

**Education and examination regulations (OER) for the MSc programme in
Physics and Astronomy 2007-2008**

Section 1 General provisions

Article 1.1 Applicability of the regulations

These regulations apply to the education and examinations in the two year Master's degree programme in Physics and Astronomy (hereinafter called 'the programme').

This programme is offered by the Educational Institute for Mathematics, Physics and Astronomy (hereinafter called 'the institute') in the Faculty of Science (hereinafter called 'the faculty').

Article 1.2 Definitions

Insofar as they are also mentioned in the Higher Education and Research Act, the concepts used in these regulations will have the same meaning as in this Act.

In these regulations the following words have the following meanings:

- a. the Act: the Higher Education and Scientific Research Act of 8 October 1992 (GG 593) as it reads currently;
- b. programme: the Master's degree programme as referred to in Article 7.3a, paragraph 1 under b of the Act;
- c. student: anyone enrolled at Radboud University Nijmegen for education and/or taking the interim and final examinations of the programme;
- d. Bachelor's degree programme: programme as referred to in Article 7.3a of the Act;
- e. practical: a practical exercise as referred to in Art. 7.13, paragraph 2 under d. of the Act, in one of the following forms:
 - writing a thesis;
 - writing a paper, carrying out a project, or developing an analytical design;
 - carrying out an analytical design or a research assignment;
 - conducting a literary study;
 - writing a computer programme
 - doing work experience;
 - taking part in fieldwork or an excursion;
 - carrying out experiments;
 - taking part in another educational activity aimed at acquiring certain skills;
- f. interim examination: an examination testing the knowledge, understanding and skills of the candidate in relation to a certain unit of study as well as an assessment of the results of that test by at least one examiner designated by the Examining Board;
- g. examination: a review of the student's academic achievements in which the Examining Board assesses whether or not all interim examinations of the units of study that are part of the Master's programme have been successfully completed, insofar as the Examining Board has not determined that the examination also includes an examination by the Examining Board, testing the knowledge, understanding and skills of the candidate as well as an assessment of the results of that test (in accordance with Article 7.10 of the Act);
- h. Examining Board: the examining board of the programme set up in accordance with Article 7.12 of the Act;
- i. examiner: the person designated by the Examining Board in accordance with Article 7.12 of the Act, who administers the interim examinations;
- j. ECs: credits in accordance with the European Credit Transfer System, 1 EC is equal to 28 hours of study;
- k. working days: Monday to Friday, except statutory holidays;
- l. Prospectus: the prospectus for one of the programme's as referred to in article 1.1 containing specific information about the master's programme;
- m. institution: Radboud University Nijmegen;

Article 1.3 Aims of the programme

The aims of the programme are:

- a. Acquiring Knowledge, skills and insights pertaining to the fields of Physics and Astronomy
- b. Providing education at the University level
- c. Management variant (MT-variant): Additional to a and b: Acquiring knowledge, skills and insights in the relevant fields of Management
- d. Communication variant (C-variant): Additional to a and b: Acquiring knowledge, skills and insights in the relevant fields of Communication
- e. Education variant (E-variant): additional to a and b: acquiring competencies as a teacher

Article 1.4 Type of programme

The programme is a full-time programme.

Article 1.5 Examinations of the programme

Students who pass the final examination of the programme obtain the degree of Master of Science (MSc)

Article 1.6 Study load

The study load of the programme is 120 ec, in accordance with the European Credit Transfer System, in terms of which one European credit equals 28 hours of study.

