

UNIVERSITY OF AMSTERDAM

FACULTY OF SCIENCE

TEACHING AND EXAMINATION REGULATIONS  
PART B

Academic year 2018-2019  
MASTER'S PROGRAMME BIOLOGICAL SCIENCES

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## **Chapter 1. General Provisions**

### *Article 1.1 – Definitions*

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

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|----------------------------|--|
| a. Course                  | Education imparted in a series of lectures or meetings   |
| b. Literature Review       | A component of 12 EC comprising literature resulting in a written report                                   |
| c. Personal Education Plan | An individual study plan for the student's Master's programme.   |
| d. Research Project        | Compulsory internship/master thesis of 30-60 EC always resulting in a written report and oral presentation |

### *Article 1.2 – General information master's programme*

1. The Master's programme Biological Sciences, CROHO 60707, is offered on a full-time basis and the language of instruction is English.
2. The programme has a workload of 120 EC.
3. Within the programme the following tracks are offered:
  - Ecology and Evolution;
  - General Biology;
  - Green Life Sciences;
  - Freshwater and Marine Biology.

### *Article 1.3 – Intake dates*

The programme is offered starting in the first semester of the academic year only (1 September).

## **Chapter 2. Programme objectives and exit qualifications**

### *Article 2.1 – Programme objective*

The programme aims at:

- teaching students to conduct empirical research to develop their skills, knowledge and insights into Biological Sciences
- providing a student-oriented education that is of high, internationally recognised quality
- offering students the opportunity to gain knowledge and insight in an international setting
- stimulating cooperation in the development of science, based on knowledge in Biological Sciences
- providing a feasible study programme to a heterogeneously composed student population in an inspiring academic learning environment
- educating students to become research-skilled professionals, that can deal with current scientific knowledge and apply this knowledge independently in new and continuously changing practical situations.

### Article 2.2 – Exit qualifications

1. The graduate of the Master's programme Biological Sciences has *[between brackets the most associated Dublin descriptor(s)]*:
  - the ability to read up on and master current scientific research developments and have knowledge of current scientific developments within relevant biological research *[Knowledge and understanding]*;
  - the analysing, problem-solving and synthesising abilities in order to deal with current scientific knowledge in biology and apply this knowledge in new and continuously changing practical situations, also in broader, multidisciplinary contexts *[Applying knowledge and understanding]*;
  - both a broad basic biological as well as specialist knowledge of one or more sub-areas of biology, as basis or opportunity for originality in developing and/or applying ideas *[Knowledge and understanding]*;
  - the ability to formulate questions on the frontline of scientific research *[Knowledge and understanding, Applying knowledge and understanding, Making judgements]*;
  - the ability to formulate realistic and falsifiable (research)hypothesis, based on incomplete, limited or complex information and translate this into a research proposal *[Knowledge and understanding, Applying of knowledge and understanding, Making judgements]*;
  - the ability to independently set up and conduct biological experiments and field or laboratory measurements contributing to a line of research *[Applying of knowledge and understanding, Learning skills]*;
  - the skills to present research plans and results, orally or written, in English, at various scales and levels of abstraction, and communicate these to specialist and non-specialist audiences *[Communication]*;
  - the skills to analyse and interpret biological patterns and processes in both a qualitative and quantitative sense *[Applying of knowledge and understanding]*;
  - the ability to get acquainted with a field of study in a short period of time by self-study, to form one's own opinion and to write a critical essay in a set period of time *[Making judgements]*;
  - the ability to integrate the many hierarchical levels present in biology, and understands the interactions between biological sciences and other sciences *[Making judgements]*;
  - the ability to successfully fulfil a position in society requiring an academic qualification as an independently operating professional that has a good knowledge base and attitude towards a biological approach to relevant societal issues *[Learning skills]*;
  - an attitude that enables critical reflection *[Making judgements, Learning skills]*.
2. In addition to paragraph 1, the student finishing track Ecology and Evolution has obtained the following track-specific qualifications:
  - the ability to interpret and evaluate current state-of-the-art research on the role of ecological and evolutionary processes in nature and to start an independent research project in this direction;
  - has the know-how and research experience to act as a self-directed professional in an environment where understanding of ecological and evolutionary processes is required.
3. In addition to paragraph 1, the student finishing the track General Biology has obtained the following track-specific qualifications:
  - the ability to interpret and evaluate current state-of-the-art research of various sub-areas of biology, and to start an independent research project in this direction;
  - has the know-how and research experience to act as a self-directed professional in an environment where integrative understanding of various sub-areas of biology is required.

