

Management and organisation

School of Life Sciences and Facility Management



School management: Karin Altermatt, Jean-Bernard Bächtiger, Margrit Büeler, Christian Hinderling, Urs Hilber, Michael Kleinert, Antje Junghans, Daniel Baumann

Organisation:

- AWG Department of Foundation Studies in Science Director: Karin Altermatt
- IAS Institute of Applied Simulation Director: Prof. Marcel Burkhard (not pictured)
- ICBT Institute of Chemistry and Biotechnology Director: Prof. Dr. Christian Hinderling
- IFM Institute of Facility Management Director: Prof. Dr. Antje Junghans
- ILGI Institute of Food and Beverage Innovation Director: Prof. Michael Kleinert
- IUNR Institute of Natural Resource Sciences
 Director: Prof. Jean-Bernard Bächtiger (until 31.7.2017, from 1.8.2017 Prof. Dr. Rolf Krebs)

Senior management:

Prof. Dr. Urs Hilber, Dean of ZHAW LSFM
Margrit Büeler, Assistant to the Dean
Prof. Dr. Daniel Baumann, Director of Education, Research and Resources

New education programmes and innovative research

Dear readers

Our approach to the challenges of the future is creative, application-oriented, passionate and reflective, as is demonstrated by our new range of courses, networks and innovative research projects.

Expansion of the Master's degree programmes

The new research-based Master's degree in Environment and Natural Resources focuses on the interface between nature and society. This degree, which starts in the autumn of 2017, is internationally oriented and includes cooperation with renowned universities. Furthermore, with the new Applied Computational Life Sciences programme, which is taught in English and provided within the framework of the Master's degree in Life Sciences, the ZHAW is responding to the growing demand for specialists in the management of huge data sets in the life sciences.

More options in the Bachelor's degree programmes

Students in the undergraduate study programme in Natural Resource Sciences can choose two new fields of specialisation: 'Environmental Systems and Sustainable Development' develops specialists to accompany sustainability projects from the planning stage to implementation, and 'Renewable Energies and Ecotechnology' focuses on shaping the future in areas of society, the environment and technology.

Institute-wide project

In autumn 2016 the NRP 69 project 'Innovations for a future-oriented consumption and animal production NOVAnimal' started. Over two dozen researchers from seven institutions (Agroscope, BFH, CCRS, EBPI University of Zurich, FHNW, FiBL) are collaborating on this transdisciplinary project, which is headed by the IUNR. Researchers and practice partners work together to develop strategies and recommendations for a healthy and sustainable Swiss food culture, and for more creativity and diversity on our plates.

Network to promote innovation

Founded in 2016, the FOODPLUS network is designed to combine the expertise of the ZHAW Institutes in Wädenswil with that of innovative companies in the region. Its aim is to promote the competitiveness of these local companies. The sponsoring organisations are the Standortförderung Zimmerberg-Sihltal, Agroscope, the ZHAW LSFM, and the Schwyz Technology Centre.

The Centres of Competence of the ICBT, CCBio and TEDD, whose thematic focal points are biocatalysis and tissue engineering for drug delivery, took important developmental steps in 2016. This included the approval of the programme 'The innovative field of biocatalysis: Toolbox for sustainable biobased production', funded by the federal government with project-related contributions, and coordinated by the ICBT. TEDD has further expanded its circle of influence and successfully completed a change of management.

Strategy 2025

The LSFM has developed its Strategy 2025 in line with the overall strategy of the ZHAW. The strategy explains how the 'HOW' and 'WHAT' of the work to be carried out:

