UNIVERSITY OF AMSTERDAM

FACULTY OF SCIENCE

Teaching and Examination Regulations

Part A

Master's programmes FNWI

Academic year 2012-2013

Preamble

These Teaching and Examination Regulations (*Onderwijs- en examenregeling*, OER), hereinafter referred to as: the Regulations, include all the rules and regulations, as prescribed under the Dutch Higher Education and Research Act (*WHW*), hereinafter referred to as: the Act, in respect of the teaching and examinations of the Master's programmes at the Faculty of Science (*Faculteit der Natuurwetenschappen, Wiskunde & Informatica*, FNWI) and the Institute for Interdisciplinary Studies (*Instituut voor Interdisciplinaire Studies*, IIS), namely:

- Artificial Intelligence
- Astronomy and Astrophysics
- Biological Sciences
- Biomedical Sciences
- Chemistry
- Brain and Cognitive Sciences
- Earth Sciences
- Forensic Science
- Grid Computing
- Information Studies
- Life Sciences
- Logic
- Mathematics and Science Education
- Mathematical Physics
- Mathematics
- Physics
- Software Engineering
- Stochastics and Financial Mathematics
- System and Network Engineering

The Master's programmes offered jointly by the University of Amsterdam (UvA) and VU University Amsterdam (VU) are covered in these Regulations, in the sense that the regulations of the programmes in question have been harmonised as much as possible.

This document consists of two parts: Part A and Part B. Part A includes general information that applies to all the Master's programmes on offer. Part B deals with specific aspects of the individual programmes, such as the aim and exit qualifications, additional entry requirements, organisation of the curriculum, description of the content and study load of the components, and, if applicable, additional regulations.

These Regulations have been drawn up by the dean of the Faculty of Science on 25 June 2012, with reservations to a number of subjects on which the Faculty Student Council did not give its approval yet at that date. The approval for these specific subjects has been given on 29 August 2012, which means all terms have been met.

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PART A – GENERAL INFORMATION

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Chapter 1 – General provisions

Article 1.1 – Applicability of the Regulations

These Regulations apply to the teaching and examinations of the Master's programmes in: Artificial Intelligence, Astronomy and Astrophysics, Biological Sciences, Biomedical Sciences, Chemistry, Brain and Cognitive Sciences, Earth Sciences, Forensic Science, Grid Computing, Information Studies, Life Sciences, Logic, Mathematics and Science Education, Mathematical Physics, Mathematics, Physics, Software Engineering, Stochastics and Financial Mathematics, and System and Network Engineering, hereinafter individually referred to as: the programme. The programme is offered within the Faculty of Science and the Institute for Interdisciplinary Studies, hereinafter referred to as: the Faculty.

Article 1.2 – Definitions

The following definitions are used in these Regulations:

1. academic year:	the period beginning on 1 September and ending on 31 August of the following calendar year;
2. the Act:	the Dutch Higher Education and Research Act (*Wet op het hoger onderwijs en wetenschappelijk onderzoek*, WHW);
3. component:	a unit of study of the programme within the meaning of the Act, for example a course or internship;
4. course catalogue:	the course catalogue provides information on the content of the programme and it's components.
5. credit:	an ECTS credit, with a workload of 28 hours of study;
6. curriculum:	the totality and cohesiveness of the components, teaching activities/methods, contact hours, testing and examination methods and recommended literature;
7. Examinations Board:	the Examinations Board of one or more study programmes of the faculty, within the meaning of Section 7.12 of the Act;
8. examiner:	the person appointed by the Examinations Board for the purpose of holding examinations and determining their results, within the meaning of Section 7.12c of the Act;
9. examination:	an assessment of the student's knowledge, understanding and skills relating to a component. The examination can be held in either written or oral form. The assessment is expressed in terms of a final mark. In the case of an oral examination, components which form part of the examination and on which the final mark is therefore partly based, such as a presentation, do not fall within the scope of the definition and are not seen as the examination itself. An examination may consist of one or more partial interim or other examinations. A resit always covers the same material as the original examination;
10. final examination	the decision of the Examinations Board that the student has completed the programme;
11. fraud and plagiarism:	the student's actions or failures to act that make it wholly or partially impossible to accurately judge his/her knowledge, understanding and skills (see the Regulations Governing Fraud and Plagiarism for UvA Students in Appendix 4);
12. interim examination:	examination which covers a part of the content of a component.

13. 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.
14. Master's thesis:	a component of 12 or more ECTS credits comprising research into the literature and/or contributing to scientific research and/or an internship, always resulting in a written report. In some study programmes, a literature study is part of the curriculum. In general, fewer credits are awarded for this literature study than for a Master's thesis. This component therefore falls outside the scope of the definition of a Master's thesis. Where necessary, the definition of a Master's thesis is further refined in Part B of these Regulations (with specific information on the individual programmes);
15. practical exercise:	the participation in a practical training or other educational learning activity, aimed at acquiring certain (academic) skills. Examples of practical exercises are: researching and writing a thesis, carrying out a research assignment, taking part in field work or an excursion taking part in another educational learning activity aimed at acquiring specific skills, participating in and completing an internship;
16. portfolio:	the collection of educational products (written and/or electronic) representing the student's achievements within the programme he/she has chosen;
17. programme:	the prescribed combination of components including teaching methods, learning activities, examinations and literature.
18. programme charter:	the part of the Student Charter specific to the programme in accordance with Section 7.59 of the Act. The programme charter is included in the UvA Course Catalogue. If applicable, regulations are set out in the course catalogue;
19. student:	the person enrolled at the University to pursue education and/or take examinations as part of the programme;
20. seminar:	a class in which the material is addressed primarily on a problem- or case-oriented basis;
21. teaching period:	the period, during the semesters, in which the teaching of a programme is offered (see the Academic Calendar UvA 2012-2013 in Appendix 2).
22. the University:	the University of Amsterdam;
23. workload:	the workload of the unit of study to which an examination applies, is expressed in terms of credits = ECTS credits (ECTS = European Credit and Transfer Accumulation System). The workload for 1 year (1,680 hours) is 60 ECTS credits;

The other terms have the meanings ascribed to them in the Act.

Chapter 2 – Admission to the programme

Article 2.1 – Entry requirements for the Master's programmes

1. The entry requirements for the specific Master's programmes can be found in Part B of these Regulations.
2. If the intended programme includes multiple programmes, a specific specialisation/minor in the Bachelor's programme may be required for admission to the different programmes.

*Article 2.2 – Pre-Master's programme (***schakelprogramma***)*

If, in the opinion of the Examinations Board, an admission request does not satisfy the set requirements but these requirements can be expected to be met within a reasonable period of time, the applicant can be given the opportunity to satisfy the requirements by means of a supplementary pre-Master's programme. The maximum number of ECTS credits for such a pre-Master's programme is 30. The content of the pre-Master's programme will be determined by the programme director. The content itself must be approved by the Examinations Board and the Central Student Administration (CSA).

Article 2.3 – English language

Admission to the programme requires sufficient command of the English language. A student may take one of the following tests to establish language competence:

- TOEFL (Test of English as a Foreign Language). The minimum required TOEFL scores are: 235 for the computer test; 580 for the written test; 90 for the Internet test;
- IELTS (International English Language Testing System). The minimum required IELTS score is 6.5 and at least 6 on each sub-score (listening/reading/writing/speaking);
- A Cambridge International Examinations test. The minimum required scores are: First Certificate in English (FCE) score A+; Certificate in Advanced English (CAE) score A/B+; Certificate of Proficiency in English (CPE) score B.

Those possessing a Bachelor's degree from a Dutch university satisfy the requirement of sufficient command of the English language.

Article 2.4 – Admissions procedure

1. The Examinations Board of the programme is responsible for admission to the programme.
2. With a view to admitting students to the programme, the Examinations Board assesses the candidate's knowledge, understanding and skills. In this assessment the Board includes knowledge of the language in which the programme will be taught. The Board may request experts within or outside the University to test certain types of knowledge, understanding and skills, in order to supplement written evidence of the programme/programmes the student has completed.
3. The admission assessment takes place once or twice a year. The specifics of the individual programmes can be found in Part B of these Regulations.
4. A request for admission to the programme must be submitted to the Examinations Board 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 this closing date.
5. Admission is granted on condition that, by the relevant starting date at the latest, the candidate fulfills the provisions of Article 2.1 regarding knowledge and skills, as evidenced by the diplomas that he/she has obtained for completed programmes.
6. Candidates receive either confirmation of admission or a negative decision. An appeal against a negative decision can be lodged with the Examination Appeals Board (COBEX).