4. In addition to paragraph 1, the student finishing the track Green Life Sciences has obtained the following track-specific qualifications:
  - can describe how plants function on a physiological, genetic, biochemical and cellular level and explain how plants respond to biotic and abiotic stress;
  - can illustrate how plant biotechnology (including “omics”-technologies) and plant breeding can be applied to improve traits;
  - the ability to interpret and evaluate current state-of-the-art research in experimental plant sciences and to start an independent research project in this direction;
  - has the know-how and research experience to act as a self-directed professional in an environment where understanding of experimental plant sciences is required.
5. In addition to paragraph 1, the student finishing the track Freshwater and Marine Biology has obtained the following track-specific qualifications:
  - has basic knowledge of the major physical and chemical processes that affect freshwater and marine ecosystems;
  - the ability to interpret and evaluate current state-of-the-art research on the functioning of freshwater and marine ecosystems and to start an independent research project in this direction;
  - has the know-how and research experience to act as a self-directed professional in an environment where understanding of freshwater and/or marine processes is required.
6. In addition to paragraphs 2.2.1 through 2.2.5, the graduate who has chosen to do a second track-specific research project has the ability to continue his/her career either as a researcher able to pursue a PhD degree at world’s best universities, as a scientist in research institutes worldwide, or as a research-skilled professional in organisations of government, civil society or business and industry.
7. In addition to paragraphs 2.2.1 through 2.2.5, the graduate who has chosen to do a major or minor as mentioned in article 4.4.2, obtains the exit qualifications as listed in the appendix.

### **Chapter 3. Further admission requirements**

#### *Article 3.1 – Admission requirements*

1. A student, who has obtained a Bachelor’s degree in Biology, Future Planet Studies with a major Biology or Beta-Gamma with a major Biology, or equivalent from a Dutch university, may enter the programme.
2. In addition to the requirements referred to in paragraph 1, the student has to comply with the following requirements:
  - a. The Bachelor’s Grade Point Average (GPA) is 6.5 or higher (according to the Dutch grading system). The GPA is the average of the Bachelor’s course grades weighed by course/study load;
  - b. The student has obtained the Bachelor’s degree within 4 years;
  - c. The student must have completed a Bachelor’s thesis (experimental work) of at least 15 EC. The subject of the Bachelor’s thesis must show affinity with the track.
3. In addition to the requirements referred to in paragraph 3.1.2 and 3.1.2, the student has to comply with the entry requirements depending on the track to be followed, which are described in paragraphs 4 through 7.
4. In addition to the requirements stated in paragraph 3.1.1 and 3.1.2, to enrol in the track Ecology and Evolution the student must have advanced (2<sup>nd</sup> and 3<sup>rd</sup> year BSc level) knowledge in Ecology and Evolution.
5. In addition to the requirements stated in paragraph 3.1.1 and 3.1.2, to enrol in the track General Biology the student must have advanced (2<sup>nd</sup> and 3<sup>rd</sup> year BSc level) knowledge in Ecology and

Evolution or advanced (2<sup>nd</sup> and 3<sup>rd</sup> year BSc level) knowledge in Molecular and Cellular Biology or advanced (2<sup>nd</sup> and 3<sup>rd</sup> year BSc level) knowledge in Marine or Aquatic Biology and experience in field work.

6. In addition to the requirements stated in paragraph 3.1.1 and 3.1.2, to enrol in the track Green Life Sciences the student must have advanced (2<sup>nd</sup> and 3<sup>rd</sup> year BSc level) knowledge in Molecular and Cellular Biology.
7. In addition to the requirements stated in paragraph 3.1.1 and 3.1.2, to enrol in the track Freshwater and Marine Biology the student must have advanced (2<sup>nd</sup> and 3<sup>rd</sup> year BSc level) knowledge in Marine and/or Aquatic Biology
8. Without prejudice to the provisions of paragraphs 3.1.1 through 3.1.7 the Admissions Board may grant admission to the programme when concluding that the previous education of the candidate is equivalent to the Bachelor's degrees referred to in paragraph 3.1.1. The Admissions Board decides in such cases for every student whether the previous education of the candidate had deficiencies for admission. An interview and test may be part of the admission procedure.
9. When the programme commences, the candidate must have fully completed the Bachelor's programme allowing admission to this Master's programme.

#### *Article 3.2 – Pre-master's programme*

1. Students with a Bachelor's degree in a field that corresponds to a sufficient extent with the subject area covered by the Master's programme can be admitted after completing a Pre-Master's programme.
2. The Pre-Master's programme must be completed within one year.
3. A student can be admitted under the condition that he or she successfully completes the Pre-Master programme before the Master programme starts.

#### *Article 3.3 – Limited programme capacity*

1. The Dean will, if necessary, announce the maximum programme capacity by 1 May prior to the start of the academic year. Up to, but no more than, 110 students are admitted to the Master's Programme Biological Sciences as a whole.
2. Candidates will be selected in the following way (in random order):
  - Study programme;
  - GPA score;
  - Study progress Bachelor's programme;
  - Subject of Bachelor's thesis;
  - Motivation.
3. The selection committee consisting of the programme director and track coordinator(s) will judge requests for admission on criteria mentioned in article 3.1 and select students on an individual basis and in comparison to the other applicants. The selection committee will advise the Admissions Board which will grant admission to the candidates.

