

STUDY GUIDE

MASTER'S DEGREE PROGRAMMES

BIOLOGY

with specialization BEHAVIOUR AND NEUROSCIENCES

ECOLOGY AND EVOLUTION

**with Top programme/ Erasmus Mundus programme EVOLUTIONARY
BIOLOGY**

MARINE BIOLOGY

MOLECULAR BIOLOGY AND BIOTECHNOLOGY

with Top programme BIOMOLECULAR SCIENCES

2011 – 2012

Colophon:

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Table of Contents

1	General Information	1
1.1	Introduction	1
1.2	The degree programmes in brief	1
1.3	How the degree programmes fit in the Faculty	2
	The School of Life Sciences	3
	Course committee	4
	Board of examiners	4
1.4	Students' association GLV IDUN	4
1.5	Safety and (house) regulations	5
	Buildings	5
	House rules, regulations	5
	Fire and emergencies	6
	Hepatitis B vaccination	6
	Computers and RSI	6
2	Facilities	9
2.1	Libraries	9
	University library	9
	Libraries of the Faculty of Mathematics and Natural Sciences	10
	Library of the University Medical Center Groningen	11
2.2	Photo copiers and the copy shop	11
2.3	Computer facilities	12
	Personal account	12
	E-mail	12
	Nestor	12
	ProgressWWW	12
	Student PCs	13
	Usage rules	13
	Helpdesk	13
	Computer center	13
3	Study matters	14
3.1	Information channels	14
	Nestor	14
	E-mail	14
	UK (University newspaper)	14
3.2	Admission requirements	14
	Conditional admission	14
	Bridging programme	15
	Deadline for applications	15
3.3	Study and financial matters	15
	Registration and tuition fees	15
	'Studiefinanciering' – IBG grants	16
	Study costs	16

3.4	Examinations and registration of results	16
	Academic year	16
	Credits and registration	17
	Registration for modules and examinations	17
	Grading system and registration of study results	17
	Fraud	18
3.5	Graduation	18
	Graduation procedure	18
3.6	Objection and appeal procedures	19
3.7	Study guidance during your degree	20
	Degree programme coordinator	20
	Study mentor	20
	Study advisor	21
	Study delay	21
	Internationalization officer	22
3.8	Non-degree programme-related support	23
	University Student Desk	23
	Student Service Centre	23
	Looking for your first job?	24
	International Service Desk (ISD)	24
3.9	International Students' association ESN-Groningen	25
4	Master programme Biology	26
4.1	Admission	26
4.2	The content of the degree programme of study	26
4.3	The structure of the degree programme of study	26
	Research profile	27
	The Policy & Management profile	28
4.4	Master modules	30
4.5	Study planning and procedures	30
5	Master programme Marine Biology	32
5.1	Admission	32
5.2	The content of the degree programme of study	32
5.3	The structure of the degree programme of study	33
	The research profile	33
	The Policy & Management profile	34
5.4	Master modules	34
5.5	Study planning and procedures	35
6	Master programme Ecology and Evolution	37
6.1	Admission	37
	Regular programme	37
	Top programme / Erasmus Mundus programme Evolutionary Biology	37
6.2	The content of the degree programme of study	39
6.3	The structure of the degree programme of study	40
	The research profile	40
	The Policy & Management profile	41
	Top programme Evolutionary Biology	41

6.4	Master modules	42
6.5	Study planning and procedures	42
7	Master programme Molecular Biology and Biotechnology	44
7.1	Admission	44
	Regular programme	44
	Top programme Biomolecular Sciences	45
7.2	The content of the degree programme of study	46
7.3	The structure of the degree programme of study	47
	The research profile	47
	The Policy & Management profile	48
	Top programme Biomolecular Sciences	49
7.4	Master modules	49
7.5	Study planning and procedures	49
8	Modules and Mentors	51
8.1	Study methods	51
8.2	Master modules	51
	General modules within the school of Life Sciences	52
	Modules organized by the research institutes CBN and GUIDE	52
	Modules organized by the research institute CEES	53
	Modules organized by the research institute GBB	53
	Module / Elective organized by Science & Society	54
	Electives organized by Education and Communication ^a	54
	Electives organized by Energy and Environmental sciences	55
	Electives organized by the Donald Smits Center for Information Technology	55
	Electives organized by Chemistry	55
8.3	List of Mentors:	55
	Behavioural and Neurosciences	55
	Marine Biology	56
	Ecology & Evolution	56
	Molecular Biology & Biotechnology	56
8.4	List of permanent staff and members of the Board of Examiners:	56
	Center for Behaviour and Neurosciences (CBN)	56
	Centre for Ecological and Evolutionary Studies (CEES)	57
	Groningen Biomolecular Sciences and Biotechnology Institute (GBB)	57
	M-profile	58
	University Medical Center Groningen	58
9	Regulations	60
9.1	Introduction	60
9.2	Teaching and Examination Regulations 2011-2012	60
	Contents	60
	Section 1 General provisions	60
	Section 2 Structure of the degree programme	61
	Section 3 Examinations and final assessment in the degree programme	62
	Section 4 Selection procedure	65
	Section 5 Tutoring	67
	Section 6 Final Provisions	67
	Appendix A. Teaching outcomes of the degree programme (art. 1.3)	68

	Appendix B. Specializations of the degree programme (art. 2.2)	69
	Appendix C. Content of the degree programme (art. 2.3)	69
	Appendix D. Optional modules (art. 2.4), plus	71
	Appendix E. Entry requirements and compulsory order of examinations (art. 3.2)	71
	Appendix F. Admission to the degree programme and different specializations (art. 4.1.1 + art. 4.2)	75
	Appendix G. Application deadlines for admission (art. 4.5.1)	78
9.3	Rules and Regulations 2011 - 2012	78
	Rules and Regulations for the School of Life Sciences	78
	Article 1 Definitions	79
	Article 2 Administrative Duties of the Board of Examiners	79
	Article 3 Taking examinations	79
	Article 4 Number of examinees at an oral examination	80
	Article 5 Language of the degree programme	80
	Article 6 Examination Frequency and Times	80
	Article 7 Registration	80
	Article 8 Withdrawal	81
	Article 9 Request for exemption	81
	Article 10 Order during examinations	81
	Article 11 Questions and assignments	81
	Article 12 Assessment	82
	Article 13 Postmortem	82
	Article 14 Standards	83
	Article 15 Determining the result of the final assessment	83
	Article 16 Judicium (grade descriptor)	83
	Article 17 Fraud	83
	Article 18 Approval procedure	84
	Article 19 Right of appeal	84
	Article 20 Amendments to the Rules and Regulations	84
	Article 21 Implementation	84
	Appendix A. List of regulations for the determination of the judicium for the different master's degree programmes	84
9.4	University-wide regulations for Academic year 2011-2012	85
	The Student Charter	85
	Applicability	86
	Publication	86
	The importance of the Student Charter	86
	Topics covered by the Student Charter	86
9.5	Addresses of Central Bodies University of Groningen	86
	Addresses for students	87
10	Locations	89

1 General Information

1.1 Introduction

This study guide contains information for all students within the degree Master's degree programmes Biology (with specialization Behaviour & Neurosciences), Ecology & Evolution (with Top programme Evolutionary Biology), Marine Biology and Molecular Biology & Biotechnology (with Top programme Biomolecular Sciences). In principle this guide contains information about the programmes, rules, facility addresses, etc. of importance to students following a Master's programme in the year 2011-2012.

Data liable to change during the year, such as lecture and examination schedules, and daily information about the degree programmes can be found in the 'organization *Master's programmes in Biology*' section in Nestor (see section 2.3.3).

The guidelines in this guide may not cover specific student needs in exceptional circumstances. In that case, students should contact the study advisor or degree programme coordinator.

1.2 The degree programmes in brief

The goal of the degree programmes is to prepare students for careers in scientific research or for careers in profit or non-profit organizations in the specific domains of the individual degree programmes. To realise these goals the degree programmes contain both theoretical and practical modules, and a substantial part of the two years is reserved for research. Various research groups of the School of Life Sciences, the School of Natural Sciences and Technology, the University Medical Center Groningen (UMCG) and associated institutes are involved in the degree programmes. Students can focus on fundamental or applied research, or a combination of the two.

The duration of the curriculum is 120 ECTS credit points (ECTS: European Credit Transfer and Accumulation System; 1 ECTS = 28 hours of study). The two-year degree programme can either be totally devoted to research (P profile) or be orientated towards management and policy along with research (M profile). The language of instruction is Dutch for a number of modules in the latter specialization.

A study programme is tailored to and depends on the interests of each student, his or her background and the skills and knowledge necessary to participate in a given research area. A study programme is designed in close cooperation with a so-called mentor. The Board of Examiners has to approve each individual study programme. The structure of the study programme is described in Chapters 4-7.

The learning outcomes of the master's degree programme are as follows:

Learning Outcome for knowledge and insight

A master graduate in:

- Biology has detailed knowledge of one or more of the scientific disciplines within the area of biology;

Chapter 1. General Information

- Ecology & Evolution has detailed knowledge of one or more of the scientific disciplines within the area of Ecology & Evolution with emphasis on evolutionary ecology & genetics, behavioural ecology & ecophysiology, conservation biology, or community ecology;
- Marine Biology has detailed knowledge of one or more of the scientific disciplines within the area of marine biology with emphasis on biological oceanography or coastal marine ecology;
- Molecular biology & Biotechnology has detailed knowledge of one or more of the scientific disciplines within the area of of biomolecular sciences, with emphasis on structural biology, biochemistry, molecular and cellular biology, microbiology, biotechnology or bioinformatics;

Learning Outcomes for academic skills and attitudes

The graduate:

- is capable of designing and conducting scientific research;
- is capable of independently investigating, and critically evaluating, scientific literature;
- is capable of identifying new developments in the relevant disciplines, and to become familiar with these developments;
- is organized and creative in the approach to scientific research and complex problems;
- can participate in, and contribute to, an interdisciplinary team;
- can effectively communicate acquired knowledge, insights and skills to others, both in writing and in oral presentation;
- is aware of the potential societal and ethical implications of scientific research, and is able to critically reflect on his/her actions in this context;
- is prepared for a professional career in science; or (M-profile) is prepared for a professional career in management & policy.

The Top programmes in Evolutionary Biology and Biomolecular Sciences do adhere to the same learning outcomes but students follow a programme that is challenging both in content and time constraints.

1.3 How the degree programmes fit in the Faculty

The Master's degree programmes are part of the Faculty of Mathematics and Natural Sciences (FWN). FWN is one of the largest natural sciences faculties in the Netherlands. The Faculty is divided into schools, research institutes and a graduate school. In general the research institutes are responsible for research, while the schools organize the teaching programmes. A graduate school combines research with the teaching of Master's and PhD students. The Faculty is managed by a Faculty Board [faculteitsbestuur], which is supported by a Faculty Committee. This committee steers educational matters relevant to all departments, and is also advised by a Faculty Council, comprising staff and students.

FWN has three teaching schools:

- School of Life Sciences
- School of Natural Sciences and Technology
- School of Computing and Cognition

The Master's degree programmes in Biology, Ecology & Evolution, Marine Biology and Molecular Biology & Biotechnology are coordinated by the School

Chapter 1. General Information

of Life sciences. Prof. dr. J.T.M. Elzenga is the Director of Studies of the School.

The School of Life Sciences

The School of Life Sciences consists of three teaching departments: biology, pharmacy, and biomedical sciences & technology. The degree programme staff of the School is drawn from a variety of disciplines from the Faculty of Mathematics and Natural Sciences – biology, chemistry, mathematics, pharmacy and physics – and also from the Faculty of Medical Sciences. The School is responsible for the coordination of several Bachelor's and Master's degree programmes:

Bachelor's degree programmes:	Master's degree programmes:
Biology	Behavioural & cognitive neurosciences
Life science & technology	Biology
Pharmaceutical sciences	Biomedical sciences
Pharmacy	Biomedical engineering
	Ecology & evolution
	Marine biology
	Medical pharmaceutical sciences
	Molecular biology and biotechnology
	Pharmacy

The board of the School of Life Sciences is responsible for the content and quality of the study programmes. It is assisted by an advisory organ, the Course Committee, and by staff responsible for its day-to-day procedures. A number of useful contact persons among the staff are listed below.

Education Office	E-mail	Telephone (050)	Room nr. CvL*
<i>Student administration office, registration of results, exams</i>			
<i>Visiting hours: 10:30-14:00</i>			
G.M.C. Hoekzema	G.M.C.Hoekzema@rug.nl	3632017	5173.0061
J.J.N. Leppink	Bos-lw@rug.nl	3632210	5173.0065
G.M.L. Bonninga-Caron	Bos-lw@rug.nl	3632210	5173.0061
N. Snijders Vroegop-Rieks	Bos-lw@rug.nl	3632210	5173.0041
<i>Study advisor</i>			
Dr. W.N. van Egmond	w.n.van.egmond@rug.nl	3639102	5173.0053
Degree programme coordinator			
Dr. M. van Rijssel	m.van.rijssel@rug.nl	3632212	5173.0037
<i>* Postal address Centre for Life Sciences, Nijenborgh 7, 9747 AG Groningen</i>			

The core business of the Education Office is to support the teaching process within the degree programmes. This involves:

- providing information for students and prospective students about the teaching programme
- helping students with study-related problems
- organizing registrations for modules and examinations
- administering examination results
- compiling lecture and examination timetables
- providing information about and organizing periods of study abroad
- formulating and implementing education policy

Course committee

The Course Committee [opleidingscommissie] handles all important matters regarding a degree programme, with the exception of individual problems. This committee directly advises the Faculty Council [faculteitsraad] with regard to the content of the Teaching and Examination Regulations [onderwijs- en examenregeling; OER]. An additional task of the Committee is the evaluation of modules and the organization of degree programmes. It also advises the director of studies, whether requested or not. The Course committee consists of six staff members and six students.. The advisory member is the degree programme coordinator Dr. M. van Rijssel.

Board of examiners

All matters concerning examinations and graduation are dealt with by the Board of Examiners [examencommissie]. Officially, all members of the academic staff sit on this committee. A delegation of staff handles the daily affairs of the Board.

Rules and Regulations [Regels en Richtlijnen] is one item within their remit. It handles all individual student requests. In addition, the Board has to authorize on each individual study programme proposal submitted by the students.

All requests and study proposals for the Board should be submitted to the secretary of the Board, Dr. M. van Rijssel. The exact composition of the Board of Examiners in 2011/2012 was not yet known at the time of press of this study guide. The Admission board is responsible for the selection of applicants. The exact composition of the Board of Examiners in 2011/2012 was not yet known at the time of press of this study guide. Dr. ing. E.G. Vrieling and Dr. M. van Rijssel are advisors of the Admission Board.

1.4 Students' association GLV IDUN

GLV IDUN is the association for all students at the School of Life Sciences of the University of Groningen. GLV IDUN was founded in 2006 by students of the School of Life Sciences.

Membership: open to all students of the School of Life Sciences,
approx €20,- per year

E-mail address: bestuur@glv-idun.nl

Telephone: 050 3632074 or 8716

One of the duties of GLV IDUN is the sale of textbooks. Members get a sixteen percent discount on their books. In addition to the sale of textbooks, GLV IDUN organizes other study-related events: an annual conference and visits to companies during the academic year.

Less serious activities provided by the GLV IDUN include drinks, parties and some more athletic activities. The website www.glv-idun.nl provides all the information about activities and events you will need.

1.5 Safety and (house) regulations

Buildings

The teaching and teaching support facilities of the School of Life Sciences are accommodated in a number of buildings;

- CvL (buildings 5171-5174); Centre for Life Sciences, Nijenborgh 7, 9747 AG Groningen
- ADL1 (buildings 3211-3217/3219): Medical Sciences, Dentistry and Pharmacy, Antonius Deusinglaan 1, P.O. Box 196, 9713 AV Groningen; tel. reception 050 3638000
- CFM (buildings 5111-5121, 5151): Chemie-Fysica-Milieukunde, Nijenborgh 4, 9747 AG Groningen; tel. reception (050 363) 4133.
- Bernoulliborg (building 5161) Nijenborgh 9, 9747 AG Groningen; tel. reception (050 363) 6868

For detailed plans of these buildings, see the end of this study guide.

House rules, regulations

Staff, students, visiting researchers and visitors are required to obey the facility house rules.

The Centre for Life Sciences is open from Monday to Friday between 8 a.m. and 8 p.m.

The ADL1 buildings are open Monday to Friday from 8 a.m. to 9 p.m. ADL2 closes at 5.30 p.m.

- Smoking ban. In accordance with Dutch law there is a general ban on smoking in public buildings.
- Mobile phones are not allowed in teaching rooms, libraries, laboratories and rooms with computer facilities.
- It is absolutely forbidden to eat or drink in the laboratories, teaching rooms, libraries and rooms with computer facilities.
- Bikes must be stored in the bicycle racks.
- The university accepts no liability for theft or lost property.

Everyone who works or studies at the School will come into contact with matters of safety, health and the environment. Many national rules and regulations about health have been formulated in the Working Conditions Act. The Environmental Protection Act contains a lot of rules concerning the environment. The consequences of these regulations for students and staff members are described in several manuals available on the internet:

www.rug.nl/fwn/faculteit/diensten/arbomilieu

You will be expected to have read these rules, particularly those concerning important matters such as the location of emergency exits, evacuation procedures and the location of the fire extinguishers. The rules on safety and care for the environment must be observed and complied with.

It is absolutely forbidden

- To eat or drink in the laboratories
- To drink from laboratory glasswork
- To store food in laboratory fridges
- To prepare food in laboratory ovens

Chapter 1. General Information

Before you start working in a laboratory

- Take note of the safety regulations
- Locate the emergency exits and where the escape routes lie
- Locate the fire extinguishers, absorption equipment for chemicals, fire blankets, fire showers, first-aid boxes and eye-wash fountains
- Always wear safety goggles and a cotton laboratory coat

Working in a laboratory without the supervision of a staff member is not permitted!

Fire and emergencies

In case of fire and accidents call **8050**. Clearly explain the situation and location. For other less urgent matters call 5520 to report malfunctions or irregularities.

Hepatitis B vaccination

Everyone working in one of the laboratories of the University Medical Center Groningen must be protected against Hepatitis B infection. Since many students from Master's degree programme Molecular Biology and Biotechnology will be working in such labs, the School provides the opportunity for students to be vaccinated free of charge. Students who were not vaccinated during their Bachelor's degree programme should contact the degree programme coordinator for assistance.

Computers and RSI

Students spend a lot of time working at computers and are at risk of developing RSI complaints. RSI is the abbreviation for Repetitive Strain Injury and is a generic term for all conditions involving the neck, shoulders, arms, wrists and hands. These conditions can become chronic and lead to incapacity for work and cause serious limitations to everyday life.

Symptoms

RSI symptoms can vary from stiffness, pain and tingling sensations, to loss of strength in the above-mentioned body parts. Initially, the symptoms occur only while working at a computer, but at later stages they also occur during rest. Ultimately, the complaints can occur continuously, causing pain during even the simplest of actions or even rendering them completely impossible.

How to prevent RSI

There is no standard method to prevent RSI. The measures you can take mainly involve relaxation of the muscles and the mind, and stimulation of blood flow.

To minimize the risks of developing RSI, five points should be considered, the so-called 5W approach.

Workload

- Undertake regular time planning and prevent creating peaks in workload
- If necessary, take a 'study skills' course at the Centre for Study Support and Academic Skills [Bureau Studie Ondersteuning] (tel. (050) 3635548)

Chapter 1. General Information

- Realize that your productivity is higher if you take regular breaks than if you work without interruption
- Try to keep things in perspective – it will help you avoid working for too long, stimulate you to take regular breaks and it helps you unwind
- If you do not feel on top of things drop by your study advisor, student counsellor or student psychologist

Work organization

- Incorporate as much variation in your work as possible: reading, writing, typing and browsing on the internet. Also alternate easy and difficult tasks
- Use the shortcut keys on your keyboard more often than your mouse
- Take regular breaks
- Alert your tutors if you are allocated too many deadlines or too many writing assignments at the same time

Working hours

- Do not work for more than five or six hours on your computer per day. Do not forget to count the hours spent gaming and browsing on the internet. Special software has been developed to remind you to take breaks
- Take regular breaks. Take a minimum break of ten minutes every two hours of work at a computer.

Workplace

- Locate the screen directly in front of you, not too close. Avoid having to work with a turned neck. Ensure the top of the screen is at eye level. Avoid annoying reflections from windows. Use large font sizes, so that you do not have to lean forward to read the letters
- You need a good chair that permits the height of the back and armrests to be adjusted. The back of the chair should mainly provide support to your lower back. Armrests relieve the shoulders. Adjust them so that the upper arms loosely touch them and form a right angle with your forearms
- If necessary, search for more information on the internet on how to equip your workplace
- Report unsatisfactory computer workplaces to the Occupational Health, Safety and Environment Coordinator [Arbo- en milieucoördinator]
- Never work for longer than two hours a day at a laptop. Connect an unattached keyboard and mouse to your laptop, and place the screen at eye level
- Ensure you have a good workplace at home

Work posture

- See to it that you are in good physical condition
- Sit upright and make sure that your upper and lower legs are at right angles when your feet are flat on the ground
- Keep your wrists extended when using the keyboard and mouse
- Perform regular physical exercise during work on the computer

Chapter 1. General Information

Lastly

- Drink a lot of water (the resulting visits to the toilet make natural breaks)
- Take early complaints seriously, check the risks applicable to your situation and find a solution. Do not ignore your body's warning signals
- If necessary, visit your family doctor or the physiotherapist at your sports centre
- A lot of information about RSI can be found on the internet
- For further questions or advice, contact the Occupational Health, Safety and Environment Coordinator [Arbo- en milieucoördinator], A.C.D. Weitenberg, tel. (050) 3634618.

2 Facilities

2.1 Libraries

The mission of the libraries of the University of Groningen is to support and promote academic teaching and research by providing high quality information and information services. The libraries aim to achieve this by adopting a demand-oriented and innovative approach. The libraries of the University of Groningen consist of the University Library (UB) and the Faculty libraries.

The UB offers a basic collection for each discipline; the Faculty libraries each have a specialized collection for research and teaching purposes.

Interdisciplinary works, bibliographical material and a number of special collections can also be found in the UB.

The combined libraries contain 2.4 million books and journals, more than 1.5 million of which are located in the central UB.

University library

The central University Library (UB) functions as a facility centre for the entire university community – for the Faculty and institutional libraries and library users. The UB offers students many services, including around 1600 study places. Furthermore, the library holds vast collections of reference and teaching material. About thirty percent of this is available in the study halls. The remaining material is kept in closed depots. This material can be accessed via the loans desk.

Practical information:

Address:	Broerstraat 4, 9712 CP Groningen P.O. Box 559, 9700 AN Groningen
Telephone:	Electronic Library (050 363) 5017 Information Retrieval (050 363) 5030 Enquiries (050 363) 5020 Subject enquiries (050 363) 5020 Guided tours (050 363) 5068 Loans (050 363) 8034
Fax:	(050 363) 4996
Website:	www.rug.nl/bibliotheek

An important facility is the Electronic Library, located on the first floor of the UB. It has over a hundred workstations for consulting catalogues, CD-ROMs and online databases. Word processing and internet access are also provided. Access to these workstations is limited to students and staff members of the University of Groningen.

