



UNIVERSITY OF AMSTERDAM

FACULTY OF SCIENCE
TEACHING AND EXAMINATION REGULATIONS
PART B

Academic year 2016-2017

MASTER'S PROGRAMME MATHEMATICAL PHYSICS

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Chapter 1. General Provisions

Article 1.1 – Definitions

In addition to part A, the following definitions are used in part B

- a. Personal Education Plan An individual study plan for the student's master programme.
- b. Research project Compulsory internship/master thesis of 42 EC always resulting in a written report
- c. Master Guidebook Booklet containing information on the master programme, including procedures and assessment criteria.

Article 1.2 – General information master's programme

1. The Master's programme Mathematical Physics, CROHO 60232, is offered on a full-time basis. The language of instruction for the programme is English. This means that the Code of Conduct governing Foreign Languages at the UvA and the provisions laid down in Section 7.2 of the Act apply.
2. The programme has a workload of 120 EC.

Article 1.3 – Enrolment

The programme starts at the beginning of the first semester (September) of the study year.

Chapter 2. Aim of the programme and exit qualifications

Article 2.1 – Aim of the programme

The objectives of the Master's programme is to provide students with knowledge, abilities and insight in the field of mathematical physics to enable them to work as a mathematical physics professional at an international level, or to become qualified to pursue advanced training as scientific researcher in a Dutch or in a foreign university.

Article 2.2 – Exit qualifications

The student graduating from the programme:

- a) has a thorough theoretical and practical knowledge of modern mathematics and theoretical physics;
- b) has a good and broad overview of the problems, techniques and working methods of modern mathematical physics;
- c) is able to apply one's knowledge of mathematical physics in a broader (multidisciplinary) context;
- d) is capable of independent orientation and application of theoretical-physical as well as mathematical (international) professional literature;
- e) is able to formulate a research plan, based on a realistic problem within the discipline of mathematical physics;
- f) is able to carry out research independently into either a mathematical problem with a significant physical character, or to carry out research into a physical problem with a distinctive mathematical content;
- g) is able to analyse and formulate research results and to draw conclusions from them;
- h) is able to incorporate the obtained results and conclusions within the frame work of the results of other scientists;
- i) is able to write a scientific report;
- j) is able to exchange ideas with fellow researchers;
- k) is able to communicate with mathematicians and theoretical physicists in speech and in writing and by giving presentations that are comprehensive and interesting to both parties;

- l) is able to become acquainted with other sub-areas of mathematical physics within a reasonable period of time;
- m) is employable in those positions in which knowledge and research skills in the field of mathematical physics are required;
- n) has sufficient knowledge of and insight in the role of mathematical physics order to make a sound choice regarding one's own profession, as well as in the exertion of this profession.
- o) is able to form a vision on the development of scientific research in the field of study.

Chapter 3. Admission to the programme

Article 3.1 – Entry requirements

1. The Master's programme Mathematical Physics is a selective study programme.
2. Students who have successfully completed the double Bachelor's degree in *Wiskunde en Natuurkunde* awarded by the University of Amsterdam or by another Dutch University may be admitted.
3. Students who have successfully completed the following degrees may be admitted: the Bachelor's degree in *Natuurkunde* or *Natuur- en Sterrenkunde* or *Wiskunde* awarded by a Dutch university, with evident interest in physics and advanced mathematics. This interest must be made clear in a letter of application or during the intake interview.
4. Without prejudice to the provisions of paragraph 1, the Admissions Board may grant admission to the study programme when concluding, that the previous education of the candidate is equivalent to the Bachelor's degree referred to in paragraphs 2 and 3.

Article 3.2 – Premaster's programme

Without prejudice to the provisions of Article 3.1 the Admissions Board may grant admission to a student whose previous education does not meet aforementioned admission requirements to the study programme, when concluding that the candidate is able to meet these admission requirements within a reasonable period of time. At the request of a candidate, and when the Admissions Board has decided additional education feasible, the Admissions Board may draw up a programme of at most 30 EC as an admission requirement, a so called 'conversion programme'. After completion of this conversion programme a letter of admission will be issued, exclusively for the stated Master's programme.

