuristic Methods in Operations Research	6	1+2			400
X_418091	Interest Rate Models	6	1+2	HC		500
X_418060	Intuitionistic Mathematics	8	1+2			400
X_400244	Measure Theoretic Probability	8	1+2	HC		400
X_418142	Mirror Symmetry	6	1+2			600
X_418124	Nonparametric Bayesian Statistics	6	1+2			500
X_400329	Numerical Linear Algebra	8	1+2			400
X_418097	P-adic numbers and applications	8	1+2	HC	E, A	400
X_418011	Parallel Algorithms	8	1+2			400
X_400535	Portfolio Theory	6	1+2			500
X_418118	Probabilistic and Extremal Combinatorics	8	1+2	HC		400
X_405130	Queues & Levy Fluctuation Theory	8	1+2	HC		400
X_400258	Simulation Methods in Statistics	6	1+2			400
X_400336	Stochastic Optimization	6	1+2	HC	E, A	400
X_400352	Stochastic Processes for Finance	6	1+2	WC, HC	E, A	400
X_400332	Systems and Control	6	1+2			400
X_400326	Advanced Linear Programming	6	4+5			400
XMM_40000	Advanced Topics in Semidefinite Progr.	8	4+5			500
XMM_40002	Algebraic Geometry 2	8	4+5			500
XMM_40003	Algebraic Methods in Combinatorics	8	4+5			400
X_400453	Applied Finite Elements	6	4+5			400
X_400452	Applied Statistics	6	4+5			400
XMM_40004	Bayesian Statistics	8	4+5			400
X_418160	Coding Theory	8	4+5			400
XMU_41013	Derived Categories	6	4+5			500
X_400505	Elliptic Curves	8	4+5	HC		400
XMU_41014	Finite Element Methods for Part Diff Equ	6	4+5			400
XMM_40008	Lie Groups and Lie Algebras	8	4+5			500
X_418096	Mathematical structures for logic	8	4+5			400
XMM_40009	Network Dynamics	6	4+5			400
X_418099	Non-commutative geometry	6	4+5			400
XMM_40010	Nonlinear Waves	8	4+5			500
X_418010	Numerical Meth. for Time-dependent PDE's	8	4+5	HC		500
X_418062	Operator Algebras	8	4+5			400
X_400422	Optimization of Business Processes	6	4+5	HC	E, A, Pres	400
X_400330	Partial Differential Equations	8	4+5	HC		500
X_400397	Queueing Theory	6	4+5			400
X_400325	Riemann Surfaces	8	4+5	HC		400
X_400396	Scheduling	6	4+5			400
XMM_40011	Selected Areas in Cryptology	8	4+5			500
X_418035	Set Theory	8	4+5	HC		400
X_400454	Stochastic Differential Equations	6	4+5			500

X_400470	Stochastic Integration	8	4+5			400
X_400339	Stochastic Processes	8	4+5	HC		400
X_418036	Symplectic Geometry	8	4+5	HC		400
X_400571	Time series	8	4+5	HC		500
XMM_40012	Topological Methods for Nonlinear Differential Equations	8	4+5			500

Education Track

Compulsory choice (24 EC required)

