# **Education and Examination Regulation 2017-2018**

Master Biology



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#### PART I GENERAL PROVISIONS

### Section 1. General provisions

#### Article 1.1 Applicability of these regulations

- 1. These Education and Examination Regulations (EER) apply to the Master's programmes of the Faculty of Science and outline the applicable procedures, rights and obligations concerning teaching, interim examinations and final examinations.
- The present regulations apply to all students enrolled in a Faculty of Science degree programme in the academic year 2017-2018. Students who enrolled in their programme before 1 September 2016 should appeal to the EER in effect at the time of their first enrolment for the programme, if they have continuously been enrolled.
- 3. The faculty offers the following 120-EC Master's programmes:
  - a. Biology;
  - b. Computing Science;
  - c. Medical Biology;
  - d. Molecular Life Sciences;
  - e. Physics and Astronomy;
  - f. Science;
  - g. Chemistry;
  - h. Mathematics.
- 4. The faculty offers the following 60-EC Master's programmes:
  - a. Information Sciences.
- 5. All degree programmes are offered exclusively as full-time programmes.
- 6. The programmes are taught completely in English. The Science and Education specialisation is taught in Dutch.

1.

#### Article 1.2 Definitions

- 1. The terms used in these EER, which are also used in the Higher Education and Research Act (Wet op het hoger onderwijs en wetenschappelijk onderzoek, hereinafter, "the Act") will have the same meaning as in the Act.
- 2. Apart from the terms referred to in paragraph 1, the terms below will be understood to have the following meaning:
  - a. Degree programme: the Bachelor's programme referred to in Article 7.3a, paragraph 1 of the Act;
  - b. Component: an educational unit as referred to in Article 7.3, paragraphs 2 and 3 of the Act;
  - c. Student: anyone enrolled at Radboud University for participation in a degree programme and/or in the courses or final examinations of a programme;



- d. First year: the foundational year (propedeutic phase) of the programme, as referred to in Article 7.8 of the Act;
- e. Academic year: the period of time from 1 September until 31 August the next calendar year;
- f. Practical exercise: a practical exercise as referred to in Art. 7.13 paragraph 2 under D of the Act;
- g. Interim examination: an examination testing the knowledge, understanding and skills of the student in relation to a certain unit of study, as well as the assessment of this examination, which is administered by at least one examiner designated by the Examination Board;
- h. Final examination: an examination of the student's academic achievements, in which the Examination Board determines whether or not all examinations that are part of the Bachelor's (propedeutic and core phase) programme have been successfully completed. The Examination Board may determine that this review requires a test of the candidate's knowledge, understanding and skills by the Examination Board itself and an assessment of the results of that test (in accordance with Article 7.10 of the Act);
- i. Fraud: every (lack of) action by a student aimed, or partially aimed, at making it impossible to accurately assess the knowledge, insight, and skills of the student, or of another student;
- j. Examination Board: the examination committee of a degree programme, established in accordance with Article 7.12 of the Act. Also see the Radboud University Structural Regulations;
- k. Examiner: the person designated by the Examination Board to administer the interim examination, in accordance with Article 7.12 of the Act;
- I. EC: European Credits, i.e. the study load unit in accordance with the European Credit Transfer System. One EC is equal to 28 hours of study;
- m. Work day: Mondays to Fridays, with the exception of official holidays and any other days marked by Radboud University as collective holidays;
- n. Awarding of the degree certificate: the formal confirmation that all the examination requirements have been met;
- o. Study guide: the guide for a particular degree programme of the Faculty of Science, containing specific information for the Bachelor's programme;
- p. The university: Radboud University;
- q. The faculty: The Faculty of Science;
- r. Minor: a cohesive selection of components;
- s. Free elective: a freely selected, academic, assessable component.



# PART II PROVISIONS APPLICABLE TO ALL MASTER'S PROGRAMMES

# Section 2. Access to the degree programmes and education

#### Article 2.1 Admission and admission requirements

- 2. Decisions regarding admission are made by the Examination Board.
- 3. The programme-specific part of this EER lists the admission requirements the student must meet to be admitted to the degree programme.

#### Article 2.3 Language requirements

- 1. A sufficient command of the English language is required to participate in the programme and possibly to sit for examinations in English. This requirement is met if the student:
  - a. is from an English-speaking country. The Faculty of Science understands the following countries to be English-speaking countries: Australia, Canada (with the exception of Quebec), Ireland, New Zealand, Singapore, South Africa, the United Kingdom, and the United States of America; or
  - b. has a diploma for pre-university education (VWO); or
  - c. has a diploma for pre-university education obtained at an English-language institution in the Netherlands or abroad; or
  - d. has a diploma for pre-university education obtained at a German secondary education institution, with English as Grundkurs; or
  - e. has a Bachelor's diploma for a university of applied sciences (HBO); or
  - f. has a Bachelor's diploma earned at a Dutch university; or
  - g. een van de onderstaande toetsen heeft afgelegd:
    - i. the TOEFL with a score of 575 or higher for the paper version;
    - ii. the TOEFL with a score of 90 or higher for the Internet version, with no sub-scores lower than an 18;
    - iii. the IELTS with a score of 6.5 or higher, with no sub-scores lower than a 6,0;
    - iv. the Cambridge CAE or CPE with a score of C or higher.
  - 4. In certain cases, the Examination Board may assess whether a student has sufficient proficiency in English.
- A sufficient command of the Dutch language is required to participate in courses and examinations taught or given in Dutch. Non-Dutch students have met the language requirement for sufficient proficiency in Dutch if they have passed the state examination of Dutch as a second language, level
   The Examination Board may in certain cases assess whether a student has sufficient proficiency in Dutch.



# Section 3. Structure and design

#### Article 3.1 Final examination, degree and distinctions

- 1. The programme is concluded by the Master's examination.
- 2. A student who has passed the examination of the Master's degree programme will be awarded the Master of Science (MSc) degree.
- 3. The degree referred to in the second paragraph, is exclusively awarded if the student has earned at least half of his/her EC at this university.
- 4. The examination board can award a distinction to a student who has successfully passed the degree programme examination. The rules for awarding a distinction are to be found in Article 4.7 of this EER.