#### *Article 3.4 – Final deadline for registration*

A candidate must submit a request to be admitted to the programme through Studielink before 1 May in the case of EU/EEA/Swiss students and before 1 February in the case of non-EU/EEA/Swiss students. Under exceptional circumstances, the Admissions Board may consider a request submitted after this closing date.

### *Article 3.5 – English Language Requirement for English-language Master’s programmes*

1. The proficiency requirement in English as the language of instruction can be met by the successful completion of one of the following examinations:

- IELTS: 6,5, at least 6 on each sub-score (listening/reading/writing/speaking);
- TOEFL paper-based: 580;
- TOEFL Internet-based test: 92, at least 20 on each sub-score (listening/reading/writing/speaking);

The foregoing examination must have been taken within two years before the student’s enrolment.

- C1 Advanced: A or B;
- C2 Proficiency: score of C

Please note that the TOEFL-code for the Faculty of Science of the University of Amsterdam is 8628.

2. An exemption from the English examination referred to in the first paragraph shall be granted to students who:

- had previous education in secondary or tertiary education in one of the following English-speaking countries: Australia, Canada (English), New Zealand, Ireland, the United Kingdom or the United States of America;
- hold an English-language ‘international baccalaureate’ diploma;
- possessing a Bachelor’s degree from a Dutch university satisfy the requirement of sufficient command of the English language;
- passed the final examination for the subject of English as part of one of the following diplomas: VWO, Belgian ASO (Flemish).

## **Chapter 4. Curriculum structure**

### *Article 4.1 – Organisation of the programme*

1. The curriculum consists of the following components:

- a. General compulsory components amounting to 84-96 EC, including Research Projects and Literature Review
- b. Specialisation-specific compulsory and/or constrained choice components amounting to 6-18 EC.
- c. Practical components
- d. Elective components amounting to a maximum of 18 EC.

### *Article 4.2 – Compulsory components*

1. In the UvA Course Catalogue the content, format and examination requirements of each compulsory component of the study programme are described, indicating the preconditions that are required in order to be able to follow the course successfully.
2. In the tracks Freshwater and Marine Biology and General Biology a so-called constrained list of courses is part of the study programme. The student has to choose 6-12 EC from this list, depending on the track. In the UvA and VU Course Catalogue the content, format and examination requirements of these components of the study programme are described.

3. For each specialisation the compulsory and constrained choice components are given below:

<b>Track Ecology and Evolution – Compulsory components</b>					
Component	Code	Study Load	Period	Teaching Method	Test
Current Trends in Ecology and Evolution	5224CTEE6Y	6 EC	1	L, T, PT, P	AP, OP & WE
Ecological Data Analysis (VU)	52248ECD6Y	6 EC	1	A, CS, L, PT & T	A & WE
Masterclasses in Ecology and Evolution	52248MIE3Y	3 EC	1-6	T, D & S	AP
Scientific Writing in English (VU)	52248SWI3Y	3 EC	1-6	SS, L & PT	A & WE
Research Projects	5224RP130Y 5224RP230Y	72-90 EC	1-6	PT	P, OP, & E
Literature Review	5224LRB12Y	12 EC	1-6	SS	E

<b>Track General Biology – Compulsory components</b>					
Component	Code	Study Load	Period	Teaching Method	Test
Research Projects	5224RP130Y 5224RP230Y	84-102 EC	1-6	PT	P, OP, & E
Literature Review	5224LRB12Y	12 EC	1-6	SS	E
<b>Constrained list courses (6 EC compulsory)</b>					
Current Trends in Ecology and Evolution	5224CTEE6Y	6 EC	1	L, PT & T	AP, OP & WE
Introduction to Aquatic Sciences	5224ITFM6Y	6 EC	1	L, PT & T	WE & OP
Plant Breeding and Biotechnology	5224PLBB6Y	6 EC	1	L, D & PT	OP/D, P & WE

<b>Track Green Life Sciences – Compulsory components</b>					
Component	Code	Study Load	Period	Teaching Method	Test
Biotic Interactions	5224BIIN6Y	6 EC	1	L, PT & T	A, P, OP & WE
Plant Breeding and Biotechnology	5224PLBB6Y	6 EC	1	L, D & T	OP/D, P & WE
Masterclasses Green Life Sciences	5224MGLS3Y	3 EC	1-6	A, D, T & S	A & AP
Research Projects	5224RP130Y 5224RP230Y	75-93 EC	1-6	PT	P, OP, & E
Literature Review	5224LRB12Y	12 EC	1-6	SS	E

