

Master of Science in Biology

with seven fields of specialization

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 begins with a core of courses covering key topics in biology, with particular emphasis on methodological and quantitative aspects. The Master's programme extends into courses in seven specialized areas, representing the research topics for which the Institute of Biology at UniNE is particularly renowned. Students choose two of the seven specializations, of which one corresponds to the topic of their Master's thesis.

Structure of the programme

The first part of the Master programme consists of a common core that focuses on fundamental concepts and methods in biology. Particular emphasis is placed on laboratory methods (molecular and chemical), quantitative tools (statistics, modelling and bioinformatics), scientific writing, and ethical aspects. Students also have the opportunity to participate in field excursions (alpine, marine, Mediterranean and tropical ecosystems) or to do internships to get workplace experience.

The second part of the Master programme involves coursework, research mini-projects and internships in two of the six areas of specialization. Students develop research plans in one of these areas, which form the basis of their Master thesis during the second year of the programme.

The Master's thesis research project (60 ECTS) lets students develop their abilities in critical thinking, their organizational skills, and their intellectual and scientific independence.

Professional perspectives

The Master of Science in Biology prepares students for a career in research, teaching, public administration (environmental protection, public health, agricultural and forestry sectors), media, industry and other sectors (environmental consulting, urban planning), or non-governmental organizations focusing on the environment and sustainable development.

Degree awarded

Master of Science in Biology
with two chosen fields of specialization

Credits

120 ECTS, 4 semesters

Teaching language

English

Seven fields of specialization

- Chemical Ecology
- Ecology and Environment
- Evolution and Biodiversity
- Biology-Anthropology
- Animal Behaviour
- Parasitology
- Sustainable Agriculture

Conditions for admission

This Master's programme is open to students with a Bachelor's degree in Biology from an accredited university.

Application deadline

April 30 for the autumn semester

Start date: autumn semester (mid-September)

Registration

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Information

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Fields of specialization

Chemical Ecology

Chemical signalling is the most ancient form of communication among living organisms. This multidisciplinary area explores how organisms, from bacteria to primates, use chemical substances to interact with each other and with their environment. This field is at the interface between ecology, behaviour, animal and plant physiology, analytical chemistry and molecular genetics. Applied areas include agriculture, parasitology, and the fragrance and flavour industry.

Ecology and Environment

This module focuses on the interactions between environmental factors and biological populations/communities from the perspective of ecosystems. The practical consequences for conservation, ecosystem restoration, and ecosystem services are addressed using a variety of model organisms (protists, bacteria, fungi, plants, or soil fauna) and ecosystems (mainly terrestrial, with a strong emphasis on soil as a dynamic interface between biology and geochemistry).

Evolution and Biodiversity

The evolution of organisms is the fundamental process that gives rise to biodiversity. Concepts such as natural selection, speciation, phylogeny, and conservation of biodiversity in a wide range of organisms are discussed. Teaching includes classroom theory and research mini-projects linked to ongoing research by the groups involved in this module, as well as to institutions active in the study and conservation of biodiversity.

Biology-Anthropology

This interdisciplinary specialization tackles a wide range of topics: analysis of the agro-food sector, developmental aid projects relating to sustainable agriculture and development, management of insect pests, as well as alternative movements advocating sustainable and environmentally respectful agriculture. The programme offers tools and skills for understanding the relationships between human societies and their environments in a holistic manner, studying their impact on everyone concerned, from the farmer to the consumer and from the researcher to the politician.

Animal Behaviour

This specialization studies the ultimate causes and the proximal (physiological and cognitive) mechanisms in the evolution of animal behaviour. We consider the emergence and evolution of a wide range of animal behaviours such as cooperation, the establishment of social hierarchies, the resolution of social conflicts, sexual behaviour, and parental behaviour. Our focus is on vertebrates (primates in particular), tropical fish and birds.

Parasitology

Parasites represent a major public health problem. They also drive sexual selection and the evolution of the genome and immune systems of their hosts, and they have been linked to the evolution of sexual reproduction. Parasitology thus addresses many important questions in biology, in addition to its obvious links to human and veterinary medicine, agriculture, and the pharmaceutical industry. We discuss and study various aspects of parasitology, ranging from molecular genetics and physiology to epidemiology and evolution.

Sustainable Agriculture

Achieving global food security with minimal impact on the environment is a major challenge. This specialization presents approaches to agriculture that aim to create sustainability in agricultural ecosystems. We discuss how studying the interactions between plants and herbivores or pathogens can help to develop ecologically friendly strategies to protecting crops from such threats.

For further information

www.unine.ch/master
www.unine.ch/sciences