#### Article 3.2 General learning outcomes

The degree programme has the following learning outcomes for students:

- a. Acquire knowledge, skills and insights in the relevant field of study;
- b. Develop academic competences;
- c. Preparation for future career.
- d. Strengthen qualifications in the area of independent academic research;

#### Article 3.3 Curriculum

- The programme comprises the total of the components as described in the programme-specific
  part of these regulations and is aimed at the realisation of well-defined objectives in the areas of
  the knowledge, understanding and skills that students are deemed to possess upon successful
  completion.
- 2. The programme has research specialisations and societal specialisations. The specialisations are decribed in the programme specific part of these EER.
- 3. The elective courses cannot have a substantial overlap in content with courses from the mandatory component. It is not possible to receive an exemption for the elective component based on a Bachelor's course.
- 4. The composition of the Master's programme compiled by the student must be presented for approval to the Examination Board no later than six months before the expected examination date. The Examination Board will decide whether to grant approval within a month of receiving the submitted programme.

#### Article 3.4 Type of interim examination



- Each component of the degree programme will be concluded by an interim examination. Interim
  examinations may comprise more than one modular interim examination and are administered
  in the following forms:
  - a. Written (paper and/or digitally)
  - b. Oral
  - c. Presentation
  - d. Proficiency test
  - e. The production of a product or text.
- 2. For each component, the examiner will announce through the prospectus the form in which the interim examinations will be administered prior to the commencement of the academic year. The Examination Board may determine that the type of interim examination be changed from what was stated in the prospectus per request by a student or the examiner. This change cannot disadvantage the student.
- 3. Students with disabilities are given the opportunity to take interim examinations in a manner appropriately suited to their disability. The Examination Board, if necessary, shall seek expert advice and counsel prior to reaching its decision. If the students in question require certain facilities for their interim examinations, they must request these from the faculty's Education and Examination Administration no later than two weeks before the interim examination.
- 4. For oral examinations, no more than one person is tested at the same time, unless decided otherwise by the Examination Board.
- 5. An oral interim examination is not public, unless the Examination Board has deemed otherwise for exceptional cases.
- 6. Oral interim examinations are administered in the presence of a second examiner or an observer appointed by the Examination Board. In special cases, the Examination Board may require that the oral interim examination be recorded.

#### Article 3.5 Exemptions

- 1. At the request of a student and having heard the examiner involved, the Examination Board may exempt the student, either partially or fully, from an interim examination if the student:
  - a. Has passed a course examination in a relevant subject at a university or institute of higher vocational education (HBO)
  - b. Demonstrates that he/she has adequate knowledge and skills regarding the component in question as a result of relevant work experience or professional experience
- 2. If the programme has generic exemptions, these can be found in the programme specific component of these EER.
- 3. Students who were first enrolled in 2017/2018 can never have more exemptions, as stated in paragraph 1, a fourth of the total study load of the programme expressed in ec.
- 4. At the request of the student who has completed a Bachelor's at the faculty, granting access to the Master's, the Examination Board may grant the student exemption for a maximum of two Master's courses or for multiple Master's courses with a total study load of no more than 10 EC,



- provided these were earned as extracurricular Bachelor's components and correspond to the Master's components.
- 5. Exemptions as referred to in paragraphs 1 and 2 cannot be granted for final examination papers.

#### Article 3.6 Term of validity of successfully completed interim examinations

The term of validity of successfully completed interim examinations is unlimited.

#### Article 3.7 Individual degree programme

A request for an individual degree programme as stated in Article 7.3d of the Act must be approved by the Examination Board. The Examination Board checks if the programme fits within the domain of the programma, whether there is enough cohesion in the programme, and if the level is high enough to meet the standards of the programme.

#### Section 4. Examinations

#### Article 4.1 Frequency of interim examinations

- 1. The opportunity to participate in a lab (course) is offered at least once a year.
- 2. Students are given at least two opportunities per year to take interim examinations.
- 3. Contrary to the stipulation in the second paragraph, there will be at least one opportunity in the following year to take an interim examination for a course that was taught for the final time in the previous academic year.
- 4. If a certain component is not given in a particular year, the opportunity to take the corresponding examination will be offered once in that year, as long as the interim examination is administered in written or oral form.

#### Article 4.2 Registration for interim examinations

- 1. Students who register through OSIRIS for courses in the programme are also automatically registered for the first interim examination opportunity in the relevant academic year. If a student does not wish to participate in the interim examination, he/she must de-register for the examination via Osiris up to 1 day before the examination date. After the abovementioned time period, the student can only personally deregister directly with the lecturer up until the starting time of the interim examination.
- 2. The student must register for an interim examination in accordance with the applicable guidelines and instructions, no later than seven days before the interim examination date.

#### Article 4.3 Confirmation of interim examination results



- 1. The result of an interim examination is determined by an examiner in the form of a grade on a scale of 1 to 10 (with 10 as the highest possible grade), consisting exclusively of whole number or half numbers. The grade 5.5, however, is never given. When rounding off between 5 and 6, the rule is that a grade lower than 5.5 is rounded down to a five (5) which is an insufficient grade, meaning the educational component has not been successfully completed; while a 5.5 and higher is rounded up to a six (6), meaning that this educational component has been successfully completed. In addition to results in the form of a grade, the assessments "satisfactory" and "not satisfactory" may also be awarded.
- 2. If a student re-sits an interim examination, the most recent mark will determine the final result.

#### Article 4.4 Publication of results

- 1. The examiner shall, on the date that an oral interim examination is administered, determine the result and give the student a written statement of this.
- 2. The examiner shall determine the result of a written interim examination within 10 work days of the date it was administered for interim examinations in the propedeutic phase and within 15 working days for interim examinations in the core phase. The precondition applies that there must be at least 10 work days between the date of the publication of the result in Osiris and the date of the resit. The examiner will provide the faculty administration office with the necessary details for them to award the document of proof regarding the student's result. This result must be made available to the student within two working days after the result has been determined.
- 3. In special cases, the Examination Board may extend the term in which the result must be determined as referred to in paragraph 2 by a maximum of 10 work days.
- 4. In instances in which an interim examination is administered in a form other than oral or written, the Examination Board shall determine prior to the administration of the examination how and when the student shall be issued a statement of the result. This term shall not be longer than 30 days after the interim examination was administered.
- 5. On this statement of the result of an interim examination, the student is informed of his/her right of inspection, referred to in Article 4.5, as well as the right to appeal to the Examination Appeals
- 6. A student may submit an appeal of a decision by the Examination Board to the Examination Appeals Board within six weeks.