Article 2.5 – Intake dates

1. Intake into the programme is possible at the beginning of the first semester of an academic year ('September') and/or at the beginning of the second semester ('February'). The specifics of the individual programmes can be found in Part B of these Regulations. The intake date(s) mentioned in this paragraph ensure(s) a programme that can be expected to be completed within the official period.
2. When the programme commences, the student must have fully completed the Bachelor's programme or the pre-Master's programme allowing admission to this programme.

3. If intake takes place at a date other than that stated in paragraph 1 of this Article, the feasibility of the programme being completed within the set time cannot be guaranteed.

Article 2.6 – Recognition of acquired competences
Those who have not yet been admitted to the programme may be eligible for recognition of acquired competences. A reasoned, written request to this effect must be submitted to the Examinations Board. The criteria in the assessment of such requests can be found in Part B of these Regulations.

Chapter 3 – Content and organisation of the programme

Article 3.1 – Aim of the programme and exit qualifications
Information about the aim of the programme and exit qualifications can be found in Part B of these Regulations.

Article 3.2 – Organisation of the programme
The programme is organised on a full-time and/or part-time basis, as specified in Part B of these Regulations.

Article 3.3 – Language of instruction for the programme
The language of instruction for the programme is English. This means that the Code of Conduct for Foreign Languages at the UvA 2000 and the provisions laid down in Section 7.2 of the Act apply (see Appendix 3).

Article 3.4 – Scope of the programme
The programme has a workload of 60 or 120 ECTS credits and concludes with a final examination. The workload of the individual programmes can be found in Part B of these Regulations.

Article 3.5 – Curriculum
Information about the curriculum can be found in Part B of these Regulations.

Article 3.6 – Components completed elsewhere
1. Components successfully completed elsewhere during the programme may supplement the student's examination programme, subject to prior permission from the Examinations Board. For components completed elsewhere that are listed in Part B of these Regulations, no permission of the Examinations Board is necessary.
2. Exemptions for components successfully completed at a higher education institution prior to beginning the programme may only be granted on the basis of Article 5.10 of these Regulations.

Article 3.7 – Free curriculum
Subject to certain conditions, the student has the option of compiling a curriculum of his/her own choice which deviates from the curricula mentioned in Article 3.5 of these Regulations. The concrete details of such a curriculum require the prior permission of the relevant Examinations Board. In order to acquire permission, at least one half of the proposed curriculum must consist of components of the study programme in question.

Article 3.8 – Joint degrees
Information about joint degrees can be found in Part B of these Regulations, if applicable.

Article 3.9 – Majors

1. The student can choose between one of two majors, provided they are offered within the specific programme. The majors are:
   - Major in Management, Policy Analysis and Entrepreneurship
   - Major in Science Communication

The options for taking these and/or other majors can be found in Part B of these Regulations.
2. Regarding the major in Management, Policy Analysis and Entrepreneurship:
The major in Management, Policy Analysis & Entrepreneurship consists of 60 ECTS credits. It must be combined with a research programme, comprising at least 60 ECTS credits (courses, internship and literature study), and with the general compulsory components in order to meet the general requirements of the programme. The exit qualifications of this major can be found as an appendix to Part B of these Regulations (for those programmes which offer the option of taking this major). Further information on this major can be found on the website of VU University Amsterdam.
3. Regarding the major in Science Communication:
The major in Science Communication consists of 60 ECTS credits. It must be combined with a research programme, comprising at least 60 ECTS credits (courses, internship and literature study), and with the general compulsory components in order to meet the general requirements of the programme. The exit qualifications of this major can be found as an appendix to Part B of these Regulations (for those programmes which offer the option of taking this major). Further information on this major can be found on the website of the VU University Amsterdam.
4. Students have to go through a separate intake procedure for admission to the major in Management, Policy Analysis & Entrepreneurship and the major in Science Communication.
5. It is not permitted to take the obligatory research part of the programme and the major simultaneously.

Article 3.10 – Double Master's programme (two-year programmes)

In order to be awarded two Master's degrees or to have stated on the Master's diploma that two Master's programmes have been completed within the discipline, the following requirements must be met:
a. The total programme of the candidate should amount to at least 180 ECTS credits.
b. The candidate's work for the programme (lectures, research work, etc.), must be of such a standard that all the compulsory requirements of each of the two programmes have been met.
c. 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.
d. 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.

Article 3.11 – Elective components

1. In the case of one-year programmes, students may only choose Master's-level elective components as part of their programme.
2. In the case of two-year programmes, in exceptional cases students may choose Bachelor's-level elective components as part of their programme. The Examinations Board will determine whether an elective component at the Bachelor's level will be seen as part of the programme and the number of credits that will be allocated to the elective component.
3. In terms of content, elective components must not show too much similarity to the components of the student's standard curriculum. The acceptable degree of similarity will be decided by the Examinations Board.

4. An elective component will only be seen as part of the programme if the Examinations Board has given its prior approval.

Chapter 4 – Teaching

Article 4.1 – Participation in components and rules for priority admission

1. Every student must enroll for every component that he or she wants to participate in. To participate in components, the student must enroll within the period indicated in the UvA Course Catalogue and according to the procedures mentioned there. The student may be refused the opportunity to participate if he/she does not enroll or fails to enroll in time.
2. If a student has registered for a component, he or she will also be registered for the examination and the resit pertaining to that component.
3. Admission to components with limited capacity takes place on the basis of previously established and published admission criteria and rules for priority admission, and on the understanding that students enrolled in the programme are given priority over others in enrolling for components in the compulsory part of their programme.

Article 4.2 – Sequence and admission requirements

1. Information about sequence and admission requirements can be found in Part B of these Regulations, if applicable.
2. In cases where the result of a component has not been determined within the time periods mentioned in Article 5.6, this component may not be required as prior knowledge for the subsequent component.

Article 4.3 – Participation in practical training and study group sessions

The requirements for this can be found in Part B of these Regulations, if applicable.

Article 4.4 – Students with a disability

1. Students with a disability can submit a written request to qualify for special adaptations in the components, practical training sessions and examinations. These adaptations will accommodate as much as possible the student's individual disability, but may not alter the quality or degree of difficulty of the component or examination.
2. A recent certificate from a doctor or a psychologist or, in the case of dyslexia, from a registered testing agency – the Dutch Health Care Professionals (*BIG*), the Dutch Professional Association of Psychologists (*NIP*) or the Dutch Association of Educationalists (*NVO*) – must accompany the request mentioned in paragraph 1 of this Article. Where possible, this certificate must include an estimate of the degree to which the student's disability is expected to impede his/her study progress.
3. The dean or, on his/her behalf, the director of the educational institute or the programme director will decide on the adaptations concerning the teaching facilities. The Examinations Board will decide on requests for adaptations concerning tests/examinations.

Chapter 5 – Testing and examining

Article 5.1 – General

1. Testing during the component establishes the student's academic skills and whether the student is achieving the intended learning objectives sufficiently.
2. The programme charter states what the student must achieve in order to pass the component, as well as the criteria for student assessment.
3. The Examinations Board may, at the student's request, permit a different form of assessment than that indicated by the UvA Course Catalogue.

Article 5.2 – Registering for examinations

1. Every student must register for every component that he or she wants to participate in. The UvA Course Catalogue describes the registration procedure. Participation in examination may be refused if the student does not register or fails to register for the component in time.
2. Only students who have registered for a component can take part in the examination or resit for that component.
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 in order to receive credits.
4. In addition to paragraph 3 of this Article, in some Master's programmes the assessment of certain interim examinations will remain valid, whereby the student does not have to retake certain subcomponents. The subcomponents for which this exception is granted are listed in Part B of these Regulations, if applicable.
5. If a student has not registered in the prescribed manner, no result will be entered in the records under the student's name and no credits will be awarded for the component.

Article 5.3 – Testing/examination opportunities

1. For every component, the student has one opportunity to resit examination during the 12-month period starting from the commencement of the teaching that prepares the student for that examination. The first opportunity for the examination falls within the teaching period in which that component is offered. Resits are in principle offered outside the main teaching periods. For each component a schedule of examinations and resits will be made with all examinations scheduled outside teaching periods.
2. Contrary to the provisions of paragraph 1 of this Article, the assessment of a practical component will only take place at the end of the teaching period of the component.
3. Contrary to the provisions of paragraph 1 of this Article, students will be given at least one opportunity per year to take the examination in a component that has been offered in the preceding academic year but that will not offered in the current academic year or in the future.

