

**Cover Page Education and Examination Regulations (EER) for the MSc programme
Computing Science FNWI 2015-2016**

Education and Examination Regulations (EER) for the MSc programmes FNWI 2015-2016

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Part 1 General part

Section 1 General provisions

Article 1.1 Applicability of the regulations

These regulations apply to the education and examinations as part of the Master's degree programmes of the Faculty of Science (hereinafter referred to as 'the faculty'), and contain the applicable procedures, rights and obligations with regard to teaching, interim examinations and examinations for students enrolled for the first time as of September 1, 2014. Part 1 of the Regulations includes provisions applicable to all Master's degree programmes; in Part 2 additional specific provisions for the programme Computing Science are listed.

Article 1.2 Definitions

Insofar as they are also mentioned in the Higher Education and Research Act and/or the structure regulations of Radboud University, the concepts used in aforementioned Act and/or regulations will have the same meaning as in this Act. In these regulations the following definitions apply:

- a. the Act: the Higher Education and Scientific Research Act of October 8, 1992 (GG 593) as it currently reads;
- b. programme: the Master's degree programme as referred to in Article 7.3a, paragraph 1 under b of the Act;
- c. component: an educational unit as referred to in Article 7.3, paragraph 2 and 3 under the Act;
- d. student: anyone enrolled at Radboud University for participation in a degree programme and/or in the interim and final examinations of the programme;
- 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 an internship;
 - taking part in fieldwork or excursions;
 - 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 student 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 Examination Board;
- g. examination: a review of the student's academic achievements, in which the Examination

- 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 Examination Board has not determined that the examination also includes an examination by the Examination 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. Examination Board: the Examination board of the programme set up in accordance with Article 7.12 of the Act;
 - i. examiner: the person designated by the Examination Board in accordance with Article 7.12 of the Act who administers the interim examinations;
 - j. EC: European Credits, the unit used to indicate the study load in accordance with the European Credit Transfer System. 1 EC is equal to 28 hours of study;
 - k. specialisation: a cohesive specialized programme within the Master's programme that has been approved as such by the Faculty Board;
 - l. obtaining a degree (Article 4.1): the declaration of the Examination Board that the requirements for the diploma have been met;
 - m. working day: Monday to Friday, except statutory holidays and other days marked as collective holidays by the RU;
 - n. Prospectus: the prospectus for one of the programmes as referred to in article 1.1 containing specific information about the Master's programme;
 - o. institution: Radboud University Nijmegen;
 - p. faculty: Faculty of Science;
 - q. free choice electives: university component enabling assessment.

Article 1.3 The Master's programmes and specialisations

1. The faculty provides the following Master's programmes with a study load of 120 EC:
 - a. Biology
 - b. Computing Science
 - c. Medical Biology
 - d. Molecular Life Sciences
 - e. Physics and Astronomy
 - f. Science
 - g. Chemistry
 - h. Mathematics

2. The faculty provides the following Master's programme with a study load of 60 EC:
 - a. Information Sciences

3. The Master's programmes of the Faculty of Science mentioned in article 1.3.1. each have a

number

of specialisations. These specialisations are described in article 1.3.6, article 1.3.7, article 1.3.8 as well as the programme specific part of paragraph 7.

4. One of the following three specialisations, which will henceforth be referred to as “Faculty” specialisations, can be chosen in the Master’s programmes as described in 1.3.1. a, c, d, e, f, g, h:

- a) Science, Management and Innovation
- b) Science in Society
- c) Science and Education

In the Master’s programme Computing Science, students can choose from two of the three aforementioned specialisations: Science, Management and Innovation and Science in Society.

These Faculty specialisations are further described in article 1.3.6, article 1.3.7 and article 1.3.8.

5. The aforementioned Faculty specialisations consist of 60 EC worth of programme specific components (for more information regarding these, please see the programme specific part of the Education and Examination Regulations) as well as 60 EC worth of specialisation specific components, as described below in article 1.3.6, article 1.3.7 and article 1.3.8.

6. The Faculty specialisation Science, Management and Innovation is at least comprised of the following components with the corresponding number of credits:

a) Courses, to be chosen by the student, from one of the following themes: 1) Climate and Energy, or 2) Health. With approval from the Examination Board, another societal beta theme can also be chosen. Depending on the chosen theme, the students will take 12 EC worth of compulsory courses of the Science, Management and Innovation specialisation, consisting of:

- Core theme course (6 EC)
For the theme Climate and Energy: NWI-FMT022 Climate and Energy
For the theme Health: NWI-FMT023 The future of health: from the laboratory to the clinic and from utopia to applications
- Other theme courses (a total of 6 EC)
 - a For the theme Climate and Energy, students can choose from:
 - NWI-FMT020 The bio-economy (3 ec)
 - NWI-FMT026 Energy modelling (3 ec)
 - NWI-MM020 Sustainable consumption and production (3 ec)
 - b For the theme Health, students can choose from:
 - NWI-FMT021 Neuroscience (3 ec)

NWI-FMT025 Synthetic bio-chemistry, nanomedicine and tissue engineering: from research lab to clinic (3 ec)

For a specific societal beta theme, a specific set of (thematic) courses, worth of 12 EC, will be comprised by arrangement.