Course code	Course component	EC	Period	Teaching method	Examination format	Level
X_405041	Coding and Cryptography	6	1	HC	E, A	500
X_418135	Advanced Combinatorics	8	1+2			500
XMM_40001	Algebraic Geometry 1	8	1+2			500
X_400324	Algebraic Number Theory	8	1+2	HC		400
X_400600	Algebraic Topology	8	1+2	WC, HC		400
X_400076	Applied Analysis: Financial Mathematics	6	1+2	HC	E, A	400
X_400392	Applied Stochastic Modeling	6	1+2	WC, HC	E, A	400
X_400323	Asymptotic Statistics	8	1+2			500
XMU_41012	Characteristic Classes	6	1+2			500
X_418136	Commutative Algebra	8	1+2			400
XMM_40005	Complex Geometry	8	1+2			500
X_405125	Complex Networks	8	1+2	HC		400
X_400446	Continuous Optimization	6	1+2			400
XMM_40006	Cryptology	5	1+2			400
X_400509	Differential geometry	8	1+2	HC		400
X_400445	Discrete Optimization	6	1+2			400
X_400429	Dynamical Systems	8	1+2	HC	E, A	400
X_418138	Ergodic Theory	8	1+2	HC		500
X_418007	Fourier Analysis and Distributions	8	1+2	HC		400
X_400328	Functional Analysis	8	1+2	HC		500
XMM_40007	Galois Representations and Automorphic Forms	8	1+2			500
XM_41012	Hamiltonian Mechanics	6	1+2			500
X_418006	Heuristic Methods in Operations Research	6	1+2			400
X_418091	Interest Rate Models	6	1+2	HC		500
X_418060	Intuitionistic Mathematics	8	1+2			400
X_400244	Measure Theoretic Probability	8	1+2	HC		400
X_418124	Nonparametric Bayesian Statistics	6	1+2			500
X_400329	Numerical Linear Algebra	8	1+2			400
X_418097	P-adic numbers and applications	8	1+2	HC	E, A	400
X_418011	Parallel Algorithms	8	1+2			400
X_400535	Portfolio Theory	6	1+2			500
X_418118	Probabilistic and Extremal Combinatorics	8	1+2	HC		400
X_405130	Queues & Levy Fluctuation Theory	8	1+2	HC		400
X_400258	Simulation Methods in Statistics	6	1+2			400
X_400418	Statistical Models	6	1+2	HC	E, A	400
X_400336	Stochastic Optimization	6	1+2	HC	E, A	400
X_400352	Stochastic Processes for Finance	6	1+2	WC, HC	E, A	400
X_400332	Systems and Control	6	1+2			400
X_400326	Advanced Linear Programming	6	4+5			400
XMM_40000	Advanced Topics in Semidefinite Programming	8	4+5			500
XMM_40002	Algebraic Geometry 2	8	4+5			500
XMM_40003	Algebraic Methods in Combinatorics	8	4+5			400
X_400453	Applied Finite Elements	6	4+5			400
X_400452	Applied Statistics	6	4+5			400
XMM_40004	Bayesian Statistics	8	4+5			400
X_418160	Coding Theory	8	4+5			400
XMU_41013	Derived Categories	6	4+5			500
X_400505	Elliptic Curves	8	4+5	HC		400
XMU_41014	Finite Element Methods for Part Diff Equ	6	4+5			400
XMM_40008	Lie Groups and Lie Algebras	8	4+5			500
X_418096	Mathematical structures for logic	8	4+5			400

XMM_40009	Network Dynamics	6	4+5			400
X_418099	Non-commutative geometry	6	4+5			400
XMM_40010	Nonlinear Waves	8	4+5			500
X_418010	Numerical Meth. for Time-dependent PDE's	8	4+5	HC		500
X_418062	Operator Algebras	8	4+5			400
X_400422	Optimization of Business Processes	6	4+5	HC	E, A, Pres	400
X_400330	Partial Differential Equations	8	4+5	HC		500
X_400397	Queueing Theory	6	4+5			400
X_400325	Riemann Surfaces	8	4+5	HC		400
X_400396	Scheduling	6	4+5			400
XMM_40011	Selected Areas in Cryptology	8	4+5			500
X_418035	Set Theory	8	4+5	HC		400
X_401029	Statistical Data Analysis	6	4+5	WC, HC	E, R	300
XMU_41015	Statistical Theory for High- and Infinite-Dimensional models	6	4+5			500
X_400454	Stochastic Differential Equations	6	4+5			500
X_400470	Stochastic Integration	8	4+5			400
X_400339	Stochastic Processes	8	4+5	HC		400
X_418036	Symplectic Geometry	8	4+5	HC		400
X_400571	Time series	8	4+5	HC		500
XMM_40012	Topological Methods for Nonlinear Differential Equations	8	4+5			500

Stochastics track

Compulsoy choice 2 out of 6 (Advanced courses Stochastics - 12 EC required)

Course code	Course component	EC	Period	Teaching method	Examination format	Level
X_405125	Complex Networks	8	1+2	HC		400
X_418091	Interest Rate Models	6	1+2	HC		500
X_400535	Portfolio Theory	6	1+2			500
X_405130	Queues & Levy Fluctuation Theory	8	1+2	HC		400
X_405110	Statistics for Networks	6	1+2	HC	A, Pres	600
XMM_40004	Bayesian Statistics	8	4+5			400

Suggested elective courses (24 EC required)