Article 5.4 – Students with a disability

Information regarding testing and examining for students with a disability can be found in Article 4.4.

Article 5.5 – Oral examinations

1. If an oral examination is desired, the examiner must submit a written and motivated request to the Examinations Board. If the request is granted, the conditions cited in paragraphs 2 to 8 of this Article must be met.
2. An oral examination will be public unless the student files an objection to this effect, or, in an exceptional case, if the Examinations Board or examiner determines otherwise.
3. An examiner will give an oral examination to only one student at a time unless the Examinations Board determines otherwise.
4. A second examiner will always be present as an observer at an oral examination.
5. The examiner will make an assessment of the oral examination.
6. An assessment will be retained for at least two years after the result of the examination has been determined.
7. Only with the consent of the student may the examiner replace a written examination with an oral examination.

Article 5.6 – Determining and announcing results

1. The examiner determines the result (= mark) of an oral examination as soon as the examination is finished and informs the student accordingly by means of a written statement.

2. The examiner determines the result of a written or other form of examination component as quickly as possible, and in any event within 15 working days of the examination date, and also submits the necessary data to the programme administration so that the results can be registered.
3. The student must have been notified of the result of an examination at least 15 working days before the resit of the examination in the relevant subject. In exceptional cases, the dean can permit deviation from this time period.
4. In case of a conflict par. 3 prevails over par. 2.
5. The examiner determines the result of an interim examination no later than 5 working days before the next interim examination will be held, and in any event no later than 10 working days after the interim examination has been held.
6. The final result of a Master's thesis must be determined within 20 working days after it has been submitted.
7. The faculty administration is responsible for notifying the student of the result no later than 5 working days after the examiner has submitted the result to the faculty administration.
8. The student must receive notification of the result of an examination at least 15 working days before the resit of the examination in the relevant component.
9. During a research project or internship, the student is permitted to ask for an interim assessment by the supervisor(s) once only. This assessment will include a recommendation concerning the student's progress and performance. No credits are allocated on the basis of this interim assessment. A written statement of the interim assessment must be given to the student.

Article 5.7 – Marks

1. Marks are given on a scale from 1 to 10, with a maximum of one decimal after the point.
2. The final assessment of a component is a pass if the student obtains a mark of 6.0 or higher. The mark of 5.5 will not be given as the final result of a component.
3. In cases where the examination of a component consists of two or more parts, each of which are graded separately, the weighted mean of these marks must be rounded off using the following table:

from (inclusive)	**to (exclusive)**	**Final mark**
0.01	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 (incl.)	10

4. Contrary to the provisions of paragraph 1 of this Article, an examination component may be concluded with the 'pass' designation. The names of the relevant examination components can be found in Part B of these Regulations, if applicable.
5. The most recent result determines the final mark.
6. When a student does not fulfill all the requirements of a component, the examiner will register the mark 'did not fulfill all requirements' (*niet aan de eisen voldaan, n.a.v.*).
7. When a student does not take part in any (interim) examination, the examiner will register the mark 'no show' (*niet aanwezig, n.a.*).

Article 5.8 – Validity period of examinations
1. If programmes are taken on a full-time basis, the validity period of passed examinations is two years in the case of one-year programmes and three years in the case of two-year programmes. If programmes are taken on a part-time basis, the validity period of passed examinations is three years in the case of one-year programmes and four years in the case of two-year programmes.
2. The validity period of passed interim examinations is until the end of the academic year (31 August), unless stated otherwise in Part B of these Regulations.
3. In individual cases, the Examinations Board is authorised to extend the validity period of successfully completed examinations for a period that it determines or to decide that an additional or replacement examination must take place.

Article 5.9 – Right of inspection
1. In the event of a written examination, and on request, the examiner will grant the student who took the examination the right to inspect the assessed work up to **30** days after the announcement of the result. The student may make copies of the assessed work and the standards on the basis of which the assessment was made.
2. During the time period mentioned in paragraph 1 of this Article, any student who took the examination may inspect the questions and assignments of the test in question and the standards on the basis of which the assessment was made. The method used to assess the examination enables the student to verify how the result was determined.
3. In the case of a written examination such as an assignment, paper, etc., the examiner will grant the student who took the examination the right to inspect the assessed work, by providing the student with a motivated assessment of the work, up to 30 days after the result is announced.

Article 5.10 – Exemption
1. At the written request of the student, the Examinations Board may exempt the student from taking one or more examination components, if the student:
a) has passed a component of an academic or higher professional education programme that is equivalent in both 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 component.
The Examinations Board will make a decision within 28 days of receiving the written request.
2. This exemption does not apply to the Master's thesis.
3. Exemptions from examinations (or parts thereof), if granted, will be valid for the same period as that of examinations.
4. The student may also apply to the Examinations Board for exemption from participation in practical exercises. This exemption may be granted, inter alia, on conscientious grounds. The Examinations Board will determine which alternative requirements the student must meet.
5. A maximum of 30 ECTS credits in the curriculum in the case of one-year programmes and 60 ECTS credits in the curriculum in the case of two-year programmes can be accumulated through granted exemptions.

Article 5.11 – Master's thesis

The Master's thesis examiner and a second reader assess the quality of the final Master's thesis. The final mark is determined by the examiner after consultation with the second reader.

Article 5.12 – Fraud and plagiarism

1. The provisions of the Regulations Governing Fraud and Plagiarism for UvA Students apply in full, and form part of the Teaching and Examination Regulations (see Appendix 4).
2. Electronic detection software programs may be used to detect plagiarism in texts. In submitting a written text, a student implicitly consents to the written text being entered into the database of the relevant detection program.
3. The following applies as a supplement to the Regulations Governing Fraud and Plagiarism for UvA students:
a. The sanctions described in the Regulations Governing Fraud and Plagiarism for UvA Students are the maximum sanctions. The Examinations Board is free to implement less severe sanctions.
b. It is permitted to submit written texts that have been submitted earlier for other component assignments or other comparable written texts (Article 3.f of the Regulations Governing Fraud and Plagiarism for UvA Students), as long as these written texts are referenced correctly.
c. Students are permitted to complete an examination even if the examination administrator suspects or observes fraud during the examination.
d. The Examinations Board will be involved only in the case of repeated misquotations.

Article 5.13 – Final examination

1. A diploma can only be awarded after the student has satisfied all the requirements, including the payment of tuition fees. All components have to be passed before the final examination can be undertaken. The Examinations Board determines the mark of the final examination.
2. The Examinations Board determines the results and date of the final examination after it has established that the student has passed all the examination components.
3. The Executive Board sets twelve examination dates per academic year for the final examination of the programme (28 September 2012, 31 October 2012, 30 November 2012, 21 December 2012, 31 January 2013, 28 February 2013, 29 March 2013, 29 April 2013, 31 May 2013, 28 June 2013, 31 July 2013, 30 August 2013).
4. The examination date on the diploma is the first day after the date on which the student has applied for the diploma. The graduation ceremony may be held at a later date than the date of the final examination.
5. By way of exception to paragraph 4 of this Article, the student will receive a diploma dated 31 August 2012, when the following criteria are met:
a. the student has applied for the diploma before 1 October 2012;
b. the student has completed the last component of the final examination by 31 August 2012 at the latest.
6. The Examinations Board may award a degree classification (*judicium*). If the student has shown exceptional competence, the Examinations Board may decide to grant the 'cum laude' qualification to the diploma. The guidelines which the Examinations Board takes into account are mentioned in the Rules and Regulations of the Examinations Boards FNWI 2012-2013. Other degree classifications are added to the diploma supplement.
7. Following a reasoned request by a student who qualifies for being awarded a diploma, the Examinations Board may delay setting the date of the final examination.
8. The Examinations Board may test the student's knowledge in one or more components of the study programme before establishing the result of the final examination, if and insofar as the results of the components in question give cause to do so.
9. In cases where a student takes longer than the official 3 years of study to finish his or her chosen Master's programme, the student's chosen Master's programme must be equivalent in terms

of level and content to the study programmes listed in the Regulations up to a maximum of 4 years ago.

