unine
Université de Neuchâtel
Faculté des sciences

MSc in Biology

Faculty of Science, University of Neuchâtel

An integral and transversal curriculum
The Master of Science in Biology offers a program that lets students select their area of specialization and acquire a diverse range of transferable skills. This MSc proposes an integrative approach: it begins with a common core of courses covering key topics in biology, with particular emphasis on methodological and quantitative aspects. Students then choose two of the six available specializations: chemical ecology, ecology and evolution, biodiversity and conservation, animal behavior, conservation biology, and sustainable agriculture.

Profs. in charge of the curriculum
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Version
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Valid for the academic year 2022-2023

General structure of the program :
The Master in Biology is a program given over the span of 2 years and requires 120 ECTS credits to complete. The first semester is dedicated to the core curriculum, whereas the second semester is dedicated to the acquisition of specializations. Of the six specializations available in 3 groups, each student must choose two from two different groups. The second year is entierly dedicated to field work and the completion of a Master thesis.

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<tr><td colspan="2">Core curriculum</td><td colspan="2">Specializations and Master thesis</td></tr>
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<tr><td>21 ECTS</td><td>15 ECTS</td><td colspan="2">24 ECTS specialization + 60 ECTS Master thesis</td></tr>
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Core curriculum (compulsory courses)

Modules/courses	Duration	Semester	ECTS	Principal Lecturer	Evaluation
Generic skills module			**9**		
Statistics	30	A	3	Dr R. Slobodeanu	CA (graded)
Scientific writing	30	A	3	Prof. K. Zuberbühler	CA (graded)
Seminars by externals	28	A and S	3	Dr T. Degen	CA (pass)
Computer tools (choose one)			**3**		
Bioinformatic tools	30	A	3	Prof. D. Croll	CA (graded)
Models and parameter estimation	30	A	3	Prof. J. Koella	CA (graded)
Seminars module (choose two)			**6**		
Ecology and biotechnology	30	A	3	Prof. J. Vermeer	CA (graded)
Ecology and evolution	30	A	3	Prof. K. Zuberbühler	CA (graded)
Ecology and biodiversity	30	A	3	Prof. D. Croll	CA (graded)
Laboratory methods (choose one)			**3**		
Molecular methods	7 hd	A	3	Dr S. Venkatasalam	CA (graded)
Natural substances analyses	7 hd	A	3	Prof. S. Von Reuss and Prof. G. Roeder	CA (graded)
Total ECTS Core compulsory courses			**21**		

Core curriculum (elective courses)

Modules/courses	Duration	Semester	ECTS	Principal Lecturer	Evaluation
Basics of Conservation biology			**3-15**		
Methods in biodiversity and conservation	28	A	3	Dr C. Praz	Written, 1 hour
Global change and restoration ecology	30	A	3	Prof. E. Mitchell	CA (graded)
Animal conservation	30	A	3	Dr C. Praz	CA (graded)
Plant systematics and evolution	30	S	3	Prof. J. Grant	CA (graded)
Natural ecosystems of Switzerland	3 d	S	3	Dr S. Ursenbacher (InfoFauna)	Written, 1 hour
Special skills			**3-15**		
Spatial modelling and remote sensing of natural systems 1	28	A	3	Dr S. Boillat	CA (graded)
Microscopy	7 hd	A	3	Dr O. Sereda (CSEM)	CA (graded)
Environmental data analysis	28	A	3	Dr E. Defossez	CA (graded)
Séminaire de socio-anthropologie de l'aide internationale	28	A	3 or 6	Prof. M. Fresia	CA (graded)
Spatial modelling and remote sensing of natural systems 2	28	S	3	Dr S. Boillat	CA (graded)
Environmental problems interdisciplinary perspective : directed readings	28	S	3	Prof. A. Aebi	CA (graded)
Non-validated compulsory course of the core curriculum			max 3		CA (graded)
Excursion (choose one max.)			**max 6**		
EXC Tropical ecology	7 d	A	6	Prof. B. Benrey	CA (pass)
EXC Marine biology	7 d	S	6	Prof. R. Bshary	CA (pass)
EXC Mediterranean ecology	7 d	S	6	Prof. W. Mueller	CA (pass)
EXC Alpine ecology	7 d	S	6	Prof. S. Rasmann	CA (pass)
Internship (see remarks)			**6**		
Approved by course controller	160	A or S	6	Prof. K. Zuberbühler	CA (pass)
Free electives (see remarks)			**max 6**		
Approved by course controller		A or S	max 6		
Total ECTS Core elective courses			**15**		

Specializations (see remarks)