#### Article 4.5 Right of inspection and right of cognisance

Within at least 30 days following publication of a written interim examination result, the student
may request access to review and inspect all graded work. For the results of interim examinations
with "open" questions, at the student's request he/she shall be granted a copy of their graded
work at cost.



- 2. During the period referred to in paragraph 1 of this Article, any student who has taken an interim examination may review the questions and assignments of the interim examination in question, as well as the standards on which the result was based.
- 3. The Examination Board may determine that the inspection or review shall take place at a particular location and provide at least two different time periods. If the student demonstrates that he/she is unable to attend the inspection or review as a result of force majeure, then another option shall be offered, if possible within the period stated in paragraph 1 of this Article.
- 4. In all cases, provided this has been requested by the student in a timely fashion, the inspection must take place a minimum of five working days before the resit of an interim examination.
- 5. The Examination Board shall retain all written interim examinations and related papers (assignments or otherwise) that count towards the final result for a period of two years following the date when the examination was administered. Bachelor's programme reports and theses must remain available for visitations, accreditations, and inspections and shall be kept for seven years.

#### Article 4.6 Confirmation of the result of the final examination

- 1. The student is given the opportunity to take the final examination after he/she has provided sufficient proof that he/she has passed the components leading up to the final examination.
- 2. The Examination Board will determine the result of the final examination, as well as the rules in relation to the manner in which the result of the examination is determined.
- 3. Prior to determining the result of the final examination, the Examination Board may evaluate and assess the student's knowledge with respect to one or more components or aspects of the programme, if and to the degree that the results of the related interim examinations justify this.

#### Article 4.7 Awarding distinctions

- 1. With due observance of the provisions set out in this Article, the Examination Board is responsible for the decision of whether a distinction shall be awarded and if so, which distinction.
- 2. The distinctions
  - a. "cum laude" shall be awarded if the weighted average of assessments of all exam components with less than 20 ec is equal to an 8.0 and the weighted average of the assessments of components with 20 ec or more is at least equal to an 8.0.
  - b. "summa cum laude" shall be awarded if the the weighted average of assessments of all exam components with less than 20 ec is equal to an 9.0 and the weighted average of the assessments of components with 20 ec or more is at least equal to an 9.0.
- 3. The distinction shall be calculated on the basis of all components of the examination programme for which a mark has been awarded on a scale of 1 to 10, with the exception of extra-curricular components.



- 4. The number of EC of the component referred to in paragraph 3 shall serve as the weighting factor for the calculation of the weighted average result, unless provided otherwise in the programme-specific part of these regulations.
- 5. The distinction shall not be awarded if more than 10 per cent of the total study load of the examinations for the degree programme (being one or more components) has been re-sat or if interim examinations have been re-sat more than once, unless the Examination Board decides otherwise, stating the reasons for this decision.
- 6. If a student does not deregister on time, their non-participation in the exam will be seen as a used exam opportunity, unless the Examination Board decides otherwise. If a student can prove that they were unable to participate or deregister on time due to a force majeure, the Examination Board can decide to retroactively deregister the student.
- 7. The distinction shall not be awarded if fraud was discovered in one of the examinations of the degree programme.

#### Article 4.8 Fraud and plagiarism

- 1. Supplement to Article 1.2 paragraph 1 sub-paragraph i, the faculty describes fraud as:
  - a. Fraud with midterms, labs, and exams, such as
    - i. having tools which are not allowed;
    - ii. cheating or exchanging information;
    - iii. pretending to be someone else, or having someone else represent as you during a midterm or exam;
    - iv. possession of the exam questions prior to the exam;
    - v. changing answers after the work has been handed in for assessment;
    - vi. providing incorrect information when requesting an exemption.
  - b. Fraud in theses and other written works, such as
    - i. plagiarism by using or copying other people's text, data, or ideas without correct or complete sourcing;
    - ii. plagiarism by using another student's work and presenting it as your own;
    - iii. fabricating or falsifying research data;
    - iv. handing in a thesis or other work created by someone else.
- 2. An attempt to commit fraud is also seen as fraud under this regulation.
- 3. The surveyor or examiner will immediately notify the student if they are being suspected of fraud.
- 4. The surveyor or examiner can order the student to make material available if they are being suspected of fraud. Refusal to do so is equated with fraud.
- 5. If suspicion arises during the exam, the student will be allowed to finish the exam.
- 6. The examiner makes a report on the suspicion of fraud and makes this report available to the student and the Examination Board.



- 7. The Examination Board will start an investigation. The student will be allowed to send in a written response to the report in paragraph 6. The Examination Board will hear both the examiner and the student.
- 8. The Examination Board will decide on the matter within 20 working days after receiving the report stated in paragraph 6. The Examination Board will notify the student and examiner with a written statement of their decision. The 20 working day period can be extended with ten days.
- 9. The Examination Board declares, if fraud has been established, the exam, thesis, or work in question to be invalid.
- 10. The Examination Board will not award an adjudication if fraud has been established.
- 11. The Examination Board clearly states the establishment of fraud and the penalties in the student's file.
- 12. The Examination Board can determine that a student is not allowed to participate in one or more exams for at most a year and only if fraud has been established.
- 13. The Examination Board can determine that a student is not allowed to hand in a thesis or written work for at most a year, if fraud has been established.
- 14. The Examination Board can suggest that the Executive Board terminates the student's enrolment in case of severe fraud.
- 15. In case of fraud, the Dean of the Honours Academy can determine, after a suggestion by the Examination Board, that the student can no longer participate in the university or faculty Honours Academy.

# Section 5. Study performance, support, advice and education evaluation

#### Article 5.1 Study performance and support

- 1. The faculty dean is responsible for recording student results in such a way that, upon request, the Examination Board can respond by providing the student with an overview of the progress of the study within a reasonable timeframe.
- 2. The dean is responsible for providing adequate student counselling.

#### Article 5.2 Method of education evaluation

Considering the care for quality in the institution, as described in the Quality Education Handbook by Radboud University, the dean oversees that the quality of education is systemically evaluated.