In addition to the catalogues, the following databases are also important for all students

- Online Contents (a catalogue of journal articles)
- The Dutch Union Catalogue (NCC)
- Picarta (a combination of Online Contents, the Dutch Union Manual and a manual of internet sites)

Chapter 2. Facilities

Furthermore, the University Library provides access to a large number of academic journals online, see www.rug.nl/bibliotheek/catalogibestanden/elektijdschr/
Access to online journals through the WWW pages of the University of Groningen is for personal study or research only.
Downloading large numbers of articles in a systematic or regular manner is prohibited by the terms of the license agreements that the University is a party to and is therefore strictly forbidden. Abuse may harm your fellow users. Any user who does not comply with these conditions of use may be excluded from access.

Further instructions on the retrieval of information can be found on www.rug.nl/bibliotheek/instructies/algInstructies/. The 'Catalogue Training Module' teaches you how to use the catalogue; the 'Finding Scientific Information' module provides an introduction to scientific communication, document types and searching literature by subject.
The introductory module 'A window on the world' introduces the library services at the University of Groningen and provides an overview of the facilities and services. This programme consists of texts and short film clips in *streaming video*.

Access

You must have a library card in order to be able to borrow publications from the libraries of the University of Groningen. The student ID issued to students of the University doubles as a library card. The loan period for books is four weeks unless stated otherwise. Please return books or request a renewal before the expiry of the loan period. Failure to do so results in a fine and can lead to exclusion from further loans until the fines have been paid and the books returned. Moreover, all other costs incurred in the course of retrieving a book or replacing it will be charged to the borrower.
In general, loans can be renewed online by the user through the Catalogue of the University of Groningen, provided that the loan period has not expired and there are no fines outstanding. Click on *Borrower Info* in the Catalogue.

Libraries of the Faculty of Mathematics and Natural Sciences

All the printed and electronic (e-) books from the Mathematics and Natural Sciences library collection are listed in the library catalogue.

<http://www.rug.nl/bibliotheek/locaties/bibfwn/index>

The library books can be recognized by the following designation:

Library of Mathematics and Natural Sciences

All the (e-)books in the library are grouped according to subject. The classification scheme should be consulted to find the correct subject codes. The local subject codes can also be used as search terms in the library catalogue (decentralized subject code).

All shelf numbers consist of a number followed by a letter. The number indicates the overall subject, while the letter indicates the subject subdivisions.

Chapter 2. Facilities

For example: 027G (027 – Science and Technology research; G – Normative aspects; Ethics)

Request number: Library of Mathematics and Natural Sciences 027G 21

Decentral code: 027G

Request info: lendable

The key is available in PDF form:

<http://www.rug.nl/bibliotheek/shared/pdf/MNSClassification2011.pdf>

Journals

The Mathematical and Natural Sciences library journals collection can be divided into printed and electronic full-text journals. All these journals are listed in the library catalogue. The printed journals can only be consulted in the library that holds the journal in its collection. Photocopies of articles may be requested via interlibrary loan (ILL), use this form:

<http://fwn.ub.rug.nl/IBL/>

The electronic journals (e-journals) can be consulted anywhere as long as the computer used for access is recognized as a 'University of Groningen machine'. This is usually achieved on the basis of the 'IP address'. When consulting e-journals from locations outside the University (the domain of the University of Groningen), use should be made of the proxy server. The proxy server for the University libraries offers safe, authorized access to the databases and e-journals to which the University subscribes from any computer outside the University domain.

Students can log in with their student account number. Members of staff log in using their personnel registration number.

Please note: For the most up-to-date and complete information on the journals collection (electronic or printed), consult the library catalogue!

Library of the University Medical Center Groningen

Visiting address:

University Medical Center Groningen, Hanzeplein 1, 9713 GZ Groningen, UMCG entrance 59, Winkelstraat 1 or Poortweg 12 (Y4202), 4th Floor (Telephone: (050 363) 3048 or (050) 361 2596)

More information on the Central Medical Library can be found online:

www.rug.nl/bibliotheek/locaties/bibcmb/

2.2 Photo copiers and the copy shop

Bernoulliborg

Cards for the photocopiers can be bought at the copy shop (first floor, building 5161). There are photocopiers in the entrance hall.

The copy shops can deliver the following services

- copies on several media
- A5 booklets, folded and stapled
- many different types of binding

For more information, contact the copy shop

2.3 Computer facilities

Personal account

After enrolment you will receive a student number and a personal computer account. A student account basically consists of several accounts, all accessed with the same login name and password. The accounts provide:

- access to the Faculty Novell servers for the use of computer applications
- access to the internet and for storing data
- an e-mail account
- access to Nestor, the electronic learning environment of the University of Groningen
- access to ProgressWWW, where you can enrol in modules and view your study progress

You need the following to log in: the name or address of the server, a login name and a password. Your login name is made up of your student number preceded by an 's'. Your initial password will be sent in a letter. At <http://progresswww.nl/wachtwoord> you can change your password.

E-mail

Your e-mail address is the primary means of communication of the University and the Faculty for news and information about your studies. Use a browser (such as Internet Explorer) and go to <https://student.rug.nl/> to access your e-mail. Your e-mail address is both your login name (s[student number]@student.rug.nl) and your name [initials separated by full stops].[infix].[surname]@student.rug.nl.

Nestor

Nestor is the electronic learning environment of the University of Groningen. Lecturers use Nestor to provide information about modules, to set electronic examinations and to exchange documents within their department. Students use Nestor to read announcements, to cooperate with group members and to submit assignments.

Use your student number (s[student number]) to log in. In order to gain access to modules in Nestor, enrol for your modules in ProgressWWW.

The Education Office also uses the Nestor organization Master's programmes in Biology to communicate with students. Announcements about the degree programme, modules, etc. will be placed on Nestor on a regular basis. Students are urged to check this site regularly.

ProgressWWW

ProgressWWW is a web-based application used by the University of Groningen. Students need to enrol for modules and exams well in advance (usually four weeks before the module is scheduled for modules and one week in advance for exams). ProgressWWW also permits you to check your results. ProgressWWW can be found on the desktop of every university computer or on the internet: <http://progresswww.nl/rug/>. More information on how to work with ProgressWWW can be found on the degree programme account on Nestor.

Student PCs

Computer facilities are available to students in all the School of Life Sciences buildings. You can use these PCs to log onto the student network. You will then have access to applications, your own data on the home directory (X:\) and the internet. Some of the rooms are used for practicals and modules, but when these are not scheduled you can use the room for self-study. Printers are also available for students.

Usage rules

Using the University IT facilities implies that you agree to the usage rules for University IT facilities as published on www.rug.nl/rc/security/aup/. Users of the university computer systems should be aware they are not the only users of these computers. Many computers are *multi-user* systems, and the users of these computers belong to a community. Therefore, the ground rule on which this AUP (Acceptable Use Policy) is based is similar to the ground rule on which traffic is based: users of the university computer systems may not endanger these systems, nor may they hinder other users. Some of the implications of this ground rule are that users are not allowed to send unsolicited e-mail or try to obtain or use other users' passwords, either accidentally or 'for fun'.

Abusing university computer systems may result in disciplinary action!

Helpdesk

Need help to log on for the first time? Have a question? Lost your password? Something not working as it should? For students at the Centre for Life Sciences call the helpdesk at the Bernoulliborg (050 363) 8100. E-mail: servicedesk.zernike@rug.nl, or visit the website for more detailed information: <http://www.rug.nl/cit/servicedesk/overzichtservedesks>.

Computer center

The Donald Smits Center for Information Technology (CIT) is the university centre for high quality IT services. To meet this objective the CIT offers many facilities:

- centrally located computers with peripherals and various workstations
- several teaching and practical rooms with almost three hundred PCs (many belonging to the educational cluster, a cooperation between the computer centre and some faculties)
- a service desk with a module counter

More information: www.rug.nl/cit

3 Study matters

3.1 Information channels

Nestor

The Education Office maintains the Nestorsite *Master's programmes in Biology* (see section 2.3.3.) which contains a wealth of information about teaching and research. The information not only covers the information found in this study guide, but also the latest information on examination and module timetables, graduation dates and procedures, etc. Nestor should be checked at least twice a week, to avoid missing important events.

E-mail

In some cases messages of importance to students or groups of students, such as requests for enrolment for certain modules or alterations to the timetables are sent to the electronic mailbox of the students concerned. For this reason, students are expected to check their mailbox on a regular basis (at least once a week).

UK (University newspaper)

The Board of the University [College van Bestuur] frequently publishes updates on the central rules and regulations in the UK. These mainly concern tuition fees, scholarships and the graduation fund.

3.2 Admission requirements

Admission requirements for Dutch students for the programmes in Biology, Ecology & Evolution, Marine Biology and Molecular Biology & Biotechnology can be found in chapters 4-7.

You will find admission requirements for the specialization Behavioural and Neurosciences in chapter 4, Biology. For the Top programme Evolutionary Biology these are described in chapter 5, Ecology & Evolution. Admission for the Top programme Biomolecular Sciences is within chapter 7, Molecular Biology & Biotechnology.

Students with a comparable Bachelor's degree from another Dutch or foreign university may also qualify for admission. However, admission is then granted on an individual basis by the Board of Examiners. The Board of Examiners will check that you have the appropriate qualifications. For international students, sufficient proficiency in English (IELTS test score of 6.5 or a TOEFL test score of 580 (paper-based)) is also required. Consult the programme coordinator (international students) or the study advisor (Dutch students) to find out whether you qualify for admission.

Conditional admission

Students who have almost finished their Bachelor's degree from the University of Groningen and want to apply to one of the Master's programmes may request conditional admission. Candidates have to prove that they have already earned 165 ECTS in one of the required Bachelor's programmes including the Bachelor's project and thesis. The remaining 15

Chapter 3. Study matters

ECTS (post-propaedeutic modules only) must be completed within six months. Requests for conditional admission must be submitted to the degree programme coordinator. Alternatively, the first proposal form for the individual programme serves as request.

Bridging programme

A bridging programme is available for Dutch students with a suitable bachelor degree in Higher Professional Education (HBO) for the degree programme in Molecular Biology & Biotechnology. The study load of this programme consists of 30 ECTS. For more information and assistance with application please contact the study advisor.

Deadline for applications

Dutch students will be freely admitted to the Master's degree programme throughout the year once they have successfully completed a Bachelor's degree programme from the University of Groningen as listed in sections 4-7.

Other Dutch students

The annual application deadline for Dutch students with Bachelor's degrees (University or Higher Professional Education (HBO)) from institutes other than the University of Groningen is 1 June.

International students

Applications for admission to the degree programmes and given modules must be submitted to the Admissions Board before 15 April (non EU/EEA students) or 1 June (EU/EEA students). However, students intending to apply for scholarships are advised to submit their applications before 1 December. For the top programmes and the Erasmus mundus deadlines please consult: <http://www.rug.nl/fmns-programme/index>

3.3 Study and financial matters

Registration and tuition fees

Statutory fees [wettelijk collegegeld] are set by law. Detailed information about the conditions you have to satisfy for paying statutory fee can be found on:

www.rug.nl/studenten/inuitschrijving/collegegeld/tarieven/master20112012.

Statutory fees for academic year 2011–2012 have been set at € 1,713.

University fees [instellingscollegegeld] If you do not satisfy all of the conditions for statutory tuition fees, you must pay university tuition fees. University tuition fees comprise different fees: university tuition fees which are the same as the statutory tuition fees (€ 1,713), and the fees for various Master's degree programmes (€ 9,600). The fee you pay depends on your personal situation. Please consult the following webpage for detailed information: www.rug.nl/studenten/inuitschrijving/collegegeld/tarieven/ The University Student Service Desk (also see section 3.8.1) provides information about registration procedures, statutory fees and everything you need to do to ensure that your registration remains valid. They also provide students

Chapter 3. Study matters

who have paid their fees and have registered as students at the University of Groningen with student cards.

Regular registration is from 1 September until 31 August.

Visiting address: Academy Building, Broerstraat 5, Groningen,
1st floor, building 1112

Postal address: University of Groningen, P.O. Box 72,
9700 AB Groningen

Contact: www.rug.nl/usd

Telephone: (050 363) 8004

Website: www.rug.nl/hoezithet or in English:
www.rug.nl/insandouts

'Studiefinanciering' – IBG grants

For more information about [studiefinanciering], grants for Dutch students, consult DUO, the former Informatie Beheer Groep (IBG), Regiokantoor Groningen:

Visiting address: Kempkersberg 4, 9722 TB Groningen,

Telephone: (050) 599 7755

Internet: www.ib-groep.nl

Study costs

The costs of books and materials for study are relatively low. €250 each year is usually sufficient for compulsory books, lecture notes, manuals etc.

The RUG has a policy on study costs. The policy aims to control costs so that the 'study cost' component does not exceed grant/loan budgets for Dutch students. The amount that students are required to spend on study materials will therefore not exceed the government grant. The standard sum for 2011-2012 is € 680,-. Each course phase has a cost 'ceiling' (standard sum x length of course).

Sometimes it is not possible to avoid going beyond the ceiling amount. In such cases it is possible to apply to the Faculty Board for reimbursement of half the extra expenditure on the basis of receipts submitted as proof.

Sometimes another arrangement may be possible.

Further information can be obtained from the study advisor, from the Student Service Centre and on www.rug.nl/insandouts.

3.4 Examinations and registration of results

Academic year

Academic year 2011-2012 commences on 5 September 2011 and finishes on 16 July 2012. Resit examinations for students who have missed one or several parts of that year are usually planned for July.

www.rug.nl/fwn/onderwijs/roosters/2011/ns/jaarindeling gives information on time tables and national holidays (buildings will be closed).

Credits and registration

University degree programmes consist of several modules. Each module is awarded a number of ECTS credit points (ECTS: European Credit Transfer and Accumulation System). ECTS is an EU standardized system for measuring study load as a means of facilitating international mobility. One ECTS credit point represents 28 hours of full-time study (including contact hours, reading, independent study, preparation for exams, etc.). Sixty ECTS credit points represent one year.

Students will receive an overview of their marks and ECTS (a printout from the ProgressWWW registration system) every year. Should the results be registered inaccurately, students are requested to report this at once to the Student Education office at the Centre for Life Sciences (section 1.3.1).

Registration for modules and examinations

Many exams require students to enrol at least five working days before the date of the written examination. This can be done using the webpage: <http://progresswww.nl/rug>. Registration should be completed in time to ensure that examinations proceed smoothly. Examiners need to know the number of participants in advance.

Note that separate registration for each module is also compulsory (see section 2.3.4).

Since students often follow modules from other programmes, they are advised to be well informed about the registration procedures of those modules.

Grading system and registration of study results

After an exam is completed the results are processed in the automated results registration system (ProgressWWW). A list of the results achieved can be found on the internet: <http://progresswww.nl/rug>. If an official results transcript is required, a printout can be requested from the Education Office. In general, each module will be examined either by a written or an oral examination, or by a written assignment or a presentation. The Dutch grading scale ranges from 10 (highest) to 1 (lowest). As an indication, 6 is the minimum pass mark and 10 and marks lower than 3 are highly exceptional:

10	Outstanding; a remarkable performance; seldom given
9	Excellent
8	Very good
7	Good
6	Satisfactory
<6	Unsatisfactory

An 'unsatisfactory' for an exam or a report serves as a warning sign. A mark below 6 for a module means that this module has to be repeated until a 6.0 or higher is achieved.

The final cumulative mark for the whole programme is the weighted average of the individual marks for each of the elements taken in account the study load.

Fraud

Plagiarism is not accepted at this university or anywhere else in the academic community. In all cases where plagiarism is found or suspected, the examiner will inform the Board of Examiners. If the Board decides that plagiarism has occurred they will impose a sanction in accordance with the 'Rules and Regulations' (see Chapter 9). In general, this will result in the student being excluded from participation in examinations or other forms of testing for the relevant module for the current academic year.

3.5 Graduation

Students may request for graduation once they have passed all the necessary modules with a study load of at least 120 erts. The actual graduation is a mere formality. Students should, however, register well in advance. Graduates will receive a diploma [bul] and a diploma supplement containing an overview of each module and the marks achieved in English. In general there are six degree certificate ceremonies held annually. However, a minimum of three graduates is required. If only 1 or 2 students wish to participate, students will be requested to take part in a ceremony at a later time. A list of ceremony dates is published on the nestor community Masters programmes in Biology. Normally, the ceremonies take place in the Academy Building, Broerstraat 5. On request, students who drop out can receive a statement of their academic record including the modules passed.

Graduation procedure

Are you approaching your graduation? There are several administrative matters you must attend to yourself.

You must apply for your degree certificate in order to graduate. Preferably, you do this before you take the last compulsory part of your degree programme, for example before your last exam, or before your final report of your research project is approved. However, you must submit your request within four weeks of receiving your last examination result. IF YOU FINISH YOUR DEGREE IN AUGUST, YOU MUST SUBMIT YOUR REQUEST FOR A FINAL ASSESSMENT BEFORE 1 SEPTEMBER. If you do not submit a request for graduation on time, the Board of Examiners will officially declare whether and when you graduate. This graduation date will appear on your degree certificate. If this means that your graduation date falls in the next academic year, you may have to reregister and pay tuition fees.

Step by step procedure for graduation:

- 1 No more than four weeks after completing the last examination module and at least four weeks in advance of the desired date of a graduation ceremony, students must submit a request for graduation via ProgressWWW see for instructions: the nestor community Masters programmes in biology. At this site you will also find the dates of the ceremony and how to deliver your paperwork.
- 2 The candidate should provide the following documents:
 - A copy of all reports (research projects and essay).
 - Examination sheets (of results not registered in ProgressWWW)
- 3 You will receive a letter to confirm your graduation

- 4 During the ceremony you validate your diploma with your autograph. If you are unable to attend the graduation ceremony, you should contact the education office immediately.
- 5 Graduation does not mean automatic deregistration. You must deregister yourself! See www.rug.nl/hoezithet (or www.rug.nl/insandouts)
- 6 When you deregister (www.studielink.nl), your student grant or loan will not be stopped automatically. You must request the [Dienst Uitvoering Onderwijs] (DUO-IB-Groep) to do this for you. You must also hand in your student travel card. For more information: www.ib-groep.nl

3.6 Objection and appeal procedures

Unfortunately, mistakes are sometimes made when applying rules and regulations. This is why the Student Charter (see chapter 9 and www.rug.nl/studenten/ > [Legal position > Students' Charter](#)) includes provisions that ensure the legal protection of the student. If you have a complaint or if you disagree with a certain decision, there are a number of things you can do.

The preferred approach is an informal one – simply talk to the person who caused the problem and try to reach a satisfactory solution. After all, you will want your problem to be solved as soon as possible, and taking the official approach of formal procedures and objections can take a long time. If the relationship or atmosphere between you and the person in question does not allow for informal talks, you can ask the study advisor or the student counsellors for advice.

You can also start a formal procedure by lodging a complaint, objection or appeal with the Central Portal for the Legal Protection of Student Rights (CLRS). www.rug.nl/studenten/regelingen/klachtenBezwaarBeroep/indienen describes your options and the procedures. In short:

You can lodge a complaint with the Central Portal for the Legal Protection of Student Rights online via

www.rug.nl/studenten/regelingen/klachtenbezwaarberoep or submit it in writing to:

University of Groningen, Central Portal for the Legal Protection of Student Rights (CLRS)

Postal address: P.O. Box 729700, AB Groningen

Complaints must be lodged within a reasonable period of time and within a year at the latest. Complaints cannot be lodged anonymously since both parties must be heard in order to satisfactorily solve a complaint.

Complaints about harassment, sexual harassment and aggressive, violent or discriminatory behaviour (SIAGD)

Complaints of this type are best discussed with the University of Groningen Confidential Advisor. Such cases are referred to as 'reports to the Confidential Advisor' rather than official complaints to the Central Portal for the Legal Protection of Student Rights.

You can lodge an official complaint with the Central Portal for the Legal Protection of Student Rights or submit it in writing to:

Confidential, University of Groningen, Central Portal for the Legal Protection of Student Rights (CLRS)

Chapter 3. Study matters

Postal address: P.O. Box 72, 9700 AB Groningen
Every complaint will be treated as confidential.

You can lodge an objection or appeal if you disagree with a decision taken in writing by a University body (for example the Board of the University, a Faculty Board, a Board of Examiners or an examiner). This mainly concerns decisions within the framework of admission, registration, payment of tuition fees, financial support, exam results, etc. You can lodge such an objection or appeal within six weeks of the date of the decision with the Central Portal for the Legal Protection of Student Rights online or submit it in writing to:
University of Groningen, Central Portal for the Legal Protection of Student Rights (CLRS)

Postal address: P.O. Box 72, 9700 AB Groningen

Your complaint, objection or appeal will be forwarded to the appropriate body or official for processing – the CLRS will let you know immediately where it has been sent. You will receive notification within 4 to 10 weeks depending on the applicable complaints procedure, and the decision will be sent to you within 10 to 18 weeks depending on which body processes your objection or appeal.

For advice contact the study advisor (section 3.6.3) or contact the Legal Affairs department (ABJZ), tel. (050 363) 5440.

3.7 Study guidance during your degree

Degree programme coordinator

The degree programme coordinator supports the teaching process within the programme, is the secretary of the Board of Examiners and advises the Course Committee. Students can address all programme-related questions to the programme coordinator. In general, students contact her for practical advice about the programme of study, mentor or module choice, etc. Note that the forms for requesting approval for your study plans (see chapter 4-7) should be handed in at the Education office. These will be passed on to the Board of Examiners.

Office Location: 5173.0037
Telephone: 050 3632212
E-mail: m.van.rijssel@rug.nl
Postal address: School of Life Sciences, Centre for Life Sciences,
Nijenborgh 7, 9747 AG Groningen
Consulting hours: Mondays and Thursdays between 11 a.m and 12 p.m

Study mentor

Students choose a study mentor associated with their master. These mentors are assigned by the Board of Examiners to supervise students (see Chapter 8 for list of mentors). The study mentor is an experienced scientist working within the scientific domain of the master programme. The mentor guides the student throughout the whole master programme from the first module through the graduation ceremony. In this way the mentor ensures, in collaboration with the Board of Examiners, that the learning outcomes related to specific knowledge and skills are met.

Chapter 3. Study matters

Most students will choose a study mentor from the research area in which they intend to perform their first research project. In order to choose students must define their field of interest, and then investigate the research group to which the potential supervisor belongs. Read recent scientific articles and get a feel for the area of activity of the group you hope to be a part of.

The mentor is responsible for ensuring the quality of the individual programme and to coach the mentee on career aspirations and on anything that might prevent the mentee from achieving his/her learning objectives. For Top programme students with a scholarship the mentor is also responsible for the evaluation of the student's progress at the end of the first year that forms the basis for the decision on continuation of the scholarship.

The mentors available are listed in chapter 8.3.

