

Appendices to the Teaching and Examination Regulations 2021-2022

Appendix I. Learning outcomes of the degree programme Marine Biology* (art. 1.3)

The graduate

- 1 a) 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
b) has acquired a cross disciplinary knowledge of issues across scientific disciplines within the field of Marine Biology and can use this knowledge to explain current societal and scientific challenges for marine ecosystems, from the shore to the deep sea;
- 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 relevant 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.

* These are based on the taxonomy of Bloom

Appendix II. Tracks/Specializations of the degree programmes

(art. 2.2)

Within the degree programme Marine Biology, the student chooses one of the following tracks:

- a. Research-track (R-track), which provides training as a researcher;
- b. Science, Business and Policy -track, (SBP-track), which prepares for professions in a societal, political and/or commercial context.

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

The degree programme consists of:

Research-Track:

Study elements	ECTS	entry requirements
<i>Principles of Biological Oceanography</i>	5	
<i>Principles of Marine Biology</i>	5	
<i>Principles of Populations Genetics in Natural Populations</i>	5	
research project (RP)*	40 or ≥	see appendix V
research project (RP)*	30 or ≥	see appendix V
colloquium	5	RP
essay	5	-
compulsory master courses	5	see Ocasys
electives**	≤20	see Ocasys

SBP-Track:

Study elements	ECTS	entry requirements
<i>Principles of Biological Oceanography</i>	5	
<i>Principles of Marine Biology</i>	5	
<i>Principles of Populations Genetics in Natural Populations</i>	5	
Introduction Science and Business	10	
Introduction Science and Policy	10	
research project (RP)*	40 or ≥	see appendix V
Work placement SBP (RP)*	35 + 5 [@]	see appendix V
colloquium	5	RP

[@]Part of the skills work placement SBP (5 ECTS) is taught at the UG

In addition to the above scheme, the following rules apply:

- The student chooses a mentor from the list of Marine Biology to get advice on 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 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 subject of the SBP work placement and the compulsory master course 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 of the master programme.
- ** The student may choose 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, be supervised by a different examiner, and be approved of by the Board of Examiners.
- 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).
- 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. Courses (art. 2.4)

Master courses and electives

The following lists present study elements that can be chosen as 'master course' and 'electives'.

Master courses

The following list presents study elements that can be chosen as master course (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 programmes, other universities in the Netherlands or even abroad. In case the master course in an individual programme is chosen, 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
Advanced self-organisation of social systems	5
Advanced Population & Community Ecology*	5
Advanced Statistics	6
Animal experimentation**	5
Behaviour, ecology & evolution*	9
Biological Modelling and Model Analysis	10
Conservation Ecology Practices*	5
Ecological research skills*	10
Ecosystem Mediterranean Rocky Shores (provisional, depending on COVID-19 circumstances since the main component of this course is fieldwork on Corsica)	10
Evolutionary theory*	8
Flyway ecology (biennial, does not run in 2021/2022)	5
Genomics in ecology and evolution*	5
Mathematical models in ecology and evolution	6
Mathematics in the Life Sciences	5
Marine Conservation	5
Marine ecosystem service & global change	5
Meta-analyses in Ecology (biennial, does not run in 2021/2022)	5
Molecular methods in ecology & evolution (biennial, runs in 2021/2022)	5/10
Orientation on International Careers	5
Practical bioinformatics for biologists	5
Practical modelling for biologists	5
Programming in C++ for biologists ***	5/10
Polar ecosystems	5
Research proposal Ecology and Evolution*	5

* Students MSc Ecology and Evolution have priority in enrolment. Students are only allowed to take either Behaviour, Ecology and Evolution or Ecological Research Skills as part of their study programme of 120 ECTS.

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

*** 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.

Master course organised by Royal Netherlands Institute of Sea Research:

Course	ECTS
NIOZ Marine Masters' Summer Course	4

Electives

The following lists presents study elements that can only be chosen as 'electives'. 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.