- b) Compulsory components of the specialisation Science, Management and Innovation (12 EC) consist of:
 - NWI-FMT003E Innovation Management (6 ec)
 - NWI-FMT024 Policy & Economics (3 ec)
 - NWI-FMT006A Entrepreneurship: Making a Business Plan (3 ec)
 - NWI-FMT019 Methods in Societal Research (3 ec)
- c) Free choice electives (3 EC)
- d) Science, Management and Innovation final research project of 30 EC

7. The Faculty specialisation Science in Society is at least comprised of the following components with the corresponding number of credits:

- a) Compulsory components with a minimum of 21 EC
 - NWI-FC002B Science and Societal Interaction (3 ec)
 - NWI-FC003B Risk Communication (3 ec)
 - NWI-FC0010C Framing Knowledge (3 ec)
 - NWI-FC0011C Knowledge Society (3 ec)
 - NWI-FC0013C Science and Media (3 ec)
 - NWI-FC0043B Science and Public Policy (3 ec)
 - NWI-FC0044B Methods of Societal Research (3 ec)
- b) Specialisation electives with a minimum of 6 EC
- c) Free choice electives (3 EC)
- d) Science in Society internship and report of 30 EC

8. The Faculty specialisation Science and Education is at least comprised of the following components with the corresponding number of credits:

- a) Courses (5 EC)
- b) Self evaluation (10 EC)

- c) Supervised internship (15 EC)
- d) Proposal and research project (10 EC)
- e) Self evaluation 2 (5 EC)
- f) Independent internship (15 EC)

These components are provided by the Radboud Teachers Academy. If the student is exempt from a part of the abovementioned components, for example because they have completed the educational minor programme during their Bachelor's programme or due to any other relevant reason, the corresponding number of ECs will be replaced with programme specific components.

9. The student's selection of Master's programme components must be approved by the Examination Board at least 6 months before the intended examination date. The Examination Board will provide their assessment within a month of submittal.

Article 1.4 Objectives of the programme

The objectives of the programme are:

- a. Acquisition of knowledge, skills and insights in the relevant field
- b. Development of academic competences
- c. Preparation for future career
- d. Deepening of qualifications in the field of independent scientific research;
- e. With regard to the specialisation Science, Management, and Innovation: acquisition of knowledge, skills and insights, as well as a societal beta theme, in the relevant fields of business;
- f. With regard to the specialisation Science in Society: acquisition of knowledge, skills and insights in the relevant fields of Science in Society;
- g. With regard to the specialisation Science and Education: acquisition of competencies as a teacher.

Section 2 Outline and type of the programmes

Article 2.1 Type of programme

All programmes are full-time programmes.

Article 2.2 Outline of the programme

The number of courses and cohesion of the courses are further outlined in the programme specific part of the Education and Examination Regulations.

Section 3 Language of the programmes

Article 3.1 Language

1. The programme is offered in English; the interim examinations and the final examination are

administered in English, with the exception of the Science and Education specialisation, which is offered in Dutch. For programmes offered in English, the Radboud University Code of Conduct with regard to foreign languages applies. (see appendix)

2. To take part in the programme and the interim examinations that are offered in Dutch, students must have a sufficient level of proficiency in Dutch. For non-native students this requirement is met by successfully completing the state examination in Dutch as a second language, level 2.

If required, the Examination Board may make a decision as to whether the student's Dutch language proficiency is sufficient.

3. To take part in the programme and the interim examinations that are offered in English, students must have a sufficient level of proficiency in English. This requirement is satisfied if the student:

- a. has a higher vocational training (HBO) degree; or
- b. has a Dutch university Bachelor's degree; 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 213 or higher for the computer version;
 - TOEFL with a score of 79 or higher for the internet version;
 - IELTS with a score of 6.0 or higher
 - the Cambridge CAE or CPE with a minimum grade C

If required, the Examination Board may judge whether the student's English language proficiency is sufficient.

Section 4 Interim examinations and examinations

Article 4.1 Programme examinations

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

Article 4.2 Types of interim examinations

1. Students complete a course by means of an interim examination. The interim examinations may consist of multiple components and may be of the following type:
 - a. written examinations and/or
 - b. oral examinations and/or
 - c. practical exercises plus a report and/or
 - d. computer exercises and/or
 - e. computer examinations and/or
 - f. oral presentations.
2. At the student's request, the Examination Board may allow an interim examination to be taken in another way than aforementioned.
3. For students with some form of disability or impairment, allowances will be made in the administration of interim examinations to the utmost extent possible so that their individual disability will not prevent them from taking part in an interim examination. If necessary, the

Examination Board will seek expert advice before taking a decision in such matters. If students wish to make use of these allowances they must apply for these at least 2 weeks in advance.