Article 3.3 – Restrictions on the number of students admitted to the Master's programme

Not applicable.

Article 3.4 – Intake dates

A request for admission to the programme must be submitted to the Faculty of Science and Master's programme before 1 May 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 these intake dates.

Article 3.5 – English Language Requirements

1. Admission to the programme requires sufficient command of the English language. A student may take one of the following tests to demonstrate language competence:
 - IELTS: 6.5
 - TOEFL paper based test: 580
 - TOEFL internet based test: 92
 - Cambridge Advanced English: C

- Those possessing command of the English language at the VWO level satisfy the English Language Requirement.

Article 3.6 – Free curriculum

- The student may compile a curriculum of his/her own choice, which has to be approved by the Examinations Board.
- At least one half of the proposed curriculum has to consist of components of the regular programme, including the Thesis Research Project Mathematical Physics.

Chapter 4. Content and organisation of the programme

Article 4.1 – Organisation of the programme

The curriculum comprises the following:

Components	EC
Compulsory components	36
Constrained electives	30
Master Project Mathematical Physics	48
Master Seminar in Algebra and Geometry	6
Total EC	120 EC

Article 4.2 – Compulsory components

- The compulsory components are listed in Appendix 1. The contents and format of the compulsory components are further described in the Course Catalogue, stating the entry requirements for successful participation in the component.

a. Students take 36 EC of compulsory courses. The list for 2016/17 is

- Algebraic Topology, 8EC
- Differential Geometry, 8 EC
- Lie Groups and Lie Algebras, 8 EC
- Mirror Symmetry, 6 EC
- Noncommutative Geometry, 6EC

b. From the constrained electives, students take at least two from the list of physics courses. The list for 2016/17 is:

- Quantum Field Theory
- Statistical Physics and Condensed Matter Theory I
- String Theory

2. Master Project Mathematical Physics:

- The *Master Project Mathematical Physics* consists of a thesis, an interim presentation in the *Master Seminar in Algebra and Geometry*, and a final presentation. The thesis contains a short non-specialist summary in either Dutch or English.

- b. At the end of the Master Project Mathematical Physics the responsible lecturer checks on the basis of the assessment form, if the student has sufficiently achieved the set exit qualifications. The assessment criteria are described in the Course Catalogue.
- c. In the assessment of the Master Project Mathematical Physics
 - i. a staff member will act as a second reviewer;
 - ii. the coordinator of the Master Seminar will assess the interim presentation;
 - iii. the final presentation will be attended by the supervisor and the second reviewer;
 - iv. the final grade of the master project will be determined in a private meeting of the responsible lecturer, the second reviewer and a member of the Examinations Board

Article 4.3 – Practical components

Not applicable.

Article 4.4 – Elective components

1. Elective courses are listed in Appendix 1.
2. Course components successfully completed elsewhere or that are not included in the list of elective components may be included in the student's programme, subject to prior permission from the Examinations Board.
 - a. The courses have to be followed at an accredited university or institute that are according to the Examinations Board of a comparable level.
 - b. The course has to be relevant to the programme.
3. In terms of content, elective components must not show too much similarity to other components of the student's curriculum. The acceptable degree of similarity will be decided by the Examinations Board.

Article 4.5 – Sequence and admission requirements

1. Participation in a course may be restricted to students that have not completed certain other components. Information about admission requirements can be found in the study guide.

Article 4.6 – Participation practical training and tutorials

Not applicable.

Article 4.7 – Exemption

A maximum of 60 EC can be accumulated in the programme through exemptions granted by the Examinations Board.

Article 4.8 – Degree

A student who passes the final examination of a programme is awarded a Master of Science degree. The name of the degree awarded is stated on the diploma.

Article 4.9 – Joint National Master's Programme

Students taking courses as part of the national Master Mathematics may also be subject to rules and regulations which have been agreed on nationally. These regulations can be found on: www.mastermath.nl -> 'Courses and Exams'.

Article 4.10 – Double Master's programme (two-year programmes)

In order to be awarded two Master's degrees, the following requirements must be met:

1. The total programme of the candidate should amount to at least 180 EC credits.
2. The two master programmes may not show too much similarity.