Study advisor

Not all students will reach the end of their degree programmes without encountering problems. Successful study depends on many different factors, and it is therefore understandable that students sometimes need to consult an impartial expert. The task of the study advisor is to assist students in finding solutions to any problems encountered while studying. In practice, this concerns matters like the choice of programme, study pace or an improvement in study methods. Problems of a more general nature (e.g. the financial consequences of study delay) are often dealt with by consulting the university student counsellors. Social matters can also be discussed with the study advisor if students need a confidant for personal problems. In some of these cases the study advisor will recommend the more specialized assistance of, for example, the student psychologists (see section 3.8.2). The study advisor for the masters at the Centre for Life Sciences is Dr W.N. van Egmond. In general he has open office hours on Mondays (room 5173.0053) between 11 a.m. and 12:30 p.m. Appointments can be made by phone 050 3639102 or E-mail (w.n.van egmond@rug.nl). In case of absence: tel. (050 363) 2017 (secretariat).

Study delay

If circumstances beyond your control affect your progress during your studies, you may be eligible for financial assistance from the Graduation Fund [Afstudeerfonds]. The conditions are set out in the regulations pertaining to the fund [Afstudeerfondsregeling]. If you experience study delay due to circumstances beyond your control, and *if the delay is expected to amount to more than four weeks, you must report this immediately to the study advisor*. The following can constitute grounds for financial assistance:

- illness
- family circumstances
- a disability (physical limitations)
- pregnancy
- lack of a degree programme that meets objective standards
- loss of certification for your degree programme
- other circumstances of an exceptional nature.

Chapter 3. Study matters

The study advisor will direct you to a student counsellor if your delay amounts to or will be more than 15 ECTS credits. You will have to make an appointment with a student counsellor for a follow-up report yourself. If during the academic year the delay amounts to more than 15 ECTS after the first report to the study advisor, you must contact a student counsellor immediately, even if you have not been told to by the study advisor. You must follow the advice of and the agreements made with the study advisor and the student counsellor or you will not be eligible for financial support from the Graduation Fund. Apply in good time for financial assistance. If you are too late you will not receive any financial compensation.

Adjustments in teaching and/or exams

Sometimes personal circumstances necessitate adjustments in teaching or testing. This can occur when students have dyslexia or performance disabilities due to a physical disability, a psychiatric problem or a chronic illness. Adjustments usually involve:

- making certain facilities available (extra exam time, adapted exam material, etc.) and/or
- permitting departures from the Teaching and Examination Regulations (OER; section 9)
- extracurricular individual examinations
- different exam time or place
- relaxation of study progress rules
- replacement assignment for compulsory lectures or practical modules, etc.

In cooperation with the study advisor, you can examine what is necessary or determine which facilities you can use, which departures from the OER will be requested, whether it will be necessary to adapt your study pace or study planning, etc.

Internationalization officer

Every year many students choose to complete a major part of their studies abroad to add international character to their curriculum. The reasons for spending time studying abroad are diverse and include strengthening your position in the employment market, refining social and cultural skills, following modules not offered in the Netherlands, and so on.

In general, students who wish to study abroad often do their second research project in a different country. Usually this research project is conducted in the laboratory of a colleague of one of the academic staff members of the School. Before leaving, however, be sure that you have authorization from the Board of Examiners!

Students who want to study abroad have to organize many issues themselves, well in advance. Wouter van Egmond (w.n.van.egmond@rug.nl), our study advisor/international officer, can advise you about grants for living and/or travelling expenses.

In general, students obtain grants from the Erasmus Life Long Learning Programme or the Marco Polo Fund.

Erasmus The purpose of the Erasmus/LLLP (Life Long Learning Programme) is to improve the cooperation between European universities. Part of this

Chapter 3. Study matters

European Union exchange programme is to make it possible for students to study abroad by additional funding. Exchange programmes and agreements are often limited to specific fields or disciplines. The Department of Biology/Life Science & Technology has exchange agreements with almost 30 partner institutions throughout Europe. Funds are awarded to students who are studying 3 till 12 months at one of the European partner universities.

Marco Polo Marco Polo scholarships are awarded to students who wish to study at a university outside Europe. The duration of their study abroad should be at least 3 till 12 months. The Marco Polo fund is an initiative of the University of Groningen and the Faculty of Mathematics and Natural Sciences.

Additional information is available on the Nestor community Master's programmes in Biology, and the internet: www.rug.nl/fwn/informatievoor/studenten/studerenbuitenland. More information about grants and other sources of finance can be found at the Information Library for Study and Careers (see section 3.8.1).

3.8 Non-degree programme-related support

University Student Desk

Visiting address: Broerstraat 5, building 1112, first floor
Postal address: P.O. Box 72, 9700 AB Groningen, the Netherlands
Website: www.rug.nl/hoezithet or in English: www.rug.nl/insandouts
Telephone: (050 363) 8004 from 10 a.m. till 4 p.m.

The University Student Desk (USD) is the information centre for students at the University of Groningen. This is where you will either find answers to your questions directly or be referred to the right person, department or institution. The USD staff members are specialized in dealing with questions in the fields of application and admission, registration and deregistration, tuition fees, Legal position, study delay and the Graduation Fund.

You can also consult the knowledge base at www.rug.nl/insoutouts if you have questions about these or other issues. If you do not find an answer to your question, just click the contact button to send us an e-mail.

In addition to finding answers to your question, you can also contact the USD for all registration and reregistration matters, including applying for a new student card, and making an appointment with one of the student counsellor of the Student Service Centre (SSC).

For the contact details and the opening hours of the USD, go to www.rug.nl/usd.

Student Service Centre

The Student Service Centre (SSC) helps students to find solutions to study problems that cannot be solved within the framework of their degree programme. The Centre offers training programmes, courses and workshops to help students improve their study skills and can arrange appointments with a student psychologist or student counsellor.

Chapter 3. Study matters

Our student counsellors specialize in dealing with financial matters, registration and deregistration, fixed intake programmes, study choice, studying with a performance disability and complaints and appeal procedures. In the event of study delay of more than 15 ECTS credit points due to extraordinary circumstances, it is essential to make an appointment with a student counsellor in order to qualify for support from the Graduation Fund. Do so as soon as you know that you will be in this situation! More information can be found on: www.rug.nl/studievertraging.

Our student psychologists can help with problems relating to matters such as studying, social contacts, relationship with parents, making decisions, stress and anxiety, depression and assertiveness problems. Their help usually consists of a – short – series of individual counseling sessions. Group activities, such as assertiveness training and a short series of group therapy sessions, are also offered.

In addition, the SSC organizes a wide variety of training programmes, courses and workshops on studying successfully and within the sphere of personal development. Examples include courses in academic writing skills, how to deal with the tendency to procrastinate, how to study more effectively and how to cope with fear of failure or study stress. You can find more information about our range at www.rug.nl/ssc.

You can also consult the knowledge base at www.rug.nl/hoezithet if you have questions about these or other issues. If you do not find an answer to your question, just click the contact button to send an e-mail. For the contact details and opening hours of the SSC, go to www.rug.nl/ssc.

Looking for your first job?

If you are about to graduate or have recently graduated, the Talent & Career Center, expertise centre for graduates, can help you to choose a career. The Center organizes courses and free theme workshops (e.g. 'Increase your chances on the job market' and 'About to graduate, what next?'), a careers café and a 'Working on your career' leaflet. Come to us if you need help when orientating yourself to the job market or when preparing job applications! Note that the Talent & Career Center offers special activities for international students in English. You can orientate yourself to the job market by attending themed meetings or the weekly careers office hour. It is also possible to make an individual appointment with one of the career counsellors.

Visiting address: Munnekeholm 2
Postal address: P.O. Box 7117, 9701 JC Groningen
Telephone: (050) 311 1589
E-mail: info@talentcareercenter.nl
Details of all activities can be found on the website:
www.talentcareercenter.nl

International Service Desk (ISD)

The International Service Desk (ISD) is part of the Office for International Relations [Bureau Internationale Samenwerking, or BIS]. It provides information to foreign students, prospective students and foreign researchers,

Chapter 3. Study matters

specifically with regard to study, doing a PhD and temporary residence at the University of Groningen for research or other purposes. The ISD also assists foreign guests staying in Groningen or those responsible for their stay with any queries they may have about issues such as regulations relating to foreigners, study advice, medical care, financial matters, accommodation, and facilities and official organizations within the city. The ISD also organizes and coordinates a number of introductory and social activities jointly with organizations such as Wings, the Global Club and the Foreign Guest Club. In some cases, the ISD is solely responsible for looking after foreign guests – if, for example, they have been invited to Groningen as guests of the Board of the University or have come to the University of Groningen within the framework of a joint project with a developing country.

Postal address: P.O. Box 72, 9700 AB Groningen, the Netherlands
Visiting address: Broerstraat 5, Groningen
Telephone: (+31 50 363) 8181
Fax: (+31 50 363) 7100
E-mail: isd@rug.nl

3.9 International Students' association ESN-Groningen

ESN-Groningen coordinates and stimulates the international activities of the student community in Groningen. It was founded in 1988. ESN-Groningen is part of the Erasmus Student Network (ESN) and works closely with the University of Groningen. One of the functions of ESN-Groningen is to support international students. This includes finding a mentor – a Dutch student who can help with practical matters and aid foreign students in getting to know the city of Groningen and student facilities such as the libraries and the sports centre. Mentors also ensure that the first taste of student life in Groningen is an enjoyable one. During your stay in Groningen, ESN-Groningen will organize various activities to make you feel at home, such as an introductory weekend, a weekly social in the pub Rumba, trips to the island of Schiermonnikoog and to Amsterdam, ice-skating, sailing, theme parties and much more. ESN-Groningen wants you have a great time in Groningen. Every Sunday a small-scale activity such as a dinner or movie is organized in the GSP house, Kraneweg 33. Last but not least, ESN-Groningen publishes a magazine especially for international students, the WaM.

Visiting address: Grote Rozenstraat 23, 9712 TG Groningen
Telephone: (050 363) 7176
E-mail: info@esn-groningen.nl
Website: www.esn-groningen.nl

Walk-in hour every Tuesday and Thursday from 1 to 3 p.m. If you want to be kept informed of all the upcoming events and activities of WINGS, send an e-mail to their e-mail address!

4 Master programme Biology

4.1 Admission

Students will be freely admitted to the degree programme Biology when they have successfully completed a bachelor's degree programme in Biology at the University of Groningen or another Dutch university.

For the specialization Behavioural and Neurosciences:
Bachelor's degree in Biology of the University of Groningen, specialization [Gedrag en Neurowetenschappen]. 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].

Students with a comparable bachelor degree from another university may also qualify for admission. However, admission is then granted on an individual basis by the Board of Examiners. The Board of Examiners will check that you have the appropriate qualifications. For international students, sufficient proficiency in English (IELTS test score of 6.5 or a TOEFL test score of 580 (paper-based)) is also required.

Consult the programme coordinator (international students) or the study advisor (Dutch students) to find out whether you qualify for admission.

Before starting with the degree programme, Dutch students with a bachelor degree as mentioned above need to register officially for the degree programme (via www.studielink.nl). Information concerning (conditional) admission requirements is presented in section 3.2.

Foreign students can apply via the on line application tool (see www.rug.nl/prospectivestudents/application/applicationprocedure) or contact the admission office at admissions@rug.nl.

4.2 The content of the degree programme of study

The Master's degree programme in Biology is for students who have a broad interest in Biology and also those who have a specific interest in science at the interface of different Biology domains, such as Ecology, Marine Biology, Biomedical Sciences and Molecular Biology. Within this Master's programme there is a specialization in Behavioural and Neurosciences. Students can focus on fundamental or applied research, or a combination of both. In consultation with a mentor, students design their own study programme tailored to their interests. Each individual programme must be approved by the board of examiners. The learning outcomes of the master's degree programme are described in section 1.2.

4.3 The structure of the degree programme of study

The master's programme is research oriented. It has two profiles: a research (P-) profile and a policy & management (M-) profile. In their first year all students conduct a research project. Thereafter, they choose either to continue in the P-profile or to enrol in the M-profile.

The P-profile focuses entirely on research to prepare for a career in academia or other research institutes. The study programme therefore mainly consists of research projects, which focus on learning about conducting research by actually doing it. Students will not only independently perform experiments in the laboratory or the field, they will also go through the whole process of conducting science developing skills such as searching for and studying scientific literature, formulating hypotheses, designing and performing experiments, and presenting results.

The M-profile comprises one year of research and one year aimed at the development of policy and management-related understanding and skills to prepare for a career in a company, consultancy or policy organization. This profile is especially for students who are not only interested in science but also in the social and commercial aspects of scientific developments and products. Additional training in interactions with other disciplines, communication with non-scientists and general management skills is also part of this profile.

Research profile

The Research (P) profile mainly consists of independent research, which focuses on learning about conducting research by actually doing it. Students will not only independently conduct experiments in a laboratory, but also gain experience with related issues, such as formulating hypotheses, searching for and studying scientific literature and presenting results.

Requirements for the Research profile

<i>Modules</i>	<i>Credits</i>
colloquium	5 ECTS
electives	≤ 20 ECTS
essay	5 ECTS
optional modules	20 ECTS
research project	40 or ≥ ECTS
research project	30 or ≥ ECTS

Students design their own study programmes according to their interests. However, students must choose a study mentor – an assistant professor or professor from the list in section 8 – to advise them and discuss the contents of their individual study programmes with (section 3.7.2).

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

- The first research project (preferably the one ≥40 EC) must be performed at the School of Life Sciences or associated institutes under supervision of one of the examiners.
- The research projects, the colloquium and the essay must deal with different research subjects, must be supervised by a different examiner and must be approved by the Board of Examiners.
- Supervisors of research projects, the colloquium, and the essay must be members of the permanent academic staff of the School of Life Sciences. A PhD student or postdoc may take on the daily supervision, but ultimate responsibility remains with the permanent staff members (see list in section 8).

Chapter 4. Master programme Biology

- The colloquium has an entry requirement. Before it can be started, at least one research project must have been completed. In addition, before starting the second research project, the mark you received for your first project must have been registered in ProgressWWW.
- Optional modules are chosen from the list presented in section 8 of this guide. The Board of Examiners may permit the student to select one or more modules within the scientific domain of the degree programme from another master's degree programme (from the University of Groningen or from another university).
- Electives may be:
 - an extension of a research project with 5-20 ECTS. Propositions for extensions of 10-20 EC must be requested before the start of the research project. Arrangements for extensions of 5-10 EC may also be made during the midterm evaluation,
 - extra master modules (section 8)
 - bachelor modules to repair specific deficiencies (not more than 10 ECTS);
 - a research assignment with a study load of 5-20 ECTS. The learning outcomes of each individual assignment must be described using the special assignment form in addition to the yellow form (see section 4.7).

All elements in the individual programme must be approved of by the Board of Examiners (use the yellow form). The assessment framework for colloquium, essay and research projects is set out in the syllabus 'Guidelines for the Master's programme' that will be available at the Education Office and Nestor.

Specialization: **Behaviour and Neurosciences**

Students generally follow the P-profile scheme and choose their mentor from the list for this specialization.

The Policy & Management profile

The policy and management (M) profile is the option to choose if students are not only interested in science but also in the social and commercial aspects of biology. This profile will prepare students for a career in a company or policy organization. In addition to gaining scientific knowledge, students will learn effective presentation skills, how to deal with tough deadlines, how to apply for an internship at a company or organization outside the University and how to give and receive feedback.

For details about the M profile (such as timetables, teaching staff and assignments) please consult the BBB café (www.rug.nl/fwn/mVariant/BBBcafe) and the Nestor website. Interviews with participating students, examples of internships and information about the job market are also available there. For more information, contact the internship coordinator of the M profile.

Internship coordinator of the M profile:

Mr A.J. Abma, tel. (050 363) 2263, a.j.abma@rug.nl

Requirements for the policy and management profile¹

<i>Modules</i>	<i>Credits</i>
colloquium	5 ECTS
electives	≤ 10 ECTS
optional modules	5 ECTS
research project	40 or ≥ ECTS
policy and management internship programme	40 ECTS
module 'Beleid & Bedrijf'	20 ECTS

¹ In this profile a number of modules are taught in Dutch since most of the topics deal with societal and professional issues in the Netherlands.

Like students in the research profile, M-profile students design their own individual study programme in consultation with a mentor (section 3.7.2 and 8).

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

- The research project must be performed at the School of Life Sciences or associated institutes under supervision of one of the examiners.
- The research projects and the colloquium must deal with different research subjects, must be supervised by a different examiner and must be approved by the Board of Examiners.
- Supervisors of research projects, the colloquium and the thesis must be members of the permanent academic staff of the School of Life Sciences. A PhD student or postdoc may take on the daily supervision, but ultimate responsibility remains with the permanent staff members (see list in section 8).
- The colloquium has an entry requirement. Before it can be started, at least one research project must have been completed. In addition, before entering the policy and management internship programme a research project has to be completed.
- Optional modules are chosen from the list presented in section 8 of this guide. The Board of Examiners may permit the student to select one or more modules within the scientific domain of the degree programme from another master's degree programme (from the University of Groningen or from another university).
- Electives may be:
 - an extension of a research project with 5-10. Arrangements for extensions of 5-10 EC may also be made during the midterm evaluation,
 - extra master modules (section 8),
 - bachelor modules to repair specific deficiencies (not more than 10 ECTS);
 - a research assignment with a study load of 5-10 ECTS. The learning outcomes of each individual assignment must be described using the special assignment form in addition to the yellow form (see section 4.5).

All elements in the individual programme must be approved of by the Board of Examiners (use the yellow form). The assessment framework for colloquium, essay and research projects is set out in the syllabus 'Guidelines for the Master's programme' that will be available at the Education Office and Nestor.

4.4 Master modules

Optional modules and electives are chosen in consultancy with the mentor. Modules organized by the School of Life Sciences are listed in section 8 of this study guide. Up-to-date information about modules will be published on Nestor (*Master's programmes in Biology*).

Individual propositions from students will also be considered seriously by the Board of Examiners. Options are open from other departments, other universities in the Netherlands or even abroad.

More extended information about modules within the University of Groningen is found in Ocasys (www.rug.nl/ocasys). Ocasys is the course catalogue system of the University. This system contains information about all modules taught in the faculties. The information concerns the modules' contents, their lecturers, the period during which the modules are taught and the compulsory reading lists/literature.

4.5 Study planning and procedures

During the Master's degree programme you must determine for yourself which modules, individual assignments (colloquium and essay) and research projects you plan to do, when and in which order. There are constraints on the content of the programme as described in the previous sections and you have to follow procedures to make sure your programme is approved of, that you are officially registered for modules and programme etc. Take notice of the following:

- 1 Before starting with the degree programme you need to register officially for the degree programme via [Studielink] (section 4.1) and visit the education office to obtain
 - a. the most recent study guide for the degree programme;
 - b. access to the Nestor organization where much additional information is available.
- 2 The modular approach allows students to design an individual, coherent study programme tailored to his/her interest. To ensure the coherency of such an individual programme mentors were assigned by the Board of Examiners to supervise students. Mentors advise students on the contents of their individual programme and the choices that they have to make to prepare for a professional career after graduation (section 3.7.2).

Therefore, before you start, you will have to choose a study mentor. Most students will choose a mentor from the research area in which they intend to perform their first research project (see section 8). In order to choose, students must define their field of interest, and thereafter, investigate the research group to which a potential supervisor belongs. Read recent scientific articles and get a feel for the area of activity of the group you hope to be a part of.

You are solely responsible for making a first appointment and maintain contact with your mentor during your master's programme.

- 3 Before the start of their first study element students are to submit a proposal for the individual study programme to the Board of Examiners using a special proposal form (yellow form). This form can be obtained via

Chapter 4. Master programme Biology

the Education office. The form, completed and signed by the mentor, has to be submitted at the Education office.

- a. It is not required to submit a complete study programme at the start of your studies. However, hand in a new form for all additions/changes.
 - b. A copy of approved proposals will be sent to your home address and the mentor.
 - c. Note that the module Animal and Human experimentation is compulsory for students who will do animal experiments during one of their research projects.
- 4 Half way the research project the Education office sends a midterm evaluation form to the supervisor of the research project to verify if the project is proceeding according to plan. If you encounter difficulties of any kind don't hesitate to contact the programme coordinator or study advisor in an earlier stage of the project. If there is a need to adjust the study load of the project the midterm evaluation is the one and only moment to arrangements for extensions of 5-10 ECTS.
 - 5 For the final assessment of research projects an assessment form is available. To complete the dossier for the Board of Examiners the original assessment form together with a hard copy version of the report is handed in at the Education office. The final grade will be processed in ProgressWWW only after receiving all the necessary information.
 - 6 For the graduation procedures see section 3.5.

5 Master programme Marine Biology

5.1 Admission

Holders of a Bachelor's degree in Biology from the University of Groningen with the specialization [Mariene Biologie], or the specialization [Ecologie] plus the modules [Oceanografie] and [Mariene Biologie 1], are considered to have sufficient knowledge and skills and will be admitted to the Master's degree programme in Marine Biology on that basis.

Holders of a Bachelor's degree in Biology from the University of Groningen with the major [Mariene Biologie] or the major [Ecologie & Evolutie] plus the modules [Biologische oceanografie] and [Mariene biologie (& ecologie)] are considered to have sufficient knowledge and skills and will be admitted to the Master's degree programme in Marine Biology on that basis.

Students with a comparable bachelor degree from another university may also qualify for admission. However, admission is then granted on an individual basis by the Board of Examiners. The Board of Examiners will check that you have the appropriate qualifications. For international students, a sufficient proficiency in English (IELTS test score of 6.5 or a TOEFL test score of 580 (paper-based)) is also required.

Consult the programme co-ordinator (international students) or the study advisor (Dutch students) to find out whether you qualify for admission.

Before starting with the degree programme, Dutch students with a bachelor degree as mentioned above need to register officially for the degree programme (via www.studielink.nl). To complete this procedure you need to, pass by the office to obtain a declaration of admission to the final assessment [verklaring toelating afsluitend examen; v.t.a.e.]. Bring a copy of your bachelor's degree with the diploma supplement. If you are there don't forget to ask for:

- the most recent study guide of the degree programme,
- access to the Nestor organization where much additional information is available.

General information concerning (conditional) admission requirements is presented in section 3.2.

Foreign students can apply via the on line application tool (see www.rug.nl/prospectivestudents/application/applicationprocedure or contact the admission office at admissions@rug.nl).

5.2 The content of the degree programme of study

Marine Biology is an international and highly interdisciplinary field. Students have the opportunity to custom design their study programme, which is strongly research oriented. During the Master's degree programme students have the opportunity to conduct research under the supervision of experienced scientists. Research may be conducted in the field, onboard research vessels and/or in the laboratory. Some examples of laboratory work include studying the influence of ultraviolet radiation on plankton, analysis of dispersal and genetic population structure of seaweeds, seagrasses, fish and

invertebrates; or the molecular identification of invasive species. Field work might include studying species interactions across trophic levels in the Wadden Sea or the population dynamics of krill in the Antarctic. Whether you are interested in biological oceanography or coastal marine ecology, there are plenty of opportunities. The learning outcomes of the master's degree programme are described in section 1.2.

