



## **Appendices to the Teaching and Examination Regulations 2017-2018**

### **Appendix I. Learning outcomes of the degree programme\* (art. 1.3)**

The graduate:

1A (Biology) has acquired in depth knowledge on one or more scientific disciplines within the general field of Biology and can use this knowledge to explain in detail the relevant concepts, using the appropriate terminology.

1B (Ecology & Evolution) has acquired in depth knowledge on one or more scientific disciplines within the field of Ecology and Evolution and can use this knowledge to explain in detail the relevant concepts, using the appropriate terminology.

1C (Marine Biology) has acquired in depth knowledge on one or more scientific disciplines within the field of Marine Biology and can use this knowledge to explain in detail the relevant concepts, using the appropriate terminology

1D (Molecular Biology & Biotechnology) has acquired in depth knowledge on one or more scientific disciplines within the field of Molecular Biology & Biotechnology and can use this knowledge to explain in detail the relevant concepts, using the appropriate terminology

2 can design and conduct scientific research;

3 can independently investigate and critically evaluate scientific literature;

4 can identify new developments in the relevant disciplines, and can become familiar with these developments;

5 can systematically organize his/her work in scientific research and formulate realistic and original solutions to complex problems;

6 can participate in and contribute to a multidisciplinary team;

7 can effectively communicate acquired knowledge, insights and skills to others, both in writing and in oral presentation;

8 can identify societal and ethical implications of scientific research and is able to critically reflect on his/her actions in this context;

9 can independently acquire new knowledge and skills that are relevant for his/her professional career, in science, in policy & management or society.

\* These are based on the taxonomy of Bloom

## **Appendix II. Tracks/Specializations of the degree programmes (art. 2.2)**

1. Within the degree programmes, the student chooses one of the following tracks:
  - a. R-track ("Research-track), which provides training as a researcher;
  - b. SBP-track ("Science, Business and Policy -track", m-variant in Dutch), which prepares for professions in a societal, political and/or commercial context.

2. Within the degree programme Biology students can follow the research track Behavioural and Neurosciences, which prepares for conducting research in this field of biology.

Within the degree programme Ecology & Evolution qualified students can follow the Top research track Evolutionary Biology, an intensified programme which prepares for conducting top quality research in this field of ecology.

Within the degree programme Ecology & Evolution qualified students can follow the Erasmus Mundus research track Evolutionary Biology, an intensified European programme which prepares for conducting top quality research in this field of ecology. For this programme the Erasmus Mundus Teaching and Examination Regulations will apply.

Within the degree programme Molecular Biology & Biotechnology qualified students can follow the Top research track Biomolecular Sciences, an intensified programme which prepares for conducting top quality research in this field of molecular biology and biotechnology

Within the degree programme Molecular Biology & Biotechnology students can follow the specialization Chemical biology

### Appendix III. Content of the degree programmes (art. 2.3)

1. The degree programmes consist of either the R- or the SBP-track programme:

*Research-Track:*

Study elements	ECTS	entry requirements
research project (RP)*	40 or ≥	see appendix V
research project (RP)*	30 or ≥	see appendix V
colloquium	5	RP
essay	5	-
compulsory master courses	20	see Ocasys
electives**	≤20	see Ocasys

*SBP-Track:*

Study elements	ECTS	entry requirements
research project (RP)*	40 or ≥	see appendix V
compulsory master courses	5	see Ocasys
colloquium	5	RP
internship SBP	40	RP
Science and Business	10	
Science and Policy	10	
electives**	≤ 10	see Ocasys

2. In addition to the above scheme the following rules apply to all programmes:

- The student chooses a mentor - an assistant professor or professor from the list of each Master programme- to advise and discuss the contents of the individual degree programme before approval of the Board of Examiners.
- \* The first research project (preferably the one ≥40 EC) must be performed at the FMNS (within life sciences oriented research groups) or the University Medical Centre Groningen under supervision of one of the examiners.
- The subject of the SBP- internship must be clearly related to the scientific domain of the chosen master programme (see Appendix I, 1). Therefore, two examiners must be involved in the assessment of the internship: one SBP-examiner and one appointed examiner
- \*\* The student may choose to use 5, - 20 ECTS to extend a research project, prepare a manuscript related to a master research project (no more than 10 ECTS), attend master courses (appendix IV), to include a maximum of 10 ECTS of courses from other relevant Life Sciences programmes, to repair specific deficiencies or perform a research assignment of 5-20 ECTS.

