University of Applied Sciences and Arts Northwestern Switzerland
School of Life Sciences

Study guide
Master in Life Sciences

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The FHNW School of Life Sciences
Introduction

The FHNW School of Life Sciences (HLS) provides market-oriented applications for the fascinating world of life sciences. With a network of industry and research partners, the HLS is a unique university centred around technology development in medical, natural, environmental and engineering sciences. The state-of-the-art infrastructure facilitates translating cutting-edge research into practice. Benefits for patients, innovative products, intelligent solutions and environmentally friendly technologies are the ultimate goal.

The Master's study programme combines lectures on applied life sciences with practical experience in an eight month Master's thesis. The core of the life sciences study programme consists of scientific knowledge for research and development, coupled with practical experience. Students may assemble their own curriculum from available modules, with support from the HLS. In order to prepare optimally for a professional career, the study course also covers essential management skills. Graduates are ultimately expected to prove their abilities in a competitive and international life sciences environment and studies are therefore complemented by English language skills and the option of taking courses abroad.

Qualified experts for the growing life sciences market
The Master's programme

The MSc (Master of Science) study programme gives graduates specialist knowledge enabling them to integrate quickly and effectively into the global industrial life sciences sector and related fields. MSc graduates have broad training and in-depth knowledge, combined with in-depth practical experiences. During the eight months of their MSc thesis, they demonstrate that they can work independently on demanding projects.

With these qualifications, graduates of the programme are able to plan and carry out projects in the fields of applied research, development, translational research and production. They are also aware of entrepreneurial issues such as budgeting, personnel, deadlines, markets and products.

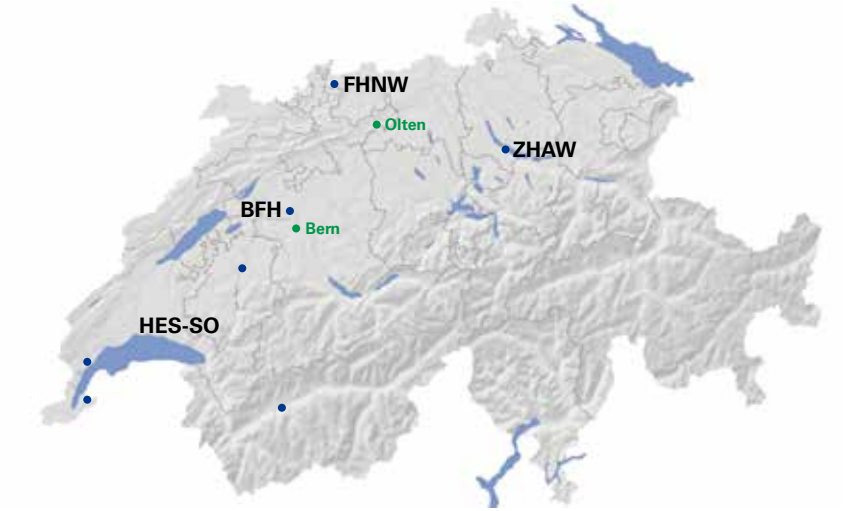
Graduates are able to present and explain the results of their work in their native language and in English to other specialists as well as to colleagues with different backgrounds. They bring skills and knowledge to multi-disciplinary and interdisciplinary teams.

New career prospects

MSc graduates typically hold positions in organisations where they manage and participate in projects that build upon their expertise. Such organisations are active in chemistry, biotechnology, environmental protection and nutrition as well as pharmaceutical and medical technology. The Master of Science degree is internationally recognised and allows students to continue their studies with a doctorate in most countries.

Where life sciences come alive
The Master's programme

The international Master of Science in Life Sciences is conducted in collaboration with other Swiss Universities of Applied Sciences: Berner Fachhochschule BFH, Haute Ecole Spécialisée de la Suisse Occidentale HES-SO and Zürcher Hochschule für angewandte Wissenschaften ZHAW.



Programme structure
The MSc study programme encompasses lectures (50 ECTS credits) and the thesis (40 ECTS credits). The Specialisation modules are offered by the School of Life Sciences FHNW and take place in Muttenz/Canton Basel-Landschaft. The Core competence modules and the Cluster-specific modules, which are organised in cooperation with the partner universities, are held in Olten and Bern.