5.3 The structure of the degree programme of study

The master's programme is research oriented. It has two profiles: a research (P-) profile and a policy & management (M-) profile. In their first year all students conduct a research project. Thereafter, they choose either to continue in the P-profile or to enrol in the M-profile.

The P-profile focuses entirely on research to prepare for a career in academia or other research institutes. The study programme therefore mainly consists of research projects, which focus on learning about conducting research by actually doing it. Students will not only independently perform experiments in the laboratory or the field, they will also go through the whole process of conducting science developing skills such as searching for and studying scientific literature, formulating hypotheses, designing and performing experiments, and presenting results.

The M-profile comprises one year of research and one year aimed at the development of policy and management-related understanding and skills to prepare for a career in a company, consultancy or policy organization. This profile is especially for students who are not only interested in science but also in the social and commercial aspects of scientific developments and products. Additional training in interactions with other disciplines, communication with non-scientists and general management skills is also part of this profile.

The research profile

The Research (P) profile mainly consists of independent research, which focuses on learning about conducting research by actually doing it. Students will not only independently conduct experiments in a laboratory, but also gain experience with related issues, such as formulating hypotheses, searching for and studying scientific literature and presenting results.

Requirements for the Research profile

<i>Modules</i>	<i>Credits</i>
colloquium	5 ECTS
electives	≤ 20 ECTS
essay	5 ECTS
optional modules	20 ECTS
research project	40 or ≥ ECTS
research project	30 or ≥ ECTS

Students design their own study programmes according to their interests. However, students must choose a study mentor – an assistant professor or professor from the list in section 8 – to advise them and discuss the contents of their individual study programmes with (section 3.7.2).

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

Chapter 5. Master programme Marine Biology

- the first research project (preferably the one ≥ 40 EC) must be performed at the School of Life Sciences, the Royal Netherlands Institute for Sea Research (NIOZ) on Texel, or the Centre for Estuarine and Marine Ecology (NIOO-CEME) in Yerseke, under supervision of one of the examiners.
- The research projects, the colloquium and the essay must deal with different research subjects, must be supervised by a different examiner and must be approved by the Board of Examiners
- Supervisors of research projects, the colloquium, and the essay must be members of the permanent academic staff of the School of Life Sciences. A PhD student or postdoc may take on the daily supervision, but ultimate responsibility remains with the permanent staff members (see list in section 8).
- The colloquium has an entry requirement. Before it can be started, at least one research project must have been completed. In addition, before starting the second research project, the mark you received for your first project must have been registered in ProgressWWW
- Optional modules are chosen from the list presented in section 8 of this guide. The Board of Examiners may permit the student to select one or more modules within the scientific domain of the degree programme from another master's degree programme (from the University of Groningen or from another university).
- 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 the module *How does the Sea Work* organized by the NIOZ Royal Netherlands Institute for Sea Research (Texel) and the NIOO-Centre of Estuarine and Marine Ecology
- Electives may be:
 - an extension of a research project with 5-20 ECTS. Propositions for extensions of 10-20 EC must be requested before the start of the research project. Arrangements for extensions of 5-10 EC may also be made during the midterm evaluation,
 - extra master modules (section 8)
 - bachelor modules to repair specific deficiencies (not more than 10 ECTS);
 - a research assignment with a study load of 5-20 ECTS. The learning outcomes of each individual assignment must be described using the special assignment form in addition to the yellow form (see section 5.5).

All elements in the individual programme must be approved of by the Board of Examiners (use the yellow form). The assessment framework for colloquium, essay and research projects is set out in the syllabus 'Guidelines for the Master's programme' that will be available at the Education Office and Nestor.

The Policy & Management profile

For information of the **Policy & Management profile**, see section 4.3.2

5.4 Master modules

Master modules and electives are chosen in consultancy with the mentor. Modules organized by the School of Life Sciences are listed in section 8 of

this study guide. Up-to-date information about modules will be published on Nestor (*Master's programmes in Biology*).

Individual propositions from students will also be considered seriously by the Board of Examiners. Options are open from other departments, other universities in the Netherlands or even abroad.

More extended information about modules within the University of Groningen is found in Ocasys (www.rug.nl/ocasys). Ocasys is the course catalogue system of the university. This system contains information about all modules taught in the faculties. The information concerns the modules' contents, their lecturers, the period during which the modules are taught and the compulsory reading lists/literature.

5.5 Study planning and procedures

During the Master's degree programme you must determine for yourself which modules, individual assignments (colloquium and essay) and research projects you plan to do, when and in which order. There are constraints on the content of the programme as described in the previous sections and you have to follow procedures to make sure your programme is approved of, that you are officially registered for modules and programme etc. Take notice of the following:

- 1 Before starting with the degree programme you need to register officially for the degree programme (section 5.1) and visit the education office to obtain
 - a. a declaration of admission to the final assessment [verklaring toelating afsluitend examen; v.t.a.e.]. Bring a copy of your bachelor's degree with the diploma supplement, and your IBG number;
 - b. the most recent study guide for the degree programme;
 - c. access to the Nestor organization where much additional information is available.

- 2 The modular approach allows students to design an individual, coherent study programme tailored to his/her interest. To ensure the coherency of such an individual programme mentors were assigned by the Board of Examiners to supervise students. Mentors advise students on the contents of their individual programme and the choices that they have to make to prepare for a professional career after graduation (section 3.7.2).

Therefore, before you start, you will have to choose a study mentor. Most students will choose a mentor from the research area in which they intend to perform their first research project (see section 8). In order to choose, students must define their field of interest, and thereafter, investigate the research group to which a potential supervisor belongs. Read recent scientific articles and get a feel for the area of activity of the group you hope to be a part of.

You are solely responsible for making a first appointment and maintain contact with your mentor during your master's programme.

- 3 Before the start of their first study element students are to submit a proposal for the individual study programme to the Board of Examiners using a special proposal form (yellow form). This form can be obtained via the Education office. The form, completed and signed by the mentor, has to be submitted at the Education office.

Chapter 5. Master programme Marine Biology

- a. It is not required to submit a complete study programme at the start of your studies. However, hand in a new form for all additions/changes.
 - b. A copy of approved proposals will be sent to your home address and the mentor.
 - c. Note that the module Animal and Human experimentation is compulsory for students who will do animal experiments during one of their research projects.
- 4 Half way the research project the Education office sends a midterm evaluation form to the supervisor of the research project to verify if the project is proceeding according to plan. If you encounter difficulties of any kind don't hesitate to contact the programme coordinator or study advisor in an earlier stage of the project. If there is a need to adjust the study load of the project the midterm evaluation is the one and only moment to arrangements for extensions of 5-10 ECTS.
 - 5 For the final assessment of research projects an assessment form is available. To complete the dossier for the Board of Examiners the original assessment form together with a hard copy version of the report is handed in at the Education office. The final grade will be processed in ProgressWWW only after receiving all the necessary information.
 - 6 For graduation procedures see section 3.5.

6 Master programme Ecology and Evolution

6.1 Admission

Regular programme

Holders of a Bachelor's degree in Biology from the University of Groningen with the specialization [Ecologie] or [Marine 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.

Holders of a Bachelor's degree in Biology from the University of Groningen with the major [Ecologie & Evolutie] or [Marine 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.

Students with a comparable bachelor degree from another university may also qualify for admission. However, admission is then granted on an individual basis by the Board of Examiners. The Board of Examiners will check that you have the appropriate qualifications. For international students, a sufficient proficiency in English (IELTS test score of 6.5 or a TOEFL test score of 580 (paper-based)) is also required.

Consult the programme co-ordinator (international students) or the study advisor (Dutch students) to find out whether you qualify for admission.

Before starting with the degree programme, Dutch students with a bachelor degree as mentioned above need to register officially for the degree programme (via www.studielink.nl). To complete this procedure you need to, pass by the office to obtain a declaration of admission to the final assessment [verklaring toelating afsluitend examen; v.t.a.e.]. Bring a copy of your bachelor's degree with the diploma supplement. If you are there don't forget to ask for:

- the most recent study guide of the degree programme,
- access to the Nestor organization where much additional information is available.

General information concerning (conditional) admission requirements is presented in section 3.2.

Foreign students can apply via the on line application tool (see www.rug.nl/prospectivestudents/application/applicationprocedure) or contact the admission office at admissions@rug.nl.

Top programme / Erasmus Mundus programme Evolutionary Biology

Admission to the (Top) programme Evolutionary Biology is highly selective. Successful candidates must demonstrate that their motivation and cognitive skills are well above average. Excellent MSc students from Ecology & Evolution and Marine Biology may apply during their first year for the Top Programme Evolutionary Biology. An admission permit is only valid for the academic year following the academic year in which the permit is granted.

Top programme Evolutionary Biology admission requirements comprise:

- 1 a relevant bachelor's degree;

Chapter 6. Master programme Ecology and Evolution

- 2 proficiency in English¹
- 3 sufficient knowledge of the relevant sciences;
- 4 a suitable attitude, motivation and talent to follow the top programme.

Foreign students apply Foreign students can apply via the on line application tool (www.rug.nl/fwn/onderwijs/masteropleidingen/topmasters/application) or contact the admission office at admissions@rug.nl).

Dutch students deliver the following to the Education office:

- 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 personal information on the applicant;
- (if desired) other documents that the student thinks useful in furthering his/her application.

¹ 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 application 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 organized 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.

- You will need to submit proof of proficiency of English as part of the admission process¹,

Admission requirements for candidates for the Erasmus Mundus programme Evolutionary Biology can be found on:
www.rug.nl/prospectiveStudents/degreeProgrammes/mastersProgrammes/masters/croho60619

6.2 The content of the degree programme of study

Within the master Ecology and Evolution there are four main fields of interest:

Evolutionary Ecology & Genetics

A central issue in evolutionary biology concerns the importance of genetic variation: how do genetic variation and natural selection result in reproductive systems, adaptation of organisms to their environment and the emergence of new species? We will try to answer this question by means of an experimental, molecular approach (genomics) and via model-based studies.

Behavioural Ecology & Ecophysiology

Both the morphology and physiology of an organism and its behaviour are formed by selection. Behaviour – for example the timing of reproduction, partner choice and time and route of bird migration – and physiology – for example the degree of plasticity to regulate energy use and temperature – are products of evolution. Theoretical models are paired with experimental ones to study these issues, both in the field and in the laboratory.

Conservation Biology

Small populations are threatened with extinction because their habitat is fragmented. Whether these populations will indeed die out depends on their genetic structure, demography, dynamics of distribution, etc. This type of research is important, for example, for the restoration of nature reserves or the development of sustainable fishery. Examples of research projects include the effects of genetic erosion in fruit flies and the seed dispersal of plants in the Wadden area.

Community Ecology

Species and individuals living in the same area interact with each other and with their environment. Processes of physiological adaptations and restrictions, competition, grazing, predation and succession can change a group of individuals into a community. Combining field observations, laboratory experiments and theoretical models can give us a better understanding of the mechanisms that are active in nature. The learning outcomes of the master's degree programme are described in section 1.2.

The Top programme Evolutionary Biology is embedded in the Master's degree programme Ecology & Evolution and explores the interface between ecology and evolution. Students can benefit from a wide spectrum of national and international expertise across the fields of ecology and evolution. The Top programme in Evolutionary Biology adheres to the same learning

outcomes as the regular programme (section 1.2) but students follow a programme that is challenging both in content and time constraints.

Within the degree programme Ecology & Evolution qualified students can follow the Erasmus Mundus programme 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: www.evobio.eu

6.3 The structure of the degree programme of study

The master's programme is research oriented. It has two profiles: a research (P-) profile and a policy & management (M-) profile. In their first year all students conduct a research project. Thereafter, they choose either to continue in the P-profile or to enrol in the M-profile.

The P-profile focuses entirely on research to prepare for a career in academia or other research institutes. The study programme therefore mainly consists of research projects, which focus on learning about conducting research by actually doing it. Students will not only independently perform experiments in the laboratory or the field, they will also go through the whole process of conducting science developing skills such as searching for and studying scientific literature, formulating hypotheses, designing and performing experiments, and presenting results.

The M-profile comprises one year of research and one year aimed at the development of policy and management-related understanding and skills to prepare for a career in a company, consultancy or policy organization. This profile is especially for students who are not only interested in science but also in the social and commercial aspects of scientific developments and products. Additional training in interactions with other disciplines, communication with non-scientists and general management skills is also part of this profile.

The research profile

The Research (P) profile mainly consists of independent research, which focuses on learning about conducting research by actually doing it. Students will not only independently conduct experiments in a laboratory, but also gain experience with related issues, such as formulating hypotheses, searching for and studying scientific literature and presenting results.

Requirements for the Research profile

<i>Modules</i>	<i>Credits</i>
colloquium	5 ECTS
electives	≤ 20 ECTS
essay	5 ECTS
optional modules	20 ECTS
research project	40 or ≥ ECTS
research project	30 or ≥ ECTS

Chapter 6. Master programme Ecology and Evolution

Students design their own study programmes according to their interests. However, students must choose a study mentor – an assistant professor or professor from the list in section 8 – to advise them and discuss the contents of their individual study programmes with (section 3.7.2).

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

- the first research project (preferably the one ≥ 40 EC) must be performed at the School of Life Sciences or associated institutes, under supervision of one of the examiners.
- The research projects, the colloquium and the essay must deal with different research subjects, must be supervised by a different examiner and must be approved by the Board of Examiners
- Supervisors of research projects, the colloquium, and the essay must be members of the permanent academic staff of the School of Life Sciences. A PhD student or postdoc may take on the daily supervision, but ultimate responsibility remains with the permanent staff members (see list in section 8).
- The colloquium has an entry requirement. Before it can be started, at least one research project must have been completed. In addition, before starting the second research project, the mark you received for your first project must have been registered in ProgressWWW
- Optional modules are chosen from the list presented in section 8 of this guide. The Board of Examiners may permit the student to select one or more modules within the scientific domain of the degree programme from another master's degree programme (from the University of Groningen or from another university).
- Electives may be:
 - an extension of a research project with 5-20 ECTS. Propositions for extensions of 10-20 EC must be requested before the start of the research project. Arrangements for extensions of 5-10 EC may also be made during the midterm evaluation,
 - extra master modules (section 8)
 - bachelor modules to repair specific deficiencies (not more than 10 ECTS);
 - a research assignment with a study load of 5-20 ECTS. The learning outcomes of each individual assignment must be described using the special assignment form in addition to the yellow form (see section 6.5).

All elements in the individual programme must be approved of by the Board of Examiners (use the yellow form). The assessment framework for colloquium, essay and research projects is set out in the syllabus 'Guidelines for the Master's programme' that is available from the Education Office and Nestor.

The Policy & Management profile

For information of the Policy & Management profile, see section 4.3.2

Top programme Evolutionary Biology

Students within the Top programme Evolutionary Biology generally follow the P-profile scheme but have to pass the following Top programme modules which are challenging both in content and time constraints

Chapter 6. Master programme Ecology and Evolution

- Adaptation, Biocomplexity and Conservation; 10 ECTS
- Theoretical Ecology and Evolution; 10 ECTS
- Phylogenetics and Genomics in Ecology; 10 ECTS

In addition to these two seminar series of 2 ECTS each are required. These are chosen from a list of the "current/classic themes" seminar series.

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

Because of the 34 ECTS obligatory modules the study load of the electives is ≤6 ECTS which can be used for modules, research or individual assignments

The assessment framework for colloquium, essay and research projects is more elaborate than the one used in the regular masters and is set out in the syllabus 'Guidelines for the Top programme Evolutionary Biology' that will be given to you at the start of the programme.

6.4 Master modules

Master modules and electives are chosen in consultancy with the mentor. Modules organized by the School of Life Sciences are listed in section 8 of this study guide. Up-to-date information about modules will be published on Nestor (*Master's programmes in Biology*).

Individual propositions from students will also be considered seriously by the Board of Examiners. Options are open from other departments, other universities in the Netherlands or even abroad.

More extended information about modules within the University of Groningen is found in Ocasys (www.rug.nl/ocasys). Ocasys is the course catalogue system of the university. This system contains information about all modules taught in the faculties. The information concerns the modules' contents, their lecturers, the period during which the modules are taught and the compulsory reading lists/literature.

6.5 Study planning and procedures

During the Master's degree programme you must determine for yourself which modules, individual assignments (colloquium and essay) and research projects you plan to do, when and in which order. There are constraints on the content of the programme as described in the previous sections and you have to follow procedures to make sure your programme is approved of, that you are officially registered for modules and programme etc. Take notice of the following:

- 1 Before starting with the degree programme you need to register officially for the degree programme (section 6.1) and visit the education office to obtain
 - a declaration of admission to the final assessment [verklaring toelating afsluitend examen; v.t.a.e.]. Bring a copy of your bachelor's degree with the diploma supplement, and your IBG number;
 - the most recent study guide for the degree programme;
 - access to the Nestor organization where much additional information is available.
- 2 The modular approach allows students to design an individual, coherent study programme tailored to his/her interest. To ensure the coherency of

Chapter 6. Master programme Ecology and Evolution

such an individual programme mentors were assigned by the Board of Examiners to supervise students. Mentors advise students on the contents of their individual programme and the choices that they have to make to prepare for a professional career after graduation.

Top programme students choose their mentor at the end of the first semester during which they have plenty of time to get to know the mentors. (During the first semester the degree programme coordinator will be the one to turn to when you have questions about the programme). Students in the regular programme already have to choose a mentor before they start. Most students will choose a mentor from the research area in which they intend to perform their first research project (see section 8). In order to choose, students must define their field of interest, and thereafter, investigate the research group to which a potential supervisor belongs. Read recent scientific articles and get a feel for the area of activity of the group you hope to be a part of.

You are solely responsible for making a first appointment and maintain contact with your mentor during your master's programme.

- 3 Before the start of their first study element students are to submit a proposal for the individual study programme to the Board of Examiners using a special proposal form (yellow form). This form can be obtained via the Education office. The form, completed and signed by the mentor, has to be submitted at the Education office.
 - It is not required to submit a complete study programme at the start of your studies. However, hand in a new form for all additions/changes.
 - A copy of approved proposals will be sent to your home address and the mentor.
 - Note that the module Animal and Human experimentation is compulsory for students who will do animal experiments during one of their research projects.
- 4 Half way the research project the Education office sends a midterm evaluation form to the supervisor of the research project to verify if the project is proceeding according to plan. If you encounter difficulties of any kind don't hesitate to contact the programme coordinator or study advisor in an earlier stage of the project. If there is a need to adjust the study load of the project the midterm evaluation is the one and only moment to arrangements for extensions of 5-10 ECTS.
- 5 For the final assessment of research projects an assessment form is available. To complete the dossier for the Board of Examiners the original assessment form together with a hard copy version of the report is handed in at the Education office. The final grade will be processed in ProgressWWW only after receiving all the necessary information.
- 6 For graduation procedures see section 3.5.

7 Master programme Molecular Biology and Biotechnology

7.1 Admission

Regular programme

- Holders of a Bachelor's degree in Biology from the University of Groningen with the specialization [Moleculaire Biologie] or [Biotechnologie], specialization [Medische biologie] plus the modules [Algemene chemie] and [Bioinformatica] are considered to have sufficient knowledge and skills and will be admitted to the Master's degree programme in Molecular Biology & Biotechnology on that basis. Holders of a Bachelor's degree in Biology or a Bachelor's degree in Life Science & Technology from the University of Groningen with the major [Moleculaire Levenswetenschappen], major [Biomedische wetenschappen] or the combination of the major [Gedrag en Neurowetenschappen] and the minor [Moleculaire Levenswetenschappen], are considered to 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 specialization Biochemistry or Biophysical Chemistry are admitted to this master's programme.
- Holders of the Bachelor's degree in Life Science and Technology, specialization Genomics & Proteomics or Molecular Medical Cell biology are admitted to this master's programme.

Students with a comparable bachelor degree from another university may also qualify for admission. However, admission is then granted on an individual basis by the Board of Examiners. The Board of Examiners will check that you have the appropriate qualifications. For international students, a sufficient proficiency in English (IELTS test score of 6.5 or a TOEFL test score of 580 (paper-based)) is also required.

Consult the programme co-ordinator (international students) or the study advisor (Dutch students) to find out whether you qualify for admission.

Before starting with the degree programme, Dutch students with a bachelor degree as mentioned above need to register officially for the degree programme (via www.studielink.nl). To complete this procedure you need to, pass by the office to obtain a declaration of admission to the final assessment [verklaring toelating afsluitend examen; v.t.a.e.]. Bring a copy of your bachelor's degree with the diploma supplement. If you are there don't forget to ask for:

- the most recent study guide of the degree programme,
- access to the Nestor organization where much additional information is available.

General information concerning (conditional) admission requirements is presented in section 3.2.

Foreign students can apply via the on line application tool (see www.rug.nl/prospectivestudents/application/applicationprocedure) or contact the admission office at admissions@rug.nl.

Top programme Biomolecular Sciences

Admission to the Top programme Biomolecular Sciences is highly selective. Successful candidates must demonstrate that their motivation and cognitive skills are well above average. Excellent MSc students from Molecular Biology & Biotechnology may apply during their first year for the Top Programme Biomolecular Sciences. An admission permit is only valid for the academic year following the academic year in which the permit is granted.

Top programme Biomolecular Sciences admission requirements comprise:

- 1 a relevant bachelor's degree;
- 2 proficiency in English²
- 3 sufficient knowledge of the relevant sciences;
- 4 a suitable attitude, motivation and talent to follow the top programme.

² 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 application 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 organized 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 above.

Foreign students can apply via the on line application tool (www.rug.nl/fwn/onderwijs/masteropleidingen/topmasters/application or contact the admission office at admissions@rug.nl).

Dutch students deliver the following to the Education office:

- 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 personal information on the applicant;
- (if desired) other documents that the student thinks useful in furthering his/her application.
- You will need to submit proof of proficiency of English as part of the admission process (see footnote ² above),

7.2 The content of the degree programme of study

Research within the master Molecular Biology and Biotechnology is in the field of biomolecular sciences, with a strong focus on proteins. The aim is to fully understand regulation, the structure and dynamics of proteins in relation to their function and activity in living cells and to obtain an understanding of the fundamental properties of proteins and microorganisms that are relevant for application in health and bio(nano)-technology. Through Synthetic Biology, this fundamental knowledge is combined with that of other disciplines to design and develop novel functional biological and semi-artificial systems. The research is primarily fundamental and curiosity-driven; it is often multidisciplinary and collaborative with specialization in the following key areas:

- Systems biology of microorganisms
- Molecular cell biology
- Membrane proteins
- Structure-function relationship of proteins
- Microbial biotechnology and biocatalysis
- Chemical and synthetic biology

Within these six key research themes, various research questions address processes that relate to human health and disease development. These include:

- 1 research on peroxisome homeostasis with the aim of understanding the biogenesis, ageing and turnover of peroxisomes in yeasts, being a suitable model for peroxisome-related diseases,
- 2 the production and modification of (synthetic) antibiotics with respect to demand for new antibiotics, and
- 3 the study on proteins involved in drug resistance, virulence and microbial infections.

