

## Curriculum MSc in Biology / MSc en biologie (120 ECTS)

GENERAL STRUCTURE	ECTS	Status	Course controller
<b>CORE CURRICULUM</b>	<b>36</b>		
<b>a) Compulsory courses</b>	<b>21</b>		
MB-1: Module Generic skills	9	Compulsory	KZ
MB-2: Computer tools	3	Compulsory	JK
MB-3: Module Seminars	6	Compulsory	TT
MB-4: Laboratory and field methods	3	Compulsory	FK
<b>b) Elective courses</b>	<b>15</b>		
MB-5: Basics of Conservation biology	3 to 12	Elective	CP
MB-6: Special skills	3 to 15	Elective	AA
MB-7: Excursion	6	Elective	RB
MB-8: Internship	6	Elective	KZ
MB-9: Free elective	6	Elective	KZ
<b>SPECIALISATIONS</b> <i>(choose two from two different groups)</i>	<b>24</b>		
<b>Group I</b>			
MB-10: Module Sustainable agriculture	12	Elective	BB
MB-11: Module Animal behaviour	12	Elective	RB/KZ
<b>Group II</b>			
MB-12: Module Biodiversity conservation: an interdisciplinary perspective	12	Elective	AA/JF
MB-13: Module Ecology and evolution	12	Elective	JK
<b>Group III</b>			
MB-14: Module Conservation biology	12	Elective	EM
MB-15: Module Chemical ecology	12	Elective	TT
<b>MASTER THESIS</b>	<b>60</b>		
<b>Total MSc in Biology</b>	<b>120</b>		

**CORE CURRICULUM (36 ECTS)**

**a) Compulsory courses (21 ECTS)**

Modules/courses	Hours of courses	Semester	ECTS per module/course	Instructor	Participant / contributor	Evaluation
<b>MB-1 Module Generic skills</b>			<b>9 ECTS</b>			
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	Prof. T. Turlings and Dr T. Degen		CA (pass)
<b>MB-2 Computer tools (choose one)</b>			<b>3 ECTS</b>			
Bioinformatic tools	30	A	3	Prof. D. Croll	PD Dr N. Ivanov	CA (graded)
Models and parameter estimation	30	A	3	Prof. J. Koella		CA (graded)
<b>MB-3 Module Seminars (choose two)</b>			<b>6 ECTS</b>			
Ecology and biotechnology	30	A	3	Prof. J. Vermeer	Profs F. Kessler, T. Turlings and P. Junier	CA (graded)
Ecology and evolution	30	A	3	Prof. K. Zuberbühler	Profs J. Koella, B. Benrey and R. Bshary	CA (graded)
Ecology and biodiversity	30	A	3	Prof. D. Croll	Profs S. Rasmann, C. Zemp and Dr M. Mulot	CA (graded)
<b>MB-4 Laboratory and field methods (choose one)</b>			<b>3 ECTS</b>			
Molecular methods	7 half days	A	3	Dr F. Longoni	Profs. F. Kessler and J. Veermer	CA (graded)
Natural substances analyses	7 half days	A	3	Profs S. von Reuss and G. Roeder	(Prof. T. Turlings)	CA (graded)
Faunistic methods <sup>1)</sup>	3 days	S	3	Dr B. Schmidt (Infofauna)		CA (graded)

**b) Elective courses (15 ECTS)**

<b>MB-5 Basics of Conservation biology<sup>1)</sup></b>			<b>3-12 ECTS</b>			
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	Infofauna	CA (graded)
Natural ecosystems of Switzerland	3 days	S	3	Dr S. Urnenbacher (Infofauna)		Written, 1 hour
<b>MB-6 Special skills</b>			<b>3-15 ECTS</b>			
Soil and water management	30	A	3	Profs P. Brunner and D. Hunkeler		CA (graded)
Spatial modelling and remote sensing of natural systems 1	28	A	3	Dr F. Akinyemi		CA (graded)
Spatial modelling and remote sensing of natural systems 2	28	S	3	Dr S. Boillat		CA (graded)
Microscopy	7 half days	A	3	Dr O. Sereda		CA (graded)
Environmental problems and socio-anthropology: directed readings	28	S	3	Prof. A. Aebi		CA (graded)
Séminaire de socio-anthropologie de l'aide internationale (in French)	28	A	3 ou 6	Prof. M. Fresia		CA (graded)
Non-validated courses of MB-2, MB-3 and MB-4		A or S	max. 3			CA (graded)

## Master of Science in Biology

(from the academic year 2021-2022)

Modules/courses	Hours of courses	Semester	ECTS per module/course	Instructor	Participant / contributor	Evaluation
<b>MB-7 Excursion (choose one maximum**)</b>			<b>max. 6 ECTS</b>			
EXC Tropical ecology	7 days*	A	6	Prof. B. Benrey		CA (pass)
EXC Marine biology	7 days*	S	6	Prof. R. Bshary		CA (pass)
EXC Mediterranean ecology	7 days*	S	6	MER W. Müller		CA (pass)
EXC Alpine ecology (Switzerland)	7 days*	S	6	Prof. S. Rasmann	Dr S. Bindschedler and Prof. J. Grant	CA (pass)
<b>MB-8 Internship</b>			<b>6 ECTS</b>			
Approved by course controller	160 total	A or S	6	Prof. K. Zuberbühler	Prof. R. Bshary	CA (pass)
<b>MB-9 Free electives</b>			<b>max. 6 ECTS</b>			
Meet your future employer (industry, public sector, NGOs)	1 half day	A	1	Prof. T. Turlings		CA (pass)
Approved by course controller <sup>2)</sup>		A or S	max. 6	Prof. K. Zuberbühler	Prof. R. Bshary	