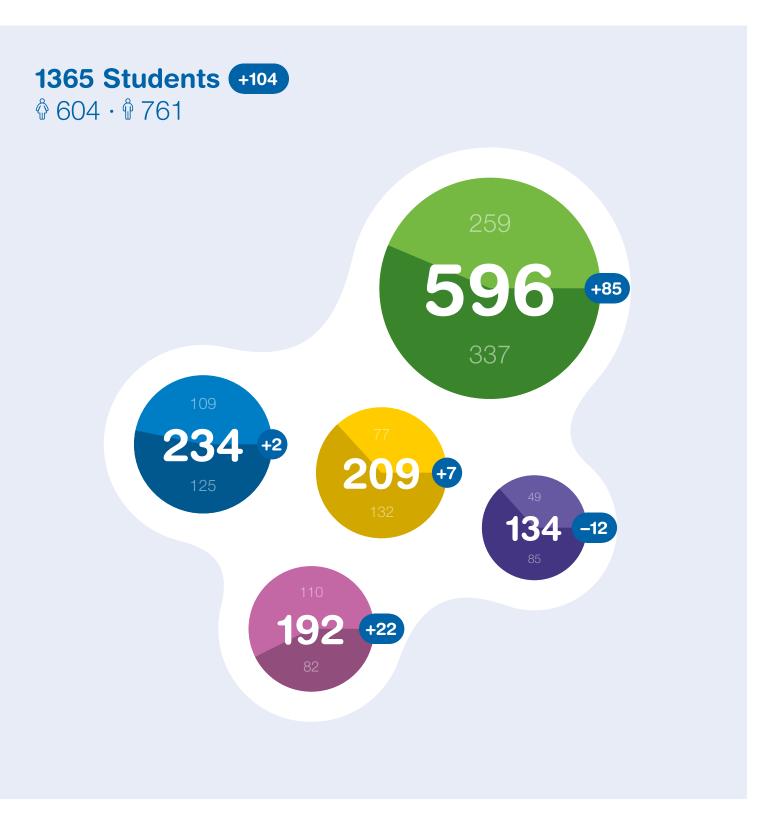
'ZHAW Life Sciences and Facility Management: study and research in Wädenswil – practical, creative, passionate and reflective', and 'Environment, food, health – with our expertise in life sciences and facility management, we make an important contribution to solving some of the challenges facing society today and to increasing our quality of life.'

Prof. Dr. Urs Hilber Dean



Environment | Food | Health | Society
Our competences in Life Sciences
and Facility Management.

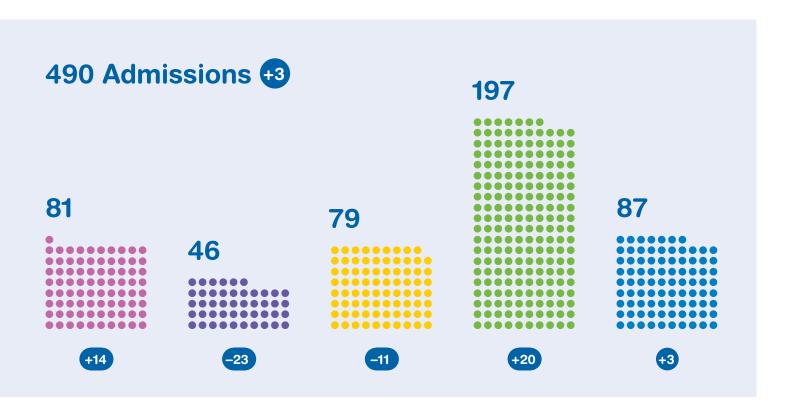
Bachelor's degree programme 2016



Status as of 15.10.2016, based on SBFI report, Number of students

Biotechnology Chemistry Food and Beverage Innovation Natural Resource Sciences Facility Management



