

Appendices to the Teaching and Examination Regulations 2022-2023

Appendix I. Learning outcomes of the degree programme Ecology & Evolution* (art. 1.3)

After completion of the master's degree programme, the graduate:

1. a) 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;
b) has acquired cross disciplinary knowledge of issues across scientific disciplines within the field of Ecology and Evolution and can use this knowledge to explain current societal and scientific challenges;
2. can design, and conduct scientific research, and systematically organize his/her work in scientific research;
3. can independently investigate, and critically evaluate scientific literature;
4. can identify new developments in the related disciplines, and can become familiar with these developments;
5. can 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.

Track-specific learning outcomes

After completion of the track Ecology and Conservation, the graduate:

1. can contribute to the development of new knowledge and to solving current ecological problems and future challenges
2. can apply relevant eco-evolutionary theories and methods to current pertinent issues in nature conservation
3. can analyse the functioning and stability of natural communities in the wild by integrating theory and ecological research
4. can communicate research and philosophies of ecology and conservation at a professional level to a scientific audience

Track-specific learning outcomes

After completion of the track Evolutionary Biology, the graduate:

1. can contribute to the development of new knowledge and to elucidating evolutionary processes
2. can apply central concepts of evolutionary theory in various research contexts, including empirical research and theoretical modelling
3. can analyse population or individual-based genetic and genomic data to address research questions in conservation genetics, evolutionary ecology, development and behaviour
4. can communicate eco-evolutionary principles, theory and research at a professional level to a scientific audience

* These are based on the taxonomy of Bloom

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

1. Within the degree programme Ecology & Evolution, students can follow the track Ecology & Conservation.
2. Within the degree programme Ecology & Evolution, students can follow the track Evolutionary Biology.
3. Within the degree programme Ecology & Evolution, students selected for the mobility programme MEME follow the track Evolutionary Biology. For this mobility programme, specified Teaching and Examination Regulations and admission rules apply.

Appendix III. Content of the degree programme (art. 2.3)

Track Ecology and Conservation:

Study elements	Course code	ECTS	Entry requirements
<i>Ecological Research Skills</i> *	WMEV005-10	10	
<i>Conservation Ecology Practices</i>	WMEV004-05	5	
<i>Advanced Population & Community Ecology</i>	WMEV008-05	5	
Research project** (RP)	WMEV901-xx	40 or ≥	see appendix V
Research project** (RP)	WMEV902-xx	30 or ≥	see appendix V
Colloquium	WMEV001-05	5	RP
Essay	WMEV002-05	5	-
Electives***		≤20	see Ocasys

Track Evolutionary Biology:

Study elements	Course code	ECTS	Entry requirements
<i>Behaviour, Ecology & Evolution</i> *	WMEV003-09	9	
<i>Evolutionary Theory</i>	WMEV006-08	8	
<i>Principles of Population Genetics in Natural Populations</i>	WMMB005-05	5	
<i>Genomics in Ecology and Evolution</i>	WMEV011-05	5	
Essay @	WMEV002-05	5	
Research project** (RP)	WMEV901-xx	40@ or ≥	see appendix V
Research project** (RP)	WMEV902-xx	30 or ≥	see appendix V
Colloquium	WMEV001-05	5	RP or @Behaviour, Ecology & Evolution and Evolutionary Theory
Electives***		≤15	see Ocasys

@ For students in the Mobility Programme MEME, the essay is a literature study written in the form of a research proposal during the course Research Proposal in Ecology and Evolution and both research projects are 30 ECTS

In addition to the above scheme the following rules apply:

- The student chooses a mentor from the list of mentors in Ecology & Evolution to get advice on and discuss the contents of the individual degree programme before requesting approval from the Board of Examiners.
- * Because of overlap between *Behaviour, Ecology & Evolution* and *Ecological Research Skills*, students are allowed to have only one of these courses in their master study programme of 120 ECTS.
- ** The first research project (preferably the one ≥40 EC) must be an internal project. Internal projects must be performed at the FSE (within Life Sciences-oriented research groups) or the Netherlands Institute for Sea Research under supervision of one of the examiners of the degree programme.

