

## Bachelor's degree in Food Technology

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# Food Technology

## Understanding and managing food

Food is more diverse and innovative than ever: vegetarian, vegan, slow food, high protein, organic meats or insects. Do you want to develop, manufacture and manage the food of the future? Then study Food Technology.

With a Bachelor of Science in food technology, you will understand how healthy, enjoyable and sustainable foods are made. You will acquire the skills to work as a food technician, manager or entrepreneur – at a regional, national or international level. You will be involved in product development, food production, quality management, food marketing, nutritional science, sustainability, digitisation, automation and business management.

## Study programme

The Bachelor's programme is aimed at anyone interested in food and its production. Do you enjoy conducting experiments and would you like to develop new products and processes? Then Food Technology is the right degree for you.

The study programme combines food-related sciences, including industrial and process engineering, chemistry, microbiology and nutrition. The main focus is the production of food and beverages and the management of processes and organisations.

Undergraduates learn how to grasp and interpret complex interrelationships found throughout the food value chain. In addition to subject-specific and broad educational content, this highly application-oriented programme places emphasis on independent study, creativity, teamwork, communication and holistic thinking. These skills are actively promoted through numerous internships, project weeks and participation in food industry projects and research programmes.

## Structure

The full-time Food Technology programme lasts for six semesters, over the course of three years. In the first year, you will learn about basic scientific and technical principles and apply them to food.

In the 2<sup>nd</sup> and 3<sup>rd</sup> academic years, you can choose from a broad range of optional modules to tailor your studies to your individual interests and career goals. One of three specialisations can be chosen: Food Safety & Quality, Food Management & Sustainability or Food Processing & Automation. Our minor in Consumer Science & Nutrition and other elective modules can help you to acquire additional competencies.

Be it in lectures, in pilot plants exercises, laboratories, case studies, sensory tests or on excursions – practice is always paramount. Thanks to our close cooperation with food and production machine manufacturers, retailers and marketing organisations, you will work on the latest developments in the field.

The study programme can also be completed on a part-time basis. We offer a four-year programme requiring three days of attendance per week. Longer part-time programmes requiring less attendance are also possible, based on individual needs.

The modular structure also allows you to spend a semester studying abroad (during the 2<sup>nd</sup> academic year). As part of our collaborative global research projects, it is also possible to complete your final Bachelor's thesis abroad.

# Specialisations and minors

## Food safety & management

Safe food is a prerequisite for a healthy diet. Legislators in Switzerland, the EU and other countries determine the framework conditions that must be adhered to.

In the **Food Safety & Quality** specialisation, you determine, assess and optimise the quality and safety of foodstuffs. You will learn how to apply relevant legislation and guidelines in practice. This knowledge is required in quality management, product development, food inspections, food chemistry, food microbiology and sensory technology.

### Educational objectives:

You will learn to:

- carry out microbiological, chemical and sensory analyses.
- interpret analytical data and use it for product development.
- carry out toxicological assessments of foodstuffs.
- implement Swiss and EU food legislation requirements in the workplace.
- create and further develop GHP and HAC CP concepts.
- utilise microorganisms designed to improve foodstuffs.
- perform case studies in the food industry.

## Quality food & sustainability

Food Management comprises corporate management, team leadership, controlling, logistics, innovation and portfolio management, with sustainability as one of the central topics.

In the **Food Management & Sustainability** specialisation, you will undertake tasks and challenges relating to the management and marketing of foodstuffs. In doing so, you will take into account the perspectives of various players in the food industry: farmers, food producers, food retailers, caterers, food start-ups and many more.

### Educational objectives:

You will learn to:

- effectively use key management and controlling tools.
- understand, global and regional agricultural and food industries.
- interpret market and consumer studies relating to foodstuffs and sustainability.
- take responsibility for procurement, materials management and logistics in the food industry.
- optimise the value chain.
- design product portfolios and accelerate innovation.
- plan, implement and evaluate marketing activities.
- employ the basic concepts of sales management.

## Food processing & automation

Rapid technological development and digitalisation are fundamentally changing the way food is produced, which presents new opportunities and risks.

In the **Food Processing & Automation** specialisation, you will prepare yourself for Industry 4.0. You will analyse and redefine food production processes. You will also gain in-depth technological and IT skills, working with the Internet of Things, artificial intelligence and machine to machine communication.

### Educational objectives:

You will learn to:

- develop, monitor, optimise and visualise food production processes and procedures.
- undertake production planning using new digitalisation technologies.
- manage production processes in the food industry.
- manage complex automation processes.
- implement predictive maintenance within an Industry 4.0 framework.
- monitor processes with sensors and actuators.
- model and simulate food production processes and systems.