Track Freshwater and Marine Biology – Compulsory components					
Component	Code	Study Load	Period	Teaching Method	Test
Introduction to Aquatic Sciences	5224ITFM6Y	6 EC	1	L, PT & T	WE & OP
Research Projects	5224RP130Y 5224RP230Y	72-90 EC	1-6	PT	P, OP, & E
Literature Review	5224LRB12Y	12 EC	1-6	SS	E
Constrained list courses (12 EC compulsory)					
Benthic Ecosystems	5224BEEC6Y	6 EC	2	L, E, PT & SS	E & WE
Biological Oceanography	52248BIO6Y	6 EC	2	L, P, PT, S & SS	A & WE
Coral Reef Ecology	5224CORE6Y	6 EC	3	L & PT	A, AP, P, OP & WE
Microbial Ecology	5224MIEC6Y	6 EC	1	L, E & PT	E, WE & OP
NIOZ Marine Master Course	5224FOOC4Y	4 EC	summer course	L & PT	OP & other

*Abbreviations: A=Assignments; AP= Active Participation; CS=Case Study; D=Discussion; E=Essay (report, proposal, abstract etc.); L=Lectures; OE=Oral Examination; OP=Oral (or video) Presentation; P=Practical Work; PT=Practical Training; S=Seminar SS=Self Study; T=Tutorials; WE=Written Examination*

- Two Research Projects should be part of the programme, unless the student opts to do a major (see article 4.4.2.). Research Projects should have a minimum of 30 EC and a maximum of 60 EC each. The total ECs for the two Research Projects depends on the track and is given in the tables above.

#### *Article 4.3 – Practical exercise*

- In addition to, or instead of, classes in the form of lectures, the elements of the master's examination programme often include a practical component as defined in article 1.2 of part A. The UvA Course Catalogue contains information on the types of classes in each part of the programme. Attendance during practical components is mandatory.
- When performing practical components, students must adhere to the faculty's safety regulations
- The student has to submit a proposal for each Research Project and the Literature Review for prior approval by the track coordinator and examiner.
- The Research Projects and Literature Review have to be completed and assessed within the period indicated in the approval form. Research Projects and the Literature Review have to be assessed by at least two assessors.
- Further information on regulations and procedures about Research Projects and Literature Review can be found at the website <http://www.student.uva.nl>.



*Article 4.4 – Elective components*

1. Elective courses may be part of the study programme. In the UvA Course Catalogue the content, format and examination requirements of elective courses are described. The student can choose up to 18 EC of the components below without asking prior approval of the Examinations Board.

Component	Code	Study Load	Period	Teaching Method	Test
Abiotic Stress	5224ABST6Y	6 EC	2	L & PT	OP
Benthic Ecosystems	5224BEEC6Y	6 EC	2	L, E, PT & SS	E & WE
Biological Oceanography	52248BIO6Y	6 EC	2	L, P, PT, S & SS	A & WE
Biotechnology	5234BIOT6Y	6 EC	2	L, S & SS	E & OP
Biotic Interactions	5224BIIN6Y	6 EC	1	L, PT & T	A,P,OP & WE
Coral Reef Ecology	5224CORE6Y	6 EC	3	L & PT	A, AP, P, OP & WE
Current Trends in Ecology and Evolution	5224CTEE6Y	6 EC	1	L, PT & T	AP, OP & WE
Developmental Biology (VU)	5224DEBI6Y	6EC	2	L & PT	W
Ecological Data Analysis (VU)	52248ECD6Y	6 EC	1		
Environmental Genetics (VU)	5224ENGE6Y	6 EC	2		
Environments through Time	5224ENTT6Y	6 EC	2	L, OP, PT & SS	OP & WE
Global Ecology and Biodiversity	5224GLEB6Y	6 EC	2	L, OP, PT, S & SS	E & P
Introduction to Aquatic Sciences	5224ITFM6Y	6 EC	1	L, PT & T	WE & OP
Invasion and Conservation Biology	5224INCB6Y	6 EC	3	L, PT & SS	WE, E & OP
Masterclasses in Ecology and Evolution	52248MIE3Y	3 EC	1-6	T, D & S	AP & other
Masterclasses Green Life Sciences	5224MGLS3Y	3 EC	1-6	A, D, T & S	A, AP & other
Microbial Ecology	5224MIEC6Y	6 EC	1	L, E & PT	E, WE & OP
NIOZ Marine Master Course	5224FOOC4Y	4EC	summer	L & PT	AP & OP
Plant Breeding and Biotechnology	5224PLBB6Y	6 EC	1	L, D & PT	OP/D, P&WE
Systems Biology in Practice	5304SBIP6Y	6 EC	2	L & PT	P, OP & E
Tropical Ecology (VU)	52248TRE6Y	6 EC	3		

*Abbreviations: A=Assignments; AP=Active Participation; CS=Case Study; D=Discussion; E=Essay (report, proposal, abstract etc.); L=Lectures; OE=Oral Examination; OP=Oral Presentation; P=Practical Work; PT=Practical Training; S=Seminar SS=Self Study; T=Tutorials; WE=Written Examination*