- *** The student may choose from the onset to use 5,10,15 or 20 ECTS to extend a research project, prepare a manuscript related to a master research project (no more than 10 ECTS, the assessment will be Pass or Fail), attend master courses (appendix IV), include a maximum of 10 ECTS of courses from other relevant Life Sciences programmes, and/or repair specific deficiencies or perform a research assignment of 5,10,15 or 20 ECTS. During the mid-term assessment one may extend the research project with only 5 or 10 ECTS.
- Research projects, colloquium and essay must deal with different subjects, and be approved of by the Board of Examiners.
- Research projects 1 and 2 must be supervised by a different examiner. In addition, it is advisable that research projects, colloquium and essay all are supervised by different examiners.
- The course unit Animal Experimentation is mandatory for students planning to participate in an "animal experiment" as defined by law (directive 2010/63/EU) during their research project work.

Appendix IV. Electives (art. 2.4)

The following lists present study elements that can be chosen as 'electives'. 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 programmes, other universities in the Netherlands or even abroad.

Electives organised by the research institutes GELIFES and ESRIG:

Course	Course code	ECTS
Advanced Population & Community Ecology	WMEV008-05	5
Advanced statistics	WMBY018-06	6
Animal Experimentation*	WMBY019-05	5
Biological Modelling and Model Analysis	WMBY005-10	10
Conservation Ecology Practices	WMEV004-05	5
Ecology of Sustainable Farming (<i>biennial, does not run in 2022/2023</i>)	WMEV009-05	5
Evolutionary Medicine: Infectious Diseases	WMBY024-05	5
Evolutionary Medicine: Diseases of Affluence	WMBY025-05	5
Evolutionary Theory	WMEV006-08	8
Flyway Ecology (<i>biennial, runs in 2022/2023</i>)	WMEV010-05	5
Genomics in Ecology and Evolution	WMEV011-05	8
Mathematical Models in Ecology and Evolution	WMEV013-06	6
Mathematics in the Life Sciences	WMBY006-05	5
Marine Ecosystem Service & Global Change	WMMB008-05	5
Marine Conservation	WMMB011-05	5
Meta-analyses in Ecology (<i>biennial runs in 2022/2023</i>)	WMBY013-05	5
Microbiological Safety	WMMP004-01	1
Molecular Methods in Ecology & Evolution	WMEV007-10	5/10
Orientation on International Careers	WMBY014-05	5
Practical Computing for Biologists	WMBY008-05	5
Practical Modelling for Biologists	WMBY009-05	5
Principles of Biological Oceanography**	WMMB003-05	5
Principles of Marine Biology**	WMMB004-05	5
Principles of Population Genetics in Natural Populations**	WMMB005-05	5
Programming in C++ for Biologists ***	WMBY010-10	5/10
Polar Ecosystems	WMMB009-05	5
Research Proposal Ecology and Evolution	WMEV012-05	5

* Course unit only possible in combination with an MSc research project involving animals.

** Students MSc Marine Biology have priority in enrolment

*** Students who have already followed similar courses during their bachelor's degree will be given a deepening version of the course more tailored to their individual background knowledge and skills.

Electives organised by the research institute GBB:

Course	Course code	ECTS
Advanced Light Microscopy	WMBY016-05	5
Advanced Genetic Engineering and Complex Gene Regulatory Circuitries*	WMBS006-05	5
Biocatalysis & Green Chemistry	WMCH027-05	5
Radioisotopes in Experimental Biology	WMBY011-05	5
Tools and Approaches of Systems Biology*	WMBS005-05	5
Transcriptomics: DNA microarrays and RNAseq*	WMBS014-05	5
iGEM (International Genetically Engineered Machine competition)**	WMBS013-xx	≤20

* Students MSc Biomolecular Sciences have priority in enrolment

** Selection for this course takes place in wintertime, an advertisement about application details is announced via Nestor and other means during the academic year.