4. Oral examinations will be given to one person at a time, unless the Examination Board determines otherwise.
5. Oral interim examinations will not be administered publicly, unless the Examination Board or the examiner in question has decided otherwise in a specific case, or if the student has made objections to this.
6. Oral examinations will take place in the presence of a second examiner or an observer appointed by the Examination Board. In special cases, the examination may determine that a recording is to be made of the examination.
7. For each programme component, the type of examination is indicated by the examiner, under approval of the Examination Board, at the beginning of the academic year. In exceptional cases, the examiner can change the type of examination at a later date in the academic year, though this will always take place before the start of the component in question and with the approval of the Examination Board.
8. The students are obliged to register on time for an examination in accordance with the applicable provisions. See article 4.3

Article 4.3 Registration for examinations

Students who have registered for a course on Osiris are automatically registered for the first exam opportunity of that course. In case a student wishes to not participate in the exam, they are obliged to deregister for the examination on time. The time periods in which the student can register and deregister for examinations are outlined in the appendix “Rules for interim examinations”.

Article 4.4 Interim examinations periods and frequency

1. In each academic year there will be at least 2 opportunities to take interim examinations with the exception of laboratory courses or practical parts of courses, which can be taken at least once per academic year. Examinations will take place subsequent to the course and for a period to be determined. The “Rules for interim examinations” limiting eligibility for examination are applicable (see appendix).
2. Contrary to the provisions in Article 4.4.1, if a certain component is no longer offered after a particular year, students are given at least one opportunity in the following year to take an interim examination of that component.
3. Should, for the first academic year, a particular course no longer be taught, one more opportunity to take part in the written interim examination of that course will be provided in that year.

Article 4.5 Re-examinations

1. If an examination is retaken, the grade that was obtained last will count.
2. If an examination is retaken two or more times, the Examination Board will, as a rule, lay

down additional examination requirements for the component.

Article 4.6 Period of validity

1. The period of validity of courses completed in the programme is unlimited.
2. Contrary to the provision of Article 4.4.1, the Examination Board may introduce additional requirements if the content of certain courses has changed drastically since the interim examinations were taken.

Article 4.7 Assessment and notification of the results of interim examinations

1. On the same day of the 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 will determine the result of a written interim examination within 15 business days of the day on which it was written, on the condition that there be at least 10 days between the determination of results and the next occasion to take the interim examination, and will provide the Centre of Educational Services of the faculty with the necessary information for issuing written proof of the results to the student. Within two working days after the determination of results, the students will have access to their results.
3. The results of an examination are determined by an examiner on a scale of 1 (=lowest possible grade) to 10 (=highest possible grade), in which only halved and rounded grades will be awarded. However, the grade of 5.5 will not be awarded. When rounding up a grade between 5 and 6, a grade lower than 5.5 will be rounded down to a five (5), meaning the student has failed this component of the programme, whereas a grade of 5.5 or higher will be rounded up to a six (6), meaning this component of the programme has been successfully passed. In addition to numbered grades, the results “passed” and “failed” can also be awarded.
4. In exceptional cases, the examiner may extend the period mentioned under 2 by a maximum of 10 business days.
5. For every interim examination that is not oral or written the Examination Board determines in advance in what way and at what time the student will receive a written proof of the result. This term is no longer than 30 days after the interim examination.
6. The interim examination outcome statement informs students of their right of inspection, as referred to in Article 4.7, and also that they may appeal to the Examination Appeals Board.
7. The period in which students can appeal a decision by the Examination Board to the Examination Appeals Board is four weeks.

Article 4.8 Rules and regulations for the Examination Board

1. The Examination Board is charged with the responsibilities and authorities as outlined in the Act, among which ensuring the quality of the examinations and interim examinations.
2. The Examination Board sets rules regarding the decent state of affairs during interim examinations and the appropriate measures to this effect.
3. The Examination Board can provide the examiners with rules and guidelines regarding the assessment of the examinee and the determination of examination results.