#### PART III PROGRAMME-SPECIFIC PROVISIONS

# Section 6. Access to the degree programme and education

#### Article 6.1 Admission requirements

Admission requirements for the programme:

- 1. Students must have successfully passed the final examination of the Radboud University Bachelor's programme in Biology; or
- 2. Students must have successfully passed the final examination of the Bachelor's programme in Biology or an equivalent degree in a similar topic at another Dutch university; or
- 3. Students must be in possession of a degree certificate that is at least equal to the degree referred to in paragraph 6.1 under a; or
- 4. Students must have demonstrated suitability for participation in the degree programme, in the opinion of the Examination Board.
- 5. And students must provide proof of sufficient proficiency in English, as described in Article 2.2.
- 6. Parts of the Microbiology specialisation have extra admission requirements as described inArticle 6.3.

#### Article 6.2 Pre-Master's

Those who have earned a university of applied sciences (HBO) degree in Biology or a related area, including higher laboratory education (HLO) and Life Science degree programmes, and have completed the Biology pre-Master's programme curriculum of 30 EC are also admitted to the degree programme. For the specialisation in Microbiology, a selection procedure applies prior to the start of the Master's degree programme, in which admission is based on a motivation letter, references and an interview.

#### Article 6.3 Enrolment capacity Microbiology

In addition to the admission requirements described above, a maximum enrolment capacity of 24 students per year applies for the specialisation in Microbiology.

# Section 7. Structure and design

#### Article 7.1 Programme-specific learning outcomes

- 1. In addition to the general learning outcomes described in Part II of these regulations, this degree programme trains students to achieve the following learning outcomes upon graduation:
  - a. Capable, based on broad and up-to-date knowledge of biological and/or biomedical processes, in combination with specialist knowledge (theories, methods, techniques) and research



- experience in at least one sub-area of this field, of setting up and conducting research aimed at acquiring new knowledge and insight in this research area
- b. Capable of formulating new questions and hypotheses in the biological/ biomedical field, and familiar with the research methods and state-of-the-art techniques to solve them, taking into account available equipment and resources
- c. Capable of setting up and conducting scientific experiments in an independent manner, including the related controls, of using models and theories to explain the results, and of evaluating the results in terms of well-founded scientific conclusions
- d. Capable of independently identifying, critically reading and comprehending relevant, up-todate international literature from different disciplines, of discriminating essential from nonessential information, and of integrating new information in his overall view on nature
- e. Capable of using concepts from different organization levels in biology, in combination with those from physics, chemistry and mathematics, to solve a complex biological/ biomedical problem at a specific abstraction level
- f. Capable of writing down the results of a research project in the form of a master thesis, in accordance with the standards of an academic article
- g. Capable of independent professional practice whereby, depending on the chosen variant, the emphasis is put on conducting fundamental scientific research (under supervision), or on transferring or applying existing scientific knowledge, thereby taking into account his own competences
- h. Capable of asking adequate questions with a critical and constructive attitude towards analysis and resolving of complex biological and/or biomedical problems
- i. Capable of defending his view and of critically evaluating other views in a scientific discussion
- j. Capable of presenting and discussing the results of a research project in the form of an oral presentation for experts and colleague students
- k. Capable of working in or leading a project team, including the making of plans, the distribution of tasks, the integration of sub-projects and the joint evaluation of results
- I. Capable of integrating ethical aspects in his professional practice, along with the ability to reflect on the potential implications for society
- m. Capable, through self-reflection and conversations with others, of assessing his own performance and possibilities on the labour market.
- 2. Students who choose a research-oriented specialisation, as described in Article 7.2 paragraph 1a-d, will also achieve the following learning outcomes upon graduation:
  - a. Capable, based on specialized knowledge and research experience in two distinct sub-areas of biological/ biomedical sciences, of setting up and performing experiments in an independent manner, including the design of appropriate checks and evaluation of the results in a given time frame.



- b. Capable of writing down the results of a research project according to the exact format of a scientific journal.
- c. Capable of writing a research proposal according to the criteria of external scientific organizations.
- d. Capable of starting up a PhD research project within his biological/ biomedical field of expertise.
- 3. Students who choose the specialisation Science, Management and Innovation as described in Article 7.2e, will also achieve the following learning outcomes upon graduation:
  - a. Capable of bridging between their own science discipline and other disciplines, based on profound understanding of the chosen core theme and how this relates to societal, political, economic, and environmental requirements of today's world.
  - b. Familiar with and capable of analysing specific problems within their theme, and able to apply a range of approaches to address these, argue for, select, and implement feasible options, taking into account the full width of technological, societal, political and economic perspectives.
  - c. Proficient in using research methods and techniques, including basic finance and economics, to verify, justify and substantiate strategies and plans, and capable of effectively using a wide variety of information and communication channels.
  - d. Capable of balancing perspectives and interests in specific contexts within a company or (non)governmental organisation in order to formulate appropriate strategies and plans towards implementation of the Sustainable Development Goals (SDGs).
  - e. Capable of communicating insights, views and analyses of complex issues to others in a clear, concise and understandable manner, both in written and spoken form.
  - f. Capable of working in multidisciplinary and multicultural high-performance teams based on sound division of tasks, knowledge, competencies, and responsibilities, whilst respecting diverging views and opinions.
- 4. Students who choose the specialisation Science in Society as described in Article 7.2f, will also achieve the following learning outcomes upon graduation:
  - a. Capable of analyzing the role of scientific expertise in societal and political decision making with regard to socio-scientific issues
  - b. Capable of designing and conducting independent and methodologically sound social research at the interface of science and society and capable of contributing to academic research
  - c. Capable of understanding and designing public and stakeholder participation processes in research and innovation
  - d. Capable of analyzing, improving and evaluating interdisciplinary collaborations with multiple stakeholders, integrating different perceptions, interests and types of knowledge (experiential, professional and scientific)
  - e. Capable of substantiating and communicating the relevance of one's scientific discipline in society