2. The student has the option to choose between one of three majors or one minor:
- Major Science in Society;
  - Major Science Communication;
  - Major Teaching;
  - Minor Tesla
- a. The major Science in Society and the major Science Communication consist of 60 EC. A major has to be combined with a research programme, comprising at least 60 EC (courses, Research Project and Literature Review), and with the general compulsory components in order to meet the general requirements of the programme. Further information on these majors can be found on the website of VU University Amsterdam.
  - b. The Major Teaching consists of 60 EC. The major has to be combined with a research programme, comprising at least 60 EC (courses, Research Project and Literature Review), and with the general compulsory components in order to meet the general requirements of the programme. Students who have completed an “Educatieve Minor” of 30 EC during their Bachelor’s programme may submit a non-standard study programme for approval to the Examinations Board of the ‘Interfacultaire Lerarenopleidingen’, after discussing this non-standard study programme with the coordinator of the Major Teaching and the coordinator of the Master’s programme. Further information on this major can be found on the website of the ‘Interfacultaire Lerarenopleidingen (ILO)’ of the University of Amsterdam.
  - c. The Minor Tesla consists of 30 EC. The minor must be combined with a research programme, comprising at least 90 EC (courses, Research Project and Literature Review), and with the general compulsory components in order to meet the general requirements of the programme. Further information on this minor can be found on the website of the University of Amsterdam.
  - d. Students have to go through a separate intake procedure for admission to the major in Science in Society, major in Science Communication, major Teaching and minor Tesla.
  - e. Students first have to finish the obligatory research part of the programme (60 EC) before starting one of the majors.
  - f. It is not permitted to take the obligatory research part of the programme and the major or minor simultaneously.
  - g. The student can participate in the majors or minor without prior approval of the Examinations Board when following the programme as described below:

Track Ecology and Evolution	Programme with major	Programme with minor
Compulsory courses: <i>Ecological Data Analysis</i> <i>Current Trends in Ecology and Evolution</i>	12 EC	12 EC
Elective courses (see paragraph 4.4.1.)	0-6 EC	0-6 EC
Literature Review	12 EC	12 EC
Research Projects	30-36 EC	60-66 EC*
Major	60 EC	-
Minor	-	30 EC
Total study load	120 EC	120 EC

Track General Biology	Programme with major	Programme with minor
Constrained list courses: <i>Current Trends in Ecology and Evolution</i> <i>Introduction to Aquatic Sciences</i> <i>Plant Breeding and Biotechnology</i>	6 EC	6 EC
Elective courses (see paragraph 4.4.1.)	6-12 EC	6-12 EC
Literature Review	12 EC	12 EC
Research Projects	30-36 EC	60-66 EC*
Major	60 EC	-
Minor	-	30 EC
Total study load	120 EC	120 EC
Track Green Life Sciences	Programme with major	Programme with minor
Compulsory courses: <i>Biotic interactions</i> <i>Masterclasses Green Life Sciences</i> <i>Plant Breeding and Biotechnology</i>	15 EC	15 EC
Literature Review	12 EC	12 EC
Research Projects	33 EC	63 EC*
Major	60 EC	-
Minor	-	30 EC
Total study load	120 EC	120 EC
Track Freshwater and Marine Biology	Programme with major	Programme with minor
Compulsory courses: <i>Introduction to Aquatic Sciences</i>	6 EC	6 EC
Constrained list courses: <i>Benthic Ecosystems</i> <i>Biological Oceanography</i> <i>Coral Reef Ecology</i> <i>Microbial Ecology</i> <i>NIOZ Marine Master Course</i>	12 EC	12 EC
Literature Review	12 EC	12 EC
Research Projects	30 EC	60 EC*
Major	60 EC	-
Minor	-	30 EC
<i>Total study load</i>	<i>120 EC</i>	<i>120 EC</i>

\* Two Research Projects with a minimum of 30 EC each

- If the student wishes to take a different subject than the units of study listed (see paragraph 4.4.1), advance permission must be obtained in writing from the Examinations Board. These units have to be relevant to the master chosen.
- In terms of content, elective components, as referred to in paragraph 3, must not show too much similarity to the components of the student's standard curriculum. The Examinations Board will decide on the acceptable degree of similarity.
- An elective component, as referred to in paragraph 3, will only be seen as part of the programme when the Examinations Board has given its prior approval to following this elective component..

#### *Article 4.5 – Free curriculum*

1. Subject to certain conditions, the student has the option of compiling a curriculum of his/her own choice which deviates from the curricula prescribed by the programme.
2. The concrete details of such a curriculum must be approved before the start of the programme by the most appropriate Examinations Board.
3. The free curriculum is put together by the student from the units of study offered by the University of Amsterdam and must at least have the size, breadth and depth of a regular Master's programme.
4. The following conditions must at least have been met in order to be eligible for the Master's degree:
  - a. At least 60 EC must be obtained from the regular curriculum
  - b. The level of the free curriculum programme must match the objectives and exit qualifications that apply for the programme for which the student is enrolled.