Electives organised by the research institute GBB:

Course	ECTS
Advanced light microscopy	5
Advanced genetic engineering and complex gene regulatory circuitries*	5
Advanced imaging techniques	5
Biocatalysis & Green chemistry	5
Radioisotopes in experimental biology	5
Tools and approaches of systems biology*	5

* Students MSc Biomolecular Sciences have priority in enrolment

Electives organised by Biomedical Sciences/GELIFES:*

Course	ECTS
Microbiological safety	1
Microbiome & Health	5
Molecular biology of ageing and age-related diseases	5
Neurobiology of nutrition	5
Neurodegenerative diseases	5
Nutrition, Brain Development and Cognition	5
Scientific writing	5

*Students MSc Biomedical Sciences have priority in enrolment

Electives organised by Science & Society:

Course	ECTS
Introduction Science & Business	10
Introduction Science & Policy	10

Elective organised by Spatial Sciences:

Course	ECTS
Transitions in water management	5

Electives organised by Energy and Environmental sciences*:

Course	ECTS
Impacts of Energy and Material Systems	5
Sustainable Use of Ecosystems	5
Sustainability & Society	5
Systems Integration and Sustainability	5

*Students MSc Energy and Environmental Sciences have priority in enrolment

Electives organised by Education and Communication*:

Course	ECTS
Research Methods in Science Education and Communication	5
Skills in Science Communication (2a only)	5

*Students MSc Science Education and Communication have priority in enrolment

Elective master courses organised by Teacher Education**

Course	ECTS
Basiscursus Master Lerarenopleiding	5
Masterstage 1	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.

Electives organised by Chemistry:

Course	ECTS
Advances in chemical biology	5
Biophysical Imaging and Manipulation Techniques	5
Synthetic biology & systems chemistry	5

Elective organised by the centre for Synthetic Biology:

Course	ECTS
iGEM (International Genetically Engineered Machine competition)*	≤20

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

Appendix V. Compulsory order of examinations (art 3.4)

Course unit	Entry requirement
Colloquium	Research project
Research project 2	Research project 1
Work placement Business & Policy	Research project, Introduction Science & Policy, Introduction Science & Business
Biological Modelling and Model Analysis	Mathematics in the Life Sciences or equivalent

Appendix VI. Admission to the degree programmes 2021/2022

(art. 5.1 + art. 5.2)

1. Requirements for admission to the selective master's degree in Marine Biology

Applicants have to fulfil the following admission requirements:

- an academic Bachelor's in any field of Biological Sciences including a major in any of the following domains: biology, ecology, evolution, theoretical biology, behaviour, marine biology, molecular biology, genetics;
- sufficient English proficiency;

Score → Test	Overall	Reading	Listening	Speaking	Writing
IELTS (academic)	6.5	6.5	6.5	6.5	6.5
TOEFL IBT (internet-based)	90	21 * (19-23)	21 * (20-23)	21* (20-22)	24 (24-26)
Cambridge English	CAE or CPE Certificate with a minimum score of 180				
English language test - TC		B2	B2	B2	C1

This requirement is also fulfilled in case the applicant:

- is a native speaker and completed secondary education in any one of the following countries: Australia, Canada, Ireland, New Zealand, UK or USA;
- has completed a full time bachelor's degree programme (nominal duration of at least three years) in one of the following countries: Australia, Canada, Ireland, New Zealand, UK or USA;
- has an International Baccalaureate;
- has a European Baccalaureate diploma.

2. Applications procedure for selective master degree programmes: (art. 4.2)

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
- Motivation form answering the following questions:
- List of subjects/courses (to be) followed
- Brief description of 3 key subjects/courses
- 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. 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. If the student has not made an individually written report during the bachelor programme he/she should upload a request to the Admission

Board to receive an assignment on the basis of which a written report can be prepared.)