During the mid-term assessment one may extend the research project with only 5-10 ECTS.

- Research projects, colloquium and essay must deal with different subjects, be supervised by a different examiner, and be approved of by the Board of Examiners.

**Additional requirements for the research track *Behavioural and Neurosciences* (Biology)**

Students within the track *Behavioural and Neurosciences* choose their mentor from the list for this track.

**Additional requirements for the Top research track *Evolutionary Biology* (Ecology and Evolution)**

3. Students within the Top research track Evolutionary Biology have to pass the following courses\*:

- Evolutionary ecology research; 10 ECTS
- Evolutionary theory 10 ECTS
- Genomics in ecology and evolution; 10 ECTS

\* These courses are challenging both in content and time constraints

The essay in this case is a literature study written in the form of a review article or a research proposal.

The study load of the electives is  $\leq 10$  ECTS which can be used for courses, research or individual assignments

**Additional requirements for the MEME research track *Evolutionary Biology* (Ecology and Evolution) are described in Annex\_MEME**

**Additional requirements for the Top research track *Biomolecular Sciences* (Molecular Biology and Biotechnology)**

4. Students within the Top research track Biomolecular Sciences generally follow the R-track scheme but have to pass 6 out of the following courses\*:

1. Advances in signal transduction; 5 ECTS
2. Advanced Membrane Biology; 5 ECTS
3. Organelle and membrane biogenesis; 5 ECTS
4. Molecular Dynamics and modeling of Membranes and Proteins ; 5 ECTS
5. Protein and Enzyme Engineering by Mutagenesis and Directed Evolution; 5 ECTS
6. Advanced protein crystallography; 5 ECTS
7. Tools and approaches of systems biology; 5 ECTS
8. Transcriptomics: DNA microarrays and RNAseq; 5 ECTS
9. Advanced Genetic Engineering and complex gene regulatory circuitries

\* These courses are challenging both in content and time constraints

Literature study written is in the form of a research proposal; 5 ECTS.

The study load of the electives is  $\leq 10$  ECTS which can be used for courses, research or individual assignments

**Additional requirements for the specialization *Chemical biology***  
(Molecular Biology and Biotechnology)

Students within the specialization Chemical biology generally follow the R-track scheme and have to pass 4 of the following courses:

1. Advanced protein crystallography; 5 ECTS
2. Protein and Enzyme Engineering by Mutagenesis and Directed Evolution; 5 ECTS
3. Advances in Chemical Biology; 5 ECTS
4. Synthetic Biology & Systems Chemistry; 5 ECTS

**Additional requirements for the programme *Marine Biology***

1. Principles of Biological Oceanography; 5 ECTS
2. Principles of Marine Biology; 5 ECTS
3. Principles of Marine Conservation; 5 ECTS

Students within the degree programme Marine Biology may use the title Marine Scientist of the Netherlands when they have fulfilled the requirements of their programme and passed one of the annual field courses organized by the NIOZ, the Royal Netherlands Institute for Sea Research (Texel).

## Appendix IV. Courses (art. 2.4)

### Master courses and electives

The following lists presents study elements that can be chosen as 'master courses' and 'electives'. The column on the right indicates the master's programmes for which the courses were developed in particular:

B = Biology,

BN= specialization Behaviour and Neurosciences in the master's programme Biology,

EE = Ecology and Evolution,

MB = Marine Biology, MBB = Molecular Biology and Biotechnology.

### Master courses

The following list presents study elements that can be chosen as part of the 'master courses' (unless stated differently). After consultation with the study mentor and approval of the Board of Examiners (use the proposal form) students may also choose from options available from other departments, other universities in the Netherlands or even abroad. In case the 'master courses' in an individual programme are completely filled, additional master courses may be chosen, which will automatically be part of the 'electives'.