#### *Article 4.6 – Sequence and admission requirements*

1. Students may participate in examinations (and/or practical exercises) of the units below only if they have passed the examination or examinations for the units mentioned hereinafter:
  - The student has to successfully complete 6 EC of compulsory courses prior to approval and starting of the Research Project.
  - Students enrolled in the track General Biology have to successfully complete 6 EC of the constrained list courses prior to approval and starting of the Research Project.

#### *Article 4.7 – Participation practical training and tutorials*

Not applicable

#### *Article 4.8 – Exemption*

1. A maximum of 60 EC of the curriculum can be accumulated through granted exemptions
2. At the written request of the student, the Examinations Board may exempt the student from taking one or more examination components, if the student:
  - a. Has passed a component of an academic or higher professional education programme that is equivalent in both content and level;
  - b. Has demonstrated through his/her work and/or professional experience that he/she has sufficient knowledge and skills with regard to the relevant component.
3. This exemption does not apply to Research Project 2.
4. Exemptions from examinations (or parts thereof), if granted, will be valid for the same period of these examinations.

#### *Article 4.9 – Validity period for results*

The validity period of passed interim examinations and exemptions from interim examinations is until the end of the academic year (31 Aug).

#### *Article 4.10 – Degree*

Students who have successfully completed their Master's examination are awarded a Master of Science degree. The degree awarded is stated on the diploma. If it is a joint degree, this will also be stated on the diploma.

#### *Article 4.11 – Determining results of examinations*

In addition to Article 4.6 of Part A, in case the examination of a component consists of two or more parts, each part has to be graded with a 5.0 or higher to pass the examination.

## **Chapter 5. Academic student counselling**

### *Article 5.1 - Academic student counselling*

The academic student counselling for this programme consists of:

- a dedicated study advisor for all students of the Graduate School of Life and Earth Sciences;
- a dedicated track coordinator for each track.

## **Chapter 6. Teaching evaluation**

### *Article 6.1- Teaching evaluation*

Teaching evaluation shall take place as follows:

- Course evaluations of a large selection of courses
- Evaluation of Research Project 2
- Curriculum evaluation

All evaluation reports are discussed within the Programme Committee.

## **Chapter 7. Transitional and final provisions**

### *Article 7.1 – Amendments and periodic review*

1. Any amendment to the Teaching and Examination Regulations will be adopted by the dean after taking advice, and if necessary approval by the relevant Board of Studies. A copy of the advice will be sent to the authorised representative advisory body.
2. Any amendment to the Teaching and Examination Regulations requires the approval of the authorised representative advisory body as stated in the WHW.
3. An amendment to the Teaching and Examination Regulations is only permitted to concern an academic year already in progress if this does not demonstrably damage the interests of students.

### *Article 7.2 – Transitional provisions*

By way of departure from the Teaching and Examination Regulations currently in force, the following transitional provisions apply for students who started the programme under a previous set of Teaching and Examination Regulations:

Transitional Provisions for students who started in 2016-2017 or earlier

Old component	Replacement in 2018-2019	Remarks
Introduction to Limnology and Oceanography	Introduction to Aquatic Sciences	The contents of the course are the same; the name changed in line with the track name.

Transitional Provisions for students who started in 2017-2018 or earlier

Old component	Replacement in 2018-2019	Remarks
Introduction to Freshwater and Marine Biology	Introduction to Aquatic Sciences	The contents of the course are the same; the name changed in line with the track name.
Current Trends in Evolution	Current Trends in Ecology & Evolution	Course contents similar
Experimental Design and Analysis	Ecological Data Analysis	Course contents similar
Soil Plant Animal Interaction	Current Trends in Ecology & Evolution	Course contents similar

### *Article 7.3 - Publication*

1. The dean will ensure the appropriate publication of these Regulations and any amendments to them.
2. The teaching and Examination Regulations will be posted in the faculty website and deemed to be included in the course catalogue.

### *Article 7.4 – Effective date*

These Regulations enter into force with effect from 1 September, 2018.

Thus drawn up by the Dean of the Faculty of Science on 28 August 2018.

- Appendix -

**Final attainment levels of the major Science in Society, the major Science Communication, the Major Teaching and the Minor Tesla**

A. Final attainment levels of the major Science in Society

*Dublin descriptor 1: Knowledge and understanding*

The graduate has theoretical and practical knowledge of management, policy analysis and entrepreneurship. The graduate:

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

*Dublin descriptor 2: Applying knowledge and understanding*

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

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

*Dublin descriptor 3: Making judgments*

The graduate is able to independently and critically judge information. The graduate is able to:

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

*Dublin descriptor 4: Communication*

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

1. has acquired skills to report orally and in writing on research results in English;
2. has the ability to communicate research conclusions, and the knowledge and rationale underpinning them, to specialist audiences and non-specialist audiences clearly and unambiguously;
3. can collaborate with researchers from various scientific disciplines;
4. can make essential contributions to scientific discussions about plans, results and consequences of research.