Course code	Course component	EC	Period	Teaching method	Examination format	Level
X_405041	Coding and Cryptography	6	1	HC	E, A	500
X_418135	Advanced Combinatorics	8	1+2			500
XMM_40001	Algebraic Geometry 1	8	1+2			500
X_400324	Algebraic Number Theory	8	1+2	HC		400
X_400600	Algebraic Topology	8	1+2	WC, HC		400
X_400076	Applied Analysis: Financial Math	6	1+2	HC	E, A	400
X_400392	Applied Stochastic Modeling	6	1+2	WC, HC	E, A	400
XMU_41012	Characteristic Classes	6	1+2			500
X_418136	Commutative Algebra	8	1+2			400
XMM_40005	Complex Geometry	8	1+2			500
X_405125	Complex Networks	8	1+2	HC		400
X_400446	Continuous Optimization	6	1+2			400
XMM_40006	Cryptology	5	1+2			400
X_400509	Differential geometry	8	1+2	HC		400
X_400445	Discrete Optimization	6	1+2			400
X_400429	Dynamical Systems	8	1+2	HC	E, A	400
X_418138	Ergodic Theory	8	1+2	HC		500
X_418007	Fourier Analysis and Distributions	8	1+2	HC		400
X_400328	Functional Analysis	8	1+2	HC		500
XMM_40007	Galois Representations and Automorphic Forms	8	1+2			500
XM_41012	Hamiltonian Mechanics	6	1+2			500
X_418006	Heuristic Methods in Operations Research	6	1+2			400
X_418091	Interest Rate Models	6	1+2	HC		500
X_418060	Intuitionistic Mathematics	8	1+2			400
X_418142	Mirror Symmetry	6	1+2			600

X_418124	Nonparametric Bayesian Statistics	6	1+2			500
X_400329	Numerical Linear Algebra	8	1+2			400
X_418097	P-adic numbers and applications	8	1+2	HC	E, A	400
X_418011	Parallel Algorithms	8	1+2			400
X_400535	Portfolio Theory	6	1+2			500
X_418118	Probabilistic and Extremal Combinatorics	8	1+2	HC		400
X_405130	Queues & Levy Fluctuation Theory	8	1+2	HC		400
X_400258	Simulation Methods in Statistics	6	1+2			400
X_400418	Statistical Models	6	1+2	HC	E, A	400
X_405110	Statistics for Networks	6	1+2	HC	A, Pres	600
X_400336	Stochastic Optimization	6	1+2	HC	E, A	400
X_400352	Stochastic Processes for Finance	6	1+2	WC, HC	E, A	400
X_400332	Systems and Control	6	1+2			400
X_400326	Advanced Linear Programming	6	4+5			400
XMM_40000	Advanced Topics in Semidefinite Programming	8	4+5			500
XMM_40002	Algebraic Geometry 2	8	4+5			500
XMM_40003	Algebraic Methods in Combinatorics	8	4+5			400
X_400453	Applied Finite Elements	6	4+5			400
X_400452	Applied Statistics	6	4+5			400
XMM_40004	Bayesian Statistics	8	4+5			400
X_418160	Coding Theory	8	4+5			400
XMU_41013	Derived Categories	6	4+5			500
X_400505	Elliptic Curves	8	4+5	HC		400
XMU_41014	Finite Element Methods for Part Diff Equ	6	4+5			400
XMM_40008	Lie Groups and Lie Algebras	8	4+5			500
X_418096	Mathematical structures for logic	8	4+5			400
XMM_40009	Network Dynamics	6	4+5			400
X_418099	Non-commutative geometry	6	4+5			400
XMM_40010	Nonlinear Waves	8	4+5			500
X_418062	Operator Algebras	8	4+5			400
X_400422	Optimization of Business Processes	6	4+5	HC	E, A, Pres	400
X_400330	Partial Differential Equations	8	4+5	HC		500
X_400397	Queueing Theory	6	4+5			400
X_400325	Riemann Surfaces	8	4+5	HC		400
X_400396	Scheduling	6	4+5			400
XMM_40011	Selected Areas in Cryptology	8	4+5			500
X_418035	Set Theory	8	4+5	HC		400
X_401029	Statistical Data Analysis	6	4+5	WC, HC	E, R	300
XMU_41015	Statistical Theory for High- and Infinite-Dimensional models	6	4+5			500
X_400454	Stochastic Differential Equations	6	4+5			500
X_400470	Stochastic Integration	8	4+5			400
X_418036	Symplectic Geometry	8	4+5	HC		400
X_400571	Time series	8	4+5	HC		500
XMM_40012	Topological Methods for Nonlinear Differential Equations	8	4+5			500

Teachers track (24 EC required)