Article 5.14 – Degree
A student who passes the final examination of a programme is awarded a Master of Science degree. This can also be a joint degree. The degree awarded is stated on the diploma.

Article 5.15 – Diplomas and transcripts
1. The Examinations Board grants a diploma as proof that the student has passed his/her final examination. The Examinations Board also grants a diploma supplement in English, signed by the chair of the Examinations Board, indicating the components of the examination, the workload and the assessment. The diploma states the qualification linked to the examination.
2. If a student successfully completes more than one examination but the Examinations Board cannot grant him/her a diploma, he/she may request and receive from the Board a transcript listing, in any event, the interim or other examinations passed.

Chapter 6 – Academic student counselling and study progress

Article 6.1 – Administration of study progress
The dean of the faculty is responsible for the correct registration of the students' study results. The UvA's student information system (SIS), in which every student can view his/her results electronically, shows the registered assessment of the examination component.

Article 6.2 – Academic student counselling
Enrolled students are eligible for academic student counselling. The types of academic student counselling available can be found in the UvA Course Catalogue.

Article 6.3 – Unsuitability (judicium abeundi)
1. Based on the provisions of Section 7.42a of the Act, the dean or the Examinations Board may, in exceptional cases, ask the Executive Board to terminate or refuse a student's enrolment for a programme, if that student's actions or remarks show that he/she is unsuitable either for practising one or more of the professions for which the programme in question is preparing the student or for the practical preparation for professional practice.
2. If a student is suspected of being unsuitable as described in paragraph 1 of this Article, the Examinations Board or the dean will institute an inquiry, of which the student shall be informed immediately. The Examinations Board or the dean will not issue any recommendation without carefully considering the interests involved and giving the student the opportunity to be heard.

Chapter 7 – Transitional and final provisions

Article 7.1 – Right of appeal
1. An appeal against decisions of the Examination Board or the examiners may be lodged with the Examination Appeals Board within 6 weeks after publication of the results.
2. Students who are of the opinion that errors have been made during the assessment procedure can take the following steps:
a. submit a written request for re-assessment to the examiner;
b. lodge an appeal against the assessment with the Examinations Board;
c. lodge an appeal against a negative decision of the Examinations Board with the Examination Appeals Board.
3. The examiner will re-assess an examination as requested by the student within 10 working days.

4. A student may lodge an appeal against the result with the Examination Appeals Board within six weeks of the announcement of the result. A request for reassessment does not affect the time period for lodging an appeal.

Article 7.2 – Hardship clause
In the event of demonstrable extreme unreasonableness and unfairness, the Examinations Board may permit deviations from the provisions of these Regulations in favour of the student.

Article 7.3 – Transitional provisions
The Examinations Board shall propose a transitional arrangement, with due regard for the Act's provisions regarding examinations and examination components, for students who, on the date these Regulations come into force, have passed one or more but not all of the examination components and whose interests are damaged by provisions in these Regulations that deviate from those in older versions.

Article 7.4 – Amendments
1. The dean shall establish amendments to these Regulations by independent decision – having heard the programme committee and with due regard for the authority of the relevant advisory bodies.
2. Amendments to these Regulations do not apply to the current academic year unless they can be reasonably assumed not to damage the students' interests.
3. Amendments to these Regulations will be made known to students.

Article 7.5 – Publication
The dean shall ensure a fitting publication of these Regulations and the rules and guidelines referred to in Section 7.12b of the Act.
These Regulations can be accessed at www.student.uva.nl (FNWI – Regulations) and can be found in the digital UvA Course Catalogue (www.studiegids.uva.nl).

Article 7.6 – Effective date
These Regulations shall come into force as of 1 September 2012 and replace all previous Regulations. Thus drawn up by the dean of the Faculty of Science on 25 June 2012.

Appendix 1: Overview of the Bachelor's and Master's Programmes

Additional admission requirements may be set and a letter of admission required for all non-follow-on Master's programmes.

Bachelor's Programme	**CROHO**	**Follow-on Master's Programme**[1]	**CROHO**
Aardwetenschappen	56986	Earth Science	66986
Betagamma	50250	*depending on the major*	
Bio-exact	50012	Life Sciences	60225
Biologie	56860	Biological Sciences	60707
Biomedische Wetenschappen	56990	Biomedical Sciences	66990
Informatica	56978	Grid Computing	60299
Informatiekunde	56842	Information Studies	60229
Kunstmatige Intelligentie	56981	Artificial Intelligence	66981
Natuur- en Sterrenkunde	56984	-Physics	60202
		-Astronomy and Astrophysics	60230
Psychobiologie	50014	Biomedical Sciences	66990
Scheikunde	56857	Chemistry	66857
Wiskunde	56980	Mathematics	66980
Future Planet Studies	(not yet available)	*depending on the major*	

Other Master's programmes offered by the Faculty:

- Brain and Cognitive Sciences
- Logic
- System and Network Engineering
- Software Engineering
- Forensic Science
- Mathematical Physics
- Stochastics and Financial Mathematics

[1] master's programme to which a bachelorstudent with a prescribed diploma will be admitted without further conditions.

UvA Academische kalender 2012/2013 **Intreeweek 2012** **27 t/m 31 augustus 2012 (week 35)**

Eerste semester

	oktober								*november*									*december*					*januari*				*februari*
week	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	1		2	3	4	5
	O	O	O	O	O	O	T	O	O	O	O	O	O	O	O	O	V	V		O	O	O	O
ma	3	10	17	24	1	8	15	22	29	5	12	19	26	3	10	17	24	31		7	14	21	28
di	4	11	18	25	2	9	16	23	30	6	13	20	27	4	11	18	25	1		8	15	22	29
wo	5	12	19	26	3	10	17	24	31	7	14	21	28	5	12	19	26	2		9	16	23	30
do	6	13	20	27	4	11	18	25	1	8	15	22	29	6	13	20	27	3		10	17	24	31
vr	7	14	21	28	5	12	19	26	2	9	16	23	30	7	14	21	28	4		11	18	25	1

Tweede semester

	februari			*maart*					*april*				*mei*					*juni*			
week	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	inhaal	O	O	O	O
ma	4	11	18	25	4	11	18	25	1	8	15	22	29	6	13	20	27	3	10	17	24
di	5	12	19	26	5	12	19	26	2	9	16	23	30	7	14	21	28	4	11	18	25
wo	6	13	20	27	6	13	20	27	3	10	17	24	1	8	15	22	29	5	12	19	26
do	7	14	21	28	7	14	21	28	4	11	18	25	2	9	16	23	30	6	13	20	27
vr	8	15	22	1	8	15	22	29	5	12	19	26	3	10	17	24	31	7	14	21	28

onderwijs en toetsing
geen onderwijs of tentamens

Kerstmis:	Dinsdag 25 en woensdag 26 december
Nieuwjaar:	Dinsdag 1 januari
Goede Vrijdag:	Vrijdag 29 maart
Pasen:	Zondag en Maandag 31 en 1 april
Koninginnedag:	Dinsdag 30 april
Dag van de Arbeid:	Woensdag 1 mei
Bevrijdingsdag:	Zondag 5 mei
Hemelvaart:	Donderdag 9 mei
Pinksteren:	Zondag en Maandag 19 en 20 mei

Opening Academisch Jaar Maandag 3 september

Appendix 3: Code of Conduct for Foreign Languages at the UvA 2000

Gedragscode vreemde talen UvA
(vastgesteld door het College van Bestuur d.d. 21 september 2000)

1. Deze gedragscode regelt uitsluitend de taal waarin het initiële onderwijs (hoorcollege, werkgroepen, practica, en dergelijke) wordt verzorgd of tentamens/examens worden afgenomen en heeft geen betrekking op het onderwijsmateriaal (boeken, syllabi en dergelijke) en eventueel door de student te maken werkstukken of scripties.
2. Het onderwijs wordt gegeven en de tentamens/examens worden afgenomen in het Nederlands.
3. In afwijking van het gestelde onder 2 kan een andere taal dan het Nederlands worden gehanteerd, indien de specifieke aard van het onderwijs daartoe noodzaakt.
4. Het gebruik van een vreemde taal in een opleiding wordt vastgelegd in de betreffende onderwijs- en examenregeling (OER).
5. Aan het gebruik van een vreemde taal in (delen van) de opleiding dienen primair onderwijskundige reden ten grondslag te liggen. Onderwijskundige redenen zijn in ieder geval aanwezig indien:
5.1. de opleiding specialismen bevat waarvoor kennis van de taal, een andere dan het Nederlands, onmisbaar is;
5.2. het onmisbaar wordt geacht om onderdelen in een andere dan de Nederlandse taal te geven als
onderdeel van vaardigheid in het desbetreffende vakgebied van de opleiding;
5.3. het onderdelen betreft die speciaal gericht zijn op buitenlandse studenten.
6. Het gebruik van een vreemde taal mag niet leiden tot verzwaring van de studielast, tot aantasting van het kwaliteitsniveau van de opleiding of tot benadeling van studenten bij tentamens.