*Dublin descriptor 5: Learning skills*

The graduate has developed learning skills that enable him/her to continue with self-education and development within the subject area. The graduate:

1. has acquired skills to develop a research plan, giving details of the problem statement, objectives, research questions, research approach, research methods, and planning;
2. is familiar with the general scientific journals, such as Nature and Science, and with journals in the specialisation, such as Research Policy, Health Policy, Science, Technology & Human Values, Social Science & Medicine, and International Journal on Technology Management;
3. has the learning skills to allow him/her to continue to study in a manner that may be largely self-directed or autonomous (life-long learning).



## B. Final attainment levels of the major Science Communication

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

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

### *Knowledge*

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

### *Skills*

1. Independently acquire, analyze and evaluate relevant information in a variety of scientific disciplines, by conducting literature study and empirical research;
2. Communicate and collaborate effectively with diverse professionals of scientific and nonscientific disciplines as well as lay citizens;
3. Design and facilitate interactive processes in relation to the science-society dialogue;
4. Translate information from various natural science disciplines into more generally accessible language and formats;
5. Produce popular-scientific media output concerning developments in the natural sciences, aimed at a variety of publics;
6. Contribute to the design of museum exhibitions from the perspective of scientific content management and science communication theory;
7. Make an intrinsic contribution to the societal discussion of developments in science and technology.

### C. Final attainment levels of the major Teaching

1. De bekwaamheidseisen Leraar Voorbereidend Hoger Onderwijs zijn, naast de voor alle wo-masteropleidingen geldende Dublin-descriptoren en algemene wettelijke eisen, richtinggevend voor de doelstellingen en eindtermen van de lerarenopleidingen Voorbereidend Hoger Onderwijs. Deze bekwaamheidseisen zijn vastgelegd in de Wet op het voortgezet onderwijs (artikel 36 e.v.) en het Besluit bekwaamheidseisen onderwijspersoneel (zie 'Besluit bekwaamheidseisen onderwijspersoneel' (<http://wetten.overheid.nl/BWBR0018692/2017-08-01>) en 'Besluit van 16 maart 2017 tot wijziging van het Besluit bekwaamheidseisen onderwijspersoneel en het Besluit bekwaamheidseisen onderwijspersoneel BES in verband met de herijking van de bekwaamheidseisen voor leraren en docenten' (<https://zoek.officielebekendmakingen.nl/stb-2017-148.html>)).

De eindtermen zijn geordend in twee categorieën:

- Eindtermen die rechtstreeks te maken hebben met de kern van het beroep: het onderwijsleerproces en het leren van leerlingen, te weten de vakinhoudelijke, vakdidactische en pedagogische bekwaamheid (eindterm 1 t/m 3).
- Eindtermen die betrekking hebben op meer algemene aspecten van professioneel handelen ten dienste van die kern van het beroep: te weten samenwerking met collega's en de omgeving van de school en met reflectie en persoonlijke en professionele ontwikkeling (eindterm 4 t/m 5).

De opleiding draagt er zorg voor dat de afgestudeerde Leraar VHO in ieder geval:

1. aantoonbaar beschikt over vakinhoudelijke kennis en vaardigheden die het wo-bachelorniveau overstijgen dan wel verdiepen. Dat wil zeggen dat de afgestudeerde Leraar VHO:
  - a. de inhoud van vak beheerst / boven de leerstof staat;
  - b. daardoor de leerstof, voor het schooltype waarin de leraar werkzaam is, zo kan samenstellen, kiezen of bewerken dat de leerlingen die kunnen leren;
  - c. vanuit vakinhoudelijke expertise verbanden kan leggen met het dagelijks leven, met werk en met wetenschap en het onderwijs betekenisvol kan maken voor de leerlingen;
  - d. daarmee kan bijdragen aan de algemene vorming van de leerlingen.
2. aantoonbaar beschikt over vakdidactische kennis en vaardigheden. Dat wil zeggen dat de afgestudeerde Leraar VHO:
  - a. de vakinhoud weet te vertalen in leerplannen of leertrajecten en dat doet op een professionele, ontwikkelingsgerichte werkwijze;
  - b. de vakinhoud leerbaar maakt voor en afstemt op het niveau en kenmerken van de leerlingen, daarbij doelmatig gebruikmakend van (digitale) beschikbare leermiddelen;
  - c. het onderwijs kan ontwikkelen en evalueren;
  - d. het onderwijs doelmatig kan uitvoeren en het leren van leerlingen kan organiseren;
  - e. de vak inhoud/didactiek afstemt met de collega's op school en laat aansluiten bij de visie en missie van de school.
3. aantoonbaar beschikt over pedagogische kennis en vaardigheden. Dat wil zeggen dat de afgestudeerde Leraar VHO:
  - a. de ontwikkeling van leerlingen volgt in hun leren en gedrag en daarop het handelen afstemt;
  - b. bijdraagt aan de sociaal-emotionele en morele ontwikkeling van de leerlingen;
  - c. bijdraagt aan de burgerschapsvorming en de ontwikkeling van de leerling tot een zelfstandige en verantwoordelijke volwassene;

