Master of Science in Biology
(from the academic year 2019)

Curriculum 'M Sc in Biology' (120 ECTS)

GENERAL STRUCTURE	ECTS	Status	Course controller
CORE CURRICULUM	**36**		
a) Compulsory courses	**21**		
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 methods	3	Compulsory	FK
b) Elective courses	**15**		
MB-5: Special skills	3 to 15	Elective	N.N.
MB-6: Excursion	6	Elective	RB
MB-7: Internship	6	Elective	KZ
MB-8: Free elective	6	Elective	KZ
SPECIALISATIONS *(choose two from two different groups)*	**24**		
Group I			
MB-9: Module Sustainable agriculture	12	Elective	BM-M/BB
MB-10: Module Animal behaviour	12	Elective	RB/KZ
Group II			
MB-11: Module Chemical ecology	12	Elective	TT
MB-12: Module Conservation and biodiversity	12	Elective	EM
Group III			
MB-13: Module Biology-anthropology	12	Elective	AA
MB-14: Module Ecology and evolution	12	Elective	JK
MASTER THESIS	**60**		
Total MSc in Biology	**120**		

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CORE CURRICULUM (36 ECTS)

a) Compulsory courses (21 ECTS)

Modules/courses	Hours of courses	Semester	ECTS per module/course	Instructor	Participant / contributor	Evaluation
MB-1 Module Generic skills			**9 ECTS**			
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	Dr R. Knetsch	CA (pass)
MB-2 Computer tools *(choose one)*			**3 ECTS**			
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)
MB-3 Module Seminars *(choose two)*			**6 ECTS**			
Ecology and biochemistry	30	A	3	Prof. T. Turlings	Profs F. Kessler, B. Mauch-Mani, 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 E. Mitchell	CA (graded)
MB-4 Laboratory methods *(choose one)*			**3 ECTS**			
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	Prof. S. von Reuss	Prof. G. Roeder	CA (graded)

b) Elective courses (15 ECTS)

MB-5 Special skills			**3-15 ECTS**			
Methods in biodiversity and conservation	28	A	3	Prof. C. Praz		Written, 1 hour
Soil and water management	30	A	3	Profs P. Brunner and D. Hunkeler		CA (graded)
Plant systematics and evolution	30	A	3	Prof. J. Grant		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)
Non-validated courses of MB-2, MB-3 and MB-4		A	max. 3			CA (graded)
MB-6 Excursion *(choose one maximum)***			**max. 6 ECTS**			
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)

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Modules/courses	Hours of courses	Semester	ECTS per module/course	Instructor	Participant / contributor	Evaluation
MB-7 Internship			**6 ECTS**			
Approved by course controller	160 total	A or S	6	Prof. K. Zuberbühler	Prof. R. Bshary	CA (pass)
MB-8 Free electives			**max. 6 ECTS**			
Meet your future employer (industry, public sector, NGOs)	1 half day	A	1	Prof. T. Turlings		CA (pass)
Approved by course controller[1)]		A or S	max. 6	Prof. K. Zuberbühler	Prof. R. Bshary	

SPECIALISATION (24 ECTS) *(choose two from two different groups)*

Group I			**12 ECTS**			
MB-9 Module Sustainable agriculture			**12 ECTS**			
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	Prof. B. Mauch-Mani		CA (graded)
MB-10 Animal behaviour			**12 ECTS**			
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**			
MB-11 Module Chemical ecology			**12 ECTS**			
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	Dr P. Longoni	CA (graded)
Natural products chemistry + labs	7 half days	S	3	Prof. S. von Reuss		CA (graded)
MB-12 Module Conservation and biodiversity			**12 ECTS**			
Global change and restoration ecology	30	S	3	Prof. E. Mitchell		CA (graded)
Conservation biology	30	S	3	Dr C. Praz		CA (graded)
Animal conservation	30	S	3	Dr Y. Gonseth	Dr C. Praz	CA (graded)
From genes to ecosystems	30	S	3	Prof. S. Rasmann		CA (graded)

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Modules/courses	Hours of courses	Semester	ECTS per module/course	Instructor	Participant / contributor	Evaluation
Group III			**12 ECTS**			
MB-13 Module Biology-anthropology (choose 3)			**12 ECTS**			
Environmental problems interdisciplinary perspective: directed readings[2)]	28	S	4	Profs A. Aebi and E. Hertz		CA (graded)
Environment and agri-food systems	28	S	4	Drs C. D. Bentia and J. Forney		CA (graded)
Advanced problems in social studies of science	28	S	4	Prof. E. Hertz		CA (graded)
Séminaire de socio-anthropologie de l'aide internationale (in French)	28	A	4	Prof. M. Fresia		CA (graded)
Une anthropologie politique de la nature : ONG, réseaux et mouvements sociaux environnementaux (in French)	28	A	4	Dr C. Dubuis		CA (graded)
MB-14 Module Ecology and evolution (choose 4)			**12 ECTS**			
Ecological interactions	30	S	3	Prof. B. Benrey		CA (graded)
Evolutionary parasitology	30	S	3	Dr A. Rojas Mora	Prof. J. Koella	CA (graded)
Evolutionary ecology	30	S	3	Prof. D. Croll		CA (graded)
Evolutionary applications	30	S	3	Prof. J. Koella		CA (graded)
Plant population genetics and conservation	30	S	3	Dr PD F. Felber		CA (graded)

MASTER THESIS (60 ECTS)

Modules/courses	Hours of courses	Semester	ECTS per module/course	Instructor	Participant / contributor	Evaluation
MB-15 Master thesis[3)]		A and S	60			CA (graded)

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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
[1)] Free elective courses must be chosen from courses that are evaluated independently of other courses of the same module.
[2)] Compulsory for students without relevant background in social anthropology
[3)] 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 registred in IS-Academia for both courses and exams.
For regulation, please consult the homepage of the Faculty of Sciences, www.unine.ch/sciences ("règlement d'études et d'examens" and existing directives) or the administrative staff of the Faculty.