The learning outcomes of the master's degree programme are described in section 1.2.

The Top programme Biomolecular Sciences is embedded in the Master's degree programme Molecular Biology & Biotechnology and explores the same key research themes. During the Top programme in Biomolecular Sciences, students acquire top quality research competences in such a way that they become highly attractive for a research career in the area of Biomolecular Sciences and often will continue this by subsequently starting PhD research. The Top programmes Biomolecular Sciences do adhere to the same learning outcomes as the regular programme (section 1.2) but students follow a programme that is challenging both in content and time constraints.

7.3 The structure of the degree programme of study

The master's programme is research oriented. It has two profiles: a research (P-) profile and a policy & management (M-) profile. In their first year all students conduct a research project. Thereafter, they choose either to continue in the P-profile or to enrol in the M-profile.

The P-profile focuses entirely on research to prepare for a career in academia or other research institutes. The study programme therefore mainly consists of research projects, which focus on learning about conducting research by actually doing it. Students will not only independently perform experiments in the laboratory or the field, they will also go through the whole process of conducting science developing skills such as searching for and studying scientific literature, formulating hypotheses, designing and performing experiments, and presenting results.

The M-profile comprises one year of research and one year aimed at the development of policy and management-related understanding and skills to prepare for a career in a company, consultancy or policy organization. This profile is especially for students who are not only interested in science but also in the social and commercial aspects of scientific developments and products. Additional training in interactions with other disciplines, communication with non-scientists and general management skills is also part of this profile.

The research profile

The Research (P) profile mainly consists of independent research, which focuses on learning about conducting research by actually doing it. Students will not only independently conduct experiments in a laboratory, but also gain experience with related issues, such as formulating hypotheses, searching for and studying scientific literature and presenting results.

Requirements for the Research profile

<i>Modules</i>	<i>Credits</i>
colloquium	5 ECTS
electives	≤ 20 ECTS
essay	5 ECTS
optional modules	20 ECTS
research project	40 or ≥ ECTS
research project	30 or ≥ ECTS

Chapter 7. Master programme Molecular Biology and Biotechnology

Students design their own study programmes according to their interests. However, students must choose a study mentor – an assistant professor or professor from the list in section 8 – to advise them and discuss the contents of their individual study programmes with (section 3.7.2).

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

- the first research project (preferably the one ≥ 40 EC) must be performed at the School of Life Sciences, School of Natural Sciences & Technology or the University Medical Center Groningen under supervision of one of the examiners.
- The research projects, the colloquium and the essay must deal with different research subjects, must be supervised by a different examiner and must be approved by the Board of Examiners
- Supervisors of research projects, the colloquium, and the essay must be members of the permanent academic staff of the School of Life Sciences. A PhD student or postdoc may take on the daily supervision, but ultimate responsibility remains with the permanent staff members (see list in section 8).
- The colloquium has an entry requirement. Before it can be started, at least one research project must have been completed. In addition, before starting the second research project, the mark you received for your first project must have been registered in ProgressWWW
- Optional modules are chosen from the list presented in section 8 of this guide. The Board of Examiners may permit the student to select one or more modules within the scientific domain of the degree programme from another master's degree programme (from the University of Groningen or from another university).
- Electives may be:
 - an extension of a research project with 5-20 ECTS. Propositions for extensions of 10-20 EC must be requested before the start of the research project. Arrangements for extensions of 5-10 EC may also be made during the midterm evaluation,
 - extra master modules (section 8)
 - bachelor modules to repair specific deficiencies (not more than 10 ECTS);
 - a research assignment with a study load of 5-20 ECTS. The learning outcomes of each individual assignment must be described using the special assignment form in addition to the yellow form (see section 5.5).
 - students selected for the International Genetically Engineered Machine competition iGEM may file their contribution as elective. See for details www.rug.nl/ocasys.

All elements in the individual programme must be approved of by the Board of Examiners (use the yellow form). The assessment framework for colloquium, essay and research projects is set out in the syllabus 'Guidelines for the Master' programme' that is available from the Education Office.

The Policy & Management profile

For information of the Policy & Management profile, see section 4.3.2

Top programme Biomolecular Sciences

Students within the Top programme Biomolecular sciences generally follow the P-profile scheme but have to pass the following Top programme modules which are challenging both in content and time constraints

- GBB Introduction + Introduction to membrane proteins and Bioinformatics; 2 ECTS
- Advances in signal transduction; 5 ECTS
- Advanced Genomics and proteomics; 5 ECTS
- Organelle and membrane biogenesis; 5 ECTS
- Molecular dynamics and modelling of membranes and proteins ; 5 ECTS
- Protein and enzyme engineering by mutagenesis and directed evolution; 5 ECTS
- Advanced protein crystallography; 5 ECTS

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

Because of the 32 ECTS obligatory modules the study load of the electives is ≤ 8 ECTS which can be used for modules, research or individual assignments.

The assessment framework for colloquium, essay and research projects is more elaborate from the one used in the regular masters and is set out in the syllabus 'Guidelines for the Top programme Biomolecular Sciences that will be given to you at the start of the programme.

7.4 Master modules

Master modules and electives are chosen in consultancy with the mentor. Modules organized by the School of Life Sciences are listed in section 8 of this study guide. Up-to-date information about modules will be published on Nestor (*FWN Students Master Biology and Life Science*).

Individual propositions from students will also be considered seriously by the Board of Examiners. Options are open from other departments, other universities in the Netherlands or even abroad.

More extended information about modules within the University of Groningen is found in Ocasys (www.rug.nl/ocasys). Ocasys is the course catalogue system of the university. This system contains information about all modules taught in the faculties. The information concerns the modules' contents, their lecturers, the period during which the modules are taught and the compulsory reading lists/literature.

7.5 Study planning and procedures

During the Master's degree programme you must determine for yourself which modules, individual assignments (colloquium and essay) and research projects you plan to do, when and in which order. There are constraints on the content of the programme as described in the previous sections and you have to follow procedures to make sure your programme is approved of, that you are officially registered for modules and programme etc. Take notice of the following:

- 1 Before starting with the degree programme you need to register officially for the degree programme (section 7.1) and visit the education office to obtain

Chapter 7. Master programme Molecular Biology and Biotechnology

- a declaration of admission to the final assessment [verklaring toelating afsluitend examen; v.t.a.e.]. Bring a copy of your bachelor's degree with the diploma supplement, and your IBG number;
 - the most recent study guide for the degree programme;
 - access to the Nestor organization where much additional information is available.
- 2 The modular approach allows students to design an individual, coherent study programme tailored to his/her interest. To ensure the coherency of such an individual programme mentors were assigned by the Board of Examiners to supervise students. Mentors advise students on the contents of their individual programme and the choices that they have to make to prepare for a professional career after graduation (section 3.7.2).
- Top programme students choose their mentor at the end of the first semester during which they have plenty of time to get to know the mentors. (During the first semester the degree programme coordinator will be the one to turn to when you have questions about the programme). Students in the regular programme already have to choose a mentor before they start. Most students will choose a mentor from the research area in which they intend to perform their first research project (see section 8). In order to choose, students must define their field of interest, and thereafter, investigate the research group to which a potential supervisor belongs. Read recent scientific articles and get a feel for the area of activity of the group you hope to be a part of. You are solely responsible for making a first appointment and maintain contact with your mentor during your master's programme.
- 3 Before the start of their first study element students are to submit a proposal for the individual study programme to the Board of Examiners using a special proposal form (yellow form). This form can be obtained via the Education office. The form, completed and signed by the mentor, has to be submitted at the Education office.
- It is not required to submit a complete study programme at the start of your studies. However, hand in a new form for all additions/changes.
 - A copy of approved proposals will be sent to your home address and the mentor.
 - Note that the module Animal and Human experimentation is compulsory for students who will do animal experiments during one of their research projects.
- 4 Half way the research project the Education office sends a midterm evaluation form to the supervisor of the research project to verify if the project is proceeding according to plan. If you encounter difficulties of any kind don't hesitate to contact the programme coordinator or study advisor in an earlier stage of the project. If there is a need to adjust the study load of the project the midterm evaluation is the one and only moment to arrangements for extensions of 5-10 ECTS.
- 5 For the final assessment of research projects an assessment form is available. To complete the dossier for the Board of Examiners the original assessment form together with a hard copy version of the report is handed in at the Education office. The final grade will be processed in ProgressWWW only after receiving all the necessary information.
- 6 For graduation procedures see section 3.5.

8 Modules and Mentors

8.1 Study methods

Lectures Theoretical parts of the programmes usually are treated in lectures. Theory is explained and illustrated with applications.

Tutorials [werkcolleges] In many cases lectures will be complemented with tutorials or exercise classes. Small groups of students make exercises or discuss difficulties under the direction of a lecturer.

Practicals Practical are an important part of the studies. The practicals are composed of experiments lasting one or more days or they are complete projects, depending on the phase of the studies.

Research project Research projects are a part of the study in which experimental and/or theoretical and/or descriptive scientific research is carried out at the university, a company or a government organization. Each research project should be concluded by a written report and an oral presentation for the research group.

A research project comprises at least 30 EC (including report, talk, discussion, etc.) and should be carried out under daily supervision of a permanent academic staff member of the school of life sciences or associated institutes. Depending on the chosen profile, a second research project, can be part of the programme. The second research project should treat a different subject and should be guided by a different supervisor. Guidelines for research projects and the assessments are on Nestor.

Internship An internship (traineeship) is an essential part of the Policy & Management profile. The goal of the traineeship is to learn the organization and methods of a company or public authority, where results of medical pharmaceutical oriented researches are put into practice. An assignment will be done in such an organization and is always accompanied by an external guide. However, the final responsibility lies by an academic staff member of the school of life sciences.

Colloquium and essay The Master's degree programme is concluded with a colloquium and an essay. A relative short time (3.5 weeks) is available to study a certain aspect of the scientific domain of the masters programme is treated thoroughly. The results of the literature research are written down in an essay (thesis) or presented in a talk (colloquium). It is important that the subjects do not have overlap with the research projects. Guidelines for colloquium and essay are on Nestor. For Top programmes there are different guidelines for assessment.

8.2 Master modules

Master modules are chosen in consultancy with a mentor (section 3.7.2). Master modules usually serve as preparation for the research projects. Up-to-date information about modules will be published on Nestor.

Chapter 8. Modules and Mentors

The following list presents optional modules and electives³. The column on the right indicates the master's programmes for which the modules 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.

General modules within the school of Life Sciences

Module	ECTS	Entry requirements	Assessments	Practical	Programme
Animal and human experimentation: Design, Practice and Ethics	5	-	Laboratory skills, written report, oral presentation	x	B, BN, EE, MB, MBB
Orientation on International Scientific Careers	5	-	Laboratory skills, written report, oral presentation	x	B, BN, EE, MB, MBB
Radioisotopes in experimental biology	5	-	Laboratory skills, written exam	x	B, BN, EE, MB, MBB
Advanced statistics	5	Biostatistiek	Written exam	x	B, BN, EE, MB, MBB
Programming C++ for biologists	5	-	Assignment	x	B, BN, EE, MB, MBB

Modules organized by the research institutes CBN and GUIDE

Module	ECTS	Entry requirements	Assessments	Practical	Programme
Advanced imaging techniques	5	-	Written exam, oral presentation	x	B, BN, MBB
Neurodegenerative diseases	5	Integratieve neurobiologie	Written exam, oral presentation	x	B, BN
Behavioural pharmacology	5	-	Written exam, oral presentation	x	B, BN
Introduction to the Behavioural and Cognitive Neurosciences (Introduction BCN)	4	-	Written reports	x	B, BN
Current themes in inflammation & cancer	5	Immunologie I	Written exam, oral presentation	x	B, BN, MBB
Advanced metabolism & nutrition	5	Metabolisme & voeding	Written exam, assignment	x	B, BN
Nutrigenomics research	5	Metabolisme & voeding	Written exam, assignment	x	B, MBB
Current themes in healthy aging	5	-	Written reports, oral presentation	x	B, BN, MBB
Stem cells & regenerative medicine	5	Regenerative medicine or MB&MB or Immunologie I	Oral presentation, written report	X	B, MBB

³ Unless indicated otherwise modules may be part of your programme either as "optional modules" or as "electives".

Chapter 8. Modules and Mentors

Module	ECTS	Entry requirements	Assessments	Practical	Programme
Immunology: from bed side to bench and back	5	Immunologie I+II	Written exam, report, oral presentation	x	B

Modules organized by the research institute CEES

Module	ECTS	Entry requirements	Assessments	Practical	Programme
Current themes seminar series	2	-	Assignments	x	B, EE, MB
Groningen lectures in theoretical biology	2-6	-	Written report		B, BN, EE, MB
CEES lectures	2	-	Participation		B, EE, MB
Mathematical models in ecology and evolution	6	Bio-mathematica	Written exam		B, BN, EE, MB
Selforganisation, cognition and Social Systems	5	-	Assignments	x	B, EE, MB
The function of marine biodiversity	5	-	Assignments	x	B, EE, MB
Polar Ecosystems	8	-	Assignments		B, EE, MB
Ecosystems Mediterranean rocky shores	5	Biological oceanography + Marine biology (& ecology)	Assignments	x	MB

Modules organized by the research institute GBB

Module	ECTS	Entry requirements	Assessments	Practical	Programme
Advanced protein crystallography	5	BS Top programme	Written exam, oral presentation	x	B, MBB
Protein crystallography 2	5	Advanced protein crystallography	Written exam	x	B, MBB
Multidimensional NMR 1	5	Biochemie & Biophysische chemie	Assignments, oral presentation	x	B, MBB
Multidimensional NMR 2	5	MDNMR 1	Written exam, oral presentation	x	B, MBB
Electron microscopy of biological macromolecules	5	-	Written exam, oral presentation	x	B, MBB
DNA microarray analysis	5	Microbiology & genetica research or equivalent	Written exam, oral presentation	x	B, BN, EE, MB, MBB
Introduction to membrane proteins and Bioinformatics	2	BS Top programme	Written exam, oral presentation	x	B, MBB
Advances in signal transduction	5	BS Top programme	Written exam, oral	x	B, MBB

Chapter 8. Modules and Mentors

Module	ECTS	Entry requirements	Assessments	Practical	Programme
			presentation		
Advanced genomics and proteomics	5	BS Top programme	Written exam, oral presentation	x	B, MBB
Organelle and membrane biogenesis	5	BS Top programme	Written exam, oral presentation	x	B, MBB
Molecular Dynamics and modeling of Membranes and Proteins	5	BS Top programme	Written exam, oral presentation	x	B, MBB
Protein and Enzyme Engineering by Mutagenesis and Directed Evolution	5	BS Top programme	Written exam, oral presentation	x	B, MBB
Biocatalysis & Green Chemistry	5	Bio-organische chemie	Written exam, assignments		B, MBB
Topics in Enzymology [#]	5	-	Written exam	x	B, BMS, MBB, MPS

[#] Course will not be offered in 2011/2012

Module / Elective organized by Science & Society

Compulsory for the M profile, elective for the P profile	ECTS	Entry requirements	Assessments	Practical	Programme
Beleid & Bedrijf ^a	10, 20	-	Assignments	x	B, BN, EE, MB, MBB

^a This module is instructed in Dutch.

Electives organized by Education and Communication^a

Elective	ECTS	Entry requirements	Assessments	Practical	Programme
Communiceren en presenteren	5	-	Assignments	x	B, BN, EE, MB, MBB
Ontwerpen	10	-	Assignments	x	B, BN, EE, MB, MBB
Wetenschap in Beeld	5	-	Assignments	x	B, BN, EE, MB, MBB
Wetenschapsvoorlichting en -journalistiek	5	Communiceren & presenteren	Assignments	x	B, BN, EE, MB, MBB
Inleiding onderzoeksmethoden	5	Communiceren & presenteren + research project	Assignments	x	B, BN, EE, MB, MBB
Achtergronden bètaonderzoek	10	Communiceren & presenteren + research project	Assignments	x	B, BN, EE, MB, MBB

^a These modules are instructed in Dutch

Chapter 8. Modules and Mentors

Electives organized by Energy and Environmental sciences

Elective	ECTS	Entry requirements	Assessments	Practical	Programme
Introduction energy and environmental studies [#]	5	-	Assignments	x	B, EE, MB
Resources and sustainable development	15	Introduction energy and environmental development	Assignments	X	B, EE, MB
Duurzame planeet (bachelor level, alternative for #)	5	-	Written exam	x	B, EE, MB

[#]This course can't be followed separately from 'Resources and sustainable development', see alternative

Electives organized by the Donald Smits Center for Information Technology

Elective (max 2 ECTS per individual programme[^])	Half day unit	Entry requirements	Assessments	Practical	Programme
Access basic	5	-	Assignments	x	B, BN, EE, MB, MBB
Excel basic	5	-	Assignments	x	B, BN, EE, MB, MBB
Excel databases en draaitabellen ^a	1	-	Assignments	x	B, BN, EE, MB, MBB

^a 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

Electives organized by Chemistry

Elective	ECTS	Entry requirements	Assessments	Practical	Programme
Modern laser Microscopy	5	-	Oral discussion	x	B, MBB
Biomolecular Chemistry	5	-	Written exam		B, MBB

8.3 List of Mentors:

Each of the mentors on the list may be selected as mentor for the degree programme Biology.

Students enrolled in the Top programme Evolutionary Biology may choose from the mentors Ecology & Evolution as well as Marine Biology.

Behavioural and Neurosciences

Beersma, Prof. D.G.M.	Chronobiology
Dijk, Prof. G. van	Neuroendocrinology
Groothuis, Prof. A.G.G.	Behavioural Biology
Koolhaas, Prof. J.M.	Behavioural Physiology
Luiten, Prof. P.G.M.	Molecular Neurobiology
Scheurink, Prof. A.J.W.	Neuroendocrinology
Zee, Prof. E.A. van der	Molecular Neurobiology

Marine Biology

Baar, Prof. H.J.W. de	Ocean Ecosystems
Buma, Prof. A.G.J.	Ocean Ecosystems
Eriksson, Dr. B.D.H.K.	Marine Benthic Ecology & Evolution
Olsen, Prof. J.L.	Marine Benthic Ecology & Evolution
Stamhuis, Prof. E.J.	Ocean Ecosystems

Ecology & Evolution

Beukeboom, Prof. L.W.	Evolutionary Genetics
Bijlsma, Prof. R.	Theoretical Biology
Elsas, Prof. J.D.	Microbial Ecology
Elzenga, Prof. J.T.M.	Plant Physiology
Hemelrijk, Prof. C.K.	Theoretical Biology
Kok, Dr. L.J. de	Plant Physiology
Komdeur, Prof. J.	Animal Ecology
Olf, Prof. H.	Community & Conservation ecology
Piersma, Prof. J.	Animal Ecology
Pen, Prof. I.R.	Theoretical Biology
Tinbergen, Prof. J.M.	Animal Ecology
Weissing, Prof. F.J.	Theoretical Biology

Molecular Biology & Biotechnology

Dijkhuizen, Prof. L.	Microbial Physiology
Dijkstra, Prof. B.W.	X-ray Crystallography
Driessen, Prof. A.J.M.	Molecular Microbiology
Fraaije, Prof. M.W.	Biotechnology
Haastert, Prof. P.J.M. van	Cell Biology
Heinemann, Prof. M.	Molecular Systems Biology
Jansen, Prof. R.C.	Bioinformatics
Klei, Prof. I.J. van der	Molecular Cell Biology
Kok, Prof. J.	Molecular Genetics
Kuipers, Prof. O.P.	Molecular Genetics
Linskens, Dr. M.H.K.	Cell Biology/ Isotope Laboratory
Maarel, Prof. M.J.E.C. van der	Microbial Physiology
Poolman, Prof. B.	Enzymology
Slotboom, Prof. D.J.	Enzymology

8.4 List of permanent staff and members of the Board of Examiners:

Center for Behaviour and Neurosciences (CBN)

Billeter, Dr. J.C.	Behavioural Biology	J.J.Billeter@rug.nl
Dijkstra, Dr. C.	Behavioural Biology	C.Dijkstra@rug.nl
Groothuis, Prof. A.G.G.	Behavioural Biology	A.G.G.Groothuis@rug.nl
Verhulst, Prof. S.	Behavioural Biology	S.Verhulst@rug.nl
Boer, Dr. S.F. de	Behavioural Physiology	S.F.de.Boer@rug.nl
Buwalda, Dr. B.	Behavioural Physiology	B.Buwalda@rug.nl
Koolhaas, Prof. J.M.	Behavioural Physiology	J.M.Koolhaas@rug.nl
Meerlo, Dr. P.	Behavioural Physiology	P.Meerlo@rug.nl
Ruiter, Dr. A.J.H. de	Behavioural Physiology	A.J.H.de.Ruiter@rug.nl
Beersma, Prof. D.G.M.	Chronobiology	D.G.M.Beersma@rug.nl
Daan, Prof. S.	Chronobiology	S.Daan@rug.nl
Hut, Dr. R.A.	Chronobiology	R.A.Hut@rug.nl
Merrow, Prof. M.	Chronobiology	M.Merrow@rug.nl

Chapter 8. Modules and Mentors

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Eisel, Prof. U.L.M.	Molecular Neurobiology	U.L.M.Eisel@rug.nl
Luiten, Prof. P.G.M.	Molecular Neurobiology	P.G.M.Luiten@rug.nl
Zee, Prof. E.A. van der	Molecular Neurobiology	E.A.van.der.Zee@rug.nl
Schmidt, Prof. M.	Molecular Pharmacology (GRP)	M.Schmidt@rug.nl
Dijk, Prof. G. van	Neuroendocrinology	Gertjan.van.Dijk@rug.nl
Scheurink, Prof. A.J.W.	Neuroendocrinology	A.J.W.Scheurink@rug.nl
Strubbe, Prof. J.H.	Neuroendocrinology	J.H.Strubbe@rug.nl

Centre for Ecological and Evolutionary Studies (CEES)