Article 1.7 Language

1. The programme is offered in the English language; the interim examinations and the final examination are administered in English. Parts of the programme can be offered in Dutch if the origin of the students does not require the English language
2. For programme's offered in the English language, the Line of Conduct for Foreign Languages of the Radboud University applies
2. To receive education and take the interim examinations of the components mentioned in Article 2.1.a, students need to have sufficient knowledge of the English language. This requirement is satisfied when the student:
 - a. is in the possession of a diploma of pre-university education (VWO) ; or
 - b. is in the possession of a diploma of secondary education, obtained at an English-language institution for secondary education in or outside the Netherlands; or
 - c. is in the possession of a diploma of "HBO" education; or
 - d. is in the possession of a bachelor diploma of a Dutch university; or
 - c. has successfully completed one of the following tests:
 - TOEFL with a score of 550 or higher for the paper version;
 - TOEFL with a score of 215 or higher for the computer version;
 - IELTS with a score of 6 or higher

Section 2 The Master's programme

Article 2.1 Structure of the Master's programme O-variant

1. The Master's programme O-variant comprises the following components:
 - Compulsory courses:
 - Electrodynamics 1 (3 ec)
 - Professional Preparation (1 ec)
 - Philosophy 2 (3 ec)
 - A Master's thesis (60 ec)
 - Free Electives (Minimal 20 ec)
 - Courses in mutual arrangement with the responsible teacher
2. The following courses can be part of the programme without permission of the Examining Board:
 - Electrodynamics 2 (3 ec)

- Compact Binaries: Physics and Evolution (6 ec)
- Astroparticle Physics (6 ec)
- Telescope Observation (4 ec)
- New Windows on the Universe (6 ec)
- Modern Classical Dynamics (6 ec)
- Theoretical Foundations of Elementary Particles (9 ec)
- Group Theory (9 ec)
- Advanced Statistical Physics (6 ec)
- Research Labs (6 ec)
- Experimental Techniques (3 ec)
- Numerical Methods (4 ec)
- Computational Physics (6 ec)
- Data Analysis (3 ec)
- Experimental Foundations of Elementary Particles (9 ec)
- Computational Neuroscience (6 ec)
- Machine Learning (6 ec)
- Brain and behaviour 2 (6 ec)
- Condensed Matter Theory (6 ec)
- Introduction Nanotechnology (3 ec)
- Capita Selecta Nanoscience and Technology (3 ec)
- Astrophysics seminar (3 ec)

Article 2.2 Structure of the Master's programme MT-variant

The Master's programme MT-variant comprises the following components:

1. Physics components

- Compulsory courses:
 - Electrodynamics 1 (3 ec)
 - Professional Preparation (1 ec)
 - Philosophy 2 (3 ec)
- A Master's thesis on a Physics or Astronomy subject (30 ec)
- Courses Physics and Astronomy (20 ec)

2. MT components

- Compulsory courses:
 - Business and Society (5 ec)
 - Organization Theory (5 ec)
 - Innovation Management (5 ec)
 - Strategy and Marketing (5 ec)
 - Finance and accounting (5 ec)
- MT Electives (5 ec) can be chosen from:
 - Algemene Managementvaardigheden (2 ec)
 - Science and Entrepreneurship (3 ec)
 - Research Strategy and Management (3 ec)
 - Courses in mutual arrangement with the responsible teacher
- MT thesis (27 ec)

3. Free electives (6 ec)

Article 2.3 Structure of the Master's programme C-variant

The Master's programme C-variant comprises the following components:

1. Physics components
 - Compulsory courses:
 - Electrodynamics 1 (3 ec)
 - Professional Preparation (1 ec)
 - Philosophy 2 (3 ec)
 - A Master's thesis on a Physics or Astronomy subject (30 ec)
 - Courses Physics and Astronomy (20 ec)
2. C components
 - Compulsory courses:
 - Introduction Science Communication (3 ec)
 - Science and Societal Interaction (3 ec)
 - Risk Communication (3 ec)
 - Framing Knowledge (3 ec)
 - Knowledge Society (3 ec)
 - Boundary Work (3 ec)
 - Science and Media (3 ec)
 - C Electives (6 ec) in mutual arrangement with the responsible teacher
 - Traineeship including report (30 ec)
3. Free electives (6 ec)