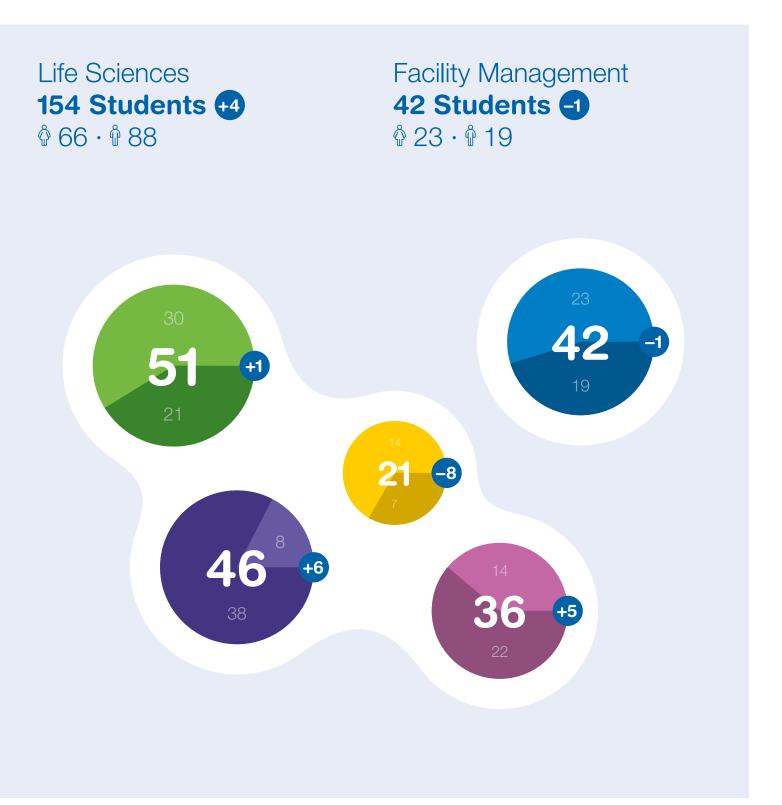


Graduates



Biotechnology 43 +17 · Chemistry 36 -2 · Food and Beverage Innovation 47 -12 Natural Resource Sciences 128 - Facility Management 66 +9

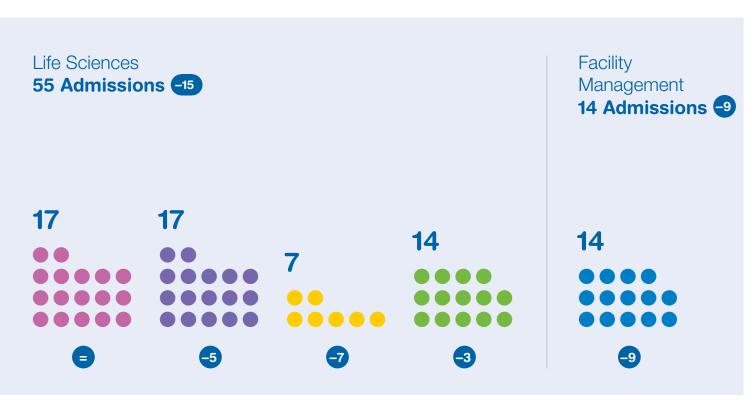
Master's degree programme 2016



Status as of 15.10.2016, based on SBFI report,

Pharmaceutical Biotechnology Chemistry for the Life Sciences **Natural Resource Sciences Facility Management**







Continuing education, courses and conferences 2016

Programmes

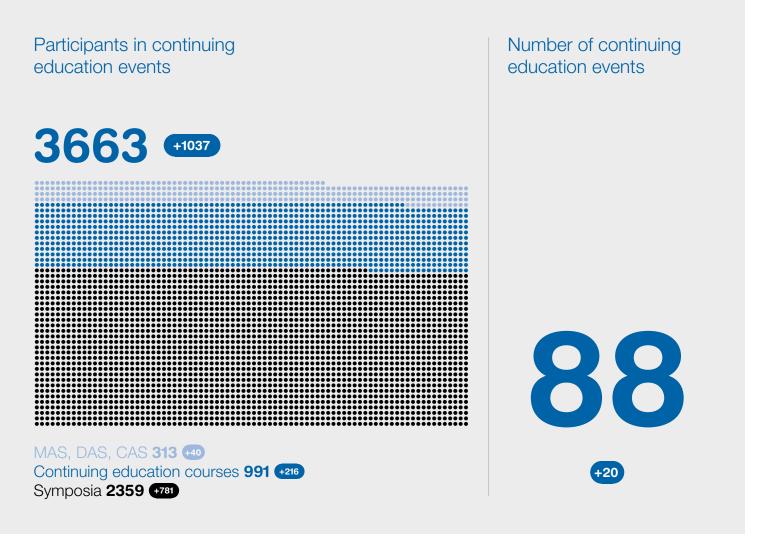
The range of continuing education activities at Wädenswil and the Technopark Zurich includes international conferences, continuing education courses (WBK), certificate and diploma courses (CAS, DAS), and graduate study programmes over several semesters (MAS). Our services are aimed at professional practitioners who have completed a university education and want to expand or deepen their expertise.