Dietz, Dr. M.W.	Animal Ecology	M.W.Dietz@rug.nl
Komdeur, Prof. J.	Animal Ecology	J.Komdeur@rug.nl
Piersma, Prof. J.	Animal Ecology	T.Piersma@rug.nl
Tieleman, Dr. B. I.	Animal Ecology	B.I.Tieleman@rug.nl
Tinbergen, Prof. J.M.	Animal Ecology	J.M.Tinbergen@rug.nl
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Smit, Dr. C.	Community & Conservation Ecology	C.Smit@rug.nl
Beukeboom, Prof. L.W.	Evolutionary Genetics	L.W.Beukeboom@rug.nl
Schilthuizen, Prof. M.	Evolutionary Genetics	M.Schilthuizen@rug.nl
Wertheim, Dr. B.	Evolutionary Genetics	B.Wertheim@rug.nl
Zande, Dr. L. van de	Evolutionary Genetics	Louis.van.de.Zande@rug.nl
Eriksson, Dr. B.D.H.K.	Marine Benthic Ecology & Evolution	B.D.H.K.Eriksson@rug.nl
Heip, Prof. C.H.R.	Marine Benthic Ecology & Evolution	C.H.R.Heip@rug.nl
Olsen, Prof. J.L.	Marine Benthic Ecology & Evolution	J.L.Olsen@rug.nl
Elsas, Prof. J.D.	Microbial Ecology	J.D.van.Elsas@rug.nl
Falcao Salles, Dr. J.	Microbial Ecology	J.Falcao.Salles@rug.nl
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Buma, Prof. A.G.J.	Ocean Ecosystems	A.G.J.Buma@rug.nl
Stamhuis, Prof. E.J.	Ocean Ecosystems	E.J.Stamhuis@rug.nl
Veldhuis, Prof. M.J.W.	Ocean Ecosystems	Marcel.Veldhuis@nioz.nl
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Kok, Dr. L.J. de	Plant Physiology	L.J.de.Kok@rug.nl
Bijlsma, Prof. R.	Theoretical Biology	R.Bijlsma@rug.nl
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Oostergetel, Dr. G.T.	Electron Microscopy	G.T.Oostergetel@rug.nl
Poolman, Prof. B.	Enzymology	B.Poolman@rug.nl
Slotboom, Dr. D.J.	Enzymology	D.J.Slotboom@rug.nl
Dijkhuizen, Prof. L.	Microbial Physiology	L.Dijkhuizen@rug.nl
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Kuipers, Prof. O.P.	Molecular Genetics	O.P.Kuipers@rug.nl
Veening, Dr. J.W.	Molecular Genetics	j.w.veening@rug.nl
Driessen, Prof. A.J.M.	Molecular Microbiology	A.J.M.Driessen@rug.nl
Lolkema, Dr. J.S.	Molecular Microbiology	J.S.Lolkema@rug.nl
Scheffers, Dr. D.J.	Molecular Microbiology	D.J.Scheffers@rug.nl
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Broos, Dr. J.	X-ray Crystallography	J.Broos@rug.nl
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Rakhorst, Dr. G.	Biomaterials	G.Rakhorst@med.umcg.nl
Sharma, Dr. P.K.	Biomaterials	P.K.Sharma@med.umcg.nl
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Kruyt, Dr. F.A.E.	Internal Medicine-Oncology	F.A.E.Kruyt@med.umcg.nl
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Harmsen, Dr. M.C.	Medical Biology	M.C.Harmsen@med.umcg.nl
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Prop, Dr. J.	Medical Biology	Jochum.Prop@med.umcg.nl
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Vos, Dr. P. de	Medical Biology	P.de.Vos@med.umcg.nl
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Hofstra, Prof. R.M.W.	Medical Genetics	R.M.W.Hofstra@med.umcg.nl
Dijl, Prof. J.M. van	Medical Microbiology	J.M.van.Dijl@med.umcg.nl
Huckriede, Dr. A.L.W.	Medical Microbiology	A.L.W.Huckriede@med.umcg.nl
Waarts, Dr. B.L.	Medical Microbiology	B.L.Waarts@med.umcg.nl
Boddeke, Prof. H.W.G.M.	Medical Physiology	H.W.G.M.Boddeke@med.umcg.nl
Copray, Dr. J.	Medical Physiology	J.C.V.M.Copray@med.umcg.nl
Eggen, Dr. B.J.L.	Medical Physiology	B.J.L.Eggen@rug.nl
Muntinga, Dr. J.H.J.	Medical Physiology	J.H.J.Muntinga@med.umcg.nl
Schuil, Dr. H.A.	Medical Physiology	H.A.Schuil@med.umcg.nl
Knibbe, Dr. M.E.	Metamedica	m.e.knibbe@med.umcg.nl
Kroese, Prof. F.	Medical Cell Biology - Immunology	F.G.M.Kroese@med.umcg.nl
Jong, Dr. S. de	Pathology and Lab. Medicine	S.de.Jong@med.umcg.nl

9 Regulations

9.1 Introduction

Dutch university education is governed by national law and local rules and regulations.

The most important of the local rules and regulations is the Teaching and Examinations Regulations [Onderwijs- en examenregeling, abbreviated OER].

The master's degree programmes are recorded in the Official Registry CROHO [Centraal Register Opleidingen Hoger Onderwijs]. The registration numbers are:

Biology	66860.
Ecology & Evolution	60365.
Marine Biology	60609.
Molecular biology and Biotechnology	60612

The Teaching and Examination Regulations for the Master's degree programmes, were not yet decreed on by the faculty council when we published this course catalogue. The Teaching and Examination Regulations published below are therefore still unofficial. Before September 1, 2011 the final version will be published on www.rug.nl/fwn/informatievoor/studenten/reglementen/oer-en/index.

9.2 Teaching and Examination Regulations 2011-2012

Contents

- 1 General provisions
- 2 Structure of the degree programme
- 3 Examinations and final assessment in the degree programme
- 4 Selection procedure
- 5 Tutoring
- 6 Final provisions

Section 1 General provisions

Article 1.1 Applicability

These Regulations apply to the modules and final assessment of the Master's degree programme in

Biology	Astronomy
Biomedical Engineering	Chemistry
Biomedical Sciences	Chemical Engineering
Ecology and Evolution	Energy and Environmental Sciences
Marine Biology	Physics
Medical Pharmaceutical Sciences	Applied Physics
Molecular Biology and Biotechnology	Mathematics
Computing Science	Applied Mathematics
Artificial Intelligence	Industrial Engineering and Management
Human-Machine Communication	Nanoscience

Chapter 9. Regulations

Behavioural and Cognitive Neurosciences

hereinafter referred to as 'the degree programme'. The degree programme is organized by the Faculty of Mathematics and Natural Sciences of the University of Groningen.

Article 1.2 Definitions

The following definitions apply to these Regulations:

- 1 *the Act*: Wet op het Hoger Onderwijs en Wetenschappelijk onderzoek [Higher Education and Research Act].
- 2 *student*: a person enrolled at the university for the purpose of taking modules and/or examinations and the final assessment leading to the conferral of a university degree.
- 3 *module*: a teaching unit or other part of the degree programme within the meaning of the Act.
- 4 *practical*: a learning-by-doing exercise, as referred to in Art. 7.13 of the Act,
- 5 *final assessment*: the final assessment of the degree programme.
- 6 *ECTS*: credits in accordance with the European Credit Transfer and Accumulation System (1 ECTS equals 28 hours of study).
- 7 *semester*: part of the academic year, either commencing on 1 September and ending on a date to be determined by the Executive Board on or around 31 January, or commencing on the aforementioned date determined by the Executive Board and ending on 31 August.
- 8 *study guide*: a document containing information about the degree programme and relevant regulations applicable to students.
- 9 *colloquium*: lecture about a discipline related subject based on scientific literature
- 10 *HBO-applicant*: a student with a bachelor degree in Applied Sciences.

The other definitions shall have the meaning that the Act ascribes to them.

Article 1.3 Aim of the degree programme

The teaching outcomes of the master's degree programme are set out in Appendix A.

Article 1.4 Type of degree programme

The degree programme is full-time.

Article 1.5 Teaching language

The degree programme is taught in English, except for the M-profile "Science, Business and Policy" which is partly taught in Dutch.

Section 2 Structure of the degree programme

Article 2.1 Study load

- 1 The degree programme has a study load of 120 ECTS.
- 2 The study load of a module is expressed in whole ECTS.

Chapter 9. Regulations

Article 2.2 Specializations

Appendix B sets out the specializations of the degree programme.

Article 2.3 Content of the degree programme

Appendix C sets out the (compulsory) parts of the degree programme and specializations, including the load of study, the entry requirements, the form of examinations and whether a practical is included.

Article 2.4 Optional modules

- 1 Appendix D sets out the optional modules of the degree programme and specializations, including the load of study, the entry requirements, the form of examinations and whether a practical is included.
- 2 The Board of Examiners may permit the student to select one or more modules from another master's degree programme (from the University of Groningen or from another university).

Section 3 Examinations and final assessment in the degree programme

Article 3.1. General

- 1 Examinations, both interim and final, provide the student with the information he needs to assess whether he has achieved or will achieve the required learning goals. This will help him with his further participation in the degree programme in question.
- 2 Assessment is expressed in whole and half numbers greater than or equal to 1 and smaller than or equal to 10, or by the qualifications 'pass' (v) or 'fail'(o). A teaching unit or module is passed when a mark higher or equal to 6 is achieved or when the qualification 'pass' (v) is awarded. The mark 5,5 is not awarded.

Article 3.2 Compulsory order of examinations

The entry requirements and the compulsory order of examinations are listed in the Appendix E.

Article 3.3 Frequency and Examination Periods

- 1 There shall be an opportunity to sit the examinations for the modules listed in Article 2.3 two times each year.
- 2 An examination for a practical is given once a year.
- 3 A module will be regularly examined in the year the module was not offered.
- 4 A module will be regularly examined in the year following the year a module was offered for the last time.

Article 3.4 Form of Examinations

- 1 The form of the examinations for the modules listed in Article 2.3 and 2.4 are set out in the Appendix C and D.
- 2 At the student's request, the Board of Examiners may allow an examination to be taken in a form different from that covered by Article 3.3.1.

Chapter 9. Regulations

- 3 Students with a functional disorder will be given the opportunity to take examinations in a form that will compensate as far as possible for their individual handicap. If necessary, the Board of Examiners will seek expert advice on this matter. Applications for an adjusted exam should be done/made at least one month before the exam.

Article 3.5 Oral Examinations

- 1 Unless the Board of Examiners decides otherwise, an oral examination may only be taken by one student at a time.
- 2 On request of the examiner or the student a neutral third party may be asked to attend an oral examination.

Article 3.6 Examination of practical modules

- 1 For practical modules, active and visible participation in the research training as well as the approval of a (research) report written by the student are required for passing the examination.
- 2 The assessment of internal practical modules and the written report of such modules will be conducted by one staff member.
- 3 The assessment of an external research training project will be conducted by the internal examiner advised by an external supervisor.

Article 3.7 Authority of the Board of Examiners regarding optional course units

- 1 The Board of Examiners for the degree programme setting the examination is authorized to assess the examinations and deal with any complaints. This does not apply to a request for an alternative examination regulation.
- 2 With regard to examinations for students with a performance disability, the Board of Examiners of the degree programme referred to in Article 3.7.1 shall comply with the facilities permitted by the Board of Examiners of the degree programme for which the student has registered.

Article 3.8 Assessing the Final Degree Project

The assessment of a final degree project (thesis or research projects/internships) takes place within a general assessment framework. The supervisors (at least two) who have been appointed as examiners by the Board of Examiners will determine the mark together. If necessary, they will consult an external supervisor.

Article 3.9 Marking of Examinations and Publication of Grades

- 1 After an oral examination, the examiner will assess the examination immediately and provides the administration office with a written confirmation.
- 2 The examiner will mark a written examination within 10 working days after the day the examination was taken and provides the administration office with the necessary details regarding the distribution of the written confirmation to the student.
- 3 The overview of the results sent digitally to the student twice a year has to be interpreted as the written confirmation.

Chapter 9. Regulations

- 4 The examiner will mark a practical examination within 10 working days after the day the module is finished, with the exception of those practicals for which the Board of Examiners has decided on a deviating term of marking with a maximum of a month.
- 5 The examiner provides the administration office with the necessary details regarding the distribution of the written confirmation to the student.
- 6 If an examination is taken in a form other than oral, written or practical, the Board of Examiners will determine in advance how and when the student will receive written confirmation of the result.

Article 3.10 Validity

- 1 Examinations that have been passed remain valid indefinitely.
- 2 Contrary to the provision of Article 3.9.1, the Board of Examiners may decide to require a student to take a supplementary or substitute examination for a module taken more than six years previously before allowing that student to progress to the final assessment.

Article 3.11 Right of Inspection

- 1 On request, a student has the right to inspect his marked work during a period of six weeks after the results of a written examination have been made known.
At the student's request a copy of his work is provided against costprice.
- 2 Within the time frame stipulated in Article 3.10.1, the student may request that he be allowed to peruse the examination paper and the assessment criteria.
- 3 The Board of Examiners may determine that this inspection or perusal will take place at a certain place and time. This inspection and perusal may be organized collectively.
If the person concerned can show that he was prevented by force majeure from attending at the indicated place and time, he will be offered another opportunity.

Article 3.12 Exemptions

At the student's request, the Board of Examiners, having discussed the matter with the examiner in question, may grant exemption from an examination on condition that the student:

- 1 has completed part of a university or higher vocational course that is equivalent in content and level
- 2 can demonstrate by work and/or work experience that he has sufficient knowledge and skills in respect of the module in question.

Article 3.13 Final Assessment

- 1 Students who have passed all examinations for a degree programme, including all optional modules, or have satisfied the requirements for all parts of the programme approved by the Board of Examiners, must apply for the certificate no later than four weeks after doing so.
The examination date entered on the certificate by the Board of Examiners is the date on which the student is deemed by the Board to have satisfied the final examination requirements.

Chapter 9. Regulations

- 2 If the student applies for the certificate after the period specified in article 3.12.1, the examination date entered on the certificate shall be the date on which the student is deemed by the Board of Examiners to have satisfied all the examination requirements, even if the date on which the Board takes this decision is in a subsequent academic year and the student is required to register for that year.
- 3 The procedure of application for the examination is described in the study guide.
- 4 The Board of Examiners shall determine the final assessment after the student has presented proof that he has passed all the examinations of the degree programme.
- 5 Before the final assessment can be determined, the Board of Examiners may itself decide to test the student's knowledge of one or more modules or aspects of the degree programme, if and in as much as the grades for these modules provide a reason for doing so.
- 6 Students are deemed to have passed the final assessment if they have obtained a sufficient grade for each module of the degree programme (see Article 3.1.2).
- 7 In conformity with the application procedure, as laid down in article 3.13.3, the final assessment will be done within 30 days after the student has presented the required proofs.

Article 3.14 Degree

- 1 A student who has satisfied all the requirements of the final assessment is awarded the degree of "Master of Science".
- 2 The degree awarded is registered on the final certificate.
- 3 The profile (P or M), specialization or Topprogramme is registered on the diploma supplement.

Article 3.15 – Assessment plan

An assessment plan has been approved by the Faculty Board, comprising the following topics:

- 1 the learning outcomes of the degree programme;
- 2 the course units of the degree programme and the learning outcomes of each course unit;
- 3 the relationship between course units and learning outcomes;
- 4 the test method to be used and the test moments for each course unit;
- 5 the test design and assessment procedures, assessment criteria and pass mark definition used;
- 6 who is/are responsible for the implementation of the various components of the assessment policy;
- 7 the method of regular evaluation.

Section 4 Selection procedure

Article 4.1 Previous education

- 1 The admission to the degree programme is set out in appendix F.
- 2 Holders of a Dutch or foreign Bachelor's or Master's degree with equivalent learning outcomes as the Bachelor's degree programmes referred to in article 4.1.1 will also be admitted to the degree programme.

Chapter 9. Regulations

- 3 Students with Bachelor's degrees other than those referred to in article 4.1.1 will be admitted at the discretion of the Admissions Board. Admission will be considered if:
 - a. the previous qualification is equivalent to the Bachelor's degree programme requested in article 4.1.1;
 - b. the applicant has sufficient proficiency in the English language to participate in the programme (IELTS test score of 6.5, TOEFL-score of 580 (paper-based), 237 (computer-based) or 92 (internet -based) or equivalent).
- 4 The Board of Examiners can decide on an individual basis that one or more optional modules that are not in the curriculum of the applicant are mandatory modules of the degree programme.
- 5 Admission within the meaning of article 4.1.1, 4.1.2 and 4.1.3 entitles students to register for the degree programme.

Article 4.2 Admission to different specializations

The admission to different specializations is set out in appendix F.

Article 4.3 Admission of HBO applicants

- 1 Applicants with a relevant HBO bachelor's degree programme will be admitted to the degree programme after having passed a bridging programme of 30 ECTS.
- 2 Within the bridging programme the candidate is allowed to resit an exam only once, the one immediately after the first exam.

Article 4.4 Admissions Board

- 1 Admission to the degree programme and the various modules is assigned to the Admissions Board of the degree programme. This Board consists of:
 - a member, also the chairperson, selected from the professors who will teach the degree programme
 - two members selected from the other academic staff who will teach the degree programme.
- 2 The study advisor for the degree programme (or a similar faculty employee) will be an advisory member and also secretary.
- 3 The members of the Admissions Board are appointed by the Board of Examiners.

Article 4.5 Applications procedure

- 1 The application deadlines for admission to the degree programme and given modules are set out in Appendix G. The application must be submitted to the Admissions Board.
- 2 Only in exceptional cases will the Admissions Board consider an application submitted after the date stated in Article 4.5.1.
- 3 The Admissions Board will make a decision before the date set out in Appendix G. The written admissions declaration will include information for the student about the possibility of an appeal to the Committee of Appeal for the Final Assessments.

Article 4.6 Conditional admission

- 1 At the request of a candidate who is preparing for the final examination for the Bachelor's degree programme listed in Article 4.1.1, the Admissions Board may admit the student to the degree programme on condition that:
 - a. the student has passed the first year (propaedeutic examination)
 - b. the deficiency in the bachelor's programme doesn't exceed 15 ECTS. Modules consisting of only practicals and the final bachelor's degree project may not be part of this 15 ECTS deficiency.
- 2 Conditional admission must be converted into admission as laid down in Article 4.1 within six months. In the case one or more modules cannot be re-examined in the first semester the conditional admission must be converted within a year.

Section 5 Tutoring

Article 5.1 Study progress administration

- 1 The Faculty Board is responsible for the registration of the individual results of students.
- 2 The Faculty Board will provide each student digitally an overview of his results twice a year.
- 3 At request of the student the administration office provides a certified overview.

Article 5.2 Tutoring

- 1 Within the framework of the admissions procedure, the Faculty Board is responsible for making an appointment with the student to discuss the individual degree programme he will follow.
- 2 The Faculty Board is responsible for providing the student with a study guide at the start of his degree programme.
- 3 The Faculty Board ensures that the student has sufficient supervision during his degree programme, particular attention will be paid to possible changes deemed necessary to ensure the chosen programme is compatible either with conducting academic research or exercising a profession outside the university.

Section 6 Final Provisions

Article 6.1 Amendments

- 1 Any amendments to these Regulations will, after discussion with the course committee and, if necessary, approval of the Faculty Council, be confirmed by the Faculty Board in a separate decree.
- 2 An amendment to these Regulations does not apply to the current academic year, unless it may reasonably be assumed that the amendment will not harm the interests of students.
- 3 An amendment may not harm the interests of students by affecting decisions taken by the Board of Examiners within the meaning of these Regulations.

Chapter 9. Regulations

Article 6.2 Publication

- 1 The Faculty Board shall duly publish these Regulations, any rules and guidelines formulated by the Board of Examiners, and any amendments to these documents.
- 2 Copies of the documents referred to in Article 6.2.1 are available from the Faculty office.

Article 6.3 Appeal procedure and unexpected events

- 1 In exceptional cases or cases not covered by these regulations, the Board of Examiners shall have the final say.
- 2 Appeals against decisions made by an examiner or a Board of Examiners may be filed with the Board of Appeal for Examinations.

Article 6.4 Date of Commencement

These Regulations shall take effect on 1 September 2011.

Appendix A. Teaching outcomes of the degree programme (art. 1.3)

- 1 The graduate
 - a. (Biology) has detailed knowledge of one or more of the scientific disciplines within the area of biology
 - b. (Ecology & Evolution) has detailed knowledge of one or more of the scientific disciplines within the area of Ecology & Evolution with emphasis on evolutionary ecology & genetics, behavioural ecology & ecophysiology, conservation biology, or community ecology
 - c. (Marine Biology) has detailed knowledge of one or more of the scientific disciplines within the area of marine biology with emphasis on biological oceanography or coastal marine ecology
 - d. (Molecular Biology & Biotechnology) has detailed knowledge of one or more of the scientific disciplines within the area of of biomolecular sciences, with emphasis on structural biology, biochemistry, molecular and cellular biology, microbiology, biotechnology or bioinformatics
- 3 is capable of designing and conducting scientific research
- 4 is capable of independently investigating, and critically evaluating, scientific literature
- 5 is capable of identifying new developments in the relevant disciplines, and to become familiar with these developments
- 6 is organized and creative in the approach to scientific research and complex problems
- 7 can participate in, and contribute to, a multidisciplinary team
- 8 can effectively communicate acquired knowledge, insights and skills to others, both in writing and in oral presentation
- 9 is aware of the potential societal and ethical implications of scientific research, and is able to critically reflect on his/her actions in this context
- 10 is prepared for a professional career, either in science or in management & policy

Appendix B. Specializations of the degree programme (art. 2.2)

- 1 Within the degree programmes, the student chooses one of the following specializations:
 - a. P-profile ("PhD-profile") which provides training as a researcher;
 - b. M-profile ("Science, Business and Policy - profile") which prepares for professions in a societal, political and/or commercial context.
- 2 Within the degree programme Biology students can follow the specialization Behavioural and Neurosciences, which prepares for conducting research in this field of biology.
- 3 Within the degree programme Ecology & Evolution qualified students can follow the Top programme Evolutionary Biology, an intensified programme which prepares for conducting top quality research in this field of ecology.
- 4 Within the degree programme Ecology & Evolution qualified students can follow the Erasmus Mundus programme 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.
- 5 Within the degree programme Molecular Biology & Biotechnology qualified students can follow the Top programme Biomolecular Sciences, an intensified programme which prepares for conducting top quality research in this field of molecular biology and biotechnology

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

The degree programmes consist of either the P- or the M-profile programme:

P- Profile

module	ECTS	entry requirements	Assessment	practical
research project (RP)*	40 or ≥	-	technical and/or laboratory skills, written report, oral presentation	x
research project (RP)*	30 or ≥	-	technical and/or laboratory skills, written report, oral presentation	x
colloquium	5	RP	oral presentation	x
essay	5	-	Written report	x
optional modules	20	see appendix D	see appendix D	see app. D
electives**	≤20	see appendix D	see appendix D	see app. D

M-Profile:

Module	ECTS	entry requirements	Assessment	practical
research project (RP)*	40 or ≥	-	technical and/or laboratory skills, written report, oral presentation	x
optional modules	5	see appendix D	see appendix D	see app. D
colloquium	5	RP	oral presentation	x
<i>Stagetraject bedrijf en beleid</i>	40	RP	performance, written report, reflection report	x
Module <i>Beleid & Bedrijf</i>	20	-	assignment, exam	x
electives**	≤ 10	see appendix D	see appendix D	see app. D

In addition to the above scheme to 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 must be performed at the School of Life Sciences (or liaised institutes) under supervision of one of the examiners.
- ** The student may choose to use 5, - 20 ECTS to extend a research project, attend master modules (appendix D), attend bachelor modules (no more than 10 ECTS), 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 5-10 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 specialization Behavioural and Neurosciences (Master Biology)

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

Additional requirements for the Top programme Evolutionary Biology (Master Ecology and Evolution)

1 Students within the Top programme Evolutionary Biology have to pass the following Top programme modules⁴:

- Adaptation, biocomplexity and conservation; 10 ECTS
- Theoretical ecology and evolution; 10 ECTS
- Phylogenetics and genomics in ecology; 10 ECTS

Two seminar series of 2 ECTS each are required. These are chosen from a list of the "current/classic themes" seminar series.