- 5. Students who choose the specialisation Science and Education as described in Article 7.2g, will also achieve the following learning outcomes upon graduation:
  - a. kennis van en inzicht in de theoretische principes van het vakspecifiek denken, educatief ontwerpen, en de methoden en technieken van (vak)didactisch onderzoek toe te passen
  - b. een educatief ontwerp en een wetenschappelijk onderzoek op te zetten, uitvoeren en systematisch evalueren, daarbij een relatie leggend tussen (vak)didactische en vakinhoudelijke concepten, het vakspecifiek denken van de leerlingen op verschillende niveaus en problemen uit de lespraktijk
  - c. aandacht te geven aan het vakspecifiek leren van individuele en verschillende leerlingen, en zich te richten op het ontwikkelen van inspirerend onderwijs
  - d. gedegen wetenschappelijke kennis van algemeen didactische concepten over het leren van individuele leerlingen, toe te passen en methoden toe te apssen om zowel het sociale klimaat in de klas te verbeteren als ook te beantwoorden aan individuele leerbehoeften van de leerlingen
  - e. gedifferentieerd te handelen en het sociale klimaat voor samenwerking te verbeteren, en daarbij zelfstandig prioriteiten te stellen, en na overleg met relevante derden adequaat te handelen bij ontwikkelings- en gedragsproblemen
  - f. zich te richten op samenwerking en verantwoord handelen vanuit een heldere communicatie met (individuele) leerlingen en collega's, en vanuit een eigen visie
  - g. een eigen professionele kennisbasis te ontwikkelen om het eigen handelen te verantwoorden en dat van collega's en begeleiders te duiden.
  - h. de professionele kennisbasis en feedback vanuit de context (leerlingen, collega's, begeleiders) te gebruiken voor het evalueren en sturen van de eigen professionele ontwikkeling
  - i. een eigen identiteit te ontwikkelen in de context van het eigen handelen, externe kaders en ethische dilemma's

#### Article 7.2 Composition of the programme

- 1. Subject to the provisions in Part II of these regulations, the student chooses one of the following specialisations of the degree programme:
  - a. Adaptive Organisms
  - b. Communities and Ecosystems
  - c. Water and Environment
  - d. Microbiology
  - e. Science, Management and Innovation
  - f. Science in Society
  - g. Science and Education
- 2. Students must select their specialisation through Osiris at the start of the Master's programme. Changing this choice is possible at any time during the first year.



# Article 7.2a Master's specialisation in Adaptive organisms

The Master's specialisation in Adaptive Organisms consists of the following components:

# 1. Compulsory components (15 ec)

Course code	Course name	Ec
NWI-BM036A	Orientation in biology and environmental sciences	3
NWI-BM060B	Quantitative conservation biology	3
NWI-BM010C	Advanced adaptation physiology	3
NWI-BM014D	Microbiology of wetland ecosystems	3
NWI-BM035B	Molecular physiology of plant stress adaptation	3

#### 2. Electives (15 ec)

The student must choose from one of the following courses:

Course code	Course name	Ec
NWI-BM010C	Advanced adaptation physiology	3
NWI-BM032C	Advanced endocrinology	3
NWI-BM004C	Apoptosis	3
NWI-FNWI001	Beroepsorientatie	3
NWI-BM040A	Biodiversity and ecological assessment	3
NWI-BM038A	Ecological and environmental concepts	3
NWI-BM002C	Ecology and management of large rivers	3
NWI-MM002A	Environmental and ecological modelling	3
NWI-MM020A	Environmental life cycle assessment	3
NWI-BM068	Environmental microbiology and biotechnology	3
NWI-BM033E	European vegetation	3
NWI-BM040B	Field course Alpine ecology (wordt in 2017-2018 niet aangeboden)	6
NWI-BM048B	Field course Ireland	6
NWI-BM067	Host-microbe interactions	3
NWI-BM024D	Laboratory animal science	3
NWI-BM039A	Management of ecosystems	3
NWI-BM065	Microbial cell structure and function	3
NWI-BM063	Microbial physiology and metabolism	3
NWI-BM014D	Microbiology of wetland ecosystems	3
NWI-BM035B	Molecular physiology of plant stress adaptation	3
NWI-BM074	NIOZ Marine masters's summer course	3,75
NWI-BM041B	Principles of systems biology	3
NWI-FMT015B	Projectmanagement	3
NWI-BM060B	Quantitative conservation biology	3
NWI-MM013	Research skills	3
NWI-MM014	Risk Management of Chemicals	3



NWI-FNWI002	Scientific English for Master students	3
NWI-BM034C	Vegetation monographs	6
NWI-BM007C	Working with radionuclides (level 5B)	2

The students chooses one of the following courses with a philosophical character (3 ec):

Course code	Course name	Ec
NWI-FFIL203B	Bioethics for Life Scientists	3
NWI-FFIL202A	Evolution and the Mind	3
NWI-FFIL209B	Environmental Ethics	3
NWI-FFIL214	Science and Metaphysics	3
NWI-FFIL212	Philosophy of Water Management	3
NWI-FFIL205A	Science and Literature	3
NWI-FFIL215	Upgrading the Human	3
NWI-FFIL302	Philosophy and Ethics in Microbiology	3

Besides this, natural science courses of an academic level need to be chosen to reach a total of 15 ec of electives.

A maximum of 6 ec of elective space can be used to lengthen the research internships. This can be done once, to lengthen one of the internships to 42 ec. It is not allowed to also use the free electives to lengthen the internship.

All components without a course code and not a part of the stated limited expansion of the internship, must have its level assessed by the Examination Board.

- 3. Free electives (6 ec)
- 4. Internships (72 ec)

Two academic internships with a minimum of 36 EC each.

Assessment of the internships takes place through the standard form "Format Assessment Internship" as published by the degree programme. One of the two internships may also be done externally. Possibly both internships can be done externally, each at a different research group, if approval is received from the Examination Board. Supervision or assessment of the second internship by the same supervisor or examiner as of the first internship is not allowed. Exceptions can be made in the case of an external internship with a differen university, institute, or company.

At least one internship must be done under the supervision of an assistant, associate or full professor of one of the chair groups listed below at Radboud University's Institute for Water and Wetland Research:

a. Animal Ecology and Physiology



- b. Aquatic Ecology & Environmental Biology
- c. Molecular Interaction Ecology
- d. Experimental Plant Ecology
- e. Microbiology
- f. Molecular Plant Physiology
- g. Organismal Animal Physiology

16.

#### 5. Master's thesis (12 ec)

To be filled with: two 6 EC theses on a biological issue, supervised by an assistant, associate or full professor of one of the chair groups listed in Article 7.2a paragraph 4. One thesis of 6 EC can be replaced by Field Course Alpine Ecology (NWI-BM040B) or Field Course Ireland (NWI-BM048B).

#### 6. Portfolio (0 ec)

The content of the portfolio is shaped by the writing of a Master Plan, a Master's View and internship application letters.

