

Curriculum "M Sc in Biology" (120 ECTS)

GENERAL STRUCTURE	ECTS	Status	Resp.
CORE CURRICULUM			
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: Module "Special skills"	3 to 15	Elective	JMN
MB-6: "Excursion"	6	Elective	RB
MB-7: "Internship"	6	Elective	MV
MB-8: Module "Free electives"	3 or 6	Elective	MV
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 "Biology-anthropology"	12	Elective	AA
MB-13: Module "Evolution & biodiversity"	12	Elective	DC
Group III			
MB-14: Module "Ecology & environment"	12	Elective	SR
MB-15: Module "Parasitology"	12	Elective	JK
MASTER THESIS	60		
Total M Sc in Biology	120		

CORE CURRICULUM

a) Compulsory courses (21 ECTS)

Modules/courses	Hours per week	Semester	ECTS per module/course	Teacher(s)	Evaluation mode
MB-1 Module "Generic skills"			9 ECTS		
Statistics	3 ¹⁾	A	3	Prof. M. Voordouw	CA (graded)
Scientific writing	3 ¹⁾	A	3	Prof. K. Zuberbühler	CA (graded)
Seminars by externals	2	A/S	3	Prof. T. Turlings	CA (pass)
MB-2 "Computer tools" (choose one*)			3 ECTS		
Bioinformatics tools	3 ¹⁾	A	3	PD Dr N. Ivanov	CA (graded)
Models and parameter estimation	3 ¹⁾	A	3	Prof. J. Koella	CA (graded)
MB-3 Module "Seminars" (choose two*)			6 ECTS		
Seminar Ecology and biochemistry	3 ¹⁾	A	3	Prof. J.-M. Neuhaus et al. (FK, TT, BMM, ED)	CA (graded)
Seminar Ecology and evolution	3 ¹⁾	A	3	Prof. R. Bshary et al. (JK, MV, KZ, BB)	CA (graded)
Seminar Ecology and biodiversity	3 ¹⁾	A	3	Prof. P. Junier et al. (SR, EM)	CA (graded)
MB-4 "Laboratory methods" (choose one*)			3 ECTS		
Molecular methods	7 half days	A	3	Profs F. Kessler, J.-M. Neuhaus and Dr E. Demarsy	CA (graded)
Natural substances analyses	7 half days	A	3	Profs T. Turlings and S. von Reuss	CA (graded)

b) Elective courses (15 ECTS)

MB-5 Module "Special skills"			3-15 ECTS		
Ethics & biosecurity	7 half days	A	3	Profs J.-M. Neuhaus and B. Mauch-Mani	CA (graded)
Spatial modelling of natural systems - 1	7 half days	A	4	Dr M. Bouzelboudjen	CA (graded)
Spatial modelling of natural systems - 2	2	S	3	Dr M. Bouzelboudjen	CA (graded)
Microscopy	7 half days	A	3	Dr M. Dadras	CA (graded)
Non-validated courses of modules MB-2 ; MB-3 and MB-4	3 ¹⁾ each	A	3 or 6 or 9		CA (graded)
MB-6 "Excursion" (choose one)			6 ECTS		
EXC Alpine ecology	7 days*	S	6	PD R. Bergmüller	CA (graded)
EXC Tropical ecology	7 days*	A	6	MER B. Benrey	CA (graded)
EXC Marine biology	7 days*	S	6	Prof. R. Bshary	CA (graded)

Modules/courses	Hours per week	Semester	ECTS per module/course	Teacher(s)	Evaluation mode
MB-7 "Internship"			6 ECTS		
The internship has to be approved by the Master coordinator		A/S	6	Prof. M. Voordouw	CA (graded)
MB-8 Module "Free electives"			3 or 6 ECTS		
The courses have to be approved by the Master coordinator ²⁾					

SPECIALISATION (24 ECTS)

(choose two from two different groups)