Qualifications

MAS: The Master of Advanced Studies (MAS) is the most extensive study programme and comprises 60 credits. The programme is part-time, usually modular in structure, and takes place over several semesters. Consisting of a number of partial qualifications, it concludes with a Master's thesis.

DAS: The diploma course Diploma of Advanced Studies (DAS) comprises 30 credits. It provides in-depth training in specific professional fields.

CAS: the Certificate of Advanced Studies is an independent degree with 10-15 credits, which can also form part of an MAS or DAS.



Status as of 31.12.2016





Research and development

Competences



Laboratory of Microbiology in the Reidbach campus, Photo: Frank Brüderli

The specific competences in each of our five Institutes provide a solid basis for solving the problems that our partners and customers face. We carry out projects and fulfil contracts in practical and creative ways. Whether in the scope of a specific Bachelor's thesis or as an interdisciplinary, multi-year research project, we welcome the opportunity to offer you our support.

Research focal points at the IAS **Institute of Applied Simulation**

- Bioinspired modelling and prognosis
- Computer-assisted genomics and biomedical simulation
- Process simulation and optimization
- Knowledge engineering

Research focal points at the **ICBT Institute of Chemistry and Biotechnology**

- Micro-, molecular and cell biology, tissue engineering
- Chemical and biotechnological processes and systems
- Synthesis and new materials
- Medicinal chemistry, phytopharmaceutics and pharmaceutical technology
- Analytical chemistry
- Biochemistry, protein technology and bioanalytics
- Chemical and biotechnological processes

Research focal points at the IFM **Institute of Facility Management**

- Workplace
- FM in healthcare
- Consumer FM
- Corporate and public real estate operations

Research focal points at the **ILGI** Institute of Food and Beverage Innovation

- Food technology
- Beverage technology and aroma research
- Food quality and safety
- Consumer behaviour and nutrition

Research focal points at the **IUNR Institute of Natural Resource Sciences**

- Landscape and tourism
- Education and communication
- Urban green spaces
- Organic farming
- Ecological engineering
- Integrative ecology

Publications

Extracts from 2016

Scientific publications are an important element in the transfer of knowledge between research and practice. A selection of key publications from the year 2016 is given below. The complete list of all publications of the School of Life Sciences and Facility Management can be found at www.zhaw.ch/lsfm/forschung.

Balakirev, E., Anisimova, M., Pavlyuchkov, V. & Ayala, F. (2016). DNA polymorphism and selection at the bindin locus in three Strongylocentrotus sp. (Echinoidea). BMC genetics, 17.

Heller, D., Hoppe, A., Restrepo, S., Gatti, L., Tournier, A., Tapon, N., Basler, K. & Mao, Y. (2016). EpiTools: An Open-Source Image Analysis Toolkit for Quantifying Epithelial Growth Dynamics. Developmental Cell, Elsevier, 36 103/116.

Christen, M., Narvaez, D., Tanner, C. & Ott, T. (2016). Using thesauruses as a heuristics for mapping values. Cognitive Systems Research, 40 59-74.

ICBT

Demuth, C., Varonier, J., Jossen, V., Eibl-Schindler, R. & Eibl, D. (2016). Novel probes for pH and dissolved oxygen measurements in cultivations from millilitre to benchtop scale. Applied Microbiology and Biotechnology, 100, 9. 3853-3863.

Wu, D., Chew, J. & Honciuc, A. (2016). Polarity Reversal in Homologous Series of Surfactant-Free Janus Nanoparticles: Toward the Next Generation of Amphiphiles. Langmuir, 32 6376-6386.

Jossen, V., Schirmer, C., Mostafa S., Eibl-Schindler, R., Kraume, M., Pörtner, R. & Eibl, D. (2016). Theoretical and practical issues that are relevant when scaling up hMSC microcarrier production processes. Stem Cells International, Special Issue 1–15.

IFM

Leiblein, T., Tucker, M., Ashall, M., Lee, S., Gollnisch, C. & Hofer, S. (2016). Legionella and risk management in hospitals - A bibliographic research methodology for people responsible for built environment and facility management. Int. J. Hyg. Environ. Health, 219, 8. 890-897.