Article 2.4 Structure of the Master's programme E-variant

1. Physics components
 - Compulsory courses:
 - Electrodynamics 1 (3 ec)
 - Professional Preparation (1 ec)
 - Philosophy 2 (3 ec)
 - A Master's thesis on a Physics or Astronomy subject (30 ec)
 - Courses Physics and Astronomy (20 ec)
2. E components
 - 2 Traineeships (57 ec)
3. Free electives (6 ec)

Article 2.5 Approval of the Master's programme

The list of courses has to be approved by the Examining Board in advance

Section 3 Preliminary examinations and examinations

Article 3.1 Sequence of interim examinations

1. The interim examinations of the following components can only be taken after the interim examinations of the components mentioned below have been successfully completed:

- The Master’s thesis project after completion of all the compulsory courses.
 - *MT variant*: Innovation Management and Strategy Marketing after completion of Business&Society and Organizations Theory
 - *MT variant*: The final master project of the MT variant after completion of at least 45 ec of the total study load including the practical activities of the research traineeship and at least 3 courses of the 5 basic MT courses as mentioned in article 2.2
 - *C Variant*: The traineeship of the C variant after completion of at least 45 ec of the total study load including the practical activities of the research traineeship and the majority of the basic courses of the C variant as mentioned in article 2.3
 - *E Variant*: The traineeships of the E variant after completion of at least 45 ec of the total study load including the practical activities of the research traineeship
2. In certain cases, the Examining Board may determine another sequence.

Article 3.2 Time schedule and interim examination frequency

1. In each academic year there will be at least 2 opportunities to take the interim examinations of the components mentioned in Article 2.1-2.4
2. In subjugation of the provision of Article 3.2.1, students are given only 1 opportunity a year to take an interim examination of a component, if education in that component has not been offered in a particular year.

Article 3.3 Form of interim examinations

1. The interim examinations of the components mentioned in Article 2.1 are written examinations or practical exercises plus a report, or computer exercises or computer examinations or oral presentations.
2. At the student’s request, the Examining Board may allow that an interim examination is taken in another way than aforementioned.
3. For disabled students, allowances will be made in the administration of interim examinations as far as possible so that their individual disability will not prevent them from taking an interim examination. If necessary, the Examining Board will seek expert advice before taking a decision in such a matter. If students wish to make use of these allowances they must apply for these allowances at least 2 weeks in advance.

Article 3.4 Oral examinations

1. Oral examinations will be held for one person at the time, unless the examining board determines otherwise.
2. The administration of oral interim examinations in such cases as referred to in Articles 3.3.2 and 3.3.3 will be public, unless the Examining Board or the examiner in question has decided otherwise in a special case, or if the student has made objections to this.

Article 3.5 Assessment and notification of the results of interim examinations

1. Immediately after having administered an oral interim examination, the examiner will determine the result, and will subsequently provide the student with a written confirmation of this result.
2. The examiner determines the result of a written interim examination within 30 days from the day on which it was written or at least 10 days before the next possibility whatever comes first and will provide the Centre of Educational Services of the faculty with the necessary information required for issuing written proof of the results to the student.
3. For every interim examination which is not oral or written the examining committee determines in advance in what way and at what time the student will receive a written proof of the result.
4. The interim examination form informs students that they have a right of inspection, as referred to in Article 3.7.1, and also that they may appeal to the Examination Appeals Board.

Article 3.6 Period of validity

1. The period of validity of courses completed in the programme is unlimited.

2. In subjugation of the provision of Article 3.6.1, the Examining Board may demand additional requirements if the content of certain courses has changed drastically since the interim examinations have been taken.