3. The candidate's work for the programme (lectures, research work, etc.), must be of such a standard that all the exit qualifications of each of the two programmes have been met.
4. The candidate must have conducted separate research work for both Master's degrees. This may consist of two separate research projects with supervisors from the respective study programmes. In the case of an integrated research project, this must be supervised by two staff members appointed from the two study programmes. Both staff members must assess the work as a pass, according to the standards for a research project in the respective master degrees. The total number of credits given for an integrated research project cannot be more than 3/4 of the sum of the credits given for two independent research projects.
5. The Examinations Boards of both study programmes must approve the student's double Master's programme before the student commences on the double Master's programme.

Chapter 5. Transitional and final provisions

Article 5.1 – Amendments

1. The dean shall establish amendments to the part B of these Regulations by independent decision – having heard the board of studies and with due regard for the authority of the relevant advisory bodies.
2. Amendments to these regulations take place following a recommendation by the board of studies relating to the regulations in their entirety, and with the endorsement of a joint meeting of those sections which do not relate to the subject of Article 7.13 paragraphs 2a to g, and paragraph 3 of the Act and the admission requirements for Master's programmes.
3. Amendments to the part B of these Regulations do not apply to the current academic year unless they can be reasonably assumed not to damage the student's interest.

Article 5.2 – Cancelled programme components

Not applicable.

Article 5.3 - Publication

1. The dean shall ensure a fitting publication of part A and B of these Regulations and the rules and guideline referred to in the Act.
2. These regulations can be accessed at the website of the Faculty of Science and the UvA Course Catalogue.

Article 5.4 – Effective date

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

Thus drawn up by the Dean of the Faculty of Science on 18 July 2016.

Appendix 1.

Description of the content and study load of the components

Format: L: lectures; T: tutorials; PR: presentations; PROJ: Project

Assessment: W: written exam; O: oral exam; P: presentation; R: report

Course	code UvA	code VU	EC	period	format	ass.
Compulsory courses (42 EC)						
Algebraic Topology	53348ALT8Y	WIUU1004	8	1, 2	L, T	W, O
Differential Geometry	53348DIG8Y	WIUU0704	8	4, 5	L, T	W, O
Lie Groups and Lie Algebras	5334LGLA8Y		8	1, 2	L, T	W, O
Master Seminar in Algebra and Geometry	5334MSIA6Y		6	1, 2, 4, 5	L, PR	P
Mirror Symmetry	-		6	1, 2	L, T	W, O
Noncommutative Geometry	-		6	4, 5	L, T	W, O
Physics courses (12 EC required)						
Quantum Field Theory	5354QUFT6Y	X_420081	6	2	L, T	W, O
Statistical Physics and Condensed Matter Theory I	53541SPC6Y	X_420100	6	5	L, T	P, R
String Theory	5354STTH6Y		6	5		
Constrained electives						
Algebraic Geometry 1	53341ALG8Y		8	4, 5	L, T	W, O
Algebraic Geometry 2	53342ALG8Y		8	1, 2	L, T	W, O
Characteristic Classes	5334CHCL6Y		6	4, 5	L, T	W, O
General Relativity	5354GERE6Y		6	4,5		
Quantum Field Theory	5354QUFT6Y	X_420081	6	2	L, T	W, O
Quantum Field Theory, extension	5354QFTE3Y	X_422554	3	3		
Riemann Surfaces	53348RIS8Y		8	4, 5	L, T	
Statistical Physics and Condensed Matter Theory I	53541SPC6Y	X_420083	6	1	L, T	W
Statistical Physics and Condensed Matter Theory II	53542SPC6Y	X_420100	6	5	L, T	P, R
Statistical Physics and Condensed Matter, extension	5354SPCM3Y	X_420083	3	3		
String Theory	5354STTH6Y	X_400242	6	5	L, T	W
String Theory, extension	5354STTE3Y		6	3		
Symplectic Geometry	-		8	4, 5	L, T	
Master Project (48 EC, compulsory)						
Master Project Mathematical Physics			48	1-6	PROJ	