An integral and transversal curriculum
The Master of Science in Biology offers a programme 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 specialisations: chemical ecology, ecology and evolution, biodiversity, animal behaviour, conservation biology, and sustainable agriculture.

Profs. in charge of the curriculum
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General structure of the programme:
The Master in Biology is a programme 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 specialisations. Of the six specialisations available in 3 groups, each student must choose two from two different groups. The second year is entirely dedicated to field work and the completion of a Master thesis.

<table>
<thead>
<tr>
<th>Core curriculum</th>
<th>Specialisations and Master thesis</th>
</tr>
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<tbody>
<tr>
<td><strong>Compulsory courses</strong></td>
<td><strong>Elective courses</strong></td>
</tr>
<tr>
<td>Generic skills</td>
<td>Basics of conservation biology</td>
</tr>
<tr>
<td>Computer tools</td>
<td>Special skills</td>
</tr>
<tr>
<td>Seminars</td>
<td>Excursions</td>
</tr>
<tr>
<td>Laboratory and field methods</td>
<td>Internship</td>
</tr>
<tr>
<td></td>
<td>Free electives</td>
</tr>
<tr>
<td><strong>21 ECTS</strong></td>
<td><strong>15 ECTS</strong></td>
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## Core curriculum (compulsory courses)

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

<table>
<thead>
<tr>
<th>Modules/courses</th>
<th>Duration</th>
<th>Semester</th>
<th>ECTS</th>
<th>Principal Lecturer</th>
<th>Evaluation</th>
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<tbody>
<tr>
<td><strong>Basics of Conservation biology</strong></td>
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<td></td>
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<tr>
<td>Methods in biodiversity monitoring</td>
<td>28</td>
<td>A</td>
<td>3</td>
<td>Dr C. Praz</td>
<td>Written, 1 hour</td>
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<tr>
<td>Animal conservation</td>
<td>30</td>
<td>A</td>
<td>3</td>
<td>Dr C. Praz (info fauna)</td>
<td>CA (graded)</td>
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<tr>
<td>Biodiversity and agriculture: a transdisciplinary perspective</td>
<td>28</td>
<td>S</td>
<td>3</td>
<td>Prof. A. Aebi</td>
<td>CA (graded)</td>
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<tr>
<td>Plant systematics and evolution</td>
<td>30</td>
<td>S</td>
<td>3</td>
<td>Prof. J. Grant</td>
<td>CA (graded)</td>
</tr>
<tr>
<td><strong>Special skills</strong></td>
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<tr>
<td>Introduction to geomatics for biodiversity conservation</td>
<td>28</td>
<td>A</td>
<td>3</td>
<td>Dr S. Boillat</td>
<td>CA (graded)</td>
</tr>
<tr>
<td>Microscopy</td>
<td>7 hd</td>
<td>A</td>
<td>3</td>
<td>Dr O. Sereda (CSEM)</td>
<td>CA (graded)</td>
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<td>Directed readings : First steps in natural or social sciences</td>
<td>28</td>
<td>A</td>
<td>3</td>
<td>Prof. A. Aebi</td>
<td>CA (graded)</td>
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<tr>
<td>Advanced geomatics for biodiversity conservation</td>
<td>28</td>
<td>S</td>
<td>3</td>
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<td>Non-validat ed compulsory course of the core curriculum</td>
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<td><strong>Excursion (choose one max.)</strong></td>
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<td>EXC Tropical ecology</td>
<td>7 d</td>
<td>S</td>
<td>3</td>
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<td>CA (pass)</td>
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<tr>
<td>EXC Marine biology</td>
<td>7 d</td>
<td>S</td>
<td>3</td>
<td>Prof. R. Bshary</td>
<td>CA (pass)</td>
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<tr>
<td>EXC Mediterranean ecology</td>
<td>7 d</td>
<td>S</td>
<td>3</td>
<td>Prof. W. Mueller</td>
<td>CA (pass)</td>
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<tr>
<td>EXC Alpine ecology</td>
<td>7 d</td>
<td>S</td>
<td>3</td>
<td>Prof. S. Rasmann Dr. S. Bindschedler Prof. J. Grant</td>
<td>CA (pass)</td>
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<tr>
<td><strong>Internship (see remarks)</strong></td>
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<tr>
<td>Approved by course controller</td>
<td>160</td>
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<td>Prof. K. Zuberbühler</td>
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<tr>
<td><strong>Free electives (see remarks)</strong></td>
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<td>Approved by course controller</td>
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<td>A or S</td>
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**Total ECTS Core elective courses**: 15
## Study plan and evaluations