The modules are offered during the semesters (see pages 12–13). All modules usually take place at least once a year. The students are supported by an innovative e-learning platform.

Study consultation
After acceptance, the Dean of the programme will consult each student regarding which modules shall be taken in which semester. Thus each student will have an individual study programme that best meets his/her interests. It is also possible to complete part of the course at a foreign institute of higher education: www.fhnw.ch/en/about-fhnw/schools/lifesciences/international/partner-universities.

Teaching language
The language of teaching is English. This requires that in addition to the technical and scientific skills applicants must be able to read scientific articles and books, follow the lectures, participate in discussions and be able to write the thesis in English on their own. Therefore, it must be emphasised that students who want to undertake the MSc programme need adequate skills in English (see also page 28).

Educational concept
The educational concept of "blended learning" combines independent learning with lessons on site. When preparing course contents, modern forms of teaching and learning such as e-learning and case studies are included. In seminars and workshops, students deal with challenging issues and differing points of view. Complex issues will be explained by the instructors in lessons. In the Master's programme, great emphasis is put on "research learning," where traditional teaching is augmented by individual context-based knowledge generation.

Start
The programme starts in the autumn semester (calendar week 38) or in the spring semester (calendar week 8).

Completion
Successful completion of the course leads to the award of the title "Master of Science" which is recognised around the world.

Learn more
The School of Life Sciences FHNW offers information evenings that provide more details about the MSc study programme. Please consult www.fhnw.ch/en/degree-programmes/lifesciences/master/info-events for more information and dates.

Specialisations
The Master’s programme

The School of Life Sciences FHNW offers five MSc specialisations:

Bioanalytics
Students are given a comprehensive bioanalytical education allowing them to take over responsibility in research and development in analytical laboratories, medical laboratories, clinics, contract research organizations and pharmaceutical companies. Modules cover the broad field of bioanalytics including the analysis of metabolites, environmental pollutants and proteins. High-throughput genome and RNA sequencing and the pharmacological and toxicological assessment of active pharmaceutical ingredients are also addressed. Further modules focus on cellular and whole organism bioassays and the use of organ chips and tissue engineering for drug discovery.

The studies conclude with an eight month Master’s thesis which is usually carried out in a company laboratory or at a foreign university or research institute. Alumni of the Master's programme have ample theoretical and practical knowledge to start a career in research and development in companies or in specialized analytical laboratories.

Chemistry
Students receive an education in chemistry preparing them for a research or development position in the chemical and pharmaceutical industry. Modules focus on polymers and inorganic materials including their characterization by spectroscopic and imaging techniques and the tailoring of surfaces for bioanalytic and biomedical applications. Two further modules emphasize analytical techniques including advanced mass-spectroscopy, NMR spectroscopy and protein analytics. Students are also taught synthetic organic and medicinal chemistry and the chemistry of energy systems and storage. In all courses the importance of sustainability and safety in chemical production processes is addressed.

Students finish their studies with an eight month Master's thesis. The thesis is commonly carried out in cooperation with a company or at a foreign university or research institute. Alumni of the Master’s programme have a sound theoretical and practical training enabling them to assume responsibility in R&D or production in the chemical industry.

Pharmatechnology
Students obtain a scientific and technical education in Pharmatechnology, which allows them to work in research, development or production in the pharmaceutical industry. Modules cover the formulation of drugs including biopharmaceuticals and the various routes of drug delivery. Another set of modules emphasizes the analytics required in the pharmaceutical industry. Students are taught protein analytics, compound profiling, advanced mass-spectroscopy and the use of tissue engineering for drug discovery. Further modules focus on production aspects: important subjects addressed are continuous pharmaceutical production and the design of (bio-)pharmaceutical production facilities.

Students conclude their studies in an eight month Master's thesis. The thesis is usually carried out on the site of a pharmaceutical company or at a foreign university or research institute. Alumni of the studies have an excellent theoretical and practical education that allows them to take on responsibility in a pharmaceutical company.