Article 3.7 Right of inspection

1. At their request, students will be given the opportunity to inspect their assessed work during a period of at least six weeks following the publication of the results of a written interim examination. The examiner will explain the criteria used to determine the grade.
2. During the term mentioned in Article 3.7.1, any interested acquaintance will have access to the questions and assignments of the interim examination in question, and if possible, to the standards used in the assessment.
3. The Examining Board may determine that the inspection or taking cognizance shall take place at a designated venue and on at least two fixed points in time. If the person in question can prove that he or she cannot appear or has not been able to appear due to force majeure at the time and place thus determined, he or she will be given another opportunity to do so, if possible within the term mentioned in Article 3.7.1.

Article 3.8 Exemption

At the request of a student, and after having consulted the examiner in question, the Examining Board may exempt the student in question from taking an interim examination if:

- a. the student has finished a course in a university or HBO institute of a similar content and level or
- b. the student can prove that he has acquired sufficient knowledge and skills concerning a certain course through working experience.

Article 3.9 Final examination

1. As soon as the student has submitted sufficient proof of having passed the required interim examinations he is allowed to register for the Master's exam.
2. The Examining Board will determine the result of the final examination and will determine the regulations concerning the way the result is laid down.
3. Prior to determining the result of the final examination, the Examining Board can evaluate and assess the knowledge of the student concerning one or more components of the programme if the results give a reason for this.

Article 3.10 Degree

1. Those who have passed the final examination will obtain the degree of Master of Science (MSc)
2. The degree obtained will be stated on the certificate of the examination.
3. Those who have passed the O variant, as mentioned in article 2.1, will obtain the degree with the addition Research.
4. Those who have passed the MT variant, as mentioned in article 2.2, will obtain the degree with the addition Management and Toepassing.
5. Those who have passed the C variant, as mentioned in article 2.3, will obtain the degree with the addition Commucation.
6. Those who have passed the E variant, as mentioned in article 2.4, will obtain the degree with the addition Education.

Section 4 Prior education

Article 4.1 Admission requirements for the Master's programme

Those who meet one of the the following criteria will be admitted to the programme:

- a. those who have passed the final examination of the Bachelor's programme in Physics and Astronomy of the Radboud University Nijmegen.

- b. those who possess an admittance from the University Board for the present year.

Article 4.2 Admittance

Those who meet the following criteria are eligible for an admittance

- a. possess a certificate that is at least equivalent to the certificate as mentioned in article 4.1 sub a, or
- b. are capable of following the Master's programme in the opinion of the Examining Board, and
- c. have proven to have sufficient knowledge of the English language, as stated in article 1.7

Article 4.3 Flexible entrance in the Master's programme

1. The Examining Board can decide to allow students to the Master's programme who are enrolled in the bachelor programme in Physics and Astronomy but have not yet passed the final examination. This is under the condition that there is sufficient capacity in the programme.
2. Those who meet the following conditions are candidates for allowance:
 - a. completion of at least 162 ec of study load
 - b. In subjugation of the provision of Article 4.3 sub 2a completion of 150 ec of study load is sufficient for students who have started their bachelorprogramme on sept. 1, 2002
3. A student who is admitted by virtue of this article has the obligation to pass the bachelor exam of Physics and Astronomy within a year after admission. If not, the student is excluded from interim examinations until the bachelor degree has been obtained.

Section 5 Student counselling

Article 5.1 Monitoring of students' progress

1. The faculty records the students' individual study results.
2. The faculty provides each student at least once a year with an overview of his or her study results.

Article 5.2 Student counselling

The faculty is responsible for the introduction to university life and counselling of the students enrolled in the programme, also for the purpose of acquainting them with the opportunities in and outside the programme.

Section 6 Transitional and final provisions

Article 6.1 Preliminary examinations and examinations for students who have started before September 1, 2002

1. Students who have started before September 1, 2002 have the opportunity to register for the interim examinations and the final exam of the doctoral programme of Physics and Astronomy until September 1, 2008
2. In special cases other students than those mentioned in article 6.1, sub 1 have the same opportunity. This is to be determined by the Examining Board.