### Master courses organised by the research institutes GELIFES and ESRIG

Course	ECTS	Programmes
A Primer in Population Genetic Modeling (not in 2017-2018)	5	B, EE, MB
Advanced selforganisation, of social systems	5	B, EE, MB
Advanced imaging techniques	5	B, BN, MBB
Advanced Population & Community Ecology	5	B, EE, MB
Advanced statistics	5	B, BN, EE, MB, MBB
Animal and human experimentation: design, practice and ethics	5	B, BN, EE, MB, MBB
Conservation Ecology Practices	5	B, BN, EE, MB, MBB
Current themes seminar series	2	B, EE, MB
Ecosystems Mediterranean rocky shores (not in 2017-2018)	10	MB
Evolutionary ecology of marine organisms	5	B, EE, MB
Flyway ecology	5	B, EE, MB
GELIFES lectures	2	B, EE, MB
Genetics in Conservation and Ecology	5	B, EE, MB
Mathematical models in ecology and evolution	6	B, BN, EE, MB
Marine ecosystem service & global change	5	B, EE, MB
Meta- analyses in Ecology (not in 2017-2018)	5	B, EE, MB
Molecular methods in ecology & evolution	5/10	B, EE, MB
Practical bioinformatics for biologists	5	B, BN, EE, MB, MBB
Practical modelling for biologists	5	B, EE, MB
Principles of Biological Oceanography*	5	B, EE, MB
Principles of Marine Biology*	5	B, EE, MB
Principles of Marine Conservation*	5	B, EE, MB
Programming in C <sup>++</sup> for biologists	5/10	B, BN, EE, MB, MBB
Polar ecosystems	5	B, EE, MB

Research proposal Ecology and Evolution	5	B, EE, MB
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\* Students MB have priority in enrolment

### Master courses organised by the research institute GBB

Course	ECTS	Programmes
Advanced light microscopy	5	B, BN, EE, MB, MBB
Advanced Membrane Biology	5	B, MBB
Advanced genetic engineering and complex gene regulatory circuitries	5	B, MBB
Advances in signal transduction	5	B, MBB
Advanced protein crystallography	5	B, MBB
Biocatalysis & Green chemistry	5	B, MBB
Electron microscopy of biological macromolecules	5	B, MBB
Molecular dynamics and modeling of membranes and proteins	5	B, MBB
Organelle and membrane biogenesis	5	B, MBB
Protein and enzyme engineering by mutagenesis and directed evolution	5	B, MBB
Radioisotopes in experimental biology	5	B, BN, EE, MB, MBB
Tools and approaches of systems biology	5	B, MBB
Transcriptomics: DNA microarrays and RNAseq	5	B, BN, EE, MB, MBB

\* Students following these degree programmes may only choose these courses as part of the 'electives' not as part of the 'master courses'

### Master courses organised by Biomedical Sciences/GELIFES

Course	ECTS	Programmes
Advanced metabolism & nutrition	5	B, BN
Behavioural pharmacology	5	B, BN
Current themes in healthy ageing	5	B, BN, MBB
Current Themes in Biomedicine	5	B, BN, MBB
Immunology: from bedside to bench and back	5	B, BN
Introduction to the behavioural and cognitive neurosciences	4	B, BN
Microbiological safety	1	B, BN, MBB
Molecular biology of ageing and age-related diseases	5	B, BN, MBB
Neurobiology of nutrition	5	B, BN
Neurodegenerative diseases	5	B, BN
Nutrition in medicine	5	B, BN
Orientation on international careers	5	B, BN, EE, MB, MBB
Professionalism and ethics in science <sup>^</sup>	5	B, BN, EE, MB, MBB
Scientific writing	5	B, BN, EE, MB, MBB
Stem cells & regenerative medicine	5	B, MBB

<sup>^</sup>Students who follow the SBP-track may only choose this course unit as part of the 'electives' not as part of the 'master courses'

### Master courses organised by Science & Society

Course	ECTS	Programmes
Science & Business <sup>#</sup>	10	B, BN, EE, MB, MBB
Science & Policy <sup>#</sup>	10	B, BN, EE, MB, MBB