#### Article 7.2b Master's specialisation in Communities and ecosystems

The Master's specialisation in Communities and ecosystems consists of the following components:

#### 1. Compulsory components (15 ec)

Course code	Course name	Ec
NWI-BM036A	Orientation in biology and environmental sciences	3
NWI-BM060B	Quantitative conservation biology	3
NWI-BM039A	Management of ecosystems	3
NWI-BM040A	Biodiversity and ecological assessment	3
NWI-BM014D	or Microbiology or wetland ecosystems	3
NWI-MM002A	Ecological and environmental modelling	3

17.

#### 2. Electives (15 ec)

A student chooses from elective courses as stated in article 7.2a paragraph 2 and the requirements stated there.

- 3. Free electives (6 ec)
- 4. Internships (72 ec)



Two academic internships with a minimum of 36 EC each.

Assessment of the internships takes place through the standard form "Format Assessment Internship" as published by the degree programme. One of the two internships may also be done externally. Possibly both internships can be done externally, each at a different research group, if approval is received from the Examination Board. Supervision or assessment of the second internship by the same supervisor or examiner as of the first internship is not allowed. Exceptions can be made in the case of an external internship with a differen university, institute, or company.

At least one internship must be done under the supervision of an assistant, associate or full professor of one of the chair groups listed below at Radboud University's Institute for Water and Wetland Research:

- a. Animal Ecology and Physiology
- b. Aquatic Ecology & Environmental Biology
- c. Molecular Interaction Ecology
- d. Environmental Sciences
- e. Experimental Plant Ecology
- f. Experimental microbiology
- g. Organismal Animal Physiology

#### 5. Master's thesis (12 ec)

To be filled with: two 6 EC theses on a biological issue, supervised by an assistant, associate or full professor of one of the chair groups listed in Article 7.4a paragraph 5. One thesis of 6 EC can be replaced by Field Course Alpine Ecology (NWI-BM040B) or Field Course Ireland (NWI-BM048B).

#### 6. Portfolio (0 ec)

The content of the portfolio is shaped by the writing of a Master Plan, a Master's View and internship application letters.

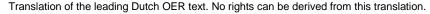
#### Article 7.2c Master's specialisation in Water and Environment

The Master's specialisation in Water and Environment consists of the following components:

#### 1. Compulsory components (15 ec)

Course code	Course name	Ec
NWI-BM036A	Orientation in biology and environmental sciences	3
NWI-BM038A	Ecological and environmental concepts	3
NWI-BM039A	Management of ecosystems	3
NWI-BM040A	Biodiversity and ecological assessment	3
NWI-MM002A	Ecological and environmental modelling	3

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#### 2. Electives (15 ec)

The student must choose from the courses listed in Article 7.2a paragraph 2.

- 3. Free electives (6 ec)
- 4. Internships (72 ec)

Two academic internships with a minimum of 36 EC each.

Assessment of the internships takes place through the standard form "Format Assessment Internship" as published by the degree programme. One of the two internships may also be done externally. Possibly both internships can be done externally, each at a different research group, if approval is received from the Examination Board. Supervision or assessment of the second internship by the same supervisor or examiner as of the first internship is not allowed. Exceptions can be made in the case of an external internship with a differen university, institute, or company.

At least one internship must be done under the supervision of an assistant, associate or full professor of one of the chair groups listed below at Radboud University's Institute for Water and Wetland Research:

- a. Animal Ecology and Physiology
- b. Aquatic Ecology & Environmental Biology
- c. Environmental Sciences
- d. Experimental Plant Ecology
- e. Ecological Microbiology

#### 5. Master's thesis (12 ec)

To be filled with: two 6 EC theses on a biological or environmental scientific issue, supervised by an assistant, associate or full professor of one of the chair groups listed in Article 7.4a paragraph 5. One thesis of 6 EC can be replaced by Field Course Alpine Ecology (NWI-BM040B) or Field Course Ireland (NWI-BM048B).

#### 6. Portfolio (0 ec)

The content of the portfolio is shaped by the writing of a Master Plan, a Master's View and internship application letters.

Article 7.2c.1 Master's specialisation in Water and Environment – variant Transnational Ecosystem-based Water Management



The below stated programme of the *double degree mastervariant Transnational Ecosystem-based Water Management* also counts as part of the Water and Environment specialisation:

#### 1. Compulsory components (60 ec)

At the Radboud University:

Course code	Course name	Ec
NWI-BM036A	Orientation in biology and environmental sciences	3
NWI-BM038A	Ecological and environmental concepts	3
NWI-BM039A	Management of ecosystems	3
NWI-BM040A	Biodiversity and ecological assessment	3
NWI-MM002A	Ecological and environmental modelling	3
NWI-MM019A	Integrated water management	3
NWI-MM021	Social aspects of water management	3
NWI-MM018A	Environmental economics for water management	3
NWI-MM022	Water governance and spatial planning	3
NWI-FFIL212	Philosophy of water management	3

#### At the university of Duisburg-Essen:

Course name	Ec
Hydroclimatology and sustainable water management	3
Applied hydrogeology and application	4
Water Quality Modelling	3
Ecology and protection of freshwater ecosystems and aquatic organisms	5
Hydrobiological field trips	2
Waterborne diseases	2
Basics in hydraulic planning and hydraulic works	3
Waste water treatment	3
Flood management	2
River basin management	3

#### 2. Project (16 ec)

Existing of a career orientation based internship in the field of Transnational ecosystem based Water Management. This space may also be filled with a short academic internship. The project is carried out under the supervision of an assistant, associate or full professor of one of the chair groups at the Institute for Water and Wetland Research at Radboud University, at the department of Sustainable Management of Resources at Radboud University OR by an assistant, associate or full professor at the Center for Water and Environmental Research at the University of Duisburg-Essen. The project can be expanded with 5 ec.



#### 3. Free electives (14 ec)

Existing of components of the students choosing, as long as the content is of a measurable academic level and at leat 8 ec is at a master's level. All courses in the free electives nee dot be approved by the Examination Board.

#### 4. Internship (30 ec)

Internship at an academic level, which is done under supervison of an examiner of one of the groups at the Institute for Water and Wetland Research at Radboud University or the department of Sustainable Management of Resources at Radboud University, and by a (assistant) professor with the Center for Water and Environmental Research at the University of Duisburg-Essen.