Article 4.9 Right of inspection

1. On request, students will be given the opportunity to inspect their assessed work during a period of at least 30 days following the publication of the results of a written interim examination. If so requested, the student will receive, at cost price, a copy of that work, insofar as the essay questions are concerned.
2. During the term mentioned in Article 4.9.1, any examined party involved will have access to the questions and assignments of the interim examination, and if possible, to the standards used in the assessment.
3. The Examination Board may determine that the inspection or taking cognizance shall take place at a designated place and at a minimum of two fixed points in time. If the person in question can prove that he or she cannot attend or has not been able to attend 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 time period mentioned in Article 4.9.1.
4. In all cases, provided they has been timely requested by the student, opportunities for assessment inspection can be provided up until five business days prior to the next occasion to take the interim examination.
5. The examiner shall keep written interim examinations and other parts of written interim examinations that count in determining the result, such as papers, assignments and the like, for at least two years after the interim examination has taken place. Master reports and master theses must remain available to assessments, accreditations and the inspector and shall be kept for seven years.
6. Student files containing testimonials shall be kept at least one calendar year after an examination.

Article 4.10 Exemption

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

- a. the student has finished a course at a university or higher vocational education (HBO) institute of a similar content and level, or
- b. the student can prove that sufficient knowledge and skills with regard to a certain course have been acquired through work experience.

Article 4.11 Final examination

- 1 As soon as the student has submitted sufficient proof of having passed the required interim examinations he/she is allowed to register for the Master's examination.
- 2 The Examination Board will determine the result of the final examination and will determine the regulations concerning the standards used in the assessment.
- 3 Prior to determining the result of the final examination, the Examination Board can evaluate and assess the knowledge of the student concerning one or more components or aspects of the programme if this is motivated by the results.

Article 4.12 Degree

- 1 Those who have passed the final examination and have applied to the requirements of 4.12.2 will obtain the degree of Master of Science (MSc). The degree obtained will be stated on the certificate of the examination. The name of the successfully completed specialisation, as a

differentiation within the Master's programme, will also be stated on the certificate of the examination. In case the specialisation Science and Education, as described in article 1.3, has been completed successfully, the Radboud Teachers Academy will also grant the student a first-degree teacher's certification.

- 2 The degree, as described in 4.12.1, is only awarded if the student has obtained at least half of their EC at the Radboud University.
- 3 Those who have obtained the right to a diploma may request the Examination Board to withhold awarding it.
- 4 Unless the Examination Board has decided to postpone upon request, the diploma in question will be awarded to the party involved.

Article 4.13 Honours

1. Complying with the regulations as described in this Article, the Examination Board has the authority to award honours to a passed examination.
2. The following awarded honours are possible.
 - a. "cum laude" is awarded in case the weighted average of the final grade of the components as referred to in clause 3 is larger than or equal to 8.0, or;
 - b. "summa cum laude" is awarded in case the weighted average of the final grade of the components as referred to in clause 3 is larger than or equal to 9.0.
3. The weighted average required for honours is calculated from all components of the Master's programme for which a grade has been awarded on a scale of 1 to 10, with the exemption of extracurricular components.
4. The number of ECs of the component as referred to in clause 3 counts as a weight factor when calculating the weighted average grade, unless the programme specific part of these Education and Examination Regulations state otherwise.
5. Honours shall not be awarded if the student has taken part in the re-examination for more than 10 percent (one or more components) of the total study load of the Master's programme, or when the student has taken part in the re-examination of a particular interim examination more than once, subject to the authority of the Examination Board decide otherwise.
6. Honours shall not be awarded if a student has been found guilty of committing fraud for one or more of the components in the Master's programme.

Article 4.14 Sequence of interim examinations (also see paragraph 8)

1. The final project of the specialisation Science, Management and Innovation can only be completed after the core theme course as well as Methods in Societal Research, as described in article 1.3.6.a and b, have been completed successfully.
2. The final project of the specialisation Science in Society can only be completed after 12 EC of the Science in Society components, including Methods in Societal Research, as described in 1.3.7.a, are successfully completed.
3. The internships of the specialisation Science and Education can only be completed after 30 EC worth of components pertaining to the relevant Master's programme, including the practical assignments with regard to the research internship of the

programme, have been successfully completed and/or exemption for these components has been granted.

Article 4.15 Components of a different programme

With approval from the Examination Board, students can substitute a component of their own Master's programme with a component from another university programme. When granting approval, the Examination Board will decide to what extent the Education and Examination Regulations of that programme apply.

Article 4.16 Fraud and plagiarism

1. If an examiner or supervisor suspects or finds proof of fraud, plagiarism, or other irregularities during or at assessment of an interim examination or written assignment, he will inform both the Examination Board of the programme involved and the student concerned in writing. The student will be allowed to finish the examination.
2. The Examination Board will assess as soon as possible, but with a maximum of 20 working days, whether fraud or plagiarism has indeed been committed and if so, which measures are to be taken. The Examination Board will only make a decision when the student involved has been heard, or has been offered the opportunity to be heard. A written report will be made of the hearing.
3. In case of fraud or plagiarism, a note will be made in the student's record.
4. In case of fraud during an examination, the examination concerned will not be assessed. As a result, the student will have lost one of their examination opportunities.
5. Following Art. 7.12, paragraph 2 under b of the Act, the measures to be taken by the Examination Board in case of fraud or plagiarism can mean the student will be denied taking part in one or more yet to be determined interim examinations or examinations, for a maximum period of 12 months.
6. In case of serious fraud, the Institute Board can terminate the student's enrolment at the, if so advised by the Examination Board.
7. In addition to the measures listed under 5, in case of plagiarism the Examination Board can require the student to write a new assignment, on a subject to be determined by the examiner responsible for the examination concerned.