Elective organised by Royal Netherlands Institute of Sea Research:

Course	ECTS
NIOZ Marine Masters' Summer Course	4

Electives organised by Science & Society:

Course	Course code	ECTS
Introduction Science & Business	WMSE001-10	10
Introduction Science & Policy	WMSE002-10	10

Electives organised by Energy and Environmental sciences*:

Course	Course code	ECTS
Impacts of Energy and Material Systems	WMEE002-05	5
Sustainable Use of Ecosystems	WMEE003-05	5
Sustainability & Society	WMEE005-05	5
Systems Integration and Sustainability	WMEE006-05	5

*Students MSc Energy and Environmental Sciences have priority in enrolment

Electives organised by Education and Communication*:

Course	Course code	ECTS
Research Methods in Science Education and Communication	WMEC005-05	5
Skills in Science Communication (2a only)	WMEC006-05	5

* Students MSc Science Education and Communication have priority in enrolment

Elective master courses organised by Teacher Education**

Course	Course code	ECTS
Basiscursus Master Lerarenopleiding	TEM0105	5
Masterstage 1	TEM0205	5

** Dutch-speaking students only

Electives organised by The Donald Smits Center for Information Technology:

Course (max 2 ects per individual programme^)	½ day unit^
Access basic	5
Excel basic	3
Excel advanced	5

^ 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 (at a low fee for students), 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.

Appendix V. Compulsory order of examinations (art 3.4)

Course unit	Entry requirement
Colloquium	Research project 1, or <i>Behaviour, Ecology & Evolution</i> , and <i>Evolutionary Theory</i> for students in the MEME programme
Research project 2	Research project 1
Biological Modelling & Model Analysis	Mathematics in the Life Sciences or equivalent

Appendix VI. Admission to the degree programmes 2022/2023

(art. 2.1A.1 + 2.1B.1)

1. Requirements for admission to the selective master's degree in Ecology and Evolution

Applicants have to fulfil the following admission requirements:

- an academic Bachelor's degree in Biology with a specialization in Ecology and Evolution or Marine Biology
- sufficient English proficiency; see <https://www.rug.nl/fse/programme/admissions/msc/language-requirements>

2. Applications procedure for selective master degree programmes:

All candidates have to register in Studielink, and upload the following documents before 1 May (start 1 September):

- ID card or passport
- Diploma of relevant Bachelor's degree programme (if possible)
- List of grades (transcript of records)
- Proof of English language proficiency
- CV
- Checklist:
 - Motivation
 - Reference contacts/letters
 - List of subjects/courses (to be) followed
 - Brief description of 5 key subjects/courses (*bachelor students Biology at the University of Groningen with a major in Ecology, and Evolution do not need to give this description)
- A report as a result of an academic assignment in the context of the programme. The report has to reflect the student's ability to produce a well-structured and concise report.

After candidates have completed their registration in Studielink, applications will be processed in the following way:

For holders of a Dutch BSc diploma:

1. The Student Administration FSE (SA FSE) compiles the individual selection file
2. SA FSE submits the individual selection file to the Admissions Board of the individual programme

For holders of a non-Dutch BSc diploma:

1. Admissions Office compiles the individual selection file
2. Admissions Office validates individual Bachelor's degree diploma
3. Admissions Office submits the individual selection file to the SA FSE
4. SA FSE submits the individual selection file to the Admission Board of the individual programme

3 Selection procedure

In order to select the appropriately suited and motivated students, the Admission Board requires a complete selection file from all candidates. The Admission Board of the individual programmes will review all individual applicants on the basis of their selection file. All candidates that have an appropriate background will be considered admissible

and further considered for the selection procedure described below. All candidates who meet the selection criteria regarding 'academic performance' and 'motivation' (as specified by the different programmes) will be admitted to the ranking list. The maximum number of students who will be admitted to the programme is 50.

At least two members of the Admission Board score the selection criteria. Scoring is on a 9-point scale from 1 to 5 (1 = insufficient to 5 = excellent with 0.5 steps). If the scores on academic performance and/or motivation deviate 1 point or more, the members of the Admission Board that gave the scores have to confer, after which they grade a second time. This outcome constitutes the final score. Candidates with minimally a sufficient average score of 3 for each criterion, and an average overall score of at least 3.5 are selected.

- **Academic performance (60%)**

The score on academic performance is the average result of the scores on relevance (70%) and proficiency (30%). Maximum score 1 point per key subject for criterium on relevance and maximum 5 points for criterium on proficiency.

A) Relevance and affiliation/fit (70%) of the followed Bachelor programme to the Master programme (list of subjects/courses followed and grades obtained; brief description of the content of 5 key subjects/courses demonstrating the programme specific knowledge and skill(s) acquired by the student).