Druhmann, C., Ashworth, S. (2016). Rating Systems in Conjunction with BIM Deliver Outstanding Possibilities for Sustainable Construction. Journal of Civil Engineering and Architecture Research, 3, 10. 1711–1717.

Windlinger, L., Nenonen, S. & Airo, K. (2016). Specification and empirical exploration of a usability concept in the workplace. Facilities, 11/12.649-661.

Wanner, M., Martin, B., Autenrieth, C., Schaffner, E., Meier, F., Brombach, C., Stolz, D., Bauman, A., Rochat, T., Schindler, C., Kriemler, S. & Probst-Hensch, N. (2016). Associations between domains of physical activity, sitting time, and different measures of overweight and obesity. Preventive Medicine Reports, 3, 2016. 177-184.

Pedan, V., Fischer, N. & Rohn, S. (2016). Extraction of cocoa proanthocyanidins and their fractionation by sequential centrifugal partition chromatography and gel permeation chromatography. Analytical and Bioanalytical Chemistry.

Born, Y., Remus-Emsermann, M., Bieri, M., Kamber, T., Piel, J. & Pelludat, C. (2016). The Fe2+ chelator Proferrorosamine A: a gene cluster of Erwinia rhapontici P45 involved in its synthesis and its impact on growth of Erwinia amylovora CFBP1430. Microbiology.

IUNR

Rezzonico, F., Smits, T., Born, Y., Blom, J., Frey, J., Goesmann, A., Cleenwerck, I., de Vos, P., Bonaterra, A., Duffy, B. & Montesinos, E. (2016). Erwinia gerundensis sp. nov., a cosmopolitan epiphyte originally isolated from pome fruit trees. International Journal of Systematic and Evolutionary Microbiology, 66, 3. 1583-1592.

Pietsch-Schmied, C., Junge, R. (2016). Physiological responses of carp (Cyprinus carpio L.) to dietary exposure to zearalenone (ZEN). Comparative Biochemistry and Physiology, Part C, 188. 52-59.

Wettstein, S., Stucki, M., von Blottnitz, H., Berli, C. & Scharfy, D. (2016). South African maize production: mitigating environmental impacts through solar powered irrigation. Proceedings of LCA Food 2016 7.

Finances 2016



ZHAW vineyards on the Au peninsula, Photo: Frank Brüderli

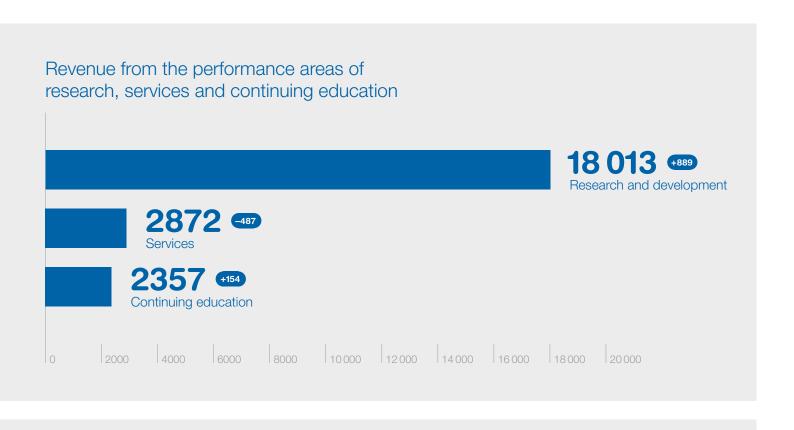
Nowadays, economic challenges and political changes are part of everyday life. Higher and continuing education are therefore more important than ever before in shaping the ability of each individual to remain competitive in their field. Our challenge is to respond to these changing needs. We did well in 2016, as the following figures show.