Biomedical Engineering
Students receive a solid education in Biomedical Engineering, which enables them to work in research and development in a biomedical company. The modules taught prepare students to design and develop implants, medical devices, surgical robots as well as sensors for active implants. A number of modules also highlight the importance of the interface between implant and body. Students get insight into materials used for implants, their biocompatibility and surface characterization as well as the engineering of surfaces for biomedical applications. Further modules focus on the use of mathematical techniques for optimization, simulation, modelling as well as medical image analysis.
Together with an eight month Master’s thesis usually carried out in cooperation with a biomedical firm or at a foreign university or research institute. Alumni are wel well prepared to take on responsibility in a firm.

Environmental Technologies

Students acquire a comprehensive training in Environmental Technologies. Modules taught deal with the economic and environmental aspects of sustainable production, the concept of the circular economy, the analysis of material and mass flow as well as technologies for resource recovery. Two further modules address water resources: its management and the treatment of water and of wastewater. Students are also taught environmental risk assessment, where the fate and effects of environmental pollutants are addressed. Two additional modules focus on environmental remediation: pollutants in contaminated sites have to be managed, monitored and treated with physicochemical or biological techniques.

Students complete their studies with an eight month Master's thesis that is usually done with an industrial partner or at a foreign university or research institute. Alumni have a thorough practical and theoretical education enabling them to develop, plan, apply and manage "clean" technologies in industry, in consulting or the public sector.

Structure of the study programme
The Master's programme

Full-time students
The MSc study programme comprises 90 ECTS credits. Shown here is a full-time study plan starting in the autumn semester (1.5 years):

Study plan

Autumn semester		Spring semester			
Sep	**Feb**	**Feb**	**Jun**	**Jun**	**Sep**
Lectures (1st sem.)		**Lectures** (2nd sem.)		**Thesis** (8 months)	
Thesis (3rd sem., 8 months)					

Programme structure full-time students

Master's thesis 8 months from end of 2nd to 3rd semester — 40 ECTS credits

Modules — min. 50 ECTS credits

Core competences (see page 14,15,16–18)	Cluster-specific modules (see page 19–21)	Specialisation modules (see page 16–18)
5–7 modules of 3 ECTS are taken during the first two semesters	**3–6 modules of 3 ECTS** are taken during the first two semesters	**5–9 modules of 3 ECTS** are taken during the first two semesters

Note: It is possible that modules or final exams take place outside the semester.

Part-time students
It is also possible to study part time. In this case, the studies take approximately six semesters depending on the individual study plan. Part-time students may work in parallel – as a guideline 50 to 60 percent workload is appropriate. Other plans are possible; please consult the Dean.

Study plan

Autumn semester		Spring semester			
Sep	**Feb**	**Feb**	**Jun**	**Jun**	**Sep**
Lectures (1st sem.)		**Lectures** (2nd sem.)			
Lectures (3rd sem.)		**Lectures** (4th sem.)		**Thesis** (8 or 12 months)	
Thesis (5/6th sem., 8 or 12 months)					

Programme structure part-time students

Master's thesis 8 months from end of 4th to 5th semester or 12 months from end of 4th to 6th semester — 40 ECTS credits

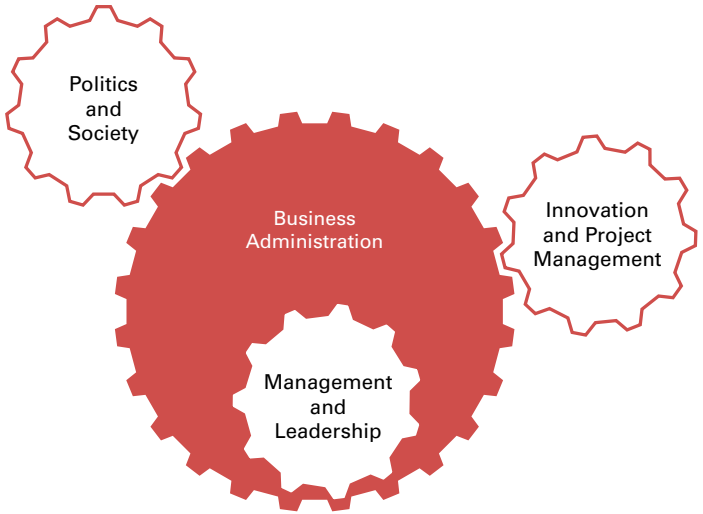
Modules — min. 50 ECTS credits

Core competences (see page 14,15,16–18)	Cluster-specific modules (see page 19–21)	Specialisation modules (see page 16–18)
5–7 modules of 3 ECTS are taken during the first four semesters	**3–6 modules of 3 ECTS** are taken during the first four semesters	**5–9 modules of 3 ECTS** are taken during the first four semesters

Note: It is possible that modules or final exams take place outside the semester.