Key subjects¹:

1. Biostatistics (Biostatistics 1, Biostatistics 2, Research Skills in Ecology & Evolution 1+2)
2. Evolution (Evolutionary Ecology, Genes & Evolution, Genetics Ecology & Evolution, Research Skills in Ecology & Evolution 1+2)
3. Ecology (Behavioural Neuroscience, Evolutionary Ecology, Research Skills in Ecology & Evolution 1+2, Systems Ecology & Ecological Interactions)
4. Physiology (Physiology, Ecophysiology of Plants & Animals)
5. Cell biology (Basic Cell & Molecular Biology, Genetics Ecology & Evolution, Biochemistry & Cell Biology in Ecology & Evolution)

¹ *Key subjects/courses: the nature of the knowledge and relevant skill(s) are defined by the deputy director in consultation with the programme committee, and are approved by the director of the Graduate School.*

Please consult our online catalogue www.rug.nl/ocasys/ for the intended learning outcomes of the course units that cover these subjects

B) Academic and analytical skills/Proficiency (30%) in completing an academic assignment in the context of the programme, and in individually producing a written report on the assignment topic. The report has to reflect the student's ability to produce a well-structured and concise report. It also has to show that the student is developing a critical attitude, and is capable of critical thinking. The assignment handed in is free of choice, and can be a report on a practicum, experiment, field-work, a literature review, a bachelor thesis, etc.²)

² *If the student has not made an individually written report in English during the bachelor programme he/she should contact the Student Administration FSE to receive an assignment on the basis of which a written report can be prepared.*

1. Motivation (40%)

The candidate has to provide a motivation form (max. 500 words, part of the checklist) demonstrating a suitable stance and talent to follow the programme. Maximum score 1

point (1 point for excellent, 0,5 point for satisfying) per question/issue 1-5. In case a specific motivation is covered under question/issue 6, the BoA members will together discuss the scoring of this answer, and note this in the scoring sheet. The letter should address the following specific questions/issues:

1. *Why did you choose this specific master's degree programme?*
2. *How did the bachelor's degree programme, extracurricular activities, and/or other experiences prepare you for this specific master programme?*
3. *In case it took you longer than nominal to acquire the bachelor degree, please briefly explain the cause(s) of the delay.*
4. *How does this master' degree programme prepare you for your future career and/or serves your ambitions?*
5. *The master program contains two research projects of 5-7 months. On what topic and under supervision of which researcher(s) at the University of Groningen would you like to carry out your first project? Please motivate your choices?*
6. *Free space to mention anything you feel is relevant and is not addressed by the questions above.*

Timeline for the application and selection procedure

The application procedure for the start on the 1st of September will open on the 1st of October and will close on the 1st of May. The details of the entire application procedure are published on the *Admission and Application* website for the individual Master's degree programme.

After registration in Studielink, all candidates will receive an email with an overview of the application procedure, the deadlines and instructions on how to proceed.

After candidates have successfully submitted all necessary documents, the Student Administration FSE (for holders of a Dutch BSc diploma,) or the Admissions Office (for holders of a non-Dutch BSc diploma) will send the candidate a confirmation of receipt.

The Admission Board will carry out the ranking. The top 50 students will be offered placements between the 1st and 21st of June. The Admission Board can offer a maximum of 3 early admission placements to excellent students between the 1st of October and the 1st of May.

Students who are offered a place have to accept or decline the placement within four weeks after receiving the offer. If the student does not accept the placement within four weeks, this placement expires and the placement will be offered to a candidate on the waiting list. If a student declines their placement, that placement will be offered to a candidate on the waiting list.

There will be one round of offering placements to candidates on the waiting list.

Candidates who are not selected or not in the top 50 of the ranking can lodge a written appeal against this decision within four weeks of the date of sending, with the Board of Appeal for Examinations, P.O. Box 72, 9700 AB Groningen, the Netherlands.

Appendix VII Transitional provisions (art. 7.1)

Non-applicable

Appendix VIII Additional Requirements Open degree Programmes (Art. 5.6)

In exceptional circumstances students wishing to pursue an open degree programme may file a request with the Board of Examiners. The Board of Examiners will evaluate whether the proposed curriculum meets the learning outcomes of the degree programme and can determine further conditions in their rules and regulations.

Appendix IX

Application and decision deadlines for admission

See art. 2.6.1 and 2.6.3 of basic TER