

Hes·so

Overview

Master of Science HES-SO in Life Sciences

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The Master of Science HES-SO in Life Sciences is primarily intended for holders of a Bachelor's degree in Life Sciences from a Swiss or foreign university or university of applied sciences. With a strong focus on professional practice, this programme allows students to deepen their knowledge and acquire the skills needed to manage complex situations, develop strategic approaches, and lead teams.

What is it about?

Life sciences study the processes and structures of living organisms, as well as the systems in which these organisms operate. This multidisciplinary field encompasses key sectors such as medicine, biomedicine, pharmacy, biochemistry, molecular biology, biophysics, bioinformatics, agrotechnology, and viticulture and winemaking. Today, the life sciences are being confronted with major challenges, such as digitization, artificial intelligence, safety and sustainability.

The HES-SO Master of Science in Life Sciences (MLS) trains students to meet the current and future challenges of life sciences. This programme allows students to deepen their scientific knowledge, develop skills in business management or data management, lead concrete projects in the field, and benefit from international experience. Three majors are offered: Applied Biosciences (AB), Chemical Development & Production (CDP) and Viticulture & Enology (VE).

Under the umbrella of the HES-SO Master's programme, the MLS is offered by three universities: the School of Engineering and Architecture of Fribourg HEIA-FR (major CDP), HES-SO Valais-Wallis – School of Engineering HEI (major AB) and CHANGINS – Haute école de viticulture et œnologie (major VE).

The programme, taught entirely in English, is part of a national cooperation with the School of Agricultural, Forestry and Food Sciences (HAFL) of the Berner Fachhochschule (BFH), the Life Sciences and Facility Management department of the Zürcher Hochschule für Angewandte Wissenschaften (ZHAW) and the Hochschule für Life Sciences of the Fachhochschule Nordwestschweiz (FHNW).

Programme structure

The MLS programme is offered in a modular structure and offers students a wide range of freedom to personalize their programme. With a strong focus on professional practice, it offers a variety of teaching methods, including project-based learning, small group exercises, and interdisciplinary or field sessions. It emphasizes close interaction between students and their teachers. The latter are active in research and have an extensive network, both academically and in business.

A rich skill set

The skills profile acquired during the MLS programme is defined in line with recent developments in the job market. The main skills are as follows:

- Applying expertise and creativity to the invention of new technologies and the development of innovative products in the field of life sciences
- Carrying out activities in one's field of expertise, taking into account the entire value chain and adjusting technical choices accordingly
- Analysing the potential of emerging life sciences technologies and, where appropriate, integrating them into an industrial context
- Assessing the potential of data sciences in one's field of expertise and integrating them into one's practice
- Carrying out projects in the field of life sciences, taking into account socio-economic constraints and ethical and sustainability requirements
- Managing projects and organizational units in the industrial context of life sciences

Wide choice of modules at the national level

The consortium of partner universities offers a wide selection of modules totalling more than 60 ECTS credits. Students must choose a programme worth at least 30 ECTS credits. This includes cross-disciplinary modules, such as Business and Data Sciences, supplemented by a selection from the following 5 fields: Environment, Food, Bio/Pharma, Chemistry, and Computation. Students must choose modules in the fields related to their major, but they also have the option of taking modules in other fields.

Three majors

- **Applied Biosciences (90 ECTS, 3 semesters, part-time possible)**
This major aims to deepen knowledge in biosciences. It enables students to manage complex and multidisciplinary projects in biotech, medtech, or pharma. Students must take modules in the Bio/Pharma field, as well as specialization modules at HEI-VS.
- **Chemical Development and Production (90 ECTS, 3 semesters, part-time possible)**
This major enables students to develop safe and environmentally friendly chemical processes with skills drawn from synthetic, analytical, and industrial chemistry. Students must take modules in the Chemistry field, as well as specialization modules at HEIA-FR.
- **Viticulture and Enology (double degree: 90 ECTS with the HES-SO degree and 120 ECTS with the Vinifera Euromaster degree, 4 semesters)**
This major supports the acquisition of tools to analyse and resolve complex situations, from grapes to wine and from management to the market. The skills acquired aim to advance viticulture, winemaking, and the wine trade. Students must take specialization modules at CHANGINS, as well as modules in the fields of Food and Environment. They spend their second year at a partner university abroad as part of the Vinifera Euromaster International Consortium.

Master's thesis

totalling 30 ECTS credits, the Master's thesis can be completed at a research institute affiliated with HEIA-FR, HEI-VS, or CHANGINS, at another national or international university, or within a company. It allows students to carry out a complete research and development project and develop essential soft skills.

A degree to boost your career

MLS graduates enjoy excellent career opportunities in a variety of sectors: agri-food, biotechnology, chemistry, para-chemistry, biomedicine, pharmaceuticals, the environment, cosmetics, and viticulture and enology. Their expertise enables them to independently manage projects in the areas of product development, analytical methods, or manufacturing processes, while actively participating in management and innovation within their organization. More than just a professional springboard, the MLS offers broader career prospects than does a Bachelor's degree in Life Sciences. For those who wish to pursue an academic career, further studies towards a doctorate, at a university or an ETH, also remain accessible.

General structure of the MLS

	AB major	CDP major	VE major
30 ECTS	Master's thesis	Master's thesis	Master's thesis
30 ECTS	International cooperation, dual degree (option currently being developed)	International cooperation, dual degree (option currently being developed)	International cooperation, dual degree
10 ECTS	Projects		
20 ECTS	Specialization (S)	Specialization (S)	Specialization (S)

National cooperation in the MLS programme

30 ECTS	Environment cluster (E)	Food cluster (F)	Bio/Pharma cluster (BP)	Chemistry cluster (C)	Computational cluster (CO)
	Data science (D)			Business (B)	

Degrees

The following degrees are awarded for this programme:

Master of Science HES-SO in Life Sciences – Applied Biosciences

Master of Science HES-SO in Life Sciences – Chemical Development and Production

Master of Science HES-SO in Life Sciences – Viticulture and Enology / Vinifera Euromaster

The MLS has been awarded the EUR-ACE® label, a certificate identifying high-quality engineering degree programmes in Europe and beyond.

Learn more

To learn more about the MLS or the registration process, visit

<https://www.hes-so.ch/en/master/hes-so-master/programmes/life-sciences>