Core competence modules

The Core competence modules are designed to introduce students to the life sciences industry, focusing on professional life within the industry as well as providing insight into data handling and analysis techniques.



Business, Management and Society

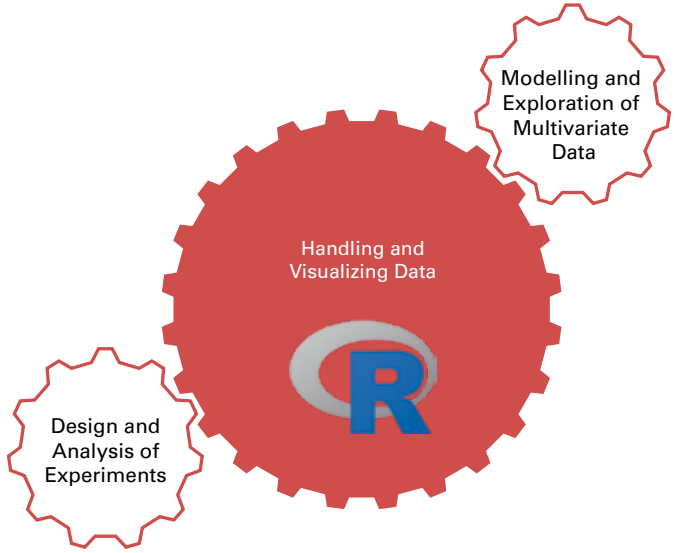
Three of the modules – Business Administration, Management and Leadership, and Project and Innovation Management – focus on providing an understanding of how Life Sciences companies function. In contrast, the fourth module is devoted to the social, political and ethical context within which Life Sciences companies operate.

Students who complete these modules will have an understanding of how Life Sciences companies work, how they are managed, and how they are led. They will therefore be aware of diverse entrepreneurial issues and be thoroughly prepared for a career in the industry.

Data

The three "Data" Core competence modules (Handling and Visualizing Data, Design and Analysis of Experiments and Modelling and Exploration of Multivariate Data) reflect the increasing importance of information in all technical and scientific areas. Today more and more data is generated and gathered than ever, and it needs to be skillfully analyzed in order for companies to profit from it. In these three modules students are trained to plan and design experiments, to handle large data sets, to visualize them, and to analyze them with state-of-the-art methods. All modules use "R", a powerful and open software suite for data analysis.

After having completed the data modules students will have acquired all the necessary competences to analyze their own data, to prepare high quality figures for meaningful data visualization, and to select and apply the appropriate methods for data analysis.