Section 5 Student counselling

Article 5.1 Monitoring of student progress

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

Article 5.2 Student counselling

3. The faculty is responsible for offering guidance to students in introducing them to university life, as well as counselling the students enrolled in the programme, also for the purpose of acquainting them with the study possibilities within and outside the programme.
4. If needed, the faculty will provide the student with oral advice on the continuing of their

studies either within or outside of the faculty, and on potential other possibilities for development.

Part 2 Regulations Specific to the Programme

Master's Programme in Computing Science

Section 6 Applicability of Regulations – General Provisions

The General Provisions of these Regulations apply to the education and examinations of this Master's Programme unless stated otherwise in the following regulations.

Article 6.a Learning objectives

In addition to the general objectives as outlined in Article 1.4.1 of these regulations, the Master's programme Computing Science aims to educate students as such that they are able to do the following after obtaining their Master's degree:

- a. Have thorough scientific knowledge and understanding in the field of their specialisation (as described in points e-h below), and are experts in a specific field of studies within their specialisation, and are capable of contributing to further scientific progress within this field of studies, and are capable of obtaining knowledge, understanding, and skills of other fields of study within reasonable time period.
- b. Capable of applying their knowledge and skills to questions and/or problems relating to research and system development, both independently as well as in a small team; here, depending on the chosen specialisation and field of expertise within this specialisation, the emphasis on research or system development may vary.
- c. Have awareness of the societal aspects of ICT.
- d. Capable of communicating on a professional level, and able to present their own or someone else's work in a comprehensible, oral or written presentation.
- e. Graduates of the specialisation Software Science have extensive knowledge of state-of-the-art techniques of the development and analysis of software (including software technology, domain specific languages, computer-aided analysis, and using mathematical models and model learning techniques in practice) and are capable of using these techniques.
- f. Graduates of the specialisation Data Science have extensive knowledge of the field of studies of Data Science (including aspects regarding algorithms, organisation, software, hardware, and ethics) and are capable of using suitable Data Science techniques to extract relevant data from databases, have experience with specifying, designing, and realising applications in which Data Science is of great importance, and are able to contribute to discussions regarding the position of Data Science in our society.
- g. Graduates of the specialisation Cyber Security have extensive knowledge of information- and computer security (including judicial aspects, as well as aspects regarding organisation, software, hardware, network, cryptography, and privacy), are capable of evaluating existing systems or systems yet to be developed in terms of security and can formulate and prioritize security requirements, have experience with specifying, designing, or developing applications in which security is of significance, and are capable

of contributing to discussions regarding the position of cyber security in our society.

h. Graduates of the specialisation Mathematical Foundations of Computer Science have extensive knowledge of theoretical computing science and the mathematical aspects that are at the basis of computing science, are capable of using mathematical techniques (such as logics and algebra) for modelling and analysing concepts in computing science.

Article 6b. Honours

In addition to Article 4.13 the Master's programme uses the following factors when awarding honours:

1. The following criteria have to be met when awarding the honours of "cum laude":
 - the weighted average grade, taking into consideration distribution of ECs, of all examination components less than 20 EC should, before rounding off the final grade, be larger than or equal to 8.0
 - the weighted average grade, taking into consideration distribution of ECs, of all examination components larger than or equal to 20 EC should, before rounding off the final grade, be larger than or equal to 8.0
2. The following criteria have to be met when awarding the honours of "summa cum laude":
 - the weighted average grade, taking into consideration distribution of ECs, of all examination components less than 20 EC should, before rounding off the final grade, be larger than or equal to 9.0
 - the weighted average grade, taking into consideration distribution of ECs, of all examination components larger than or equal to 20 EC should, before rounding off the final grade, be larger than or equal to 9.0

Section 7 Master's Programme

Article 7.1 Master's specialisations

Candidates select a specialisation from the following:

1. Software Science
2. Data Science
3. Cyber Security (TRU/e Master), in collaboration with TUE
4. Mathematical Foundations of Computing Science (MFoCS)
5. Science, Management and Innovation, as described in Article 1.3.4
6. Science in Society, as described in Article 1.3.4

Within two months after the start of the Master's programme, the student will give notice of their preference of specialisation.

Article 7.2 Deviating programme

In case a student does not choose a specialisation, they have to submit a motivated request to apply for a deviating programme to the Examination Board. This request needs to present another programme consisting of at least 60 EC of the total of 120 EC, of which 15 EC consists of

Master's courses and internship specific to the programme. In a deviating programme, the following courses are mandatory: NWI-IMI003 Philosophy and Ethics for Computing and Information Sciences (3 EC) and Master's thesis (30 EC).