Modules/courses	Hours per week	Semester	ECTS per module/course	Teacher(s)	Evaluation mode
Group I			12 ECTS		
MB-9 Module "Sustainable agriculture"			12 ECTS		
Integrated pest management (course + workshop)	3 ¹⁾	S	4	Prof. T. Turlings et al.	Written, 2 hours
Plant domestication and insect interactions	3 ¹⁾	S	2	MER B. Benrey	
Soil and water management	3 ¹⁾	S	3	Profs D. Hunkeler and P. Brunner	
Plant pathology	3 ¹⁾	S	3	Prof. B. Mauch-Mani	
MB-10 Module "Animal behaviour"			12 ECTS		
An integrative approach to animal behaviour	3 ¹⁾	S	3	Prof. R. Bshary et al.	CA (graded)
Behavioural ecology	3 ¹⁾	S	3	Prof. R. Bshary	
Eco-physiology	3 ¹⁾	S	3	Prof. F. Helfenstein	
Comparative cognition	3 ¹⁾	S	3	Prof. K. Zuberbühler	
Group II			12 ECTS		
MB-11 Module "Chemical ecology"			12 ECTS		
The basics of chemical ecology + labs	7 half days	S	2	Prof. T. Turlings et al.	Written, 2 hours
Biosynthesis and function of secondary compounds	7 half days	S	2	Profs F. Kessler and J.-M. Neuhaus	
Recent advances in chemical ecology	7 half days	S	2	Prof. T. Turlings	CA (graded)
Molecular genetics of secondary metabolism + labs	7 half days	S	3	Dr E. Demarsy and Prof. J.-M. Neuhaus	CA (graded)
Natural products chemistry + labs	7 half days	S	3	Prof. S. von Reuss	CA (graded)

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Modules/courses	Hours per week	Semester	ECTS per module/course	Teacher(s)	Evaluation mode
MB-12 Module "Biology-anthropology"			12 ECTS		
Environmental problems interdisciplinary perspective: directed readings ³⁾	2	S	4	MER A. Aebi and Prof. E. Hertz	CA (graded)
Anthropologie thématique - Environment and agri-food systems	2	S	4	Prof. J. Forney	CA (graded)
Anthropologie thématique - Séminaire de socio-anthropologie du développement (course only in French)	2	S	4	Prof. M. Fresia	CA (graded)
Anthropologie thématique - Sociologie de l'engagement dans les associations de défense de l'environnement (course only in French)	2	A	4	Dr C. Dubuis	CA (graded)
Ethnobotany	2	S	4	Dr J. Kissling	CA (graded)
MB-13 Module "Evolution & biodiversity"			12 ECTS		
Landscape genetics	2 ¹⁾	S	2	PD Dr C. Parisod	CA (graded)
Plant population genetics and conservation	2 ¹⁾	S	2	PD Dr F. Felber	CA (graded)
Conservation biology	2 ¹⁾	S	2	Dr C. Praz	CA (graded)
Evolutionary ecology	3 ¹⁾	S	3	Prof. D. Croll	CA (graded)
Biodiversity	3 ¹⁾	S	3	Dr E. Lara and Dr C. Praz	CA (graded)
Group III			12 ECTS		
MB-14 Module "Ecology & Environment"			12 ECTS		
From genes to ecosystems	3 ¹⁾	S	3	Prof. S. Rasmann	CA (graded)
Microbial ecology	3 ¹⁾	S	3	Prof. P. Junier	CA (graded)
Environmental mycology	2 ¹⁾	S	2	Dr S. Binschedler	CA (graded)
Biologie du sol (course only in French)	2 ¹⁾	S	2	Prof. E. Mitchell	CA (graded)
Paléoécologie (course only in French)	2 ¹⁾	S	2	Prof. E. Mitchell	CA (graded)
MB-15 Module "Parasitology"			12 ECTS		
Parasitoid-host interactions	3 ¹⁾	S	3	MER B. Benrey	CA (graded)
Evolution of parasites	3 ¹⁾	S	3	Prof. M. Voordouw	CA (graded)
Topics in parasitology	3 ¹⁾	S	3	Prof. J. Koella	CA (graded)
Experimental parasitology	2	S	3	Prof. J. Koella	CA (graded)

MASTER THESIS (60 ECTS)

Modules/courses	Hours per week	Semester	ECTS per module/course	Teacher(s)	Evaluation mode
MB-16 Master thesis ⁴⁾		A/S	60		CA (graded)
Total M Sc in Biology			120 ECTS		

Abbreviations and notes

¹⁾ **The courses will take place over 10 weeks rather than 14**

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

³⁾ This course is compulsory for student without prior experience in anthropology

⁴⁾ **The Master thesis must be carried out under the responsibility of a Professor of The Institute of Biology**

* Travel time to be added for excursions abroad

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

NPAC = Neuchâtel Platform of Analytical Chemistry

Informations

Master coordinator: **Prof. K. Zuberbühler** (klaus.zuberbuehler@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 ("règlement d'études et d'examens" and existing directives) or the administrative staff of the Faculty

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