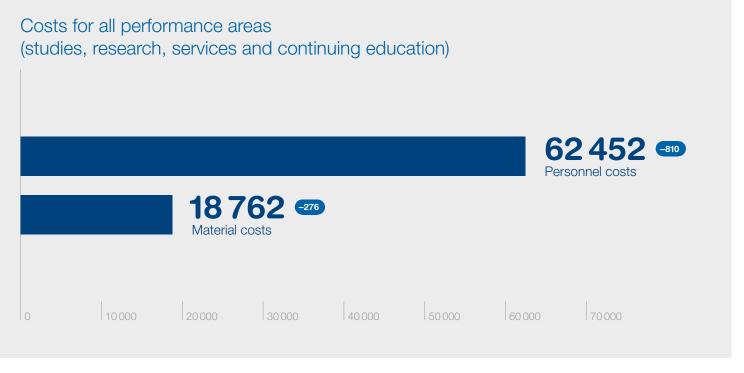
The number of enrolled Bachelor's students rose by over 100 compared to the previous year (1365 in 2016, 1261 in 2015). The number of Master's students on the life sciences programme was comparable to the previous year - a small increase from 150 in 2015 to 154 in 2016. Furthermore, interest in our continuing education programme was particularly high in 2016: 3663 participants attended one of the 88 further training events (in 2015 there were 2626 participants in 68 events).

In addition, our strong position in research and development (R&D) was further strengthened in 2016. The amount of revenue from R&D at CHF 18 million (excluding contributions from the Canton of Zurich) was almost CHF 1 million higher than in the previous year. Revenue from services was slightly down on the previous year at around CHF 2.8 million.

The ZHAW is still the largest employer in Wädenswil and an important player in the Zurich Parkside region. With 605 employees (462 full-time positions), we are slightly below the previous year (612 employees), but the gender distribution (304 women and 301 men) continues to be well-balanced. The high proportion of part-time employees (men and women) is a further positive factor, demonstrating that the ZHAW is a particularly familyfriendly employer.

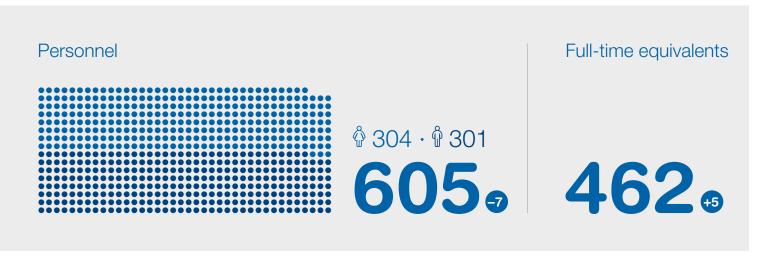
The economic and financial situation was stable at the LSFM in 2016. We are now approaching the future with a practical orientation, creativity, reflection and passion, and are pleased to be able to make an important contribution to Switzerland's further development through education and research. We highly value and are motivated by the trust that we receive from private companies and public institutions, as well as the support from the Canton of Zurich.





Revenue not including contributions from the Canton of Zurich. All amounts are given in 1000 CHF.

Employees School of LSFM





IUNR Management / Strategic Affairs Unit **(1)** 12 • • 1

Employees by category

161 185 Professors and **Assistants** Administration, **Apprentices** associates lecturers technology, and interns operations personnel 3 **2** -13 +10

Status as of 31.12.2016



Foundations and Boards

Foundations

The School of Life Sciences and Facility Management (LSFM) supports various foundations, mainly technically and with human resources, and thanks to this commitment benefits financially. The LSFM is represented in the following foundations:

Stiftung Technische Obstverwertung (Foundation for Technical Fruit Recycling), Wädenswil

- Prof. Dr. Urs Hilber, Dean of ZHAW LSFM

Stiftung Gartenbau (Foundation for Horticulture), Wädenswil

- Prof. Jean-Bernard Bächtiger, Director of IUNR, ZHAW (until 31.7.2017)
- Prof. Dr. Rolf Krebs, Director of IUNR, ZHAW (from 1.8.2017)

grow, Wädenswil start-up organisation

- Prof. Dr. Urs Hilber, Dean of ZHAW LSFM (on the Board of Trustees)
- Catherine Kroll, Director of Technology Transfer Office, ZHAW LSFM (in the senior management)

Alumni organisations

Representatives of the School of Life Sciences and Facility Management:

Alumni ZHAW Facility Management

- Barbara Keller Foletti, previously Institute of Facility Management, ZHAW (President)
- Prof. Thomas Wehrmüller, previously Director of Institute of Facility Management, ZHAW (member)

Alumni ZHAW Life Sciences

- Prof. Dr. Daniel Baumann, Head of Education, Research and Resources, ZHAW LSFM

Alumni Network Wädenswil

- Prof. Dr. Daniel Baumann, Head of Education, Research and Resources, ZHAW LSFM

Advisory boards

To ensure the practical relevance and quality of education and applied research, as well as to secure long-term development, numerous representatives of business and professional organisations support our Institutes in an advisory capacity.