- d. met een professionele, ontwikkelingsgerichte werkwijze en in samenwerking met collega's een veilig, ondersteunend en stimulerend leerklimaat voor leerlingen kan realiseren;
  - e. in staat is om oordelen te formuleren, rekening houdend met de sociaal-maatschappelijke en ethische verantwoordelijkheden die horen bij het beroep.
4. aantoonbaar reflecteert ten behoeve van persoonlijke en professionele ontwikkeling. Dat wil zeggen dat de afgestudeerde Leraar VHO:
    - a. in staat is kritisch te reflecteren op alle aspecten die met zijn/haar persoonlijkheid, motivatie, attitudes, verwachtingen en cognities te maken hebben (die onder meer tot uiting komen in het pedagogisch handelen) en feedback hieromtrent ter harte te nemen
    - b. op onderzoeksmatige wijze de (eigen) onderwijspraktijk verbetert en blijft ontwikkelen;
    - c. in staat is (vak)kennis en -kunde actueel te houden;
    - d. in staat is een eigen positie te bepalen ten aanzien van de missie en visie van de school/instelling en bereid is een constructieve bijdrage te leveren aan de ontwikkeling van het vak/het onderwijs in de school.
  5. aantoonbaar samenwerkt en communiceert met collega's en omgeving. Dat wil zeggen dat de afgestudeerde Leraar VHO:
    - a. het pedagogisch handelen kan afstemmen met collega's en met anderen die voor de ontwikkeling van de leerling verantwoordelijk zijn;
    - b. de ontwikkeling van het vak/curriculum in de school kan afstemmen met collega's en met anderen die voor de ontwikkeling van de leerling verantwoordelijk zijn.
2. Onverminderd het bepaalde in lid 1 heeft de afgestudeerde van afstudeerrichting Biologie een gedegen vakinhoudelijke kennis van en inzicht in het vakgebied en de vakdidactiek van Biologie en kan op basis daarvan aantrekkelijke, effectieve en efficiënte leeractiviteiten ontwerpen, uitvoeren, begeleiden en evalueren voor het schoolvak Biologie in de onderbouw en/of bovenbouw.
  3. Onverminderd het bepaalde in lid 1 heeft de afgestudeerde van afstudeerrichting Natuurkunde een gedegen vakinhoudelijke kennis van en inzicht in het vakgebied en de vakdidactiek van Natuurkunde en kan op basis daarvan aantrekkelijke, effectieve en efficiënte leeractiviteiten ontwerpen, uitvoeren, begeleiden en evalueren voor het schoolvak Natuurkunde in de onderbouw en/of bovenbouw.
  4. Onverminderd het bepaalde in lid 1 heeft de afgestudeerde van afstudeerrichting Scheikunde een gedegen vakinhoudelijke kennis van en inzicht in het vakgebied en de vakdidactiek van Scheikunde en kan op basis daarvan aantrekkelijke, effectieve en efficiënte leeractiviteiten ontwerpen, uitvoeren, begeleiden en evalueren voor het schoolvak Scheikunde in de onderbouw en/of bovenbouw.
  5. Onverminderd het bepaalde in lid 1 heeft de afgestudeerde van afstudeerrichting Wiskunde een gedegen vakinhoudelijke kennis van en inzicht in het vakgebied en de vakdidactiek van Wiskunde en kan op basis daarvan aantrekkelijke, effectieve en efficiënte leeractiviteiten ontwerpen, uitvoeren, begeleiden en evalueren voor het schoolvak Wiskunde in de onderbouw en/of bovenbouw.
  6. Onverminderd het bepaalde in lid 1 heeft de afgestudeerde van afstudeerrichting Aardrijkskunde een gedegen vakinhoudelijke kennis van en inzicht in het vakgebied en de vakdidactiek van Aardrijkskunde en kan op basis daarvan aantrekkelijke, effectieve en efficiënte leeractiviteiten ontwerpen, uitvoeren, begeleiden en evalueren voor het schoolvak Aardrijkskunde in de onderbouw en/of bovenbouw.

#### D. Learning objectives of the minor Tesla

By completing the Tesla Minor the graduate is fit to start a career in demanding environments which require abilities to utilize the disciplinary science background in research, corporate, civil society, governmental and advisory work environments.

All learning objectives fall into at least one of the following categories:

1. Information processing;
2. Teamwork;
3. Project Work;
4. Communication;
5. Self-reflection.

Further information about the minor Tesla can be found in the study guide:

<http://www.teslaminor.nl> .