Appendix 4: Regulations Governing Fraud and Plagiarism for UvA Students

REGULATIONS GOVERNING FRAUD AND PLAGIARISM FOR UvA STUDENTS

Adopted by the Executive Board in 2008, last amended in May 2010

Disclaimer: This translation is provided for information purposes only. In the event of a difference of interpretation, the original Dutch version of this document is binding.

Article 1 Definitions

1. Fraud and plagiarism are defined as any act or omission on the part of the student which makes an accurate assessment of his/her knowledge, insight and skills partially or wholly impossible.
2. Fraud is taken to include in any event:
a. being in possession during an examination of any aids (pre-programmed calculator, mobile telephone, books, outlines, notes, etc.) the use of which is not expressly permitted;
b. attempting during an examination to read what another candidate is writing, or exchanging information inside or outside the examination room;
c. assuming the identity of another person during an examination;
d. allowing someone else to assume one's identity during an examination;
e. obtaining possession of the questions in the examination paper prior to the scheduled date or time of the examination concerned;
f. fabricating and/or falsifying survey or interview answers or research data.
3. Plagiarism is taken to include in any event:
a. making use of or reproducing another person's texts, data or ideas without complete and correct acknowledgement of the sources;
b. presenting the structure or central body of ideas taken from third-party sources as one's own work or ideas, even if a reference to other authors is included;
c. failing to clearly indicate in the text – for instance by means of quotation marks or a particular layout – that literal or near-literal quotations have been included in the work, even if a correct reference to the sources has been included;
d. paraphrasing the contents of another person's texts without sufficient reference to the sources;
e. reproducing another person's audio, visual or test materials, or software or program codes without reference to the sources, and in doing so passing these off as one's own work;
f. submitting a text that has previously been submitted, or is similar to a text that has previously been submitted, in the context of assignments for other courses;
g. reproducing the work of fellow students and passing it off as one's own;
h. submitting papers obtained from a commercial agency or written (whether or not for payment) by another person.
4. 'Examination Board' is taken to mean the Examination Board of the study programme responsible for the course concerned.
5. 'Examination' is taken to mean any examination per course component of the knowledge, insight and skills of the student, which results in an assessment.

Article 2 Complicity

1. Sanctions may be imposed on both the perpetrator and the co-perpetrator of fraud and plagiarism.
2. If the work of a fellow student is reproduced with the consent and/or cooperation of the fellow student, the latter is a co-perpetrator of plagiarism.

3. If one of the authors of a joint paper commits plagiarism, the other authors are co-perpetrators of plagiarism if they could have known or should have known that the other author committed plagiarism.

Article 3 Detection of plagiarism
Electronic detection software programs may be used to detect plagiarism in texts. In submitting a text, a student implicitly consents to the text being entered into the database of the detection program concerned.

Article 4 Procedure
1. If a case of fraud and/or plagiarism is detected, the examiner shall immediately inform the student and, at the same time, notify the Examination Board in writing, with submission of the texts and findings.
2. The Examination Board shall give the student the opportunity to be heard within a period of 2 weeks.
3. The Examination Board shall determine whether fraud or plagiarism has been committed and shall notify the student in writing of its decision and sanctions in accordance with Article 4 in conjunction with Article 5, within a period of 4 weeks, stating the possibility of appeal with the Examinations Appeals Board.
4. If plagiarism is detected or suspected in a specific paper, the Examination Board may decide to investigate papers previously submitted by the same student(s) for plagiarism. The student is obliged to cooperate with any such investigation and may be required to provide digital versions of previous papers.
5. Sanctions imposed shall be recorded in the student's records.

Article 5 Sanctions in the event of fraud
Where fraud has been established, the Examination Board shall impose the following sanctions:
1. In the event of conduct as specified in Article 1, paragraph 2 under a and b, the examination submitted shall be declared invalid and the student shall be excluded from participation in the first subsequent examination or possibly the first two subsequent examinations for the course concerned.
2. In the event of conduct as specified in Article 1, paragraph 2 under c to f, the work that has been produced with the aid of fraud shall be declared invalid and the student shall be totally excluded from participation in all interim or other examinations or any other forms of assessment in the study programme for a maximum period of 12 months. In the event of serious fraud, the Examination Board may advise the Executive Board to permanently terminate the enrolment of the student concerned.
3. In the event of conduct not covered by these Regulations and depending on the seriousness of the fraud, the Examination Board may impose the following sanctions:
the examination submitted may be declared invalid; the student may be excluded from participation in the examination concerned for a maximum period of 12 months; the student may be totally excluded from participation in all interim or other examinations or any other forms of assessment in the study programme for a maximum period of 12 months. In the event of serious fraud, the Examination Board may also advise the Executive Board to permanently terminate the enrolment of the student concerned.
4. If the student has already been penalised on a former occasion for fraud or plagiarism, he/she shall be totally excluded from participation in all interim or other examinations or any other forms of assessment for the study programme for a maximum period of 12 months, and shall be advised to leave the study programme. In the event of serious fraud and on the advice of the Examination Board, the Executive Board may also permanently terminate the enrolment of the student concerned.

5. The Examination Board shall not grant any exemptions based on results obtained elsewhere during the period of exclusion from examinations for the study programme that was imposed on the student in accordance with this Article.
6. If the student is enrolled for more than one study programme, the Examination Board shall consult with the Examination Board(s) of the relevant study programme(s) before imposing any sanction.
7. If the detected misconduct concerns a module of the Honours programme, the Examination Board may rule that further participation in the programme shall be denied.

Article 6 Sanctions in the event of plagiarism

The Examination Board shall impose the following sanctions in the event of plagiarism:
1. If the case involves conduct as specified in Article 1, paragraph 3, whereby certain sections of existing texts have been reproduced but the student has in fact conducted his/her own research, the paper submitted shall be declared invalid and the student shall be excluded from participation in the examination of the course concerned or totally excluded from participation in all interim or other examinations or any other forms of assessment for the study programme for a maximum period of 6 months. If the paper is related to a Bachelor's or Master's thesis, the supervisory activities of the thesis supervisor shall be suspended for the duration of this period.
2. In the event of conduct as specified in Article 1, paragraph 3, whereby the entire paper or considerable sections of it, including the research presented as being the student's own work, is derived from existing material and research or literature published elsewhere, the paper submitted shall be declared invalid and the student shall be excluded from participation in the examination of the course in question or totally excluded from participation in all interim or other examinations or any other forms of assessment for the study programme for a maximum period of 12 months. In the event of serious fraud and on the advice of the Examination Board, the Executive Board may also permanently terminate the enrolment of the student concerned. If the paper is related to a Bachelor's or Master's thesis, the supervisory activities of the thesis supervisor shall be suspended for the duration of this period.
3. If, after the investigation conducted in accordance with Article 4, paragraph 4, it becomes apparent that plagiarism has been committed on a former occasion, the Examination Board may rule that the results obtained previously for course components that were achieved by means of plagiarism shall be declared invalid.
4. In the event of conduct not covered by these Regulations, and depending on the seriousness of the plagiarism, the Examination Board may impose the following sanction: the paper submitted may be declared invalid and the student excluded from participation in the examination of the course in question or totally excluded from participation in all interim or other examinations or any other forms of assessment for the study programme for a maximum period of 12 months. In the event of serious fraud and on the advice of the Examination Board, the Executive Board may permanently terminate the enrolment of the student involved. If the paper is related to a Bachelor's or Master's thesis, the supervisory activities of the thesis supervisor shall be suspended for the duration of this period.
5. If the student has already been penalised on a former occasion for fraud or plagiarism, he/she shall be totally excluded from participation in all interim or other examinations or any other forms of assessment for the study programme for a maximum period of 12 months, and shall be advised to leave the study programme. In the event of serious fraud and on the advice of the Examination Board, the Executive Board may permanently terminate the enrolment of the student involved.
6. The Examination Board shall not grant any exemptions based on results obtained elsewhere during the period of exclusion from examinations for the study programme that was imposed on the student in accordance with this Article.