#### Article 7.2d Master's specialisation in Microbiology

The Master's specialisation in Microbiology consists of the following components:

#### 1. Compulsory components (18 ec)

Course code	Course name	Ec
NWI-BM069	Introduction and orientation in microbiology	3
NWI-BM063	Microbial physiology and metabolism	3
NWI-BM068	Environmental microbiology and biotechnology	3
NWI-BM065	Microbial cell structure and function	3
NWI-BM067	Host-microbe interactions	3
NWI-BM070	Medical microbiology	3

#### 2. Electives (12 ec)

The student must choose from the courses listed in Article 7.2a paragraph 2.

- 3. Free electives (6 ec)
- 4. Internships (72 ec)

Two academic internships with a minimum of 36 EC each.

Assessment of the internships takes place through the standard form "Format Assessment Internship" as published by the degree programme. One of the two internships may also be done externally. Possibly both internships can be done externally, each at a different research group, if approval is received from the Examination Board. Supervision or assessment of the second internship by the same supervisor or examiner as of the first internship is not allowed. Exceptions can be made in the case of an external internship with a differen university, institute, or company.



At least one internship must be done under the supervision of an assistant, associate or full professor of one of the chair groups listed below at Radboud University's Institute for Water and Wetland Research:

- a. Ecological Microbiology
- b. Medical Immunology
- c. Medical Microbiology
- d. Mechanisms of Inflammatory Diseases

#### 5. Master's thesis (12 ec)

To be filled with: two 6 EC theses on a biological issue, supervised by an assistant, associate or full professor of one of the chair groups listed in Article 7.4a paragraph 5. One thesis of 6 EC can be replaced by Field Course Alpine Ecology (NWI-BM040B) or Field Course Ireland (NWI-BM048B).

#### 6. Portfolio (0 ec)

The content of the portfolio is shaped by the writing of a Master Plan, a Master's View and internship application letters.

#### Article 7.2e Master's specialisation in Science, Management and Innovation

The Master's specialisation in Science, Management and Innovation consists of the following components:

#### 1. Compulsory components (15 ec)

Course code	Course name	Ec
NWI-FMT003E	Innovation Management	6
NWI-FMT0234	Policy and Economics	3
NWI-FMT006A	Entrepreneurship: Making a Business Plan	3
NWI-FMT019	Methods in Societal Research: Science, Management & Innovation	3

1.

#### 2. Theme components (12 ec)

Choose one of the themes below:

#### 2. Climate and Energy

Course code	Course name	Ec
NWI-FMT022	Energy and Climate	6
Choose from 6 ec of	the courses below:	
NWI-FMT020	Bio-economy	3



NWI-FMT026	Energy Modelling	3
NWI-MM020A	Environmental Life Cycle Assesment	3

3.

#### 4. Health

Course code	Course name	Ec	
NWI-FMT023	The Future of Health	6	
Choose from 6 ec of the courses below:			
NWI-FMT025B	From Lab to Clinic	6	
NWI-FMT027	NWI-FMT027 Health Policy: From Local to Global		
NWI-FMT028 Financial Sustainability and solidarity in healthcare: the Dutch health system's challenges		3	

#### 3. Disciplinary components (15 ec)

Choose one of the combinations of Compulsory components, as stated in 7.2a paragraph 1, 7.2b paragraph 1, 7.2c paragraph 1 of 7.2d paragraph 1. If the combination stated in 7.2d paragraph 1 is chosen, a selection needs to be made of 15 ec.

#### 4. Philosophy course (3 ec)

The students chooses one of the following courses with a philosophical character (3 ec):

Course code	Course name	Ec
NWI-FFIL203B	Bioethics for Life Scientists	3
NWI-FFIL202A	Evolution and the Mind	3
NWI-FFIL209B	Environmental Ethics	3
NWI-FFIL214	Science and Metaphysics	3
NWI-FFIL212	Philosophy of Water Management	3
NWI-FFIL205A	Science and Literature	3
NWI-FFIL215	Upgrading the Human	3
NWI-FFIL302	Philosophy and Ethics in Microbiology	3

18.

#### 5. Internship (33 ec)

Assessment of the Internship is done based on the standard form: "Format Assessment Internship".

The Internship is done under supervision of an examiner of one of the groups mentioned in 7.2a paragraph 4, 7.2b paragraph 4, 7.2c paragraph 4 of 7.2d paragraph 4.

#### 6. Master's thesis (12 ec)

To be filled with: a 6 EC thesis on a biological or environmental science issue. This thesis of 6 EC can be replaced by Field Course Alpine Ecology (NWI-BM040B) or Field Course Ireland (NWI-BM048B).



#### 7. Portfolio (0 ec)

The content of the portfolio is shaped by the writing of a Master Plan, a Master's View and internship application letters.

- 8. Free electives (6 ec)
- 9. Science, Management and Innovation Final research project (30 ec)

# Article 7.2f Master's specialisation in Science in Society

The Master's specialisation in Science in Society consists of the following components:

#### 1. Compulsory components (21 ec)

Course code	Course name	Ec
NWI-FC002B	Science and Societal Interaction	3
NWI-FC003B	Research, Responsibility and Uncertainty	3
NWI-FC0010C	Framing Knowledge	3
NWI-FC0011C	Knowledge Society	3
NWI-FC0013C	Science and Media	3
NWI-FC0043B	Science and Public Policy	3
NWI-FC0044B	Methods of Societal Research: Science in Society	3

#### 2. Disciplinary components (15 ec)

Choose one of the combinations of Compulsory components, as stated in 7.2a paragraph 1, 7.2b paragraph 1, 7.2c paragraph 1 of 7.2d paragraph 1. If the combination stated in 7.2d paragraph 1 is chosen, a selection needs to be made of 15 ec.

#### 3. Philosophy course (3 ec)

The students chooses one of the following courses with a philosophical character (3 ec):

Course code	Course name	Ec
NWI-FFIL203B	Bioethics for Life Scientists	3
NWI-FFIL202A	Evolution and the Mind	3
NWI-FFIL209B	Environmental Ethics	3
NWI-FFIL214	Science and Metaphysics	3
NWI-FFIL212	Philosophy of Water Management	3
NWI-FFIL205A	Science and Literature	3
NWI-FFIL215	Upgrading the Human	3
NWI-FFIL302	Philosophy and Ethics in Microbiology	3



1.

#### 4. Internship (33 ec)

Assessment of the Internship is done based on the standard form: "Format Assessment Internship".