Advisory Board of the ICBT, Institute of Chemistry and Biotechnology

- Prof. Dieter Beckmann, Institute of Bioprocess and Analytical Measurement Technology
- Dr. Gunter Festel, owner of FESTEL **CAPITAL**
- Prof. Dr. Christian Hinderling, Director of ICBT, ZHAW
- Dr. Erich Hochuli, formerly with F. Hoffmann-La Roche Ltd.
- Eva-Maria Kupsch, Dow Europe GmbH
- Dr. Michael Mathes, scienceindustries, Chemistry Pharma Biotech industry association
- Dr. Ferruccio Messi, Cell Culture Technologies Ltd. Liab Co.
- Hans-Peter Meyer, HES-SO
- Dr. Thomas Münch, Givaudan Switzerland Ltd
- Dr. Martin Riediker, Expert at the Promotion Agency for Innovation CTI
- Dr. Philippe Steiert, CSEM, Swiss Center for Electronics and Microtechnology
- Markus Tanner, Werthenstein Biopharma
- Dr. Pius Waldmeier, Head of Synthesis & Process Research Group, F. Hoffmann-La Roche Ltd.
- Dr. Roland Wohlgemuth, Sigma-Aldrich

Advisory Board of the IFM, Institute of Facility Management

- Ricarda Berg, CEO, TREOS Facility Management AG
- Michael Bürki, Head of IMS Clean, Post Real Estate Management and Services
- Astrid Furrer, Co-President of the Social Conference of the Canton of Zurich
- Renate Gröger, Director of Operations, University Hospital Zurich

- Prof. Dr.-Ing. Tore Haugen, Norwegian University of Science (TNU)
- Prof. Dr.-Ing. Antje Junghans, Director of IFM, ZHAW
- Wolfgang Stiebellehner, Head of Management, Livit AG
- Daniel Zbinden, Head of Energycontracting, Electricity Plant of the Canton

Advisory Board of the ILGI, Institute of Food and Beverage Innovation

- Dr. Michael Beer, Head of Food and Nutrition, BLV
- Dr. Thomas Büeler, Head of Innovation & Process Intelligence, Emmi Management AG
- Dr. Karl W. Gschwend, Managing Director Operations, Hochdorf Swiss Nutrition AG
- Prof. Michael Kleinert, Director of ILGI, **7HAW**
- Cédric Ochsner, Head of Operations, Member of Senior Management, Midor AG
- Andreas Schwab, Head of Operations, Member of Senior Management, Le Patron Orior Menu AG
- Prof. Dr. Erich Windhab, Professor of Food Process Engineering, ETH Zurich

Advisory Board of the IUNR, Institute of Natural Resource Sciences

- Prof. Jean-Bernard Bächtiger, Director of IUNR, ZHAW (until 31.7.2017)
- Prof. Dr. Rolf Krebs, Director of IUNR, ZHAW (from 1.8.2017)
- Ursin Ginsig, Managing Director for Contaminated Sites, Eberhard Recycling AG
- Christian Guggisberg, Managing Director, Gastro Star AG
- Karin Hindenlang, Managing Director, Wildnispark Zurich
- Dr. Tove Larsen. Member of the Board. FAWAG
- Dr. Matthias Stolze, Deputy Director, FiBL Research Institute of Organic Agriculture
- Dr. Raimund Rodewald, Managing Director, Foundation for Landscape Protection Switzerland

The ZHAW in Wädenswil

The ZHAW at a glance

Eight Schools are united under the umbrella of the Zurich University of Applied Sciences. With more than 12,000 students in 27 Bachelor's and 16 Master's degree programmes as well as more than 6800 participants in continuing education, the ZHAW is one of the leading Swiss universities of applied sciences. All the ZHAW locations (Wädenswil, Winterthur and Zurich) are situated in the economically strong Greater Zurich Area. They offer a high quality of life for both study and work, and are easily accessible by public transport.