<sup>#</sup> Students who follow the R-track may only choose these courses as part of the 'electives' not as part of the 'master courses'

### Master course organised by Spatial Sciences

Course	ECTS	Programmes
Transitions in water management	5	B, EE, MB

### Master course organised by Royal Netherlands Institute of Sea Research

Course	ECTS	Programmes
NIOZ Marine Masters' Summer Course	4	B, EE, MB

## Electives

The following lists presents study elements that can only be chosen as 'electives' in the indicated master's programmes (see two columns on the right). After consultation with the study mentor and approval of the Board of Examiners students may also choose from options available from other departments, other universities in the Netherlands or even abroad.

### Elective master courses organised by Energy and Environmental sciences:

Course	ECTS	Programmes
Impacts of Energy and Material Systems (IEMS)	5	B, EE, MBB
Sustainable Use of Ecosystems	5	B, EE, MBB
Sustainability & Society	5	B, EE, MBB
Systems Integration and Sustainability	5	B, EE, MBB

### Elective master courses organised by Education and Communication<sup>a</sup>:

Course	ECTS	Programmes
History and Philosophy of Science	5	B, BN, EE, MB, MBB
Introduction to Research in Science Education and Communication	5	B, BN, EE, MB, MBB
Nature of Scientific Disciplines	5	B, BN, EE, MB, MBB
Science Education and Communication Design	10	B, BN, EE, MB, MBB
Science Communication Skills	5	B, BN, EE, MB, MBB
Science and the Public	5	B, BN, EE, MB, MBB
Science Communication and Journalism	5	B, BN, EE, MB, MBB

<sup>a</sup> These modules are instructed in Dutch



**Elective master courses organised by The Donald Smits Center for Information Technology:**

<b>Course (max 2 ects per individual programme^)</b>	<b>1/2 day unit^</b>	<b>Programmes</b>
Access basic	5	B, BN, EE, MB, MBB
Excel basic	5	B, BN, EE, MB, MBB
Excel data bases en draaitabellen <sup>a</sup>	1	B, BN, EE, MB, MBB

<sup>a</sup> These modules are instructed in Dutch

^ A minimum of 5 half day units is required for a study load of 1 ECTS, for 2 ECTS 11 units are needed.

These courses have additional costs (low student tariff), which are at the student's own expenses. These courses are not available in Ocasys. Please consult the Donald Smits Center for further information, time schedules and enrolment details.

**Elective master courses organised by Chemistry:**

<b>Course</b>	<b>ECTS</b>	<b>Programmes</b>
Advances in chemical biology	5	B, MBB
Modern laser microscopy	5	B, MBB
Synthetic biology & systems chemistry	5	B, MBB

**Elective master course organised by the centre for Synthetic Biology:**

<b>Course</b>	<b>ECTS</b>	<b>Programmes</b>
iGEM (International Genetically Engineered Machine competition)*	≤20	B, BN, EE, MB, MBB

\* Selection for this competition takes place in winter time, an advertisement about application details will be announced via Nestor during the academic year.

## Appendix V. Compulsory order of examinations (art 3.4)

› <b>Course unit</b>	› <b>Entry requirement</b>
› Colloquium	› Research project
› Research project 2	› Research project
› Internship Science Business & Policy	› Research project, Science & Policy, Science & Business

## **Appendix VI. Admission to the degree programme and different tracks/ specializations (art. 5.1 + art. 5.2)**

### **1. Requirements for admission to the master's degree in Biology**

Holders of a Bachelor's degree in Biologie from the University of Groningen are considered to have sufficient knowledge and skills and will be admitted to the Master's degree programme in Biology on that basis. Holders of a Bachelor's degree in Life Science & Technology from the University of Groningen with the majors *Biomedische wetenschappen*, *Gedrag & Neurowetenschappen* of *Moleculaire levenswetenschappen* will be admitted to the Master's degree programme in Biology on that basis. Holders of a Bachelor's degree with the major *Gedrag & Neurowetenschappen* from the University of Groningen will be admitted to the research track Behavioural and Neurosciences within this master's degree programme in Biology.