The Internship is done under supervision of an examiner of one of the groups mentioned in 7.2a paragraph 4, 7.2b paragraph 4, 7.2c paragraph 4 of 7.2d paragraph 4.

#### 5. Master's thesis (12 ec)

To be filled with: a 6 EC thesis on a biological or environmental science issue. This thesis of 6 EC can be replaced by Field Course Alpine Ecology (NWI-BM040B) or Field Course Ireland (NWI-BM048B).

#### 6. Portfolio (0 ec)

The content of the portfolio is shaped by the writing of a Master Plan, a Master's View and internship application letters.

#### 7. Electives (6 ec)

To be filled with components related to the graduation project. These components need tob e approved by the SIS coordinator.

- 7. Free electives (6 ec)
- 8. Science in Society internship and report (30 ec)

The SiS graduation project can, in consultation with a SiS teacher, be done internally (at the SiS department) or externally (government, consultation bureau, NGO's etc.). In the first month, the student writes a research plan which needs to be approved by the supervisor and second reader. The assessment of the thesis is conducted on the basis of the 'graduation project guidelines SiS'.

#### Artikel 7.2g Master's specialisation in Science and Education

The Master's specialisation is only offeerd in Dutch, therefore the following text is only available in Dutch. De Master's specialisation Science and Education bestaat uit de volgende onderdelen:

#### 2. 1. Disciplinaire onderdelen (15 ec)

Keuze uit één van de combinaties van verplichte onderdelen, zoals bedoeld 7.2a lid 1, 7.2b lid 1, 7.2c lid 1 of 7.2d lid 1. Indien voor de combinatie als bedoeld in 7.2d lid 1 wordt gekozen, dient de student een selectie van 15 ec uit de daar genoemde cursussen te maken.

#### 3. 2. Cursus met een wijsgerig karakter (3 ec)

De student maakt een keuze uit een van de volgende cursussen met een wijsgerig karakter (3 ec):



Cursuscode	Cursusnaam	Ec
NWI-FFIL203B	Bioethics for Life Scientists	3
NWI-FFIL202A	Evolution and the Mind	3
NWI-FFIL209B	Environmental Ethics	3
NWI-FFIL214	Science and Metaphysics	3
NWI-FFIL212	Philosophy of Water Management	3
NWI-FFIL205A	Science and Literature	3
NWI-FFIL215	Upgrading the Human	3
NWI-FFIL302	Philosophy and Ethics in Microbiology	3

#### 4. 3. Stage (30 ec)

Beoordeling van de stage gebeurt door middel van het standaardformulier "Format Assessment Internship".

De stage wordt gevolgd onder supervisie van een universitair (hoofd)docent of hoogleraar van één van de leerstoelgroepen genoemd in 7.2a lid 4, 7.2b lid 4, 7.2c lid 4 of 7.2d lid 4.

#### 5. 4. Thesisruimte (6 ec)

In te vullen door een 6 ec thesis over een biologische of milieuwetenschappelijke probleemstelling. Deze thesis van 6 ec kan vervangen worden door Field course Alpine ecology (BM040B) of Field course Ireland (BM048B).

#### 6. 5. Portfolio (0 ec)

Inhoudelijk wordt het portfolio vormgegeven door het schrijven van een Master Plan, een Master's View en sollicitatiebrieven voor de stages.

- 6. Vrije keuze (6 ec)
- 7. Educatie specialisatie (60 ec)

De specialisatie Science and Education omvat in ieder geval de volgende onderdelen met de daarbij vermelde studielast:

- a. Lessenreeks (5 ec)
- b. Zelfevaluatie 1 (10 ec)
- c. Begeleide stage (15 ec)
- d. Ontwerp en onderzoek (10 ec)
- e. Zelfevaluatie 2 (5 ec)
- f. Zelfstandige stage (15 ec)



Deze onderdelen worden verzorgd door de Radboud Docenten Academie. Indien op grond van het gevolgd hebben van de minor educatie tijdens de bacheloropleiding, dan wel op andere gronden, een deel van de hierboven genoemde onderdelen niet behoeft te worden gedaan, wordt het hiermee corresponderende aantal ec ingevuld met opleidingsspecifieke onderdelen.

#### Article 7.3 Deviating programme

If a student does not choose a specialisation, they should ask approval for a deviating major before the programme commences. This can be done by a motivated request for approval to the Examination Board. This should be programme-specific with at least 60 ec of which at least 15 ec are Master's courses and is needs to have a programme-specific internship.

#### Article 7.4 Order of exams

- 19. The course Orientation in biology and environmental sciences should be done in the first year, or as the first course of the next year. An exception exists for Microbiology, where a similar arrangement exists for Introduction and orientation in microbiology.
- 20. The project and internship ("master thesis") of the Transnational ecosystem-based Water Management specialisation cannot be done unless at least 45 ec of the programme has been completed.

# Article 8. Transition provision

- BM008C Estuarine Ecology (3 ec) can be used as part of the elective space in all specialisations.
- NWI-BM021C Population ecology (3 ec) can be used as part of the elective space in all specialisations.

For students of the Science, Management and Innovation programme the following applies:

- NWI-FMT021 Neuroscience (3 ec) can be used within the 6 ec elective space in the Health elective courses.



#### PART IV FINAL PROVISIONS

# Section 9. Final provisions

#### Article 9.1 Safety net scheme and hardship clause

- 1. In any situations which are not fully or clearly covered by these regulations, the decision lies with the dean.
- 2. Any situations which these regulations may result in unreasonable hardship for individual students, the Examination Board or the dean is authorised to make an exception to the provisions in the Education and Examination Regulations.

#### Article 9.2 Adoption and amendment

- 1. Notwithstanding the provisions in Article 7 of the Structure Regulations, these regulations are drawn up or amended by the dean after receiving advice from the programme committees and after having obtained approval from the faculties' general assembly.
- 2. An amendment to these regulations cannot enter into force in the current academic year, unless the situation has the potential to make it extremely difficult for the student to participate in the programme.
- 3. In derogation from paragraph 1, the dean is authorised to drop elective components of the curriculum should the circumstances be deemed impossible to offer the course.

#### Article 9.3 Entry into force

These regulations shall enter into force on 1 September 2017.

#### Article 9.4 Publication

- 1. The dean is responsible for publishing these regulations and any amendments thereto.
- 2. Interested parties may consult these regulations through the prospectus.

As established by the dean on June 27, 2017.