Article 7.3 Programme Master specialisation Software Science

This specialisation is comprised of the following components:

- Main courses of the specialisation (18 EC), consisting of:
 - NWI-I00032 Advanced Programming (6 ec)
 - NWI-IMC046 Model Checking (6 ec)
 - NWI-I00110 Testing Techniques (6 ec)

- Specialisation electives (24 EC), to be composed from the following list of courses, of which at least one course from the category “Theory of Computation” must be chosen.

Category Software Technology & Engineering:

- NWI-IMC004 Compiler Construction (6 ec)
- NWI-I00155 Design of embedded Systems (6 ec)
- NWI-IMC052 Software Development in Start-ups (6 ec)
- NWI-IMC051 Software Security (5 ec), evt. aangevuld met
NWI-IMC054 Specialisation Project Assignment (1 ec)

Category Computer-Aided Analysis:

- NWI-IMC035 Software Analysis (6 ec)
- NWI-IMC009 Automated Reasoning (6 ec)
- NWI-I00139 Proof Assistants (6 ec)

Category Theory of Computation:

- NWI-IMC010 Type Theory and Coq (6 ec)
- NWI-IMC011 Semantics and Domain Theory (6 ec)
- NWI-IMC036 Coalgebra (6 ec)
- NWI-WM072B Complexity Theory (6 ec) or
NWI-WM120B Computability Theory (8ec)

- NWI-IMC045 Research seminar Software Science (6 EC)
- NWI-IMC047 Research internship (15 EC)
- NWI-IMI003 Philosophy and Ethics for Computing and Information Science (3 EC)
- External electives (12 EC), to be chosen outside of the specialisation. For approval, submit request to the Examination Board.
- Free electives (12 EC)
- Master thesis (30 EC)

Article 7.4 Programme Master specialisation Data Science

This specialisation is comprised of the following components:

- Main courses of the specialisation: (18 ec), consisting of
 - NWI-I00041 Information Retrieval (6 ec)

- NWI-IMC030 Machine Learning in Practice (6 ec)
- NWI-IMC012 Bayesian Networks (6 ec)
- Specialisatie electives (24 ec), to be composed from the following list of courses:
 - Category Data Science Theory and Tools
 - NWI-NB054E Statistical Machine Learning (6 ec)
 - NWI-IMC042 Natural Computing (6 ec)
 - NWI-NM048C Machine Learning (9 ec)
 - Category Data Science Applications
 - NWI-IMC037 Computer Aided Diagnosis in Medical Imaging (6 ec)
 - SOW-MKI49 Bayesian Neurocognitive Modeling (6 ec)
 - NWI-IMC013 Bioinformatics (3 ec), in 2015-2016 replaced by way of exception by NWI-BM041B Principles of Systems Biology
 - NWI-SM299 Pattern Recognition for the Natural Sciences (3 ec)
 - LET-REMA-LCEX06 Text Mining (6 ec)
 - Category Data Science Aspects
 - NWI-IMC006 Law in Cyberspace (6 ec)
 - NWI-I00035 Foundations of Information Systems (6 ec)
 - NWI-I00054 Cognition and Representation (6 ec)
 - NWI-IMK003 Business Rules Specification and Application (3ec)
 - SOW-MKI51 Artificial Intelligence at the Webscale (6 ec)
- NWI-IMC044 Research Seminar Data Science (6 ec)
- NWI-IMC047 Research Internship (15 ec)
- NWI-IMI003 Philosophy and Ethics for Computing and Information Science (3 ec)
- External electives (12 EC), to be chosen outside of the specialisation. For approval, submit a request to the Examination Board.
- Free electives (12 EC)
- Master thesis (30 EC)

Article 7.5 Programme Master specialisation Cyber Security

This specialisation is comprised of the following components:

- Main courses of the specialisation (30 ec)
 - NWI-IMC051 Software Security (5 ec)
 - NWI-IMC053 Security in Organisations (5 ec)
 - NWI-IMC050 Advanced Network Security (5 ec)
 - NWI-TRUE01 Principles of Data Protection (aan de TU/e, 5 ec)
 - NWI-TRUE02 Cryptography 1 (aan de TU/e, 5 ec)
 - NWI-TRUE07 Verification of Security Protocols (aan de TU/e, 5 ec)
- Specialisation electives: at least 15 EC should be chosen from the following componens:
 - NWI-IMC001 Hardware Security (6 ec)
 - NWI-IMC006 Law in Cyberspace (6 ec)
 - NWI-IMC039 Cryptographic Engineering (6 ec)
 - NWI-TRUE03 Physical Aspects of Digital Security (aan de TU/e, 5 ec)
 - NWI-TRUE04 Applied Cryptography (aan de TU/e, 5 ec)
 - NWI-TRUE05 Hacker's Hut (aan de TU/e, 5 ec)