See www.zhaw.ch

Attractive campus facilities and locations

The Grüental and Reidbach campuses in Wädenswil, which include the RA building on the Seestrasse, are situated in a beautiful location on the left bank of Lake Zurich. The teaching and working areas, laboratories and pilot plants are equipped with the latest technology, while the green spaces around the Grüental campus not only serve as learning and research sites, but also inspire the public with their extensive collection of plants. The continuing education courses of the Institute of Facility Management take place at the centrally located Technopark in Zurich. The research group 'Tourism and Sustainable Development' is on the frontline at the the Center da Capricorns in Wergenstein/GR.

Local and regional roots

Wädenswil has established itself as an educational and research town, and actively supports the ZHAW. The ZHAW's regional science and industry networking is also reflected in its long-term close cooperation with the University of Zurich, ETH Zurich, and Zurich Parkside, the regional development organisation, as well as with Agroscope.

International orientation

ZHAW students have the opportunity to spend a semester abroad to prepare them for international competition in their future careers. In addition, many of the Institutes' research projects and specialist conferences at the LSFM, as well as their Summer and Winter Schools, are internationally orientated. The specialised foci of these events bring scientists and students from around the world to Wädenswil.

Promotion of entrepreneurship

Together with other initiators, the ZHAW is actively involved in the Wädenswil start-up organisation grow. Consulting, inexpensive premises, and proximity to the university facilitate the step into self-employment. grow enables students to become entrepreneurs and helps turn ideas into products. grow currently includes 21 organisations with 78 members. With the programme entrepreneurship@zhaw, the university also provides a start-up and counselling centre for employees interested in founding their own company.



















- RA building, Wädenswil
 Grüental campus, Wädenswil
 Reidbach campus, Wädenswil
 Center da Capricorns, Wergenstein/GR

A brief historical review of the last 75 years

Establishment and opening of the school 'Schweizerische Fachschule für Obstverwertung Wädenswil' by the Swiss Fruit Association.

1950

Renamed 'Swiss School of Fruit and Wine (SOW)' due to the integration of wine production as a subject.

Technical diplomas awarded for the first time.

1972

Inclusion of Horticulture as a subject.

1975

The title 'Higher Technical Education Institute (HTL)' awarded to the Fachschule Wädenswil by the Swiss Department of Economic Affairs (EVD) in Berne.

1976

Concordat formation by the cantons of Berne, Appenzell-AR and Graubünden; in the following years, further cantons join.

Inauguration of the main building (GA) in Grüental.

Introduction of the study programme in Food Technology.

Introduction of the study programme in Biotechnology.

1998

Merger of the Wädenswil Engineering School (ISW) with the Centre for Executive Education in Zurich (ZKZ) and transfer of the Facility Management study programme to Wädenswil, leading to the founding of the University of Applied Sciences Wädenswil (HSW).

2004

Decision of the Council of Zurich Universities of Applied Sciences to develop the University of Applied Sciences Wädenswil into a Centre of Excellence for Chemistry/Life Sciences and to transfer the study programme in Chemistry from Winterthur to Wädenswil.

2005

Addition of the Einsiedlerstrasse 31 building (today Campus Reidbach) and inauguration of new rooms.

2006

Dissolution of the Concordat and transfer of responsibility to the Canton of Zurich from 1 January 2007.

2007

The University of Applied Sciences Wädenswil (HSW) becomes part of the newly founded ZHAW: Zurich University of Applied Sciences.

Start of the Master of Science in Life Sciences.

2011

Start of the Master of Science in Facility Management.

2013

ZHAW's first endowed professorship at the ICBC Institute of Chemistry and Biochemistry in 'New Materials'; opening of the RA building (formerly Seifen-Sträuli) at Seestrasse 55.

2014

First successful project submission to the EU Framework Programme 'Horizon 2020' (ProPAT project).

The Institute of Biotechnology (IBT) and the Institute of Chemistry and Biological Chemistry (ICBC) merge to become the Institute of Chemistry and Biotechnology (ICBT).

2016

Approval of the Master's degree in Natural Resource Sciences and of the specialisation in Applied Computational Life Sciences in the MSc in Life Sciences.