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 best 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 who meet the selection criteria '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 30.

At least two members of the Admissions Board score the selection criteria. Scoring is on a 9-point scale from 1 to 5 (1 = insufficient to 5 = excellent). 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.

1. Academic performance (60%)

The score on academic performance is the result of the scores on relevance (70%) and proficiency (30%).

- **Relevance and affiliation/fit** of the followed bachelor programme to the master programme (list of subjects/courses followed and grades obtained; brief description of the content of 3 key subjects/courses demonstrating the knowledge and skill(s) acquired by the student).

Key subjects¹;

1. Basic training in biology (Basic Cell & Molecular Biology, Physiology, Genetics Ecology & Evolution, Microbiology)
2. Research methodology (Biostatistics 1, Bachelor Thesis, Research Course, Research Skills in Ecology & Evolution 1+2 OR Research Skills in Life Sciences 1+2+3)
3. Major in any of the following domains: biology, ecology, evolution, theoretical biology, behaviour, marine biology, molecular biology, genetics, microbiology.

Please consult our on line catalogue www.rug.nl/ocasys/ for the intended learning outcomes of the course units that adhere to these subjects

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.*

- **Proficiency** 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 during the bachelor programme, he/she should contact the selection committee to receive an assignment on the basis of which a written report can be prepared.*

2. Motivation (40%)

The candidate has to provide a motivation form (500 words) demonstrating a suitable stance and talent to follow the programme. 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. *On what topic and with which researcher/research group would you like to do your first research project, and why?*
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 2021 will open on the 1st of October 2020 and will close on the 1st of May 2021. 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 30 students will be offered placements between the 15th of May and the 8th 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 30 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

(art. 2.6.1 and 2.6.3)

Programmes starting on 1 September 2021

Programme	Deadline of Application	Deadline of decision
Behavioural and Cognitive Neurosciences	1 May 2021	1 June 2021
Biology	1 May 2021	1 June 2021
Biomedical Engineering	1 May 2021	1 June 2021
Biomedical Sciences	1 May 2021	1 June 2021
Biomolecular Sciences	1 May 2021	1 June 2021
Ecology and Evolution	1 May 2021	1 June 2021
Energy and Environmental Sciences	1 May 2021	1 June 2021
Human-Machine Communication	1 May 2021	1 June 2021
Marine Biology	1 May 2021	1 June 2021
Mechanical Engineering	1 May 2021	1 June 2021
Medical Pharmaceutical Sciences	1 May 2021	1 June 2021
Nanoscience: for non-EU/EEA students	1 February 2021	1 June 2021
Nanoscience: for EU/EEA students	1 May 2021	1 June 2021
Science Education and Communication	1 May 2021	1 June 2021

Programmes starting on 1 September 2021 and 1 February 2022

Programme	Deadline of Application for 1 September	Deadline of decision for 1 September	Deadline of Application for 1 February	Deadline of decision for 1 February
Applied Mathematics	1 May 2021	1 June 2021	15 October 2021	15 November 2021

Applied Physics	1 May 2021	1 June 2021	15 October 2021	15 November 2021
Artificial Intelligence	1 May 2021	1 June 2021	15 October 2021	15 November 2021
Astronomy	1 May 2021	1 June 2021	15 October 2021	15 November 2021
Chemical Engineering	1 May 2021	1 June 2021	15 October 2021	15 November 2021
Chemistry	1 May 2021	1 June 2021	15 October 2021	15 November 2021
Computing Science	1 May 2021	1 June 2021	15 October 2021	15 November 2021
Farmacie	1 May 2021	1 June 2021	15 October 2021	15 November 2021
Industrial Engineering and Management	1 May 2021	1 June 2021	15 October 2021	15 November 2021
Mathematics	1 May 2021	1 June 2021	15 October 2021	15 November 2021
Physics	1 May 2021	1 June 2021	15 October 2021	15 November 2021