Compulsory Choice Mathematics

Course code	Course component	EC	Period	Teaching method	Examination format	Level
X_405041	Coding and Cryptography	6	1	HC	E, A	500
X_400076	Applied Analysis: Financial Math	6	1+2	HC	E, A	400
X_400244	Measure Theoretic Probability	8	1+2	HC		400
X_400258	Simulation Methods in Statistics	6	1+2			400
X_400323	Asymptotic Statistics	8	1+2			500
X_400324	Algebraic Number Theory	8	1+2	HC		400
X_400328	Functional Analysis	8	1+2	HC		500
X_400329	Numerical Linear Algebra	8	1+2			400
X_400332	Systems and Control	6	1+2			400
X_400336	Stochastic Optimization	6	1+2	HC	E, A	400
X_400352	Stochastic Processes for Finance	6	1+2	WC, HC	E, A	400
X_400392	Applied Stochastic Modeling	6	1+2	WC, HC	E, A	400

X_400418	Statistical Models	6	1+2	HC	E, A	400
X_400429	Dynamical Systems	8	1+2	HC	E, A	400
X_400445	Discrete Optimization	6	1+2			400
X_400446	Continuous Optimization	6	1+2			400
X_400509	Differential geometry	8	1+2	HC		400
X_400535	Portfolio Theory	6	1+2			500
X_400600	Algebraic Topology	8	1+2	WC, HC		400
X_405125	Complex Networks	8	1+2	HC		400
X_405130	Queues & Levy Fluctuation Theory	8	1+2	HC		400
X_418006	Heuristic Methods in Operations Research	6	1+2			400
X_418007	Fourier Analysis and Distributions	8	1+2	HC		400
X_418011	Parallel Algorithms	8	1+2			400
X_418060	Intuitionistic Mathematics	8	1+2			400
X_418091	Interest Rate Models	6	1+2	HC		500
X_418097	P-adic numbers and applications	8	1+2	HC	E, A	400
X_418118	Probabilistic and Extremal Combinatorics	8	1+2	HC		400
X_418135	Advanced Combinatorics	8	1+2			500
X_418136	Commutative Algebra	8	1+2			400
X_418138	Ergodic Theory	8	1+2	HC		500
X_418142	Mirror Symmetry	6	1+2			600
XM_41012	Hamiltonian Mechanics	6	1+2			500
XMM_40001	Algebraic Geometry 1	8	1+2			500
XMM_40005	Complex Geometry	8	1+2			500
XMM_40006	Cryptology	5	1+2			400
XMM_40007	Galois Representations and Automorphic Forms	8	1+2			500
XMU_41012	Characteristic Classes	6	1+2			500
X_400325	Riemann Surfaces	8	4+5	HC		400
X_400326	Advanced Linear Programming	6	4+5			400
X_400330	Partial Differential Equations	8	4+5	HC		500
X_400339	Stochastic Processes	8	4+5	HC		400
X_400396	Scheduling	6	4+5			400
X_400397	Queueing Theory	6	4+5			400
X_400422	Optimization of Business Processes	6	4+5	HC	E, A, Pres	400
X_400452	Applied Statistics	6	4+5			400
X_400453	Applied Finite Elements	6	4+5			400
X_400454	Stochastic Differential Equations	6	4+5			500
X_400470	Stochastic Integration	8	4+5			400
X_400505	Elliptic Curves	8	4+5	HC		400
X_400571	Time series	8	4+5	HC		500
X_401029	Statistical Data Analysis	6	4+5	WC, HC	E, R	300
X_418010	Numerical Meth. for Time-dependent PDE's	8	4+5	HC		500
X_418035	Set Theory	8	4+5	HC		400
X_418036	Symplectic Geometry	8	4+5	HC		400
X_418062	Operator Algebras	8	4+5			400
X_418096	Mathematical structures for logic	8	4+5			400
X_418099	Non-commutative geometry	6	4+5			400
X_418160	Coding Theory	8	4+5			400
XMM_40000	Advanced Topics in Semidefinite Programming	8	4+5			500
XMM_40003	Algebraic Methods in Combinatorics	8	4+5			400
XMM_40002	Algebraic Geometry 2	8	4+5			500
XMM_40008	Lie Groups and Lie Algebras	8	4+5			500
XMM_40009	Network Dynamics	6	4+5			400
XMM_40010	Nonlinear Waves	8	4+5			500
XMM_40011	Selected Areas in Cryptology	8	4+5			500
XMM_40012	Topological Methods for Nonlinear Differential Equations	8	4+5			500
XMU_41013	Derived Categories	6	4+5			500
XMU_41015	Statistical Theory for High- and Infinite-Dimensional models	6	4+5			500
XMM_40004	Bayesian Statistics	8	4+5			400

If the student wishes to take a different course than the units of study listed, advance permission must be obtained in writing from the Examinations Board.

