

## Curriculum 'M Sc in Biology' (120 ECTS)

GENERAL STRUCTURE	ECTS	Status	Course controller
<b>CORE CURRICULUM</b>	<b>36</b>		
<b>a) Compulsory courses</b>	<b>21</b>		
<b>MB-1:</b> Module Generic skills	9	Compulsory	KZ
<b>MB-2:</b> Computer tools	3	Compulsory	JK
<b>MB-3:</b> Module Seminars	6	Compulsory	TT
<b>MB-4:</b> Laboratory and field methods	3	Compulsory	FK
<b>b) Elective courses</b>	<b>15</b>		
<b>MB-5:</b> Basics of Conservation biology	3 to 12	Elective	CP
<b>MB-6:</b> Special skills	3 to 15	Elective	N.N.
<b>MB-7:</b> Excursion	6	Elective	RB
<b>MB-8:</b> Internship	6	Elective	KZ
<b>MB-9:</b> Free elective	6	Elective	KZ
<b>SPECIALISATIONS</b> <i>(choose two from two different groups)</i>	<b>24</b>		
<b>Group I</b>			
<b>MB-10:</b> Module Sustainable agriculture	12	Elective	BB
<b>MB-11:</b> Module Animal behaviour	12	Elective	RB/KZ
<b>Group II</b>			
<b>MB-12:</b> Module Biodiversity conservation: an interdisciplinary perspective	12	Elective	N.N.
<b>MB-13:</b> Module Ecology and evolution	12	Elective	JK
<b>Group III</b>			
<b>MB-14:</b> Module Conservation biology	12	Elective	EM
<b>MB-15:</b> 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 et 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 biochemistry	30	A	3	Profs B. Mauch-Mani et T. Turlings	Profs F. Kessler, J. Veermer	CA (graded)
Ecology and evolution	30	A	3	Prof. K. Zuberbühler	Profs J. Koella, B. Benrey, R. Bshary	CA (graded)
Ecology and biodiversity	30	A	3	Prof. D. Croll	Profs S. Rasmann, P. Junier 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	Prof. F. Kessler	Prof. J. Veermer and Dr P. Longoni	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	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 Y. Gonseth	Infofauna	CA (graded)
Natural ecosystems of Switzerland	3 days	S	3	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 of natural systems - 1 (in French)	28	A	3	Prof. M. Bouzelboudjen		CA (graded)
Spatial modelling of natural systems - 2 (in French)	28	S	3	Prof. M. Bouzelboudjen	Dr Y. Gonseth	CA (graded)
Microscopy	7 half days	A	3	Prof. M. Dadras		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	4	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 2020-2021)

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) <b>not given in 2020-2021</b>	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	Prof. P. Junier	Dr S. Bindschedler	CA (graded)
Plant pathology	30	S	3	N.N.		CA (graded)
<b>MB-11 Module Animal behaviour</b>			<b>12 ECTS</b>			
Integrative approach to animal behaviour	40	S	4	Prof. R. Bshary	Prof. K. Zuberbühler	CA (graded)
Behavioural ecology	40	S	4	Prof. R. Bshary		CA (graded)
Comparative cognition	40	S	4	Prof. K. Zuberbühler		CA (graded)
Group II		12 ECTS				
<b>MB-12 Biodiversity conservation: an interdisciplinary perspective</b>			<b>12 ECTS</b>			
Anthropological approaches to agro-environmental governance in Switzerland	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 V. Boisvert (FSE)		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 2020-2021)

Modules/courses	Hours of courses	Semester	ECTS per module/course	Instructor	Participant / contributor	Evaluation
<b>Group III</b>						
			<b>12 ECTS</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	N.N.		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 P. 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.

### 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) et **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.**