### **2. Requirements for admission to the master's degree in Ecology and Evolution**

Holders of a Bachelor's degree in Biologie from the University of Groningen with the major *Ecologie & Evolutie* or *Mariene Biologie* are considered to have sufficient knowledge and skills and will be admitted to the Master's degree programme in Ecology & Evolution on that basis.

### **3. Requirements for admission to the master's degree in Marine Biology**

Holders of a Bachelor's degree in Biology are considered to have sufficient knowledge and skills and will be admitted to the Master's degree programme in Marine Biology on that basis. For holders of another relevant Bachelor's degree in science there is an individual admission procedure based on the content of the bachelor's programme.

### **4. Requirements for admission to the master's degree in Molecular Biology and Biotechnology**

- Holders of a Bachelor's degree in *Biologie* or a Bachelor's degree in Life Science & Technology from the University of Groningen with the major *Moleculaire Levenswetenschappen*, or the combination of the major *Biomedische wetenschappen* or the major *Gedrag en Neurowetenschappen* or the major *Medisch farmaceutische wetenschappen* in combination with the minor *Moleculaire Levenswetenschappen*, have sufficient knowledge and skills and will be admitted to the Master's degree programme in Molecular Biology and Biotechnology on that basis.
- Holders of a Bachelor's degree in Chemistry with the major *Chemistry of Life* are admitted to this master's programme

### **5. Admission requirements to tracks and specializations**

In addition to the provisions in 4, the following admission requirements apply to the specialization or Top programmes:

1. Master Biology, research track *Behavioural and Neurosciences*: A Bachelor's degree in Biology or a Bachelor's degree in Life Science & Technology of the University of Groningen with major *Gedrag en Neurowetenschappen*.

2. Master Ecology and Evolution, Top research track *Evolutionary Biology*: a relevant Bachelor's degree and an individual selection procedure (see below). Excellent MSc students from Ecology & Evolution and Marine Biology may apply during their first year for the Top research track Evolutionary Biology.
3. Master Molecular Biology and Biotechnology, Top research track *Biomolecular Sciences* : a relevant Bachelor's degree and an individual selection procedure (see below).

## **6. Applications procedure for a Top research track (art. 4.2)**

1. Students in possession of an admission permit can be admitted to the top programme.
2. Students who meet the requirements are provided with an admission permit by the Admission Board.
3. An admission permit is only valid for the academic year following the academic year in which the permit is granted.
4. There may be other conditions attached to the admission permit. The requirements must be met before the top programme has started.
5. The admission requirements comprise:
  - a relevant bachelor's degree;
  - sufficient knowledge of the English language;
  - sufficient knowledge of the relevant sciences;
  - a suitable attitude, motivation and talent to follow the Top programme.
6. The Board of Examiners establishes an Admissions Board that judges the student's fulfilment of the requirements. This Board consists of three members of the top programme's Board of Examiners, completed by a university employee.  
One of the members is appointed as chairperson.
7. An appeal can be made against a decisions of the Admissions Board at the Board of Appeal for Examinations.
8. Students apply to the admission procedure by sending in the following documents:
  - a completed application form;
  - a complete *curriculum vitae*;
  - a survey of the study results attained in academic courses so far;
  - a letter in which the student states why s/he wants to follow this top programme in particular, what his/her expectations and ambitions are;
  - (if desired) results of former research projects, like reports or articles;
  - the names of three scientists willing to provide information on the applicant;
  - (if desired) other documents that the student deems useful in furthering his/her application.

These documents are to be sent to the Faculty of Science and Engineering before the deadline (see appendix G) .

9. Proficiency in English is an admission requirement for most master's programmes. You will need to submit proof of proficiency of English as part of the admission process,

#### Exemptions

This requirement does not apply if you:

- are a native speaker and completed secondary education in any one of the following countries: Canada, USA, UK, Ireland, New Zealand, Australia
- have completed your bachelor education in any one of the following countries: Canada, USA, UK, Ireland, New Zealand, Australia
- have an International Baccalaureate
- have a European Baccalaureate diploma

#### Accepted test

- The International English Language Testing System (IELTS). Minimum score: 6.5 and all sections should be at least 6.0.
- The Test of English as a Foreign Language (TOEFL). Minimum total score: 580 and minimum section score 56 (paper-based) / 237 – 22 minimum section score (computer-based) / 92 and 21 minimum section score (Internet- based) for most master's programmes.
- Cambridge Certificate of Proficiency in English

#### Important notes

- The certificates need to be recent: not older than 2 years.
- The modality required is "academic".
- We do not accept institutional scores, with the exception as mentioned below.
- Chinese Students need to submit an IELTS or a TOEFL iBT test.