7. If the student is enrolled for more than one study programme, the Examination Board shall consult with the Examination Board(s) of the relevant study programme(s) before imposing any sanction.
8. If the detected misconduct concerns a module of the Honours programme, the Examination Board may rule that further participation in the programme shall be denied.

Article 7 Effective date, official title
These Regulations enter into force as of 1 September 2010, upon the simultaneous revocation of the 'Regulations Governing Fraud and Plagiarism for UvA Students 2007', and may be cited as the 'Regulations Governing Fraud and Plagiarism for UvA Students' (*Regeling Fraude en Plagiaat Studenten UvA*).

EXPLANATORY NOTES TO THE 'REGULATIONS GOVERNING FRAUD AND PLAGIARISM FOR UvA STUDENTS'

These uniform Regulations have been drawn up on the advice of the Working Group for the prevention and combating of plagiarism and fraud by students, and in consultation with the Examination Boards. The Regulations are part of a broader fraud and plagiarism policy and above all provide clear definitions of fraud and plagiarism and guidelines concerning possible sanctions.

Definitions
The Regulations apply to all students studying at the UvA, i.e. including exchange students, external students and contract students. Although plagiarism may also be considered a form of fraud, the two concepts are referred to separately. This simplifies the task of providing definitions and specifying the various sanctions. The definition in Article 1 is only applicable to interim and other examination situations. This means that the Regulations do not apply to plagiarism in draft chapters or other preparatory documents for a thesis or paper. If a lecturer or supervisor detects plagiarism in the preparatory phase, it stands to reason that he/she shall call the student to account and point out that if the draft text were to be submitted as the definitive text, this would lead to a problem. It is important that there never be uncertainty as to which particular Examination Board is dealing with an issue. Problems can arise in this regard, especially where electives are concerned. The principle underlying the Regulations is that the Examination Board under which the course component in question falls, bears responsibility. If the student is enrolled for more than one study programme, the Examination Board must consult with the Examination Board(s) of the study programme(s) concerned before imposing any sanction. Article 2 states that in addition to the perpetrator, the co-perpetrator or 'colluder' is also liable to sanctions. The 'perpetrator' takes the initiative to commit the act, whereas the 'co-perpetrator' actively participates in this. According to paragraphs 2 and 3, such collusion is punishable. A colluder may be reproached for specific conduct or for refraining from specific conduct.

Procedure
In the event that fraud or plagiarism is suspected, the examiner shall immediately inform the Examination Board. The Examination Board is responsible for the subsequent procedure. This provision ensures that no undesirable opportunity for negotiation arises between the examiner and the student. Moreover, the Examination Board is in a better position to ensure the exercise of due care in the procedure and to safeguard the student's legal interests. The sanctions imposed shall be recorded in the student's records. This refers to the file – whether in written or electronic form – kept by the student administration of each faculty.

Sanctions

In accordance with the provisions of Section 7.12b, paragraph 2, of the Dutch Higher Education and Research Act (WHW), in the event of fraud and plagiarism the Examination Board is authorised to exclude the student from one or more interim or other examinations for the study programme as indicated by the Examination Board, for a maximum period of one year. A new provision in the WHW allows for the possibility that the Examination Board may advise the Executive Board to permanently terminate the enrolment of the student concerned. When a sanction is imposed, it must be clearly stated to which interim or other examinations in the study programme the exclusion applies. In determining the sanctions policy of these Regulations, the aim has been to follow the legal precedents already established by Examination Boards and the Examinations Appeals Board. Whether serious fraud has been committed on the grounds of which the Executive Board may decide to permanently terminate the enrolment of the student at the institution, shall be investigated on an individual basis.

Implementation

Under Section 9.5 of the WHW, the Executive Board may establish guidelines concerning the Dean's authority in accordance with Section 9.15, paragraph 1 of the WHW, to determine the Teaching and Examination Regulations. The Regulations Governing Fraud and Plagiarism include a guideline instructing the dean to incorporate the unabridged version of these Regulations in the Teaching and Examination Regulations no later than at the start of the academic year 2009-2010. Specific situations concerning study programmes may be included as supplementary regulations.

UNIVERSITY OF AMSTERDAM
FACULTY OF SCIENCE

EDUCATION AND EXAMINATION REGULATIONS

Academic year 2012-2013
part B

MASTER'S PROGRAMME PHYSICS

September 1st 2012

Chapter 1 Aim of the programme and exit qualifications

Article 1.1 Objectives

The general objective of the Physics Master's programme is to provide students with such knowledge, skills and insight in the field of physics, including the necessary mathematical, experimental, computational and communicative skills, enabling them to work as a professional physicist, or to become qualified to pursue advanced training as scientific researcher. The programme also aims at furthering the understanding of the position and role of physics in the sciences and in society, and to further a social sense of responsibility.

The aim of the Master's programme in Physics is to:

1. educate students to become independent academic professionals, through conducting fundamental scientific research as well as working with current scientific knowledge, and applying this knowledge in new and continuously changing practical situations;
2. actively stimulate interdisciplinary collaboration in the development of science, based on knowledge in the field of physics;
3. offer students the possibility to develop skills, knowledge and insight in a specialisation in the field of physics, with emphasis on formulating relevant scientific questions and the approach to formulate answers to these questions;
4. provide student-oriented education that is of a high, internationally recognised quality;
5. offer students the opportunity to gain knowledge and insight in an international setting;
6. provide an inspiring academic learning environment, and to offer feasible study specialization programmes to a demanding and heterogeneously composed student population;
7. develop the ability in students to convey acquired knowledge to others.

Article 1.2 Exit qualifications

The graduate:

1. has a thorough theoretical and practical knowledge of modern physics, including the knowledge of other disciplines required for that purpose;
2. has a thorough knowledge of theoretical and/or experimental methods and research experience in at least one sub-area within the physics discipline;
3. is able to become acquainted with other sub-areas of the physics discipline within a reasonable period of time;
4. is able to formulate a research plan based on a realistic problem definition within the physics discipline;
5. is able to analyse and formulate research results and to draw conclusions there from;
6. is able to write a scientific report or an internationally accessible scientific publication and to participate in discussions on (specialised) topics in the field of study;
7. is able to consult international professional literature in the relevant sub-areas and to apply the knowledge gained from that;
8. is able to apply one's knowledge of physics in a broader (multidisciplinary) context;
9. is employable in those positions for which knowledge and research skills in the field of physics are a prerequisite;
10. has sufficient knowledge of, and insight in the social role of physics to make a sound choice regarding one's own profession, as well as in the exertion of this profession;
11. is able to cooperate with other people, to convey knowledge to other people, and to give a presentation both to discipline specialists and to a broader audience.

The Physics Master's study programme has four majors: a major Research (R-major), a major Science Communication (C- major), a major Management, Policy Analysis & Entrepreneurship and a major Science and Sofware Engineering (S-majors).
Each major has its specific exit qualifications (see also article 3.9 of Part A).

The graduate in the major Research:

R1 must be able to, in the case that an experimental Master's programme has been chosen, independently design experiments including the corresponding controls, conducting and evaluating these within a given period of time;
R2 is able to compare and incorporate obtained research results and conclusions within the framework of the results of other scientists;
R3 is able to form a vision on the development of scientific research in the field of physics;
R4 is able to quantitatively and qualitatively analyse physics processes, to incorporate data in existing or new models and to present the results at various levels of abstraction.

Major Science and Software Engineering

The aim of this major is for the graduate to acquire insight , skills and knowledge necessary for a position as an academic professional in the ICT sector and in scientific research. The graduate is able to:

S1 develop individually a vision with regard to ICT applications in a scientific research;
S2 deduce from this vision a problem solving scientific question;
S3 implement this vision in cooperation with scientists, thus creating a bridge between scientific researchers and ICT;
S4 participate in a multi-disciplinary project team.