Module Competences

Core Competences and Specialisation Modules

	Module	Day	Semester	Biomedical Engineering	Chemistry	Bioanalytics	Pharma-technology	Environmental Technologies	Contents
Data	Handling and Visualizing data	Friday: Olten Monday – Wednesday: Muttenz	AS-1	●	●	●	●	●	introduction to R, organising data, databases, describing data: scatter, skewness, outliers, visualising data, informative plots
Data	Design and Analysis of Experiments		AS-2	●	●	●	●	●	statistical interference, experimental design, feasibility, efficiency and power of experiment designs, statistical analysis, interpretation and visualisation of results
Data	Modelling and Exploration of Multivariate Data		AS-2	●	●	●	●	●	modelling: linear, nonparametric and multiple regression, model selection and diagnosis; exploration: visual inspection, principal component analysis, clustering
Business, Management & Society	Business Administration for Life Sciences		SS-1	●	●	●	●	●	business models, marketing, production, sourcing, capital budgeting, financial accounting, cost accounting
Business, Management & Society	Management and Leadership for Life Sciences		SS-1	●	●	●	●	●	management, corporate ethics, strategic management, HR management, leadership, change management
Business, Management & Society	Innovation and Project Management		SS-2	●	●	●	●	●	entrepreneurship, megatrends, innovation management, presentation techniques, project management
Business, Management & Society	Politics and Society		SS-2	●	●	●	●	●	politics: a process of negotiation, struggle and compromise; the role of society; public opinion, responsabilitiy, ethics
	Implant Design and Manufacturing	Monday – Wednesday	SS	●					standard and patient-specific implants, medical additive manufacturing
	Sensors and Signal Processing		AS	●					sensors for implants negotiation; noise reduction, filtering and error corrections
	Medical Device Development		SS	●					development process, regulatories, risk management procedures
	Surgical Robotics		SS	●					robot kinematics, robot dynamics, safety; practical excercise
	Biointerface Engineering		AS	●	◓	◓	○		bioconjugation, chemical and topographical surface modifications, surface (nano)stucturing, surface biomolecule/cell/tissue interactions, biocompatibility
	Synthetic and Medicinal Chemistry		AS		●				selectivity in organic synthesis, organometallic reactions, catalysis in chemical synthesis, hits to leads to candicate drugs, drug synthesis, kinase inhibitors
	Advanced Mass Spectrometry and NMR Spectroscopy		SS		●	●	◓	○	MS-ionization methods, UHPLC-MS, metabolic profiling, protein mass spectrometry, two-dimensional NMR, LC-NMR
	Process Development and Technology		SS		●				seperation principles, mass and energy balances, process design and layout studies
	Reaction Technology		SS		●		○	○	reactor technology, reaction kinetics, simulation of reactions, operational modes, regulatories
	Proteomics and Protein Analytics		SS		●	●	◓		protein identification by mass spectroscopy, posttranslational modifications, light-scattering, infrared spectroscopy, calorimetry, turbidimetry
	Genomics		AS		◓	●			next generation sequencing technologies, genomics in a clinical context, liquid biopsy, practical exercise, student work-shop: genome engineering
	Bioassays: Engineered Cells, Tissues and Organisms		SS			●	●		reporter cell assays, organ chips, zebrafish, daphnia
	Continuous Pharmaceutical Production		AS		○		●		continuous production of solid forms and of extrudates, incl. laboratory course at an industrial site
	Pharmaceutical Production Facilities		AS		○		●		design of production plants; containment systems; heating, ventilation, air conditioning (HVAC); water, vapour and gas distribution
	Formulation of Biologics and Routes of Drug Delivery		AS			◓	●		formulation and delivery of biologics (liquid and solid forms), drug delivery, drug targeting
	Cost Effectiveness of Sustainable Production and Risk Reduction in Industries		SS					●	cost-benefit concepts, circular economy
	Material Recovery Methods and Technologies		AS		○			●	material and mass flow analysis, separation and conversion technologies
	Industrial Pollution Control and Resource Recovery Applications		AS		○			●	industrial environmental technologies, sustainable production, resource recovery case studies
	Water and Wastewater Treatment Technologies		SS					●	water quality parameters, water purification, waste water treatment, practical excercise
	Environmental Risk Assessment		SS		◓	◓		●	exposure assessment, fate of pollutnats, environmental effects of pollutants, health implications of pollutants
	Environmental Bioremediation		SS			◓		●	biogeochemical considerations, microbial bioremediation of organics, microbial bioremediation of organics and inorganics, phytoremediation, emerging contaminants, literature seminar
	Environmental Remediation		AS		○			●	management and monitoring of contaminated sites, economic and risk aspects of remediation, contaminant properties, advanced analytical tools, physico-chemical remediation technologies, case study shooting ranges

-1 or -2: First or second half of semester
Bx: Block week at end of the semester

AS: Autumn Semester
SS: Spring Semester

● Compulsory elective modules ◓ Elective modules (1st choice) ○ Elective modules (2nd choice)