From 1 September 2008, Chinese students will be eligible to apply to study in Holland using a TOEFL score, confirmed by Neso China. Chinese students need to apply for the Neso certificate, which is an obligatory document for the study visa. Students can apply for the certificate at the same time as applying to the university.

- ONLY Indonesian applications are permitted to submit an Institutional TOEFL score, under the following conditions:
  1. The application for admission to our study programmes have been sent to us by NESO Jakarta and includes the statement of Neso Jakarta on the procedures of the ITP TOEFL test organised by Neso Jakarta, TOEFL and the Indonesian International Education Foundation.
  2. The minimum score for TOEFL is: 580 (paper-based) / 237 (computer-based) / 92 (Internet- based).
  3. The ITP TOEFL score must be an equivalent of the official TOEFL scores as mentioned under condition 3.

10. The applicants will be informed in writing about the decision on their admission within 3 weeks after the deadline for submission. This may be a tentative decision, conditional on further information to be supplied by the candidate.

**Appendix VIII Application deadlines for admission****(art. 5.6.1)****Application deadlines for admission****(art. 5.6.1)**

<b>Deadline of Application</b>	<b>Non-EU students</b>	<b>EU students</b>
Nanoscience	February 1st 2018	May 1st 2018
Behavioural and Cognitive Neurosciences	May 1st 2018	May 1st 2018
Biomolecular Sciences (top programme)	May 1st 2018	May 1st 2018
Evolutionary Biology (topprogramme)	May 1st 2018	May 1st 2018
Remaining FMNS Masters	May 1st 2018	May 1st 2018

**Decision deadlines****(art. 5.6.3)**

<b>Deadline of Decision</b>	<b>Non-EU students</b>	<b>EU students</b>
Nanoscience	June 1st 2018	June 1st 2018
Behavioural and Cognitive Neurosciences	June 1st 2018	June 1st 2018
Biomolecular Sciences (topprogramme)	June 1st 2018	June 1st 2018
Evolutionary Biology (topprogramme)	June 1st 2018	June 1st 2018
Remaining FMNS Masters	November 1st 2018	November 1st 2018

# **Annex of the Teaching and Examination Regulations of Ecology & Evolution for the students of the track Evolutionary Biology (Ecology & Evolution)**

**2017 – 2018**

## **Preamble**

The MEME programme (Erasmus Mundus Master Programme in Evolutionary Biology) is an MSc programme that is jointly organized by four European universities:

- Rijksuniversiteit Groningen (The Netherlands)
- Université de Montpellier (France)
- Ludwig-Maximilians Universität München (Germany)
- Uppsala Universitet (Sweden)

in close co-operation with Harvard University (USA) as an external partner.

The programme is funded by the European Union through the Erasmus Mundus initiative. At the University of Groningen, the MEME programme is a specialization within the Master's degree programme Ecology and Evolution. However, the MEME programme must adhere to specific regulations imposed by the European Committee. As a result in collaboration with the Course Committee, special set of Teaching and Examination Regulations has been established for this specialization. In spirit, these regulations closely follow the Teaching and Examination Regulations of the Master's degree programme in Ecology and Evolution, but they also satisfy the conditions imposed by the regulations of the European Committee.

The University of Groningen is the coordinating partner of the MEME consortium, which consists of the aforementioned universities. The European Committee requires that each student that graduates in an Erasmus Mundus Master programme obtains a degree from at least two of the partner institutions that organize the Master's programme. This means that students of the MEME programme must comply with at least two sets of local requirements for obtaining a Master's degree. In addition, the European Committee requires that graduates from an Erasmus Mundus Master programme have spent at least one semester at two different partner institutions.