### SPECIALISATION (24 ECTS)

(choose two from two different groups)

Group I		12 ECTS				
<b>MB-10 Module Sustainable agriculture</b>			<b>12 ECTS</b>			
Integrated pest management (course + workshop)	40	S	4	Prof. T. Turlings		CA (graded)
Plant domestication and insect interactions	20	S	2	Prof. B. Benrey		CA (graded)
Microbial ecology	30	S	3	Dr D. Gonzalez (prof. P. Junier)	Dr S. Bindschedler	CA (graded)
Plant pathology	30	S	3	Dr T. Badet		CA (graded)
<b>MB-11 Module Animal behaviour <sup>a)</sup></b>			<b>12 ECTS</b>			
Integrative approach to animal behaviour	28	S	3	Prof. R. Bshary	Drs E. Genty and X.-Y. Li	CA (graded)
Animal behaviour research	28	S	3	Prof. K. Zuberbühler	Prof. R. Bshary	CA (graded)
Behavioural ecology	28	S	3	Prof. R. Bshary		CA (graded)
Comparative cognition	28	S	3	Prof. K. Zuberbühler		CA (graded)

<sup>a)</sup> see transitional provisions for students who have started this specialization before 21-22, p. 5

Group II		12 ECTS				
<b>MB-12 Module Biodiversity conservation: an interdisciplinary perspective</b>			<b>12 ECTS</b>			
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 (FD)		CA (graded)
Introduction to environmental economics	28	S	3	Dr A. Zabel		CA (graded)
<b>MB-13 Module Ecology and evolution</b>			<b>12 ECTS</b>			
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	Ambizione fellows	CA (graded)

## Master of Science in Biology

(from the academic year 2021-2022)

Modules/courses	Hours of courses	Semester	ECTS per module/course	Instructor	Participant / contributor	Evaluation
<b>Group III</b>						
<b>MB-14 Module Conservation biology (choose 4)</b>			<b>12 ECTS</b>			
Conservation biology	30	S	3	Dr C. Praz		CA (graded)
Advanced topics in conservation biology	30	S	3	Prof. C. Zemp		CA (graded)
From genes to ecosystems	30	S	3	Prof. S. Rasmann		CA (graded)
Plant population genetics and conservation	30	S	3	Dr F. Felber		CA (graded)
Plant systematics and evolution	30	S	3	Prof. J. Grant		CA (graded)
<b>MB-15 Module Chemical ecology</b>			<b>12 ECTS</b>			
Basics of chemical ecology + labs	7 half days	S	2	Prof. T. Turlings	Prof. G. Roeder	Written, 2 hours
Biosynthesis and function of secondary compounds	7 half days	S	2	Prof. J. Veermer	Prof. F. Kessler and Dr F. Longoni	
Recent advances in chemical ecology	7 half days	S	2	Prof. T. Turlings		CA (graded)
Plant molecular genetics + labs	7 half days	S	3	Prof. J. Veermer		CA (graded)
Natural products chemistry + labs	7 half days	S	3	Prof. S. von Reuss		CA (graded)

### MASTER THESIS (60 ECTS)

Modules/courses	Hours of courses	Semester	ECTS per module/course	Instructor	Participant / contributor	Evaluation
<b>MB-16 Master thesis<sup>3)</sup></b>		A and S	60			CA (graded)

<b>Total MSc in Biology</b>			<b>120 ECTS</b>			
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### Important remarks

When an evaluation of a course chosen in the compulsory modules MB-2, MB-3 et MB-4 is failed after a second attempt and not compensable, students have the possibility to choose another course in the concerned module until all choices are exhausted.

All elective courses are validated only with a sufficient mark.

### Transitional provisions

For courses with a content that has changed from earlier years, the students enrolled in earlier years must be examined on the earlier content.

MB-11 (Animal behaviour): Students who followed all courses of this specialization before 2021-22 must be examined on the earlier content as mentioned by the previous program (2020-21). For students who have started this specialisation and have not followed its full content in 2020-21 (or before), an analysis will be carried out by the Dean's Office at the beginning of the academic year 2021-22 to define transitional provisions.

### Abbreviations and notes

<sup>1)</sup> Highly recommended for students following specialisations in conservation (MB-10, MB-12 or MB-14)

<sup>2)</sup> Free elective courses must be chosen from courses that are evaluated independently of other courses of the same module.

<sup>3)</sup> **Master thesis must be supervised by a professor of the Institute of Biology**

\* Travel time to be added for excursions abroad

\*\* Check availability, available spaces may be limited (not possible for external students)

CA (pass) = continuous assessment without grading, modalities fixed in course descriptives

CA (graded) = continuous assessment that is graded, modalities fixed in course descriptives

A = autumn semester

S = spring semester

### Informations

Master coordinators: **Prof. K. Zuberbühler** (klaus.zuberbuehler@unine.ch) and **Prof. R. Bshary** (redouan.bshary@unine.ch)

### Exams and regulation

Candidates must be registered in IS-Academia for both courses and exams.

**For regulation, please consult the homepage of the Faculty of Sciences, [www.unine.ch/sciences](http://www.unine.ch/sciences) ("règlement d'études et d'examens" and existing directives) or the administrative staff of the Faculty.**

### 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.