Chapter 2 Additional entry requirements

Article 2.1 Admission to the study programme

12. Students who have successfully completed the following degrees will automatically be admitted:
    - the *Kandidaats* degree in *Natuurkunde* Physics or *Natuur- en Sterrenkunde* Physics and Astronomy, awarded by the University of Amsterdam;
    - a Bachelor's degree in Physics and Astronomy, in Physics, in Technical Physics and in Astronomy, awarded by a Dutch University
    - the Bachelor's Degree in *Beta-gamma met een Natuurkunde Major* (Liberal Arts and Sciences with a Physics Major), awarded by the University of Amsterdam;
2. Without prejudice to the provisions of paragraph 1, the Examination 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 paragraph 1.
3. The Examination Board decides for every student whether the previous education of the candidate has deficiencies for admission and may draw up a list of components the student has to take, in order to make up for these deficiencies. These components, with a maximum of 12 EC, will be at the expense of free elective components in the Master's programme
4. Without prejudice to the provisions of paragraphs 1 and 2 the Examination Board may grant admission to a student whose previous education does not meet aforementioned requirements for admission to the study programme, when concluding that the candidate is able to meet the admission requirements within a reasonable period of time. At the request of a candidate, and if the Examination Board has decided additional education feasible, the Examination Board may draw up a programme of maximum 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 (and the specialization programme).
5. For admission to the *AtoSim* programme a candidate must have done a research project of at least 24 EC in the subject of Phyics.
6. In addition to the provisions in paragraph 1, admission to the S-major *Science and Software Engineering* requires participation in an examination at the end of the academic year prior to the start of the first year of the Master's programme. Only students whose suitability has been verified by this examination will be admitted to this major. The programme has to be approved of by the Examination Board of the discipline.

Article 2.2 Determination of study programme

1. The student determines the content of the Master's programme in consultation with the coordinator of the Master's programme and according to the rules of chapter 3.
2. The coordinator of the Master's programme will lay down the content chosen by the student in a Personal Education Programma (PEP). This includes a section on possible shortcomings and deficiences of the previous education of the student. The student coordinator submits this PEP together with his recommendation to the Examination Board.
3. The Examination Board decides on the admission of the student (see 2.1).
4. If the student wants to change the contents of the study programme the student promptly consults with the coordinator of the study programme. If this results in a new PEP the student coordinator submits this to the Examination Board.

Chapter 3 Structure of the Curriculum

Article 3.1 Full-time / Part time

The study programme is offered on a full-time basis.

Article 3.2 Organisation of the study programme

The study programme consists of a study load of 120 EC.
The study programme is offered in collaboration with the VU University Amsterdam. The Master's programme in Physics offers the following specialization programmes:

- Advanced Matter and Energy Physics
- Atomic Scale Modelling of Physical, Chemical and Bio-molecular Systems (AtoSim)[1#]
- GRavitation and AstroParticle Physics Amsterdam (GRAPPA)
- Particle and Astroparticle Physics
- Physics of Life and Health
- Science for Energy and Sustainability[#]
- Theoretical Physics

Depending of the specialization programme the study programme is composed of components according to tables 1 and 2. On the certificate the chosen specialization programme will be stated.

Tabel 1

Components	**R- major EC**	**C/S- major EC**
Compulsory components	12	Total 24
Elective components discipline	24	
Compulsory Orientation project/seminar/literature study	6	
Preparation research project	6*	6
Research project	48*	24
Master's thesis and presentation	6	6
Free elective components / deficiencies	12	
Academic skills in the Master	6	
C/S programme		60
Total EC	**120**	**120**

* These components are combined for the for the specialization programs Advanced Matter and Energy Physics and Physics of Life and Health

Tabel 2

Components for AtoSim	**EC's**
Compulsory components	48
Elective components discipline	30
Orientation project/seminar/literature study	12
Research project	30
Total EC	**120**

[#] Total of physics courses has to be at least 36 EC. See study guide for the relevant physics courses.

[1] The programme AtoSim is a joint operation with *Ecole Normale Supérieure* in Lyon and *La Sapienza University* in Rome.

Article 3.3 Compilation of the programme of the R- major

The programme of the R- major includes compulsory components with a maximum study load of 12 EC. The contents and format of the compulsory components of the various specialization programmes are further described in the Course Catalogue, stating the entry requirements for successful participation in the component. In addition:

1. In the R- major the student has to participate in an orientation project, a student seminar or has to write a thesis about a subject that is not directly related to the subject of the final research project, with a study load of 6 EC
2. The programme of the R- major includes research-related components with a study load of 60 EC (or 30 EC for the AtoSim programme).
3. The research-related parts include the following compulsory components:
   - preparation physics oriented research project, resulting in a research plan with a study load of 6 EC;
   - a physics oriented research assignment with a study load of at least 48 EC;
   - a Master's thesis and a scientific presentation with a study load of 6 EC.
4. The programme includes elective components as described in paragraph 3.5.
5. In order to compensate for deficiencies the Examination Board may permit the student to include components from the relevant *Kandidaats* or Bachelor's degree programme. This will be at the expense of, but will never exceed the 12 EC free elective components.

Article 3.4 Compilation of the programme of the C-/S- majors

1. The programme of the C-/S- majors includes a component of 24 EC that will be drawn up in consultation with the master coordinator, and consists of compulsory components, disciplinary elective components, projects or the student seminars as described in the R- major.
2. The programme of the C-/S- major includes research related components with a study load of 36 EC. The research related part includes the following compulsory components:
   - preparation research project, resulting in a research plan with a study load of 6 EC;
   - a research assignment with a study load of at least 24 EC;
   - a Master's thesis and a scientific presentation with a study load of 6 EC.
3. The programme of the C-/S- majors includes a programme of 60 EC, drawn up by the coordinator of the C-/S- major and approved by the Examination Board.

Article 3.5 Elective components discipline

1. Students choose components in the field of the discipline with a study load of at least 24 EC in consultation with and accordance of the coordinator of the Master's programme and according to the rules stated the Course Catalogue of the study programme.
2. Elective components are considered to be those components in the field of the discipline stated in the Appendix, and included in the Course Catalogue of the discipline, or of components offered by another Dutch or foreign university, being according to the Examination Board of a comparable level.

Article 3.6 Academic Skills in the Master in the R-major

1. The Academic Skills in the Master consist of components with a study load of 6 EC.
2. The English Academic Course (5524ENAC3Y) is compulsory;
3. The student may complete the Academic Skills in the Master by participating in the relevant components as described in the Course Catalogue.

Article 3.7 Final research project and Master's thesis

1. At the end of the final research project and after completion of the Master's thesis the responsible supervising staff member verifies on the basis of the assessment form, whether the student has sufficiently achieved the set exit qualifications;
2. For the assessment of the final research project the advice of a second staff member is always obtained;
3. In the assessment of the Master's thesis and the scientific presentation of the results of the research project the opinion of a second staff member from a research group different from the one in which the research project has taken place will always be obtained and included in the assessment;
4. If the mark for both the final research project and the Master's thesis and Colloquium is 8 or higher, the supervisor and the second staff member provide the examination board with a written statement explaining their assessment results in more detail and their agreement with a potential Cum Laude.
5. Students, proficient in the Dutch language write a short non-specialist summary in Dutch; students who do not have a sufficient command of the Dutch Language write this summary in English.

Chapter 4 List of Components and their Study Load

This list comprises the curriculum components of the Physics Master's programme 2012-2013. The contents of the components are described in the Course Catalogue.