These Teaching and Examination regulations are for students participating in the Erasmus Mundus Master Programme in Evolutionary Biology (MEME) who want to graduate at the University of Groningen.

## **Section 1 General provisions**

### **Article 1.1 Applicability**

These Regulations apply to the modules and the final assessment of the Groningen part of the MEME programme, a specialization within the Master's degree programme Ecology and Evolution.

### **Article 1.2 Additional definitions**

The following additional definition applies to these Regulations:

Final assessment: the final assessment of the degree programme as a whole on which the decision is based whether a student obtains a Master's degree from the University of Groningen.

### **Article 1.3 Additional teaching outcomes of the MEME degree programme**

The graduate:

1. has a sound knowledge of the theory of evolution and is familiar with "evolutionary thinking" in biology and other disciplines;
2. is familiar with the state-of-the-art concerning knowledge, skills and scientific approaches in at least one specific field of expertise in evolutionary biology;
3. is capable of following a postgraduate training in evolutionary biology, performing a PhD project and training him/herself continuously.

## **Section 2 Structure of the degree programme**

### **Article 2.1 Study load**

1. The MEME programme has a study load of 120 ECTS credits
2. The study load of a module is expressed in whole or half ECTS credits.

### **Article 2.2 Content of the degree programme**

To graduate from the MEME programme, the student has to satisfy the following requirements:

1. In the first semester the student follows a compulsory programme of a total of 30 ECTS credits either at the University of Groningen or at Uppsala University. These programmes adhere to the same teaching outcomes (as ensured by the MEME programme).

At the University of Groningen, the first semester consists of three mandatory courses:

- Evolutionary Ecology Research (10 ECTS)
- Genomics in Ecology and Evolution (10 ECTS)
- Evolutionary Theory (10 ECTS)



At the University of Uppsala, the first semester consists of two core courses:

- Evolutionary Patterns (15 ECTS)
- Evolutionary Processes (15 ECTS)

2. An additional 15 ECTS credits should be spent on course work. The following courses can be taken at the University of Groningen, the University of Montpellier, the Ludwig-Maximilians University of Munich or at Uppsala University.

Groningen:

- Advanced Self-Organization of Social Systems (5 ECTS)
- Advanced Statistics (5 ECTS)
- Animal and Human Experimentation (5 ECTS)
- Current Themes in Ecology and Evolution (2 ECTS)
- Mathematical Models in Evolution (6 ECTS)
- Molecular Methods in Ecology and Evolution (5 ECTS)
- Polar Ecosystems (5 ECTS)
- Programming C++ for Biologists (5 ECTS)

Montpellier:

- Advanced Population Genetics (2.5 ECTS)
- Advanced Statistics (2.5 ECTS)
- Genetic Data Analysis (2.5 ECTS)
- Hot Topics in Ecology (2.5 ECTS)
- Modelling in Ecology and Evolution (2.5 ECTS)
- Writing Scientific Papers (2.5 ECTS)

Munich:

- Basic and Advanced Evolutionary Genomics (3 ECTS each)
- Evolutionary Ecology Modelling (6 ECTS)
- Experimental Behavioural Ecology (3 ECTS)
- Population Genetics (6 ECTS)
- Principles of Behavioural Ecology (3 ECTS)
- Statistics (3 ECTS)
- Essential Skills in the Analysis of High-Throughput Data (6 ECTS)
- Hot Topics in Evolution, Ecology and Systematics (3 ECTS)
- Marine Biology (Seminar + Excursion; 6 ECTS)
- Multivariate Statistics in Ecology and Quantitative Genetics (3 ECTS)
- PERL for Beginners (3 ECTS)
- Transcriptomic Analysis in Evolution (3 ECTS)
- EES excursion (3 ECTS)
- An Introduction to Remote Satellite Sensing and GIS (3 ECTS)
- Current Topics in Behavioural Ecology (3 ECTS)
- Phylogenetic Analysis of Morphological and Molecular Characteristics (3 ECTS)
- Measuring Animal Behaviour; from an idea to a publication (6 ECTS)
- Matlab Programming (3 ECTS)
- Functional Morphology (3 ECTS)