Module Offer
Cluster-Specific Modules

	Module	Day	Semester	Biomedical Engineering	Chemistry	Bioanalytics	Pharma-technology	Environmental Technologies	Contents
	* Organized by the School of Life Sciences								
Group BCES	Modelling of Complex Systems	Wednesday	AS-1	◓				○	system theory, system dynamics, modelling software Vensim, numerical integration methods, Monte Carlo simulation
	Machine Learning and Pattern Recognition		AS-2	◓					Bayesian inference, graphical modelling, classification, ensemble methods
	Optimisation Methods *		SS-1	●					linear, non-linear, deterministic and stochastic optimization methods; Matlab excercises
	Medical Imaging and Image processing *		SS-2	◓	○	○	○		quantitative image processing, segmentation, registration, classification
Cluster Chemistry	Materials Science *	Thursday	AS-1	●	●		○		solid state bulk materials, crystallographic and electronic structure, structural, optical, mechanical and magnetic properties, metallic and ceramic materials, nanoscale materials
	Surface Characterisation *		AS-2	◓	●		○		modern microscopic and spectroscopic surface characterization techniques: advanced microscopy, infrared and Raman spectroscopy, EDX, WDX, XPS; Interactions with surfaces: SPR, QCM, OWLS
	Polymers and Applications		AS-B3	○	◓				polymer synthesis, polymer characterization, biopolymer, polymer processing
	Chemistry and Energy		SS-1		◓			○	chemical energy storage, biogas, bioenergy, photocatalysis, photovoltaics, energy and mobility
	Green Chemistry		SS-2		◓			○	green chemistry metrices, industrial green chemistry, green solvents
	Industrial Chemical Process Safety		SS-B2		●				process safety in the chemical industry, case studies
Cluster Bio/Pharma	Compound Profiling in Pharmaceutical Drug Discovery *		AS-1			●	x●		target identification, clinical candidate selection, ADME, toxicology assessment, validity of test models, extrapolation from animal and in vitro studies to man
	Drug Formulation and Delivery for Solid Dosage Forms *		AS-2			◓	●		controlled release technologies, per-oral drug delivery, formulation of poorly-water soluble drugs, biopharmaceutical modeling
	Design of Biopharmaceutical Production Facilities		AS-B1			○	◓		facility concept, modularization of production facilities, zone concept, regulatory aspects, supply chain, automation
	Bioanalytics in a regulated Environment		AS-B3		◓	●	●		concept of specification, development phases of a test methods, monographs for biopharmaceuticals, GMP requirements, analytical SOP
	Physiology and Immunotherapies		SS-1			◓	○		quality management in production and development, license application process
	Tissue Engineering for Drug Discovery		SS-2			◓	◓		3D-construction of human tissues, co-cultures of blood immune cells and infectious microorganisms, immune-based therapies
	Regulatory Affairs		SS-B1	○		○	◓		tissue engineering techniques, bioprinting, skin, cosmetic testing, engineered liver and kidney, cancer models
Cluster Environment	Journal Club Environmental and Natural Resource Sciences		AS-1					◓	scientific publishing, reading and presenting selected publications, discussion and wrap-up of groups of related publications
	Life Cycle Assessment		AS-2					◓	seminal examples of LCA, use and misuse of LCA, environmental management methods, steps of an LCA procedure
	Sustainable Development Natural Resource Management		AS-B1						Rio+20, conflicts in natural resources managment, challenges
	Ecological Infrastructure in Landscapes		AS-B3						landscape and movement ecology, GIS tools, ecological infrastructure, ecological connectivity, landuse planning
	Biodiversity		SS-1					○	global change, species loss, functioning of the ecosystem, ecosystem services, international conventions, biodiversity maintenance
	Water Management in Households, Industry and Agriculture *		SS-2					●	water resources, water supply and distribution, water use, water cycle management
Cluster Food	Journal Club Food and Nutrition Sciences		AS-1						Scientific publishing, reading and presenting selected publications, discussion and wrap-up of groups of related publications
	Progresses in Food Processing		AS-B1/2				○		food processing techniques, practical on shelf life extension and micro-encapsulation
	Advanced Sensory Techniques		AS-B3						innovative sensory evaluation methods, analysis of sensory data, cognitive and psychophysical aspects of perception
	Foodomics		SS-1			○			digestive tract and ingestion, techniques for nutrigenome, microbiome and metabolome analysis, data mining
	Sustainable Sourcing, Processing and Tracing of Food		SS-2						process analysis, sustainable agriculture, social aspects, sourcing, energy management, sustainable diet, customer information
	Nutrition and Nutrition Related Chronic Diseases		SS-B1						sustainable healthy and unhealthy diets, epidemiology, diet as risk factor for diseases, public health approaches