MSc in Biology

2023-2024

### Specialisations (see remarks)

<table>
<thead>
<tr>
<th>Modules/courses</th>
<th>Duration</th>
<th>Semester</th>
<th>ECTS</th>
<th>Principal Lecturer</th>
<th>Evaluation</th>
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<tbody>
<tr>
<td><strong>Group I</strong></td>
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<tr>
<td><strong>Sustainable agriculture module</strong></td>
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<tr>
<td>Integrated pest management (course + workshop)</td>
<td>40</td>
<td>S</td>
<td>4</td>
<td>Profs. T. Turlings</td>
<td>CA (graded)</td>
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<tr>
<td>Plant domestication and insect interactions</td>
<td>20</td>
<td>S</td>
<td>2</td>
<td>Prof. B. Benrey</td>
<td>CA (graded)</td>
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<tr>
<td>Microbial ecology</td>
<td>30</td>
<td>S</td>
<td>3</td>
<td>Prof. P. Junier and Dr. S. Bindschedler</td>
<td>CA (graded)</td>
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<tr>
<td>Plant pathology</td>
<td>30</td>
<td>S</td>
<td>3</td>
<td>Dr T. Badet</td>
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<tr>
<td><strong>Animal behaviour module</strong></td>
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<tr>
<td>An integrative approach to animal behaviour</td>
<td>28</td>
<td>S</td>
<td>3</td>
<td>Prof. R. Bshary</td>
<td>CA (graded)</td>
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<tr>
<td>Animal behaviour research</td>
<td>28</td>
<td>S</td>
<td>3</td>
<td>Prof. K. Zuberbühler</td>
<td>CA (graded)</td>
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<tr>
<td>Behavioural ecology</td>
<td>28</td>
<td>S</td>
<td>3</td>
<td>Prof. R. Bshary</td>
<td>CA (graded)</td>
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<tr>
<td>Comparative cognition</td>
<td>28</td>
<td>S</td>
<td>3</td>
<td>Prof. K. Zuberbühler</td>
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<td><strong>Group II</strong></td>
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<td><strong>Biodiversity module</strong></td>
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<td>Soil biodiversity</td>
<td>28</td>
<td>S</td>
<td>3</td>
<td>Prof. E. Mitchell</td>
<td>CA (graded)</td>
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<tr>
<td>Genomics of biodiversity</td>
<td>28</td>
<td>S</td>
<td>3</td>
<td>Prof. K. Lucek</td>
<td>CA (graded)</td>
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<tr>
<td>Natural ecosystems of Switzerland</td>
<td>28</td>
<td>S</td>
<td>3</td>
<td>Dr S. Ursenbacher (info fauna)</td>
<td>CA (graded)</td>
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<tr>
<td>Biodiversity data analysis</td>
<td>28</td>
<td>S</td>
<td>3</td>
<td>Dr E. Defossez</td>
<td>CA (graded)</td>
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<tr>
<td><strong>Ecology and evolution module</strong></td>
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<tr>
<td>Ecological interactions</td>
<td>30</td>
<td>S</td>
<td>3</td>
<td>Prof. B. Benrey</td>
<td>CA (graded)</td>
</tr>
<tr>
<td>Evolutionary parasitology</td>
<td>30</td>
<td>S</td>
<td>3</td>
<td>Prof. J. Koella</td>
<td>CA (graded)</td>
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<tr>
<td>Evolutionary ecology</td>
<td>30</td>
<td>S</td>
<td>3</td>
<td>Prof. D. Croll</td>
<td>CA (graded)</td>
</tr>
<tr>
<td>Methods in evolutionary ecology</td>
<td>30</td>
<td>S</td>
<td>3</td>
<td>Prof. J. Koella</td>
<td>CA (graded)</td>
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</tbody>
</table>
### Study plan and evaluations
### MSc in Biology
### 2023-2024