- Plant Ecophysiology (3 ECTS)
- Chemical Ecology and Neurobiology (3 ECTS)
- Human Genomics I and II (3 ECTS each)
- Current Topics in Primate Genomics (3 ECTS)
- Hot Topics in Ecology (3 ECTS)

Uppsala:

- Applied Ecosystem Ecology (15 ECTS)
- Ecotoxicology (15 ECTS)
- Fundamental and molecular systematics (10 ECTS)
- Genes, Brain and Behaviour (15 ECTS)
- Modelling in Biology (5 ECTS)
- Population and Community Ecology (15 ECTS)
- Trends in Molecular Biology and Biotechnology(15 ECTS)

3. At least two research projects must be carried out:

- One project corresponding to  $\geq 30$  ECTS credits will be conducted at the University of Groningen. This does not necessarily have to be the first project.
- One project corresponding to  $\geq 30$  ECTS may be conducted at one of the three MEME partner universities or at Harvard University. In case the research is conducted at Harvard University, it takes place under the responsibility of an examiner of one of the four MEME partner universities. If the student conducts a research project at Harvard University while been registered at the University of Groningen, the responsible person must be an examiner of the MSc programme Ecology & Evolution; this examiner will assess the project.
- Each research project must start with an introductory period of at least 3 weeks, during which the student writes a research proposal that includes a literature review, a description of the research questions to be addressed, and an outline of the approach to be taken. This research proposal will be graded separately. For a research project conducted at the University of Groningen, the grade of this proposal must be a 6.0 or higher.

4. The student must participate in at least two annual Summer Schools in Evolutionary Biology. Participation in the Summer School prior to the first semester is compulsory. The student must present his/her research at the Summer School at least once, by means of an oral presentation.

5. The student has to do a colloquium (5 ECTS), or an equivalent. Entry requirements for the colloquium are the mandatory courses (2.2.1.).

6. The remaining ECs of “electives” can be devoted to more coursework, more research, or a research assignment.

## **Section 3 Examinations and final assessment**

### **Article 3.1 Validity**

Examinations that have been passed remain valid for five years.

### **Article 3.2 Degree**

The specialization 'Erasmus Mundus Master's Programme in Evolutionary Biology' is registered on the diploma supplement.

## **Section 4 Mentoring**

### **Article 4.1 Quality assurance**

1. Each MEME student is provided with a study guide for the MEME programme.
2. Each student will choose a mentor from the MSc programme Ecology & Evolution.

## **Section 5 Admission**

### **Article 5.1 Admissions Board**

1. The MEME programme has an Admissions Board that judges the student's fulfilment of the requirements of all partners involved. This board is accountable to the Admissions Board of the Master's programme Ecology & Evolution of the University of Groningen.
2. Students can only be admitted to the MEME programme if they are provided with an admission permit by the Admissions Board of the MEME programme.
3. An admission permit can be employed for admission only in the academic year following the academic year in which the permit is granted.
4. If, to the motivated judgement of the Admissions Board, additional conditions are required, these requirements must be met before the start of the MEME programme.
5. The decisions of the MEME Admissions Board can be appealed to at the Admissions Board of the Master's programme Ecology & Evolution.

### **Article 5.2 Application and admission requirements**

1. The annual application deadline for the MEME programme is the first of February of the year the student will start the programme.
2. Students apply to the MEME Admissions Board by sending in the following documents:
  - a complete curriculum vitae;
  - a survey of the study results attained in academic courses so far;
  - (if applicable) certified copies of former academic degree certificates;
  - a letter explaining their motivation for following this particular programme and outlining their expectations and ambitions;
  - a proof of proficiency in English;
  - the names of two scientists willing to provide personal information on the applicant;
  - (if desired) other documents that the student thinks useful in furthering their application.
3. Students will only be considered for the MEME programme if a complete application package has been received before the deadline has passed.

## **Section 6 Final Provisions**

### **Article 6.1 Date of commencement**

These Regulations shall take effect on September 1<sup>st</sup>, 2017.

As decreed by the Board of the Faculty of Mathematics and Natural Sciences of the University of Groningen on xx

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