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

⁴ These modules are challenging both in content and time constraints

- 3 The study load of the electives is ≤ 6 ECTS which can be used for modules, research or individual assignments

Additional requirements for the Top programme Biomolecular Sciences (Master Molecular Biology and Biotechnology)

- 1 Students within the Top programme Biomolecular Sciences generally follow the P-profile scheme but have to pass the following Top programme modules⁵:
 - a. Introduction to membrane proteins and bioinformatics; 2 ECTS
 - b. Advances in signal transduction; 5 ECTS
 - c. Advanced genomics and proteomics; 5 ECTS
 - d. Organelle and membrane biogenesis; 5 ECTS
 - e. Molecular Dynamics and modeling of Membranes and Proteins ; 5 ECTS
 - f. Protein and Enzyme Engineering by Mutagenesis & Directed Evolution; 5 ECTS
 - g. Advanced protein crystallography; 5 ECTS
- 2 Literature study written in the form of a research proposal; 5 ECTS.
- 3 The study load of the electives is ≤ 8 ECTS which can be used for modules, research or individual assignments

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 the module *How does the Sea Work* organized by the NIOZ Royal Netherlands Institute for Sea Research (Texel) and the NIOO-Centre of Estuarine and Marine Ecology.

Appendix D. Optional modules (art. 2.4), plus

Appendix E. Entry requirements and compulsory order of examinations (art. 3.2)

The following list presents optional modules. The column on the right indicates the master programmes for which the modules were developed in particular. B: Biology, BN: specialization Behaviour and Neurosciences in the study programme Biology, EE: Ecology and Evolution, MB: Marine Biology, MBB: Molecular Biology and Biotechnology

General modules within the school of Life Sciences

Module	ECTS	entry requirements	Assessments	practical	programme
Animal and human experimentation: Design, Practice and Ethics	5	-	laboratory skills, written report, oral presentation	x	B, BN, EE, MB, MBB

⁵ These modules are challenging both in content and time constraints

Chapter 9. Regulations

Module	ECTS	entry requirements	Assessments	practical	programme
Orientation on International Scientific Careers	5	-	laboratory skills, written report, oral presentation	x	B, BN, EE, MB, MBB
Radioisotopes in experimental biology	5	-	laboratory skills, written exam	x	B, BN, EE, MB, MBB
Advanced statistics	5	Biostatistiek	written exam	x	B, BN, EE, MB, MBB
Programming C++ for biologists	5	-	Assignment	x	B, BN, EE, MB, MBB

Modules organized by the research institutes BCN and GUIDE :

Module	ECTS	entry requirements	assessments	practical	programme
Advanced imaging techniques	5	-	written exam, oral presentation	X	B, BN, MBB
Neurodegenerative diseases	5	Integratieve Neurobiologie	written exam, oral presentation	X	B, BN
Behavioural pharmacology	5	-	written exam, oral presentation	X	B, BN
Introduction to the Behavioural and Cognitive Neurosciences	4	-	written reports	X	B, BN
Current themes in inflammation and cancer	5	ImmunologieI	written exam, oral presentation	X	B, BN, MBB
Advanced metabolism & nutrition	5	Metabolisme & Voeding	written exam, assignment	X	B, BN
Nutrigenomics research	5	Metabolisme & Voeding	written exam, assignment	X	B, MBB
Current themes in healthy aging	5	-	written reports, oral presentation	X	B, BN, MBB
Stem cells & regenerative medicine	5	Regenerative Medicine or MB&MB, or ImmunologieI	oral presentation, written report	X	B, MBB
Immunology: from bedside to bench and back (w.t.)	5	Immunologie I+II	written exam, oral presentation, report	X	B

Modules organized by the research institute CEES

Module	ECTS	entry requirements	assessments	practical	programme
Current themes seminar series	2	-	assignments	x	B, EE, MB
Groningen lectures in theoretical biology	2-6	-	written report		B, BN, EE, MB
CEES lectures	2	-	<i>participation</i>		<i>B, EE, MB</i>

Chapter 9. Regulations

Module	ECTS	entry requirements	assessments	practical	programme
Mathematical models in ecology and evolution	6	Biomathematica	written exam		B, BN, EE, MB
Selforganisation, cognition and Social Systems	5	-	assignments	x	B, EE, MB,
Ecosystems Mediterranean rocky shores	10	Biological oceanography + Marine Biology (& ecology)	assignments	x	MB
The function of Marine Biodiversity	5	Bachelor Biology, major B, EE or MB	assignments	x	B, EE, MB
Polar Ecosystems	8	Students admitted in B, MB or EE	assignments	x	B, EE, MB

Modules organized by the research institute GBB

Module	ECTS	entry requirements	assessments	practical	programme
Advanced protein crystallography	5	For students Biomolecular Sciences	Written exam, oral presentation	x	B, MBB
Protein crystallography 2	5	Advanced protein crystallography	Written exam	x	B, MBB
Multidimensional NMR 1	5	Biochemie en Biofysische Chemie	Assignments, oral presentation	x	B, MBB
Multidimensional NMR 2	5	MDNMR 1	Written exam, oral presentation	x	B, MBB
Electron microscopy of biological macromolecules	5	-	Written exam, oral presentation	x	B, MBB
DNA microarray analysis	5	Microbiology & Genetica research or equivalent	Written exam, oral presentation	x	B, BN, EE, MB, MBB
Introduction to membrane proteins and Bioinformatics	2	For students Biomolecular Sciences	Written exam, oral presentation	x	B, MBB
Advances in signal transduction	5	For students Biomolecular Sciences	Written exam, oral presentation	x	B, MBB
Advanced genomics and proteomics	5	For students Biomolecular Sciences	Written exam, oral presentation	x	B, MBB
Organelle and membrane biogenesis	5	For students Biomolecular Sciences	Written exam, oral presentation	x	B, MBB
Molecular Dynamics and modeling of Membranes and Proteins	5	For students Biomolecular Sciences	Written exam, oral presentation	x	B, MBB
Protein and Enzyme Engineering by Mutagenesis and	5	For students Biomolecular Sciences	Written exam, oral presentation	x	B, MBB

Chapter 9. Regulations

Module	ECTS	entry requirements	assessments	practical	programme
Directed Evolution					
Biocatalysis & Green Chemistry	5	Bio-organische Chemie	Written exam, assignments		B, MBB

Modules organized by Science & Society^a:

Module	ECTS	entry requirements	examinations	practical	programme
Beleid & Bedrijf ^a	10, 20	-	assignments	x	B, BN, EE, MB, MBB
Stagetraject bedrijf en beleving	40	Beleid & Bedrijfa	laboratory skills, written report, oral presentation	x	B, BN, EE, MB, MBB

Electives organized by Energy and Environmental sciences

Elective	ECTS	entry requirements	examination	practical	programme
Introduction energy and environmental studies I [#]	5	-	assignments	X	B, EE, MB
Resources and sustainable development	15	Introduction energy and environmental studies I	assignments	X	B, EE, MB
Duurzame planeet (bachelor level, alternative for [#])	5	-	Written exam	X	B, EE, MB

[#] This course cannot be followed separately from 'Resources and sustainable development', see alternative

Electives organized by Education and Communication^a

Elective	ECTS	entry requirements	examination	practical	programme
Communiceren en presenteren	5	-	assignments	X	B, BN, EE, MB, MBB
Ontwerpen	10	-	assignments	X	B, BN, EE, MB, MBB
Wetenschap in beeld	5	-	assignments	X	B, BN, EE, MB, MBB
Wetenschapsvoorlichting en -journalistiek	5	Communiceren & Presenteren	assignments	X	B, BN, EE, MB, MBB
Inleiding onderzoeksmethoden	5	Communiceren & Presenteren and Research Project	assignments	X	B, BN, EE, MB, MBB
Achtergronden bèta-onderzoek	10	Communiceren & Presenteren and Research Project	assignments	X	B, BN, EE, MB, MBB

Chapter 9. Regulations

Electives organized by The Donald Smits Center for Information Technology

Elective (max 2 ects per individual programme[^])	Half day unit	entry requirements	examination	practical	programme
Access basic	5	-	assignments	x	B, BN, EE, MB, MBB
Excel basic	5	-	assignments	x	B, BN, EE, MB, MBB
Excel data bases en draaitabellen ^a	1	-	assignments	x	B, BN, EE, MB, MBB

*For entry requirements see module description in Ocasys

^a 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.

Electives organized by Chemistry

Elective	ECTS	entry requirements	examination	practical	programme
Modern laser microscopy	5	-	Oral discussion	x	B, MBB
Biomolecular Chemistry	5	-	Written exam		B, MBB

Appendix F. Admission to the degree programme and different specializations (art. 4.1.1 + art. 4.2)

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

Holders of a Bachelor's degree in Biology 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 with the major Gedrag & Neurowetenschappen from the University of Groningen will be admitted to the specialization programme Behavioural and Neurosciences within this master's degree programme in Biology.

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

Holders of a Bachelor's degree in Biology from the University of Groningen with the specialization *Ecologie* 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.

Holders of a Bachelor's degree in Biology 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.

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

Holders of a Bachelor's degree in Biology from the University of Groningen with the specialization *Mariene Biologie*, or the specialization *Ecologie* plus the modules *Oceanografie* and *Mariene Biologie 1*, are considered to have sufficient knowledge and skills and will be admitted to the Master's degree programme in *Marine Biology* on that basis.

Chapter 9. Regulations

Holders of a Bachelor's degree in Biology from the University of Groningen with the major *Mariene Biologie* or the major *Ecologie & Evolutie* plus the modules *Biologische oceanografie* and *Mariene biologie (& ecologie)* are considered to have sufficient knowledge and skills and will be admitted to the Master's degree programme in Marine Biology on that basis.

Requirements for admission to the master's degree in Molecular Biology and Biotechnology

Holders of a Bachelor's degree in Biology from the University of Groningen with the specialization *Moleculaire Biologie* of *Biotechnologie*, specialization *Medische biologie* plus the modules *Algemene chemie* and *Bioinformatica* are considered to have sufficient knowledge and skills and will be admitted to the Master's degree programme in Molecular Biology & Biotechnology on that basis. Holders of a Bachelor's degree in Biology or a Bachelor's degree in Life Science & Technology from the University of Groningen with the major *Moleculaire Levenswetenschappen*, major *Biomedische wetenschappen* or the combination of the major *Gedrag en Neurowetenschappen* and the minor *Moleculaire Levenswetenschappen*, are considered to 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 specialization Biochemistry or Biophysical Chemistry or the major *Chemistry of Life* are admitted to this master's programme.

Holders of the Bachelor's degree in Life Science and Technology, specialization *Genomics and Proteomics* or *Molecular Medical Cell biology* are admitted into this master's programme.

Admission requirements to specializations and Top programmes

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

- 1 *Master Biology, specialization Behavioural and Neurosciences*: a Bachelor's degree in Biology of the University of Groningen, specialization *Gedrag en Neurowetenschappen*. 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 programme 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 Programme Evolutionary Biology.
- 3 *Master Molecular Biology and Biotechnology, Top programme Biomolecular Sciences* : a relevant Bachelor's degree and an individual selection procedure (see below). Excellent MSc students from Molecular Biology & Biotechnology may apply during their first year for the Top Programme Biomolecular Sciences

Applications procedure for a Top programme (art. 4.2)

- 1 Students in possession of an admission permit can be admitted to the top programme.

Chapter 9. Regulations

- 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 The decisions of the Admissions Board can be appealed to 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 personal information on the applicant;
 - (if desired) other documents that the student thinks useful in furthering his/her application.These documents are to be sent to the Faculty of Mathematics and Natural Sciences 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

Chapter 9. Regulations

- 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 organized 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 G. Application deadlines for admission (art. 4.5.1)

Deadline of Application	Non-EU students	EU students
Biomolecular Sciences (top programme)	February 1st 2011	April 15 th 2011
Evolutionary Biology (top programme/EM)	February 1st 2011	February 1st 2011

Decision deadlines (art. 4.5.3)

Deadline of Decision	Non-EU students	EU students
Biomolecular Sciences (top programme)	June 1st 2011	July 15 th 2011
Evolutionary Biology (top programme/EM)	June 1st 2011	June 1st 2011

9.3 Rules and Regulations 2011 - 2012

The Rules and regulations for the School of Life Sciences were not yet decreed on by the faculty council when we published this course catalogue. The Teaching and Examination Regulations published below are therefore still unofficial. Before September 1, 2011 the final version will be published on www.rug.nl/fwn/informatievoor/studenten/reglementen/RenR

Rules and Regulations for the School of Life Sciences

Rules and Regulations as referred to in Article 7.12.4 of the Higher Education and Research Act (WHW) for the degree programmes:

- Biology and Life Science & Technology Board of Examiners
- MSc Biology
- MSc Ecology and Evolution
- MSc Marine Biology
- MSc Moleculair Biology and Biotechnology
- Biomedical and Medical Pharmaceutical Sciences Board of Examiners

Chapter 9. Regulations

- MSc Medical Pharmaceutical Sciences
- MSc Biomedical Sciences
- Biomedical Engineering Board of Examiners
- MSc Biomedical Engineering
- Behavioural & Cognitive Neurosciences Board of Examiners
- RM Behavioural and Cognitive Neurosciences

The Boards of Examiners for the degree programmes, having regard to Article 7.12.4 of the WHW, have decided to set the following rules and regulations for the degree programmes:

Article 1 Definitions

The following definitions apply to these Rules and Regulations:

- OER: the Teaching and Examination Regulations for the degree programme listed in the introduction, most recently updated on 1 September 2010
- Examinee: a person taking an examination or final assessment
- Examination: an assessment of the knowledge and/or skill of the examinee concerning a certain module in the degree programme
- Student: a person who has registered for the degree programme
- Final assessment: the final assessment for the degree programme
- Mentor: a lecturer who has been allocated the task by the Board of Examiners. A mentor assists students with choosing an individual programme in the Master's degree phase.

Article 2 Administrative Duties of the Board of Examiners

The administrative duties include:

- decisions concerning approval of teaching units as referred to in Article 7.3.c of the WHW;
- decisions concerning regulations that at the request of the student may deviate from the current provisions;
- decisions concerning exemptions;
- preparations to determine the results of final assessments;
- determining measures in the event of an infringement of the order during an examination within the meaning of Article 10 or in the event of fraud within the meaning of Article 17.

Article 3 Taking examinations

3.1. The Board of Examiners will appoint one or more examiners before any examination is taken.

3.2. Every examination will be a survey by the examiner of the knowledge, understanding and skills of the student, as well as an assessment of the results of that survey.

3.3. In the event that one and the same examination is held and assessed by more than one examiner, whether or not at the same time, the relevant Board of Examiners will ensure that the examiners all use the same assessment criteria. To this end, the assessment criteria will be set out in writing by the relevant examiners in advance. If necessary, the Board of Examiners will appoint one of the examiners to be the main examiner.

3.4. The examiner will ascertain whether the conditions for taking the examination have been met.

Article 4 Number of examinees at an oral examination

With the permission of the examinees, an examiner may decide that a certain examination will take place as an oral group examination.

Article 5 Language of the degree programme

5.1. In the Master's degree programmes the examinations will be in English, unless the Board of Examiners or the examiner considers it to be necessary or desirable for them to be in a different language.

5.2. A request by an examinee to take the written examinations referred to in Article 5.1 in a different language must be sent to the lecturer at least five working days before the date of the examination.

Article 6 Examination Frequency and Times

6.1. Written examinations will be taken at times that shall be determined at least 1 month before the start of the relevant examination period, in consultation with the relevant examiners and bearing in mind the provisions of the OER.

6.2. When determining the times as referred to in Article 6.1, as far as possible no examinations will be planned concurrently.

6.3. Changes to the time referred to in Article 6.1 may only occur in the event of force majeure and with the approval of the examiner and all the students involved.

6.4. Oral examinations will be taken at a time determined by the examiner or examiners, if possible after discussion with the examinee.

6.5. The provisions of Article 6.4 will also apply as far as possible to examinations to be taken other than in written or oral form.

6.6 There will be a maximum of 3 resit opportunities for a module.

6.7 If the permitted number of resits still do not result in a pass, the student has to submit a motivated request for an extra examination to the Board of Examiners. The Board of Examiners decides when, in what way and under which conditions the student can participate in the examination.

Article 7 Registration

7.1. Participation in a written examination may only take place after proper and timely registration via the web application ProgressWWW.

7.2. Timely registration is a digital registration via ProgressWWW at least 5 working days before the time when the examination in question will be held. In exceptional circumstances, the Board of Examiners may permit a late registration.

7.3. Participation in a module may only take place after proper and timely registration.

7.4 Timely registration is considered to be registration at least 1 month before the time when the relevant module will be given. In exceptional circumstances, the Board of Examiners may permit a late registration.

7.5. Registration for a module offered by the School of Life Sciences obliges the registered person to appear for the first session of the module.

7.6. A final assessment may only take place after proper registration in person with the student administration office at least 20 working days before the relevant session of the Board of Examiners. In exceptional circumstances, the Board of Examiners may permit a late registration.

Chapter 9. Regulations

7.7. The Faculty Office or the administration office will ensure that the examinee will receive an invitation to the final assessment at least 1 week before the date on which it is set.

Article 8 Withdrawal

8.1. If the examinee does not take the examination at the time for which he or she has registered, or withdraws less than 5 working days before that time, the examination opportunity will be deemed to have been taken.

8.2. If the examinee does not participate in modules at the time for which he or she has registered, or withdraws less than a month before that time, then he or she may be denied access to other modules.

8.3. In cases of force majeure, the Board of Examiners will decide.

Article 9 Request for exemption

9.1. Requests for exemption, stating reasons, must be submitted to the Board of Examiners in writing 2 months before the start of the module in question.

9.2. The Board of Examiners may decide to consult the relevant examiners before making a decision about the request.

9.3. The Board of Examiners will make its decision within a month of receipt of the request. The person making the request will be informed of the decision immediately.

Article 10 Order during examinations

10.1. The Board of Examiners will ensure that invigilators are appointed to supervise written examinations; they will ensure that the examination proceeds in good order. The Board of Examiners may delegate this responsibility to the relevant examiner.

10.2. Examinees must identify themselves by means of their student card at the request or behest of the Board of Examiners.

10.3. Examinees must obey the directions of the Board of Examiners or the examiner which will be published before the start of the final assessment or the examination, as well as directions given during or immediately after the examination.

10.4. If an examinee ignores one or more of the directions referred to in Article 10.3, then he or she may be excluded from further participation in the examination in question by the Board of Examiners or the examiner.

Exclusion means that no result will be given for that examination. Before the Board of Examiners or the examiner makes a decision to exclude a student, they will allow the examinee to put his or her case.

10.5. The duration of every examination is such that the examinee may reasonably have enough time to answer the questions.

10.6. The examinee may remove the examination questions after the examination, unless the Board of Examiners or someone on their behalf has stated otherwise, or if the nature of the examination questions makes this impossible.

Article 11 Questions and assignments

11.1. The scope of an examination paper shall not exceed the content of the sources upon which the paper is based. These sources as well as the amount of material will be made public in general terms before the start of the

module that will prepare for the examination. The precise content of the examination subjects shall be published not later than one month before the examination.

11.2. Once the teaching for a particular examination starts, the examiner will publish the guidelines for the use of calculators, literature and other resources.

11.3. The questions and assignments that comprise the examination will be divided as evenly as possible over the sources.

11.4. The examination will be representative of the learning objectives with regard to content and form.

11.5. The questions and assignments in the examination will be clear and unambiguous and contain sufficient indications of the detail required in the answers.

11.6. In good time before the examination is sat, the Board of Examiners or the examiner will announce the type of examination in line with the provisions of Article 3.4 of the OER for Master's degree programmes.

11.7. In good time before the examination is sat, the Board of Examiners or the examiner will arrange a mock examination to familiarize the examinees with the type of examination.

Article 12 Assessment

12.1 Assessment is expressed in whole and half numbers greater than or equal to 1 or smaller than or equal to 10, or by the qualifications 'Pass' (V) or 'Fail' (O). The mark 5.5 is not awarded.

12.2. A teaching unit or module is passed when a mark higher or equal to 6,0 is achieved or when the qualification 'Pass' (V) is awarded.

12.3. The final assessment of the Master's degree is deemed to have been passed when all the relevant module examinations have been passed.

12.4. Exemption from an examination or a practical is considered to be the equivalent of a Pass (V) and will be indicated by VR.

12.5. As far as possible, the assessment of written examinations will occur in line with criteria set in advance, and adapted if necessary as a result of matters that may arise during the correction process.

12.6. The means of assessment shall be such that the examinee can check how the results of his or her examination have been arrived at.

12.7. The Board of Examiners will announce in advance those cases in which it will conduct an enquiry as referred to in 3.13.5 of the Master's OER.

Article 13 Postmortem

13.1. As soon as possible after publication of the results of an oral examination, there will be a discussion of the results between the examiner and the examinee, either on request or at the initiative of the examiner. The results will then be explained.

13.2. An examinee can request a post mortem with the relevant examiner concerning the results of an examination other than an oral examination within six weeks of the day of the publication of the results. The postmortem will take place at a time and a place determined by the examiner.

13.3. If the Board of Examiners arranges a collective post mortem for an examination, then an examinee may submit a request as defined in Article 13.2 if he or she attended the collective postmortem and motivates the

request, or if he or she is unable to attend the collective post mortem due to force majeure.

13.4. The provisions in Article 13.3 also apply if the Board of Examiners or the examiner enable the examinee to compare his or her solutions with model answers.

13.5. The Board of Examiners or the examiner may permit exceptions to the provisions of Article 13.2 and 13.3.

Article 14 Standards

- 1 The Board of Examiners or the examiners when making their decisions must adhere to the following standards:
 - the preservation of the quality and selection criteria of each examination
 - effectiveness criteria, concentrating on:
 - 2 the limiting of time lost by students who are progressing well with their studies
 - 3 timely termination of the degree programme by students who are unlikely to pass the exams
 - 4 protect students who want to do too much from themselves
 - 5 be understanding towards students who, through no fault of their own, have suffered study delay.

Article 15 Determining the result of the final assessment

15.1. Subject to the provisions of Article 3.13 (Master's OER), the Board of Examiners will determine the result of the final assessment by a simple majority of votes.

15.2. If there is not a majority, then the examinee will be failed.

Article 16 Judicium (grade descriptor)

16.1 The result of a final assessment can be qualified by the judicium Cum Laude (with distinction). The Boards of Examiners of the different master's degree programmes have adopted regulations for the determination of the judicium which are listed in Appendix A.

16.2 The Board of Examiners will decide by a simple majority of votes.

16.3 The Board of Examiners may decide to award a judicium outside these criteria. In cases it considers to be borderline, the Board of Examiners may deviate from the provisions of Article 16.1 by taking not only the G average but also other matters into consideration. Criteria used by the Board of Examiners are listed in Appendix A.