* Organized by the School of Life Sciences

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SS: Spring Semester

● Compulsory elective modules ◓ Elective modules (1st choice) ○ Elective modules (2nd choice)

Study Regulations
General information

Module	Requirements
Specialisation modules	compulsory elective depending upon given major (page 23)
Cluster-specific modules (FHNW & cooperation)	min. 9 ECTS
Core competences	min. 15 ECTS
Master's Thesis	40 ECTS
Other elective modules (University of Basel, etc.)	max. 12 ECTS (30 ECTS for an exchange semester) Modules which are credited need to be agreed by the Dean.
	90 ECTS in total required

Compulsory Elective Modules
for each Specialisation

Biomedical Engineering at least five of the modules:

Implant Design and Manufacturing	Biointerface Engineering
Sensors and Signal Processing	Materials Sciences
Medical Device Development	Optimisation Methods
Surgical Robotics	

Chemistry at least five of the modules:

Synthetic and Medicinal Chemistry	Proteomics and Protein Analytics
Advanced Mass Spectrometry and NMR Spectroscopy	Materials Sciences
Process Development and Technology	Surface Characterisation
Reaction Technology	

Bioanalytics at least three of the modules:

Bioassays: Engineered Cells, Tissues and Organisms	Advanced Mass Spectrometry and NMR Spectroscopy
Compound Profiling in Pharmaceutical Drug Discovery	Genomics
	Proteomics and Protein Analytics

Pharmatechnology at least four of the modules:

Bioassays: Engineered Cells, Tissues and Organisms	Compound Profiling in Pharmaceutical Drug Discovery
Continuous Pharmaceutical Production	Drug Formulation and Delivery for Solid Dosage Forms
Pharmaceutical Production Facilities	
Formulation of Biologics and Routes of Drug Delivery	

Environmental Technologies at least five of the modules:

Cost Effectiveness of Sustainable Production and Risk Reduction in Industries	Environmental Risk Assessment
Material Recovery Methods and Technologies	Environmental Bioremediation
Industrial Pollution Control and Resource Recovery Applications	Environmental Remediation
Water and Wastewater Treatment Technologies	Water Management in Households, Industry and Agriculture

The Master’s thesis
The Master’s programme

Amounting to 40 ECTS points, the thesis is the most important module of the MSc programme. It addresses a scientific or technical question of practical relevance and is carried out either at an institute of the School of Life Sciences FHNW, at the site of an industrial partner or at a foreign university or research institute. In all cases, the student is supervised by a member of the school’s faculty.

The thesis has to be written in English and lasts eight months in full-time study.

Our Partner Schools

The School of Life Sciences has over 40 international partner schools (www.fhnw.ch/en/about-fhnw/schools/lifesciences/international/partner-universities) all over the world. Students may spend one semester at a foreign University in selected MSc programmes. In addition, it is possible to perform the Master’s thesis abroad. The School of Life Sciences is partner of the SEMP (Swiss European Mobility Programme) which supports student exchanges within Europe.

Double-Degree with UTC Prag
Selected students on our Master's programme can complete a double degree by taking an additional semester at the UCT Prague, earning them the two titles of MSc in Life Sciences FHNW and MSc in Drug Synthesis and Manufacturing UCT Prague.

UNIVERSITY OF CHEMISTRY AND TECHNOLOGY PRAGUE

Double-Degree with Linköping University
Selected students of our Master's programme in specialisation chemistry can complete a double degree by taking an additional semester at the Linköping University, earning them the two titles of MSc in Life Sciences FHNW and MSc in Chemistry from the University of Linköping.

LINKÖPING UNIVERSITY

Cooperation with the University of Basle
Students of the MSc programme may visit lectures offered by the University of Basle. Up to 12 ECTS can be gained in this way. Please consult the Dean for details.

Universität Basel

Basel—Centre of the global Life Sciences Industry

The School of Life Sciences FHNW in Muttenz (Canton Basel-Land) is situated in one of the global centers of the life sciences industry. Several international companies have their headquarters in the Basel area, e.g. Roche, Novartis, Clariant, Straumann and Syngenta, to name just a few. Apart from these, around 600 other companies in the life sciences sector conduct development, research or production in the Basel area. Together they offer approximately 30,000 high-powered jobs.