Article 6.2 Switch from the undivided programme to the bachelor/master structure

A student mentioned in article 6.1 can follow this programme under the following conditions:

1. Passed interim examinations can be evaluated as exemptions for similar courses in the new programme
2. Participation is possible as far as it is permitted by the introduction of the programme and the interim examinations

Article 6.3 Adoption of these regulations and any amendments

1. These regulations and any amendments to these regulations will be enacted by a separate order of the Dean, after consultation with the Education Committee and having acquired the approval of the Joint Student-Staff Council.
2. An amendment to these regulations will not affect the current year, as long as the interests of the students are not harmed.
2. An amendment to these regulations shall not disadvantage students by affecting any other decision that has been taken by the Examining Board concerning students in accordance with these regulations.

Article 6.3 Publication

1. The Dean will ensure appropriate publication of these regulations, of the rules and guidelines adopted by the Examining Board, as well as of any amendment to these documents.
2. Interested parties can obtain a copy of the documents referred to in Article 6.3.1 from the Faculty Office.

Article 6.4 Preference for Dutch text

In the event of conflict between the Dutch original and the English translation, the Dutch text will prevail.

Article 6.5 Date of validity

These regulations will come into effect on 1 September 2007

As confirmed by the Dean, _____

Appendix

Code of rules for use of a non-Dutch language as covered in article 7.2 section c WHW,

The following code of conduct is in force at the RU:

- Article 1
Education and examinations can take place in another language than Dutch within the RU when the specific nature of the program, the goal of maintaining the quality of the education, or the origin of the student requires this.
- Article 2:
A decision to use a language besides Dutch can be made by the Dean of the involved faculty, based on advice by the education committee. The Dean will consider the following points:

A clear need for using a language besides Dutch must be established.
 - Tests and final examinations can be given in Dutch on the request of the student. In an English language programme tests will be given in English unless the examination committee of the program decides against this.
 - Use of a language besides Dutch may not lead to an increase in the work-load of the program.
 - This non-Dutch education must meet the same quality tests as if the program were in Dutch.
- Article 3
The decision of the Dean must be included in the education and examination rules of the programme.
- Article 4
The Dean reports his decisions with respect to the programme annually to the Governing Board of the university.

Education committee

An education committee is required by art. 9.18 WHW. The committee has the mandate:

- a. To give advice on the education and examination code.
- b. To annually evaluate the performance of the education and examination aspects of the programme, and
- c. To give solicited or unsolicited advice to the director of education and the Dean over all aspects regarding Masters education in Physics,

Rules limiting eligibility for examination

This rule of eligibility applies to all examinations given within the Faculty, as established by the Faculty decision taken on January 7, 2004.

- Students are allowed a maximum of three attempts to pass a given examination. Registration 5 working days before the exam via the KISS system is required. Proper registration must be confirmed before any student is allowed to take the exam.
- Any student deciding not to take the exam should cancel:
 - Up to 5 working days before the exam via the KISS system.
 - Up to 1 day by written or electronic means before the exam directly via the lecturer.

If the cancellation does not meet these requirements then the missed exam will be counted as one of the three attempts.

- If after three attempts the student has still not passed the examination then any further request by the student to take the exam must be submitted in written form to the examination committee.
- The student administration is responsible for keeping track of the number of attempts to pass the exam.
- This rule applies to both oral and written exams.
- This rule applies to all students of the FNWI faculty.
- If the student can demonstrate that he/she was unable to cancel participation in an exam due to circumstances beyond his or her control, the examination committee can decide to not count the exam as an official attempt.
- This rule applies for students registering for their first attempt for an examination, starting February 1, 2004

Other rules regarding examinations (not considered in article 7.12 section 4 WHW).

The examination committee sets the rules with regard to all aspects of ensuring fair and valid examinations. This can include the case where a student is found to commit fraud in taking the exam. In this case the examination committee may ban the student for a period of up to a year from repeating the given examination or taking any other examinations, as decided by the committee.