Article 4.5 Sequence of examinations

Examinations and/or practical exercises that may only be taken once the exams of other (prior) components have been passed:

- Before starting a work placement and/or graduation project, the student must have earned all other programme credits. A shortfall of 6 credits is permissible.

Article 4.6 Participation in practical exercise and tutorials

1. Students are expected to participate actively in all degree components for which they are registered.
2. In addition to the general requirement regarding active participation, the study guide details additional requirements for each degree component, as well as component attendance requirements.
3. At the start of each degree component, a specification will be made available which details:
   - The final attainment levels of the degree component;
   - The study guidelines for passing the degree component;
   - The way in which the final attainment levels are assessed;
   - The regulations for examinations and resits;
   - The guidance provided by lecturers during scheduled hours and otherwise;
   - Component attendance requirements;
   - The provision of feedback to the student on assignments submitted, report and presentations given during the degree component.
4. If a student is prevented by force majeure from attending a required degree component, then the student must send written notification of his or her absence to the examiner and the study advisor as soon as possible. The examiner may, after consultation with the study advisor, give the student an alternative assignment.
5. Absence from degree components with required attendance is only allowed in the case of force majeur.
6. In the case of inadequate participation of a qualitative or quantitative nature, which must be recorded in advance and approved by the Director of Studies, the examiner may exclude the student from further participation in the degree component or a part of the degree component.

Article 4.7 Maximum exemption

Not applicable

Article 4.8 Validity period for results

As laid down in article 4.8 of TER part A.

Article 4.9 Degree

Students who have successfully completed their Master's final examination are awarded a Master of Science degree. The degree awarded is stated on the diploma. If it is a joint degree, this will also be stated on the diploma.

5. Transitional and final provisions

Article 5.1 Amendments and periodic review

1. Any amendment to the Teaching and Examination Regulations will be adopted by the faculty board after taking advice from the relevant Board of Studies. A copy of the advice will be sent to the authorized representative advisory body.
2. An amendment to the Teaching and Examination Regulations requires the approval of the authorized representative advisory body if it concerns components not related to the subjects of Section 7.13, paragraph 2 sub a to g and v of the WHW and the requirements for admission to the Master's programme.
3. An amendment to the Teaching and Examination Regulations can only pertain to an academic year that is already in progress if this does not demonstrably damage the interests of students.

Article 5.2 Transitional provisions

Notwithstanding the current Teaching and Examination Regulations, the following transitional

provisions apply for students who started the programme under a previous set of Teaching and Examination Regulations:

Not applicable.

Article 5.3 Publication

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

Article 5.4 Effective date

These Regulations enter into force with effect from 1 September 2016.

Advice from Board of Studies on 1 July 2016

Advice from Examination Board of the Faculty of Sciences on 5 July 2016

Approved by authorized representative advisory body on 30 June 2016

Adopted by the Board of the Faculty of Earth and Life Sciences / of Sciences on 14 July 2016.

Appendix I

List of articles that must be included in the OER pursuant to the WHW (articles in framed boxes):

Section A

Art. 1.1	7.13, para 1, WHW
Art. 2.1	7.13, para 2 sub w
Art. 3.2	7.13, para 2 sub e
Art. 4.2	7.13, para 2 sub h and l
Art. 4.3	7.13, para 2 sub n
Art. 4.4	7.13, para 2 sub o
Art. 4.5	7.13, para 2 sub j, h
Art. 4.7	7.13, para 2 sub r
Art. 4.8	7.13, para 2 sub k
Art. 4.9	7.13, para 2 sub p
Art. 4.10	7.13, para 2 sub q
Art. 4.11	7.13, para 2 sub a
Art. 5.1	7.13, para 2 sub u
Art. 5.2	7.13, para 2 sub m

Section B

Art. 1.2	7.13, para 2 sub i
Art. 2.1	7.13, para 1 sub b, c
Art. 2.2	7.13, para 2 sub c
Art. 3.1	7.25, para 4
Art. 4.1	7.13, para 2 sub a
Art. 4.2	7.13, para 2 sub e, h, j, l
Art. 4.3	7.13, para 2 sub t
Art. 4.4	7.13, para 2 sub e, h, j, l
Art. 4.5	7.13, para 2 sub s
Art. 4.6	7.13, para 2 sub d
Art. 4.8	7.13, para 2 sub k