Components for C- S- and R- major of the Master's programme Physics		
Code	**Component title**	**EC**
5354ADMT6Y	Advanced Medical Technology	6
53548AQM6Y	Advanced Quantum Mechanics	6
5354AMLP6Y	AMEP Lab Project	6
5354ASPH6Y	Astroparticle Physics	6
5354BESM3Y	Beyond the Standard Model	3
5354BIIA3Y	Big Issues in Atomic Quantum Physics	3
5354BIIE6Y	Big Issues in Emergent Energy Materials	6
5354BISM3Y	Big Issues in Soft Matter	3
5354BIOP6Y	Biomedical Optics	6
535483BI3Y	Biophotonics 3 - Practical Training	3
52548BIC6Y	BioSolar Cells	6
5354BOEC6Y	Bose Einstein Condensates	6
5254CFSE6Y	Catalysis for Sustainable Energy	6
5354CSLP3Y	CERN Summer Student Lecture Programme	3
5354CLQC6Y	Classical and Quantum Chaos	6
53548COM6Y	Computational Methods	6
53548COM3Y	Computational Methods, extension	3
5354CPVI3Y	CP-Violation	3
52548CSE6Y	Current Sustainable Energy Technologies	6
5354DYBC6Y	Dynamics of Biomolecules and Cells	6
5354EINS6Y	Einstein	6
5254ENCH6Y	Environmental Chemistry	6
5354FEQG6Y	Fermi Quantum Gases	6
5354FWCL3Y	Forensics with Complex Liquids	3
5354GETP6Y	From Genome to Physiome	6
5354GERE6Y	General Relativity	6
5354GRSS6Y	GRAPPA Student Seminar	6
5354GRWA3Y	Gravitational Waves	3
52548GRC6Y	Green Chemistry	6
5354GTPH6Y	Group Theory in Physics	6
5354GTPH3Y	Group Theory in Physics; extension	3
5214HAOC6Y	HEA: Accretion onto compact objects	6
5254HECA6Y	Heterogeneous Catalysis	6
5254HOCA6Y	Homogeneous Catalysis	6
5354HYDR6Y	Hydrodynamics	6
5354IMPR6Y	Image Processing	6
5354LAMP6Y	Lasers and Molecular Photonics	6
5354LRBP6Y	Literature Review Biomedical Physics	6
5354LIRB6Y	Literature Review Biophysics	6

52548MAS6Y	Management of Sustainable Innovation	6
5354MAFP3Y	Mathematica for Physicists	3
5354MEIM6Y	Medical Imaging	6
5354MSMS6Y	Modelling and Simulation in Medical Sciences	6
5354NANO6Y	Nanophotonics	6
5354NIPR6Y	Nikhef Project	6
52548NUF6Y	Nuclear Fusion/Fission	6
53548PEM6Y	Parameter Estimation Applied to Medical & Biological Science	6
5354PACO6Y	Particle Cosmology	6
5354PADE6Y	Particle Detection	6
53541PAP6Y	Particle Physics I	6
53542PAP6Y	Particle Physics II	6
5354PAFI6Y	Particles and Fields	6
53548PHO6Y	Photosynthesis and Energy	6
5354PHVO6Y	Photovoltaics	6
53541PHO6Y	Physics of Organs 1: Cardio-Pulmonary Physics	6
53542PHO6Y	Physics of Organs 2: Sensory Organs and Bioelectricity	6
5354PROG3Y	Programming C++	3
52548PRS6Y	Project Sustainable Future	6
53548QFT6Y	Quantum Field Theory	6
5354QFTE3Y	Quantum Field Theory, extension	3
5354QUOP6Y	Quantum Optics	6
5254QTMM6Y	Quantum Theory of Molecules and Matter	6
5214RAAS6Y	Radio Astronomy	6
5554SCPE6Y	Science in Perspective	6
53548SCM6Y	Soft Condensed Matter and Biological Physics	6
5354STDA6Y	Statistical Data Analysis	6
53548SMS6Y	Statistical Mechanics of Soft Matter	6
53541SPC6Y	Statistical Physics and Condensed Matter Theory I	6
53542SPC6Y	Statistical Physics and Condensed Matter Theory II	6
5354SPCM3Y	Statistical Physics and Condensed Matter, extension	3
5254STTC6Y	Statistical Theory of Complex Molecular Systems	6
5354STTH6Y	String Theory	6
53541STI3Y	Strong Interactions I	3
53542STI3Y	Strong Interactions II	3
5214STES6Y	Structure and Evolution of Stars	6
5354SSPH6Y	Student Seminar Theoretical Physics	6
5354SUSA3Y	Summer-school AMEP	3
5354SUPE6Y	Superconductivity	6
5524SGFS3Y	Survival Guide for Scientists	3
53548ULL6Y	Ultrafast Laser Physics	6
5354UXRP3Y	Ultrafast X-ray Physics	3
5254UNMS6Y	Understanding Molecular Simulation	6
5254UNQC6Y	Understanding Quantum Chemistry	6

Appendix: Final attainment levels of the major Management, Policy Analysis & Entrepreneurship (MPA) and the major Science Communication (SC)

A. FINAL ATTAINMENT LEVELS OF THE MAJOR MANAGEMENT, POLICY ANALYSIS & ENTREPRENEURSHIP (MPA)

The final attainment levels of the major with regard to the Dublin descriptors are given below.

Dublin descriptor 1: Knowledge and understanding
The graduate has theoretical and practical knowledge of management, policy analysis and entrepreneurship
The graduate:

a. has insight into the various relevant disciplines in the social and behavioural sciences. More specifically, the student acquires insight into:
   - important concepts and theories in the field of policy science, management studies, and entrepreneurship;
   - the relation of these gamma sciences to the beta sciences;
b. has insight into concepts and the latest theories, research methodologies, analytical models and important research questions related to interdisciplinary research for addressing societal problems;
c. has knowledge of, and insight into, relevant concepts and theories for effective communication and collaboration;

Dublin descriptor 2: Applying knowledge and understanding
The graduate is experienced in carrying out interdisciplinary research, in applying techniques specific to the subject area and in applying scientific knowledge to societal problems.
The graduate:

a. has the ability to integrate knowledge from the beta and gamma sciences, as well as from science and practice;
b. can apply scientific knowledge to formulate solutions to societal problems and assess them for appropriateness and societal relevance;
c. adopts an appropriate attitude towards the correct and unbiased use and presentation of data.

Dublin descriptor 3: Making judgements
The graduate is able to independently and critically judge information.
The graduate is able to:

a. independently acquire information in relevant scientific areas through a literature review and by conducting empirical research, as well as evaluate such information critically;
b. select and order information, distinguish essentials from trivialities, and recognize connections;
c. formulate personal learning objectives and critically evaluate own performance, both introspectively and in discussion with others.

Dublin descriptor 4: Communication
The graduate is able to transfer knowledge and skills related to his/her subject area to other people and to adequately reply to questions and problems posed within society.
The graduate:

a. has acquired skills to report orally and in writing on research results in English;

b. has the ability to communicate research conclusions, and the knowledge and rationale underpinning them, to specialist audiences and non-specialist audiences clearly and unambiguously;
c. can collaborate with researchers from various scientific disciplines;
d. can make essential contributions to scientific discussions about plans, results and consequences of research.

Dublin descriptor 5: Learning skills
The graduate has developed learning skills that enable him/her to continue with self-education and development within the subject area.
The graduate:
a. has acquired skills to develop a research plan, giving details of the problem statement, objectives, research questions, research approach, research methods, and planning;
b. is familiar with the general scientific journals, such as Nature and Science, and with journals in the specialisation, such as Research Policy, Health Policy, Science, Technology & Human Values, Social Science & Medicine, and International Journal on Technology Management;
c. has the learning skills to allow him/her to continue to study in a manner that may be largely self-directed or autonomous (life-long learning).

B. FINAL ATTAINMENT LEVELS OF THE MAJOR SCIENCE COMMUNICATION (SC)

The MSc graduate possesses an academic attitude, skills and competences to operate at the interface of science and society aiming to contribute to a fruitful science-society dialogue. This means that Master's graduates have the following focus:

- Understanding the dynamic relationship between science and society
- Translating information from the natural sciences to society and vice versa
- Shaping the dialogue between science and society

Knowledge

- Knowledge of and insight into the relevant concepts and theories in the field of science communication, sociology, communication science, philosophy and science & technology studies in relation to the natural sciences
- Familiarity with scientific journals in the field of science communication and science & technology studies, as well as familiarity with a variety of popular-scientific media
- Insight into the nature and course of interpersonal and group communication processes relevant to the formal and informal dialogue between science and society
- Insight into relevant concepts and theories for effective communication and collaboration in relation to diverse science-society interactions
- Insight into the popularization of the natural sciences in various media
- Insight into the roles and responsibilities of museums in science communication

Skills

- Independently acquire, analyze and evaluate relevant information in a variety of scientific disciplines, by conducting literature study and empirical research

- Communicate and collaborate effectively with diverse professionals of scientific and nonscientific disciplines as well as lay citizens
- Design and facilitate interactive processes in relation to the science-society dialogue
- Translate information from various natural science disciplines into more generally accessible language and formats
- Produce popular-scientific media output concerning developments in the natural sciences, aimed at a variety of publics
- Contribute to the design of museum exhibitions from the perspective of scientific content management and science communication theory
- Make an intrinsic contribution to the societal discussion of developments in science and technology