- NWI-TRUE06 Cryptographic Protocols (voorheen Cryptography 2) (aan de TU/e, 5 ec)
- One of the following seminars:
 - NWI-I00136 Privacy Seminar (6 ec)
 - NWI-TRUE08 Seminar TU/e (aan de TU/e, 5 ec)
- NWI-IMC047 Research internship (15 EC)
- NWI-IMI003 Philosophy and Ethics for Computing and Information Science (3 EC)
- External courses (6 EC or more, depending on the content of the other chosen components), to be chosen outside of the specialisation. For approval, submit a request to the Board of Examiners.
- Free electives (12 EC, depending on the content of the other chosen components)
- Master thesis (30 EC)

The total of all chosen components should at least be 120 EC (in accordance with Article 1.3).

Article 7.6 Programme Master specialisation Mathematical Foundations of Computer Science

This specialisation is comprised of the following components:

- Main courses of the specialisation (15 EC), consisting of:
 - NWI-IMC010 Type Theory and Coq (6 ec)
 - NWI-WM069B Computer algebra (6 ec)
 - NWI-IMC049 MFoCS seminar (3 ec)
- Specialisation electives (56 EC), to be composed from the following list of components, should be submitted to the Examination Board for approval. At least 6 EC should be chosen from the category “RU-CS” and at least 6 EC from the category “RU-Math”.

Category RU-CS

- NWI-I00032 Advanced Programming (6 ec)
- NWI-IMC009 Automated Reasoning (6 ec)
- NWI-IMC004 Compiler Construction (6 ec)
- NWI-IMC046 Model Checking (6 ec)
- NWI-I00139 Proof Assistants (6 ec)
- NWI-IMC011 Semantics and Domain Theory (6 ec)
- NWI-NB054E Statistical Machine Learning (6 ec)

Category RU-Math

- NWI-WM072B Complexity Theory (6 ec)
- NWI-WM120B Computability Theory (8 ec)
- NWI-WB070B Intuitionistic Mathematics (6 ec)
- NWI-WM040B Philosophy of Mathematics (6 ec)
- NWI-IMC036 Coalgebra (6 ec)
- NWI-WM033C Category Theory (6 ec)
- NWI-IMI003 Philosophy and Ethics for Computing and Information Science (3 EC)
- Free electives (6 EC)
- Master’s thesis (40 EC)

Article 7.7 Programme specific part of the Faculty specialisations Science, Management & Innovation and Science in Society

The programme specific part (60 EC), as referred to in article 1.3 clause 5, is comprised of the following components:

- Main courses of the specialisation (18 EC), specialisation electives (24 EC), Research seminar (6 EC); in accordance with the specialisation Software Science (article 7.3) or Data Science (article 7.4)
- NWI-IMI003 Philosophy and Ethics for Computing and Information Science (3 EC)
- Free electives (9 EC)

Article 7.8 Thematic part of the specialisation Science, Management & Innovation

The specific societal beta theme, as referred to in article 1.3 clause 6a, within the Master's programme Computing Science can be chosen for Managing ICT Innovations, along with its corresponding thematic set of courses (12 EC):

- NWI-IMC052 Software Development in Start-ups (6 EC), core theme course
- NWI-IMC021 System Development Management (6 EC)

Section 8 Sequence of Programme Examinations (see also Article 4.14)

Not applicable.

Section 9 Start of the Programme

Starting the Master's programme is possible per 1 September. Later enrolment is only possible with the explicit approval of the Examination Board, stating that starting the programme at a time later in the programme is still a possibility.

Section 10 Admission Master's programme Computing Science

Article 10.1 Admission requirements for the Master's Programme

Without taking into account the conditions of Article 10.4, admission to the programme is granted to the following persons:

- a. candidates who have passed the final examination Bachelor's Programme Computing Science at Radboud University Nijmegen;
- b. candidates who have passed the final examination of the Bachelor's Programme Computing Science, or Technical Computing Science at another Dutch University;
- c. With regard to the specialisation Data Science: candidates who have passed the final examination of the Bachelor's Programme Artificial Intelligence at the Radboud University Nijmegen
- d. candidates who possess a Proof of Admissions from the Executive Board for the concerning academic year (Article 10.2);
- e. candidates in possession of a higher professional education (HBO) diploma who have also completed the Pre-Master's programme

Article 10.2 Proof of Admission

Admission is granted to those who:

- a. possess a certificate that is at least the equivalent of the certificate mentioned in article 10.1, clauses a, b, c, and e;
- b. in the opinion of the Examination Board, are capable of following the Master's Programme; and
- c. have proven to have sufficient knowledge of the English language, as stated in Article 3.1.