#### Specializations and Master thesis (see remarks)

<table>
<thead>
<tr>
<th>Modules/courses</th>
<th>Duration</th>
<th>Semester</th>
<th>ECTS</th>
<th>Principal Lecturer</th>
<th>Evaluation</th>
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<td><strong>Group III</strong></td>
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<tr>
<td><strong>Conservation biology module</strong></td>
<td>12</td>
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<tr>
<td>Evidence-based conservation of species and habitats</td>
<td>30</td>
<td>S</td>
<td>3</td>
<td>Dr C. Praz</td>
<td>CA (graded)</td>
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<tr>
<td>Evidence-based conservation of ecosystems</td>
<td>30</td>
<td>S</td>
<td>3</td>
<td>Prof. C. Zemp</td>
<td>CA (graded)</td>
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<tr>
<td>Plant and ecosystem conservation</td>
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<td>S</td>
<td>3</td>
<td>Prof. S. Rasmann</td>
<td>CA (graded)</td>
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<tr>
<td>Faunistic methods</td>
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<td>S</td>
<td>3</td>
<td>Dr B. Schmidt (info fauna)</td>
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<tr>
<td><strong>Chemical ecology module</strong></td>
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<tr>
<td>Basics of chemical ecology (+labs)</td>
<td>7 hd</td>
<td>S</td>
<td>2</td>
<td>Profs. T. Turlings and G. Roeder</td>
<td>Written, 1 hour</td>
</tr>
<tr>
<td>Biosynthesis and function of secondary compounds</td>
<td>7 hd</td>
<td>S</td>
<td>2</td>
<td>Profs. J. Vermeer and F. Kessler</td>
<td>CA (graded)</td>
</tr>
<tr>
<td>Recent advances in chemical ecology</td>
<td>7 hd</td>
<td>S</td>
<td>2</td>
<td>Prof. T. Turlings</td>
<td>CA (graded)</td>
</tr>
<tr>
<td>Plant molecular genetics (+labs)</td>
<td>7 hd</td>
<td>S</td>
<td>3</td>
<td>Prof. J. Vermeer</td>
<td>CA (graded)</td>
</tr>
<tr>
<td>Natural products chemistry (+labs)</td>
<td>7 hd</td>
<td>S</td>
<td>3</td>
<td>Prof. S. Von Reuss</td>
<td>CA (graded)</td>
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<tr>
<td><strong>Total ECTS Specializations</strong></td>
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<table>
<thead>
<tr>
<th><strong>Master thesis</strong></th>
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</thead>
<tbody>
<tr>
<td>Master thesis</td>
<td>A and S</td>
<td>60</td>
<td></td>
<td>CA (graded)</td>
<td></td>
</tr>
</tbody>
</table>

**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).
- Continuous 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 = continuous 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 12 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 specialisation module
Students who followed all courses of this specialization before 2023-24 must be examined on the earlier content as mentioned by the previous program (2022-23).
For students who have started this specialization and have not followed its full content in 2022-23 (or before), an analysis will be carried out by the Dean's Office at the beginning of the academic year 2023-24 to define specific transitional provisions. The students concerned will be contacted individually.

Transitional provisions for Biodiversity conservation: an interdisciplinary perspective specialisation module
Students who followed all courses of this specialization before 2023-24 must be examined on the earlier content as mentioned by the previous program (2022-23).
For students who have started this specialization and have not followed its full content in 2022-23 (or before), an analysis will be carried out by the Dean's Office at the beginning of the academic year 2023-24 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.