### Minor "Consumer Science & Nutrition"

Within the range of options, you can obtain an additional qualification called "Consumer Science & Nutrition" as a minor. This involves aspects of nutrition in all life stages, from youth to old age. You will learn to identify the needs of consumers and food trends. You will then apply this knowledge to the development and optimization of food products.



# Overview

Year of study	Foundation studies/Student work (92 ECTS / 28 ECTS, compulsory)	Specialisations (24 ECTS, choose 1 of 3)	Elective modules (36 ECTS, free choice)
1	<ul style="list-style-type: none"> <li>– <b>Food Production 1 and 2</b> (Raw Materials, Food Technology, and Process Engineering)</li> <li>– <b>Natural Sciences 1 and 2</b> (Biology, Microbiology, Chemistry, Sensory Analysis)</li> <li>– <b>Data Science 1 and 2</b> (Mathematics, Physics, Statistics, Computer Science)</li> <li>– <b>Management, Language &amp; Critique 1 and 2</b> (Principles of Food Law, Quality Management, Business Administration, English, Social Context and Language)</li> </ul>		
2	<ul style="list-style-type: none"> <li>– <b>Food Production 3 and 4</b> (Process Engineering, Food Technology, Packaging)</li> <li>– <b>Natural Sciences 3</b> (Food Chemistry, Food Microbiology, Nutrition)</li> <li>– <b>Management, Language and Critique 3.</b> (Project Management, Food Marketing, Communication)</li> <li>– <b>Scientific Work</b> (Literature Review, Data Analysis)</li> </ul>	<ul style="list-style-type: none"> <li>– <b>Food Safety &amp; Quality 1 and 2</b> (Food Law, Chemical and Sensory Analysis, Toxicology)</li> <li>– <b>Food Management &amp; Sustainability 1 and 2</b> (Consumer Research, Sustainability Concepts, Supply Chain Management, Agricultural Markets)</li> <li>– <b>Food Processing &amp; Automation 1 and 2</b> (Processing Fundamentals, Supply Chain Management, Smart Processing 1, Process Engineering 1)</li> </ul>	<p>Many of these modules can be taken either in the 2<sup>nd</sup> or 3<sup>rd</sup> year of study.</p> <ul style="list-style-type: none"> <li>– Advanced Consumer Studies*</li> <li>– Alternative Proteins</li> <li>– Beer and Wine Technology</li> <li>– Case Study Consumer and Nutrition*</li> <li>– Consumer and Nutrition*</li> <li>– Consumer Insights*</li> <li>– Physiology and Biochemistry Research*</li> <li>– Consumer Research*</li> <li>– Cosmetic Science Technology - Basics and Advanced</li> <li>– English 3 and 4</li> <li>– Soft Drinks</li> </ul>
3	Semester Assignment Bachelor's Thesis	<ul style="list-style-type: none"> <li>– <b>Food Safety &amp; Quality 3 und 4</b> (Good Practice &amp; HACCP, Molecular Food Analytics, Quality Excellence, Industrial Case Study)</li> <li>– <b>Food Management &amp; Sustainability 3 and 4</b> (Sustainability Assessments, Marketing &amp; Sales, Food Innovation, Fit for Market)</li> <li>– <b>Food Processing &amp; Automation 3 and 4</b> (Smart Processing 2, Process Engineering 2, Factory Management)</li> </ul>	<ul style="list-style-type: none"> <li>– Intercultural Competence</li> <li>– Milk and Meat Technology</li> <li>– Nutrition Insights*</li> <li>– Nutrition-related Diseases*</li> <li>– Life Cycle Assessment and Label Management</li> <li>– Resource Recovery and Reuse in the Food Industry</li> <li>– Tutoring in Natural Sciences and Data Science</li> <li>– Various modules from the non-selected specializations</li> <li>– Value Chain of Bakery Products, Cocoa, and Fruits</li> </ul>

\*\*Minor: Consumer Science & Nutrition

Note: This overview shows a summarised overview of our study programmes. For reasons of clarity, not every individual module is shown here. You can find more information about our study programmes and the range of options available on our website at [www.zhaw.ch/ilgi/bachelor](http://www.zhaw.ch/ilgi/bachelor).



### Food Technology Student

“I’ve loved baking sweets since I was a child. Thanks to my studies in food technology, I now understand the underlying processes and can focus my search for specific new taste experiences.”

# Cornelia

# Prospects

## Your degree

On completion of your studies, you will be awarded a Bachelor of Science degree in Food Technology. You will understand the entire food value chain from raw materials through processing to consumer-ready products. You will be familiar with marketing, logistics and retailing of foodstuffs.

You will have an understanding of the economic environment in Switzerland and internationally, applicable legal regulations, pertinent health policy issues, as well as nutritional issues and concepts. You will be able to take responsibility for food safety and environmental protection activities. You will have a good working knowledge of modern manufacturing practices and analytical methods. You will be able to shape innovation processes, understand digitalisation and manage sustainability in the food industry.