Article 10.3 Admission Procedure

Decisions regarding admission are made by the Examination Board on behalf of the student dean.

Article 10.4 Flexible Admissions to the Master's Programme

1. The Examination Board may, upon request, decide to grant access to components and accompanying examinations of the Master's programme for the remaining length of the academic year to students who are enrolled in the Bachelor's programme in Biology at the Radboud University.
2. The request for flexible admission can only be honoured when:
 - a. The student has successfully completed the final examination (also referred to as Bachelor's internship or Bachelor's thesis);
 - b. The student has obtained at least 162 EC of the Bachelor's programme's components;
 - c. The student meets the admission requirements of the programme in order to successfully take part in the programme.For the requirement as referred to in clause b, ECs obtained by means of exemptions are taken into account.
3. The Examination Board will only grant admission to the programme if the programme's capacity allows this. The components on basis of which the Examination Board have based their approval will be specified, as well as the time period that the Examination Board's decision is valid.

Section 11 Transitional and Final Provisions

Article 11.1 Adoption of and Amendments to the Regulations

1. These regulations and any amendments to these regulations will be ratified by a separate order of the Faculty Board, after consultation with the Education Committee and after having acquired the approval of the Joint Student-Staff Council.
2. Any amendments to these regulations will not affect the current academic year, unless the interests of the students are not adversely affected in any way by doing so.
3. Any amendment to these regulations may not disadvantage students by affecting any other decision that, in accordance with these regulations, has been taken by the Examination Board on behalf of the students.

Article 11.2 Publication

The Dean will ensure the appropriate publication of these regulations. Both the rules and

guidelines adopted by the Examination Board, and any amendments to these documents.

Article 11.3 Precedence of Dutch Language Version

In the event of incongruity between the Dutch original and the English translation, the Dutch version shall prevail.

Article 11.4 Safety net regulations and Hardship Clause

1. In cases where these regulations do not suffice or are unclear or ambiguous, the dean makes the decision.
2. In special cases, the Examination Board may deviate from the provisions in these Education and Examination Regulations in favour of the student, if application of these Regulations would lead to unreasonable disadvantage or serious unfairness.

Article 11.5 Date of Validity

These regulations will come into effect on 1 September 2015.

As confirmed by the Faculty Board on 8 June 2015.

Appendix

Code of Conduct with regard to foreign languages as covered in article 7.2 under c of the Act,

The following Code of Conduct applies at Radboud University Nijmegen:

Article 1

Education and examinations may take place in another language than Dutch at the Radboud University Nijmegen if this is motivated by the specific nature of the program, the goal of maintaining the quality of the education, or the origin of the student.

Article 2

A decision to use a language other than Dutch is made by the Dean of the faculty involved, based on the education committee's advice. The Dean will consider the following aspects:

- a clear need for using a language other than Dutch must be established
- in an English language programme, interim and final examinations will be held in English; interim examinations from English language courses will be held in English, unless the examination committee of the program decides otherwise
- this foreign language education must meet the same quality criteria as if the programme were in Dutch

Article 3

The decision of the Dean must be included in the programme's Education and Examination Regulations.

Article 4

On an annual basis the faculty Dean will report to the Executive Board of the university on decisions taken with respect to the programme.

Rules for interim examinations

These rules of eligibility apply to all students enrolled at the Faculty of Natural Science, Mathematics, and Information Sciences, and concerns the procedures for registering/deregistering for interim examinations, as well as the procedure for applying for extra interim examination opportunities.

1. Students have two interim examination opportunities for every component.
2. Registration for a course in Osiris means that the student is automatically registered for the first exam opportunity
3. In deviation of clause 2, students are obliged to register for other interim examinations via Osiris, no later than 7 days before the examination.
4. Students can deregister for the examination up until 1 day before the exam on Osiris.
5. Students can also deregister in person at the Student Service Desk of the Education and Examination administration, or via email (studentinfo@science.ru.nl) up until 1 hour after the examination has started.
6. If a student does not take part in the exam without timely deregistration, the missed exam will count as one of the two possibilities. This will be marked as ND in the examination registration.
7. If the student can demonstrate that he/she was unable to cancel participation in an examination due to circumstances beyond his or her control, the Examination Board can decide not to count the examination as an official attempt. The examination registration will then be removed from OSIRIS Student by the faculty administration.
8. If, after two attempts, the student has still not passed the examination, written consent of the lecturer and Examination Board is required for each other examination opportunity. For this purpose, an application form for additional examination opportunity is available on the website: <http://www.radboudnet.nl/studentenfswj>. The student must submit the signed application form to the Student Service Desk. Here, the student will be registered for their examination. The student can check their registration in OSIRIS Student.
9. These rules come into force 1 September 2015 and therefore replace the rules of 1 September 2014.