University of Basel

Faculty of Science

Degree Profile

Master in Plant Science

Organizational unit	Department of Environmental Sciences
Degree	MSc in Plant Science
Range, Duration, Start	90 ECTS, 3 semesters (if full-time), spring or autumn semester
Language of instruction	English

Program Goals

Students develop a solid theoretical and practical knowledge of organismic biology in general and plant sciences in particular. They acquire the ability to carry out research and to work as professionals in all fields of plant science, ecology, agronomy or a related field.

Program Characteristics

Orientation	Scientific education
Subject area	Biology
Majors	–
Program structure	The curriculum consists of the modules: Master's thesis (50 ECTS); Master's examination (10 ECTS); courses (30 ECTS, of which 18 ECTS must be taken within the plant science course offerings).
Distinctive Features	The program builds upon the strength of the Department in the areas of plant molecular biology, plant-microbe interactions, symbiosis, ecophysiology, ecosystem sciences and sustainable land use. It benefits greatly from the leadership of the Zurich-Basel Plant Science Center, a network integrating more than 600 scientists interested in plant biology.

Career Opportunities

Employment	Higher education research in plant sciences; biotechnology and pharmaceutical industries; government service; teaching
Further Studies	Doctorate, teaching diploma for secondary schools

Teaching

Approaches	Problem-based learning, autonomous learning, research-oriented learning
Assessments	Oral and written examinations, Master's thesis, Master's examination

Competences

Generic Attitude / Communication Approach / Management	Students acquire the skills to … – carry out independent and creative scientific research. – study scientific literature and understand scientific concepts. – formulate hypotheses and test them through experimentation. – organize the scientific work process efficiently through prior planning and priority setting. – analyze and document experimental data. – communicate ideas and results effectively in the English language. – lead discussions and deal constructively with criticism. – present scientific results and theories orally and in written form to specialist as well as public audiences. – write a concise and well-structured scientific text. – deal responsibly with ethical aspects of the scientific work. – work in a team environment.
Subject-related Knowledge / Understanding Application / Judgment Interdisciplinarity	Students acquire the skills to … – understand and apply advanced scientific concepts in Plant Science. – describe simple and complex biological systems qualitatively and quantitatively. – understand advanced biological laboratory practices, analyses and experimental methods and apply them independently. – appreciate biophysical and biochemical laws as the underlying rules governing the functioning of biological systems.

Learning Outcomes

Graduates of the master's program of Plant Science...

- are able to select independently appropriate advanced techniques, theories and scientific concepts in Plant Science to systematically develop a scientific hypothesis and test through experimentation.
- are able to correctly describe the technical details of experimental methods in accordance with a specified research problem and adapt them appropriately to new research questions and to different systems in order to provide scientifically-grounded positive and negative arguments for a given experimental research approach in the discipline of specialization.
- possess a broad and profound scientific knowledge of the fundamental theories underlying Plant Science, in particular in their area of specialization, and are able to appropriately apply this knowledge to perturb or manipulate biological systems as well as systematically and correctly quantify the resulting changes.
- are able to independently carry out a complete research project in the field of Plant Science, including literature searches, the framing of research questions in the context of current research of the field, conduct appropriate experimental work and laboratory practices, and can clearly and concisely present their results to peers as well as to the public in written and oral form according to scientific standards.
- can appropriately manage and analyze scientific data and use the results in order to provide scientifically grounded work on a new research question or experimental research.
- understand the ethical aspects of scientific work and can apply this knowledge to distinctly argue for the responsible use of scientific methods.