16.4. At least three members of the Board of Examiners must participate in the decision-making process.

16.5. If the result of the judicium is Cum Laude, this will be stated on the Degree Certificate.

Article 17 Fraud

17.1. Fraud is an act or omission by the examinee designed to partly or wholly hinder the forming of a correct assessment of his or her knowledge, understanding and skills. Examples of fraud include:

- cheating during examinations, including digitally
- plagiarism (this includes the use of internet files without stating the source)

Chapter 9. Regulations

- freewheeling with fellow students during group assignments and practicals
- copying the reports or practical reports of fellow students
- falsifying the results of experiments.

17.2. In the event of fraud during an examination, the Board of Examiners can ban the examinee from further participation in the relevant exam for a period of up to a year.

17.3. The decision to ban will be taken on the basis of the written report of the invigilator concerning the fraud discovered or suspected by him or her.

17.4. In cases requiring swift action, the Board of Examiners may decide to impose a provisional ban based on a verbal report by the invigilator. He or she will ensure that this report is committed to writing immediately after the examination and a copy provided to the examinee.

17.5. The examinee can request that the Board of Examiners annul the ban. He or she must include a copy of the report referred to in Article 17.4 with the request and, if desired, a written commentary thereon.

17.6. Before the Board of Examiners decides on the request as defined in Article 17.4, it will give the examinee the opportunity to put his or her case.

17.7. A ban means that no result will be recorded for the examination referred to in Article 17.2.

Article 18 Approval procedure

18.1 A request for approval of an individual study programme choice or one that deviates from the standard programme must be submitted by the examinee to the Board of Examiners at least one month before registering for the relevant module or modules.

18.2. A decision to deny approval by the Board of Examiners will be supported by reasons.

The Board of Examiners will make its decision within 1 month of receipt of the request.

Article 19 Right of appeal

It is possible to appeal against decisions made by the Board or Examiners or the examiners to the Board of Appeal for the Examinations within the meaning of Article 7.60 of the WHW.

Article 20 Amendments to the Rules and Regulations

No amendments shall be made that have an effect on the current academic year, unless the interests of students would otherwise be harmed.

Article 21 Implementation

These Rules and Regulations will come into effect on 1 September 2011 and will replace all previous Rules and Regulations.

Appendix A. List of regulations for the determination of the judgement for the different master's degree programmes

The Board of Examiners for master's degree programmes in Biology, Marine Biology, Ecology & Evolution and Molecular biology & Biotechnology has adopted the following regulation:

Chapter 9. Regulations

When determining the judicium, the Board of Examiners is mainly guided by the total of the marks earned (G) on the individual examinations. The total result G is determined by averaging the marks of all the parts of the final assessment, bearing in mind the study load of each examination part. The total result G is not rounded off.

Cum Laude can be awarded when $G > 8$ and no mark is less than 7.0. In addition to this, the mark for the 'internal' research project- as specified in the study guide - must be ≥ 9 , and the mark for either the essay or the colloquium must be at least 8.5. The judicium Cum Laude will only be awarded to the final assessment of a Master's degree on the advice of the mentor.

The Board of Examiners may decide to award a judicium outside these criteria. In cases it considers to be borderline, the Board of Examiners may deviate from the provisions of Article 16.1 by taking not only the G average but also other matters into consideration, for example:

- 1 the originality of the thesis
- 2 the number of resits for examinations
- 3 the study pace
- 4 the results for examinations that were assessed by means other than a mark
- 5 the possibility of compensating for a mark lower than 7 by other positive factors
- 6 the results achieved for modules that do not form part of the student's examination programme as listed in Articles 7, 9 or 10 of the Teaching and Examination Regulations (OER).

9.4 University-wide regulations for Academic year 2011-2012

The Student Charter

The Student Charter provides an overview of the rights and obligations of both students and the University. It is based on national legislation, particularly the Higher Education and Research Act (WHW), supplemented by regulations that are specific to the University of Groningen. These latter regulations are set out in the appendices to the university-wide section of the Student Charter.

The Charter has been divided into two sections. The university-wide section describes the rights and obligations that apply to the university as a whole, such as registration and protection of rights. This section can be found on the University of Groningen website (www.rug.nl/studenten/ > Legal position > Students' charter).

The university-wide section of the Student Charter does not literally quote the articles from acts and regulations but describes them as clearly as possible. The various topics are accompanied by links to the relevant articles of the act or regulation in question.

The programme-specific sections describe the rights and obligations that apply to specific programmes, such as examinations and ECTS credit points, and which differ from one programme to another, as well as from one faculty

to another. You can consult the programme-specific section at the faculty Education Offices and in the faculty Study guides.

Applicability

The Student Charter applies to academic year 2011-2012. The university-wide section of the Student Charter is approved annually by the Board of the University and endorsed by the University Council. In the event that the Charter challenges or contradicts any legal regulations, these legal regulations will take priority.

Publication

A CD-ROM containing the Student Charter will be sent to the home addresses of students who register for a degree programme at the University of Groningen for the first time. All other students will receive a letter informing them where they can consult the Student Charter. It is also available on the internet.

The importance of the Student Charter

All students are expected to be familiar with the contents of the Student Charter. Not complying with the rules in the Charter may affect your rights, for example the right to financial support from the Graduation Fund. Some of these regulations may not be as hard and fast as they sound. Rules and regulations are by definition general in character, and this Student Charter is no exception. This means that the applicability of these regulations in concrete situations and individual instances is not always a predictable and straightforward matter. Moreover, rules and regulations are never static but always subject to revision. Students who have registered for the first time this year may find that the regulations that apply to them are different to those for students who have reregistered. Make sure you are provided with the right information by your faculty and/or the University Student Desk (USD) and read the Student Charter carefully!

Topics covered by the Student Charter

The university-wide part of the Student Charter contains further information about student rights and obligations with regard to the following topics:

- eligibility and admission requirements for university degree programmes
- registration and deregistration, payment of tuition fees
- teaching
- examinations and final assessments
- financial support in the event of force majeure or extraordinary circumstances
- participation
- rules of conduct
- protection of rights, complaints, objections and appeal procedures.

9.5 Addresses of Central Bodies University of Groningen

Board of the University (CvB)

Postal address: P.O. Box 72, 9700 AB Groningen, the Netherlands

Telephone: (050) 363 5285

Chapter 9. Regulations

University Council (U-raad)

Postal address: P.O. Box 72, 9700 AB Groningen, the Netherlands
Telephone: (050) 363 8535
E-mail: uraad@rug.nl
Internet: www.rug.nl/uraad

Legal Affairs Office (ABJZ)

Postal address: P.O. Box 72, 9700 AB Groningen, the Netherlands
Telephone: (050) 363 5440
E-mail: abjz@rug.nl
Internet: www.rug.nl/bureau/expertisecentra/abjz

Donald Smits Center for Information Technology (CIT)

Visiting address: Zernikeborg, Nettelbosje 1
Postal address: P.O. Box 11044, 9700 CA Groningen, the Netherlands
Telephone: (050) 363 9200
E-mail: secretariaat-cit@rug.nl
Internet: www.rug.nl/cit
CIT Helpdesk:
Telephone: (050) 363 3232
E-mail: servicedesk-centraal@rug.nl

Health, Safety and Environment Service (AMD)

Visiting address and postal address: Visserstraat 49, 9712 CT Groningen, the Netherlands
Telephone: (050) 363 5551
E-mail: amd@rug.nl
Internet: www.rug.nl/amd

Office of the Confidential Advisor; Marijke Dam, Confidential Advisor

Visiting and postal address: Visserstraat 47, 9712 CT Groningen, the Netherlands
Telephone: (050) 363 5435
E-mail: j.m.dam@rug.nl
Internet: www.rug.nl/vertrouwenspersoon

Complaints Committee for harassment, sexual harassment and aggressive, violent or discriminatory behaviour

Postal address: Antwoordnummer 172, 9700 AB Groningen

Addresses for students

University Student Desk (USD)

Visiting address: Broerstraat 5
Postal address: P.O. Box 72, 9700 AB Groningen, the Netherlands
Telephone: (050) 363 8004
Internet: www.rug.nl/insandouts

International Service Desk (ISD)

Visiting address: Broerstraat 5

Chapter 9. Regulations

Postal address: P.O. Box 72, 9700 AB Groningen, the Netherlands
Telephone: (050) 363 8181
E-mail: isd@rug.nl
Internet: www.rug.nl/isd

Student Service Centre

Visiting address: Uurwerkersgang 10
Postal address: P.O. Box 72, 9700 AB Groningen, the Netherlands
Telephone: (050) 363 8066
Email: ssc-secretariaat@rug.nl
Internet: www.rug.nl/ssc

Talent and Career Center (T&CC)

Visiting address: Munnekeholm 2, 9711 JA Groningen
Postal address: P.O. Box 7117, 9701 JC Groningen, the Netherlands
Telephone: (050) 311 1589
E-mail: info@talentcareercenter.nl
Internet: www.talentcareercenter.nl

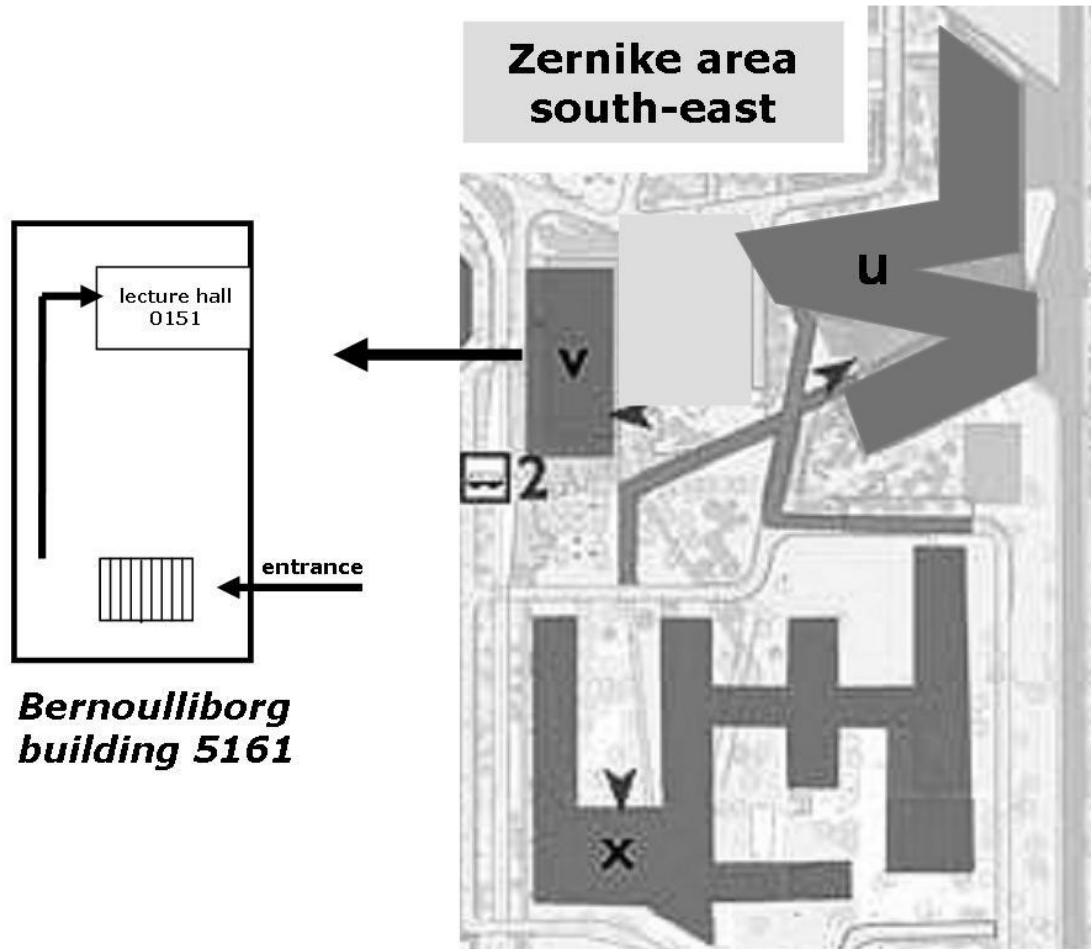
Central Portal for the Legal Protection of Student Rights (CLRS).

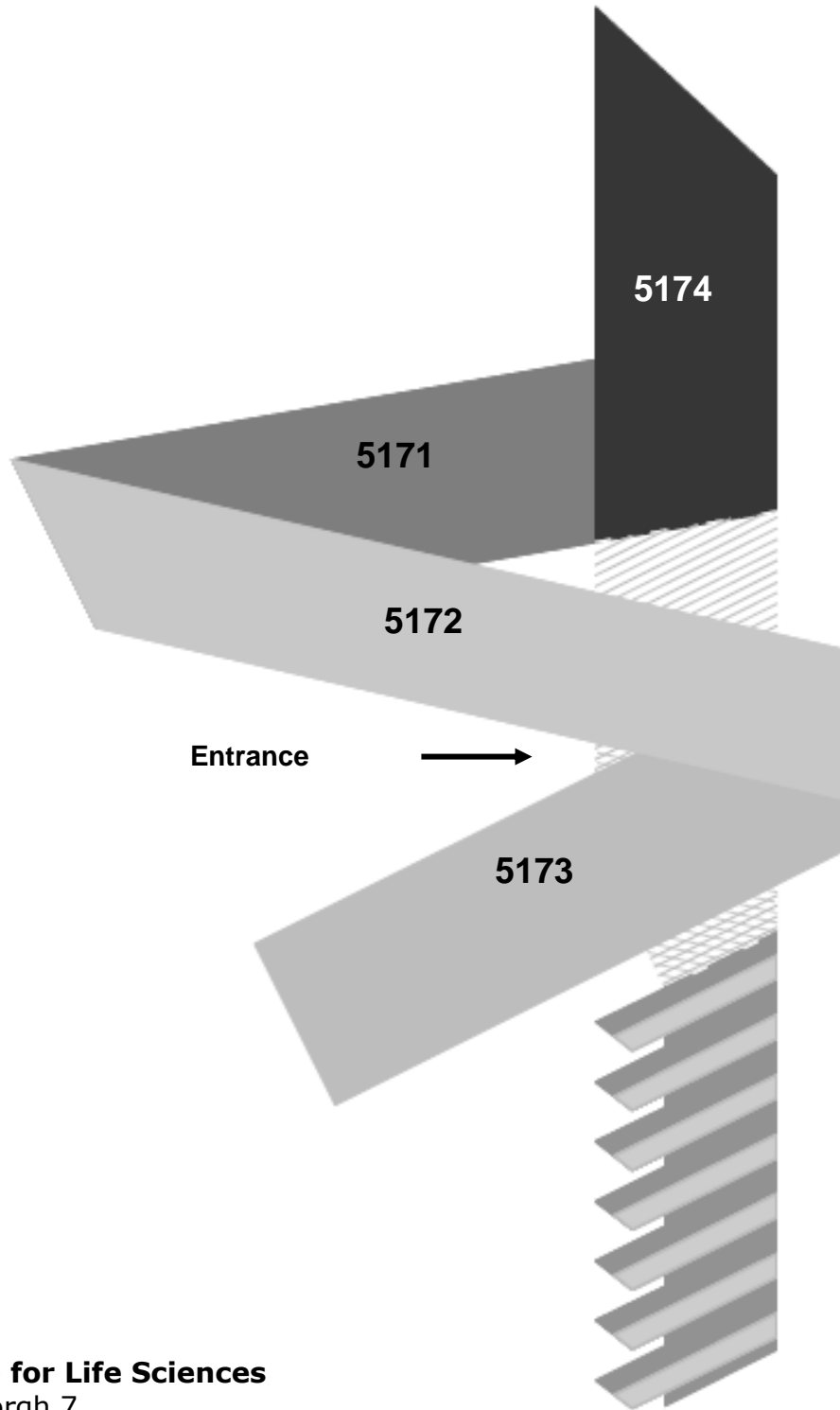
Postal address: P.O. Box 72, 9700 AB Groningen, the Netherlands
Internet/E-mail: www.rug.nl/studenten or www.rug.nl/insandouts

University Funds Committee (UFC)

Postal address: P.O. Box 72, 9700 AB Groningen, the Netherlands
E-mail: ufc@rug.nl

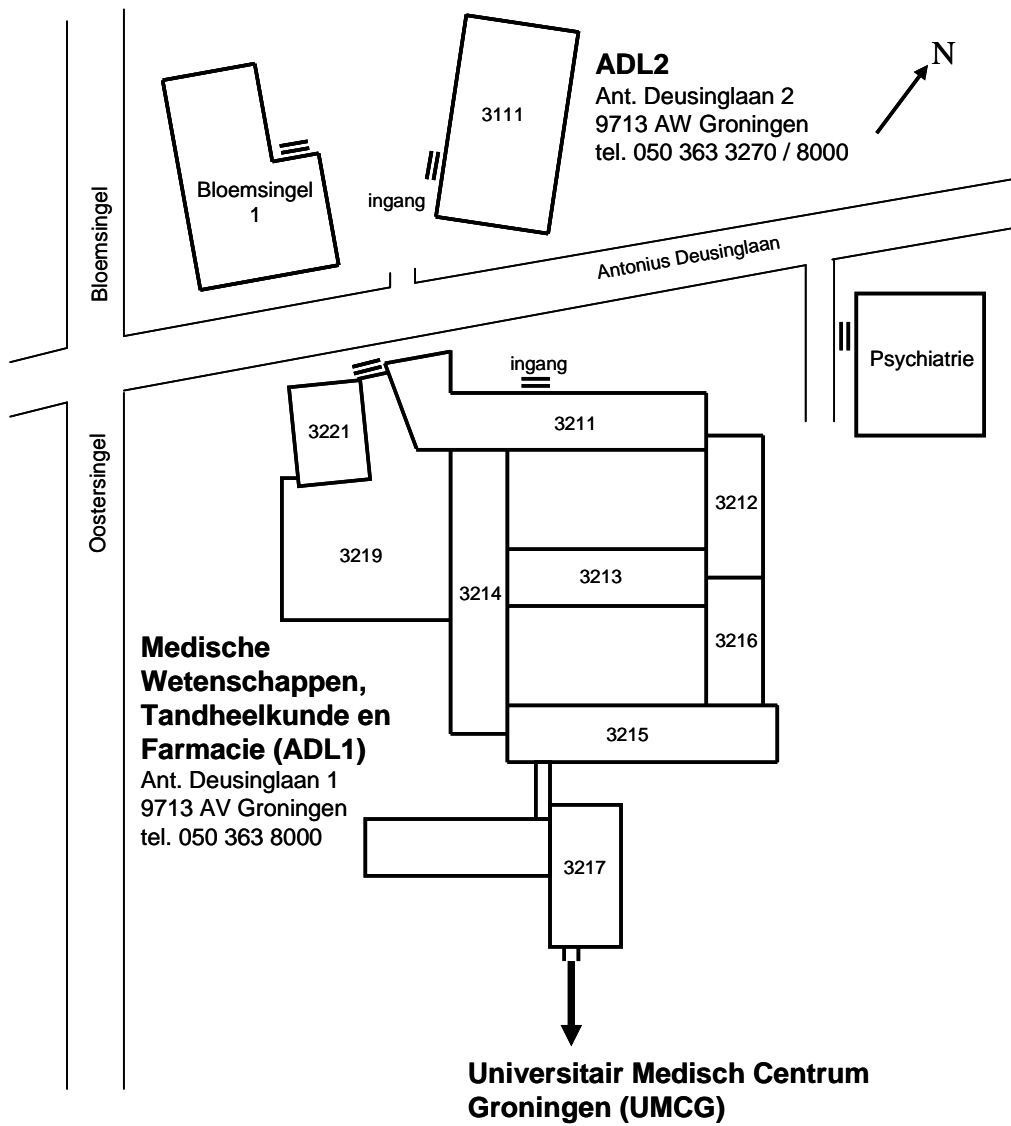
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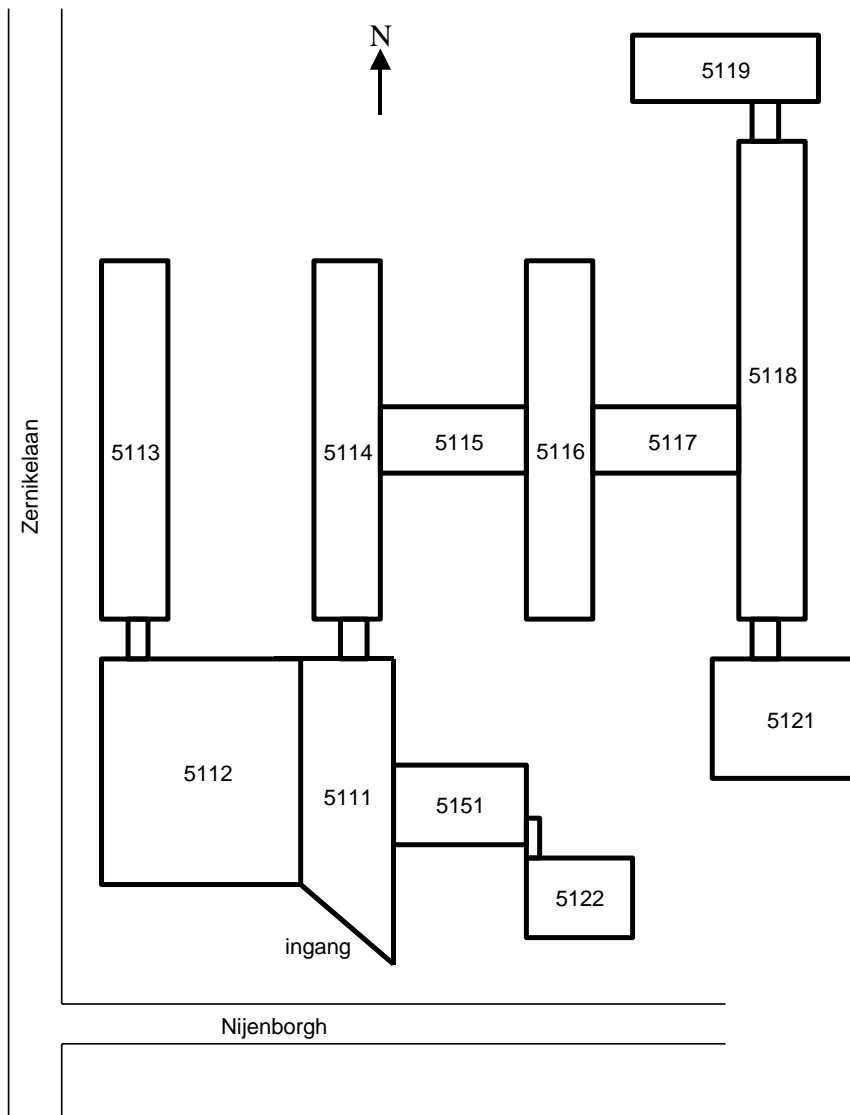


Centre for Life Sciences
Nijenborgh 7
9747 AG Groningen
tel. 050 363 2021

Chapter 10. Locations



Chapter 10. Locations



Chemie-Fysica-Milieukunde
Nijenborgh 4
9747 AG Groningen
tel. 050 363 4133