The lecturers of the School of Life Sciences cooperate closely with local industry in joint projects. In addition, the majority of Bachelor's and Master's theses are completed with a partner in industry. And the Basel area is not only attractive with regard to job opportunities but is also part of the vibrant Rhine valley region where Switzerland, France and Germany meet and which offers many options for entertainment and leisure activities.

Terms of admission

As a rule, outstanding bachelor's degree qualifications are accepted for the MSc programme.

Candidates will be admitted without an entry examination if they have
- gained a BSc in a related subject and graduated with grade A, B or ≥ 5, or demonstrated an equivalent qualification equivalent qualification (≤ 2.5 for Germany/Austria)
- adequate English skills

Motivated students who do not fulfil the entry requirements entirely might be invited for an assessment interview.

Adequate English competency has to be proven with one of these certificates:

Type of certificate		Required level
FCE	(First Certificate English)	**FCE**
IELTS	(English Language Testing System)	**5.5**
TOEFL	(Test of English as a Foreign Language)	**iBT 71**
Intermediate or Spoken / Written Academic Englisch	(module of the Bachelor programme at the School of Life Sciences FHNW)	**5.0**

In the case of a lower English level, the applicants are admitted but have the obligation to improve their English during the Master's course. They may attend the Advanced English course offered by the School of Life Sciences or may attend other courses. At the end of the studies, students have to prove that they have attained the required English level (see table above).

Application

Deadline for applications is end of April for the autumn semester (start in calendar week 38) and end of November for the spring semester (start in calendar week 8).

→ Application

School of Life Sciences FHNW
Student Administration
Hofackerstrasse 30
4132 Muttenz
Switzerland

Fees and grants
General information

Fees and expenses

Tuition fees per semester for students domiciled in a Swiss canton, the Principality of Liechtenstein*	CHF	700*
For students who are legally resident in the EU/EFTA at the start of their studies, the semester fees are	CHF	1 000
Tuition fees per semester for all other students	CHF	5 000
Enrolment fee	CHF	200
Graduation fee	CHF	300
It is expected that students own a notebook PC		

Grants

In Switzerland, grants are regulated on a cantonal basis. The canton of your place of residence decides on grants or interest-free loans. In addition to public grants, there are also private institutions that award scholarships.

* Fees of CHF 700 are payable by those students whose parents or guardians are in Switzerland, Liechtenstein; who are citizens of Switzerland, Liechtenstein; who for the previous two years were financially independent due to being employed in Switzerland, Liechtenstein and who did not undertake any higher or further education in this time.

FHNW University of Applied Sciences and Arts Northwestern Switzerland
General information

The FHNW University of Applied Sciences and Arts Northwestern Switzerland is a leading education and research institution with strong links to the surrounding region. It is one of the most innovative universities of applied sciences in Switzerland.

The FHNW comprises nine schools covering the following fields: Applied Psychology, Architecture, Civil Engineering and Geomatics, Art and Design, Business, Education, Life Sciences, Music, Social Work and Technology.

More than 12,500 students are enrolled at the FHNW campuses in the cantons of Aargau, Basel-Land, Basel-Stadt and Solothurn. Around 800 lecturers teach 29 bachelor's and 17 master's degree courses as well as a range of practical and market-focused continuing education programmes. FHNW graduates are highly sought-after specialists.

Application-oriented research and development has an equally high priority at the FHNW. With national and international partners from industry, business, culture, government and institutes, the FHNW runs research projects and is an active participant in European research programmes. The FHNW supports the transfer of expertise and technology to firms and institutions: in 2018, application-oriented research and development included 1251 research projects and 371 service projects.

We are at your service
Contact and student advisory service

Address
FHNW University of Applied Sciences and Arts
Northwestern Switzerland
School of Life Sciences
Hofackerstrasse 30
4132 Muttenz
Switzerland

Contact
Director of Studies
Prof. Dr. Frank Pude
T +41 61 228 54 43
E lehre.lifesciences@fhnw.ch

Dean, Student Advisory Service
Prof. Dr. Georg Lipps
T +41 61 228 54 52
E georg.lipps@fhnw.ch

www.fhnw.ch/lifesciences

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