Modules/courses	Duration	Semester	ECTS	Principal Lecturer	Evaluation
Group I					
Sustainable agriculture module			**12**		
Integrated pest management (course + workshop)	40	S	4	Profs. T. Turlings	CA (graded)
Plant domestication and insect interaction	20	S	2	Prof. B. Benrey	CA (graded)
Microbial ecology	30	S	3	Prof. P. Junier and Dr. S. Bindschedler	CA (graded)
Plant pathology	30	S	3	Dr T. Badet	CA (graded)
Animal behaviour module			**12**		
Integrative approach to animal behaviour	28	S	3	Prof. R. Bshary	CA (graded)
Animal behaviour research	28	S	3	Prof. K. Zuberbühler	CA (graded)
Behavioural ecology	28	S	3	Prof. R. Bshary	CA (graded)
Comparative cognition	28	S	3	Prof. K. Zuberbühler	CA (graded)
Group II					
Biodiversity conservation: an interdisciplinary perspective module			**12**		
Anthropological approaches to agro-environmental governance	28	S	3	Dr J. Forney	CA (graded)
Biodiversity and agriculture: a transdisciplinary perspective	28	S	3	Prof. A. Aebi	CA (graded)
Introduction to the law of biodiversity conservation	28	S	3	Dr V. Wyssbrod	CA (graded)
Introduction to environmental economics	28	S	3	Dr A. Zabel	CA (graded)
Ecology and evolution module			**12**		
Ecological interactions	30	S	3	Prof. B. Benrey	CA (graded)
Evolutionary parasitology	30	S	3	Prof. J. Koella	CA (graded)
Evolutionary ecology	30	S	3	Prof. D. Croll	CA (graded)
Methods in evolutionary ecology	30	S	3	Prof. J. Koella	CA (graded)

Specializations and Master thesis (see remarks)

Modules/courses	Duration	Semester	ECTS	Principal Lecturer	Evaluation
Group III					
Conservation biology module			**12**		
Conservation biology	30	S	3	Dr C. Praz	CA (graded)
Biodiversity and ecosystems functioning	30	S	3	Prof. C. Zemp	CA (graded)
From genes to ecosystems	30	S	3	Prof. S. Rasmann	CA (graded)
Faunistic methods	3 d	S	3	Dr B. Schmidt (InfoFauna)	CA (graded)
Chemical ecology module			**12**		
Basics of chemical ecology (+labs)	7 hd	S	2	Profs. T. Turlings and G. Roeder	Written, 1 hour
Biosynthesis and function of secondary compounds	7 hd	S	2	Profs. J. Vermeer and F. Kessler	CA (graded)
Recent advances in chemical ecology	7 hd	S	2	Prof. T. Turlings	CA (graded)
Plant molecular genetics (+labs)	7 hd	S	3	Prof. J. Vermeer	CA (graded)
Natural products chemistry (+labs)	7 hd	S	3	Prof. S. Von Reuss	CA (graded)
Total ECTS Specializations			**24**		
Master thesis			**60**		
Master thesis		A and S	60		CA (graded)
Total ECTS MSc in Biology			**120**		

Complementary information

Evaluations and regulations

- Course and exam registration in IS-Academia is compulsory for course validation.
- For details regarding Faculty regulations, please consult the *Règlement d'études et d'examens de la Faculté des sciences* and existing directives on the Faculty's webpage (www.unine.ch/sciences).
- Continous assessment evaluations (pass or graded) are specified in the corresponding course description.
- Elective courses must be validated with a sufficient mark (4.0) and cannot be compensated.
- When an evaluation of a course chosen from the modules **Computer tools**, **Seminars** and **Laboratory and field methods** is failed and not compensated after a second attempt, students have the option to choose another course of the same module until all choices are exhausted.

Abbreviations and grades

labs	= laboratory work
EXE	= exercises
EXC	= excursions
CA	= continous assessment
hd	= half-days
d	= days
N.N.	= teacher to be designated
A	= autumn semester
S	= spring semester

Remarks

- **Specializations :** Students must choose two specializations from two different groups.
- **Master thesis :** Must be supervised by a professor of the Institute of Biology.
- **Internship :** Students can validate an approx. 4 week internship for 6 ECTS credits during their Master program. For all related details, please contact Prof. K. Zuberbühler.
- **Free electives :** Up to 6 ECTS credits can be validated as free electives. Courses must be pre-approved by the Prof. in charge of the curriculum. In addition, they must be Master level courses and in relation to the field of Biology.
- **Excursions :** Available space may be limited (not possible for external students).

Transitional provisions for Conservation biology specialization module

Students who followed all courses of this specialization before 2022-23 must be examined on the earlier content as mentioned by the previous program (2021-22).
For students who have started this specialization and have not followed its full content in 2021-22 (or before), an analysis will be carried out by the Dean's Office at the beginning of the academic year 2022-23 to define specific transitional provisions. The students concerned will be contacted individually.

Examination modalities in the case of online exam sessions

If an exam session has to be held online, the examination modalities mentioned in this study plan are maintained and will be following.

- For a written exam to be held during the exam session (1h, 2h or 3h), the online exam will be of the duration mentioned by the study plan. An exception is made when the same exam evaluates two or more different courses simultaneously (indicated as a common or grouped exam in the study plan). In this case, the courses will be examined separately when the exam takes place online. The duration of each part of the on-line exam will be defined by the number of ECTS each examined course. A single mark will be notified for any such split up exam, as specified by the study plan.
- For oral exams to be held during the exam session, the online duration of the exam is maintained as specified in the study plan.
- Continuous assessments (graded or ungraded) remain unchanged even if the exam session is taking place online. If required, the evaluation modality will be adapted to the situation. The course description will be updated accordingly by the teacher in charge.
- All exams and assessments that take place in other Faculties or Universities remain under their responsibility and the FS cannot be held liable for specific rules and regulations regarding those evaluations.