## Career prospects

The Bachelor's degree programme leads to a recognised qualification and provides you with excellent job opportunities. Many of our graduates already have an offer of employment before completing their studies. This practice-oriented programme makes you an attractive candidate to pursue a wide range of activities in sectors such as agriculture, food & beverages, catering, cosmetics, industrial machinery, government and non-profit organisations (fair trade, organic farming and consumer protection).

With a Bachelor's degree in food technology, you can work as an engineer, manager or entrepreneur – in regional, national or international contexts. Your role may involve:

- managing the production and processing of food.
- developing innovative and sustainable foods.
- administering production processes and automation.
- guaranteeing the quality of food.
- understanding how food influences nutrition and health.
- assessing consumer needs.
- taking advantage of opportunities presented by digitisation.
- managing teams and complex projects.

Graduates are able to readily collaborate with experts from other fields in solving complex industrial problems, either with multinational companies or with small and medium-sized enterprises (SMEs). They take their ethical and societal responsibilities seriously and use valuable resources sparingly in pursuit of their objectives.

## Master's programme / continuing education

On successful completion of the Bachelor's degree programme in Food Technology at the ZHAW in Wädenswil, there are opportunities to study further for a research-based and practically-oriented Master of Science in Life Sciences degree with a specialisation in Food and Beverage Innovation, which enables you to understand how new food business models emerge and can be disseminated worldwide. [www.zhaw.ch/ilgi/master](http://www.zhaw.ch/ilgi/master)

The food industry is highly dynamic and is expanding both in Switzerland and internationally. The speed at which new concepts, products and business models emerge has increased significantly. In order for you to continuously develop your knowledge, the Institute of Food and Beverage Innovation offers a wide range of continuing education courses (MAS, DAS, CAS and shorter courses). Furthermore, annual specialist conferences provide excellent opportunities for professional networking. [www.zhaw.ch/ilgi/weiterbildung](http://www.zhaw.ch/ilgi/weiterbildung)



## Food Technology Student

“Technology and the question of how it can be further developed and used in an effective way fascinates me – especially when it ensures that food is healthy and sustainable.”

# Manuel

# Important information

## Admissions criteria

The study programme is multidisciplinary and students come from a broad variety of educational backgrounds:

- Individuals with a **vocational baccalaureate (BM) and a traditional vocational training in the food industry** have direct access to the following programs of study: Food and Beverage Technologist, Wine Technologist, Baker, Dairy Technologist, Meat Specialist, Chef, Miller, Food Retail Specialist, Drugstore Specialist, etc.
- Individuals with a **vocational baccalaureate (BM) and a vocational training in a related field of study** have direct access to the following programs: Engineering, Synthesis/Analysis, Natural Sciences, Health Sciences, Administration, and Logistics. Optionally, additional work experience in the field is encouraged.
- Individuals with a **vocational baccalaureate (BM) and a vocational training in an unrelated field of study** require 6 months of work experience in a field related to the chosen program of study.
- Candidates with an **Academic Baccalaureate (Maturität)** require twelve months' work experience in a field related to the study programme before beginning their studies.
- Work carried out on their final **thesis by candidates with a Professional Baccalaureate (Fachmatura)** will be recognised as work experience, provided the topic was related to the study programme and included practical experience. Otherwise, individuals with a Professional Baccalaureate require six months work experience in a field related to their field of study.

## International exchange

Would you like to complete part of your studies abroad? The ZHAW can provide you with this valuable opportunity. An exchange semester, a foreign internship, attendance at a summer school, a field trip or a language stay all bring many advantages: you can learn about a different culture and language, another educational and research system, and gain experience for your future career.

The work experience must be documented through a report and certificates.

## Academic support services

If you do not have the relevant work experience and have not taken chemistry/biology in your Vocational Baccalaureate, you can apply for the laboratory induction internship. For food technology studies, there are two places available per year on this internship. It takes 2 months to complete, starting at the end of July, and teaches important laboratory skills and techniques.

If your knowledge of maths, physics, biology or chemistry is not yet sufficient, we offer support courses before and during your studies to help you brush up on these subjects. [www.zhaw.ch/lfsfm/vorkurse](http://www.zhaw.ch/lfsfm/vorkurse)

For more information on international mobility and reports on students' experiences, go to: [www.zhaw.ch/lfsfm/international/en](http://www.zhaw.ch/lfsfm/international/en)

## Dates

The programme begins in mid-September. The registration deadline is 30 April.



You learn to deal with complexity and manage projects.



# At a glance

<b>Degree programme</b>	Food Technology
<b>Specialisations</b>	Food Safety & Quality, Food Management & Sustainability, Food Processing & Automation
<b>Minor</b>	Consumer Science & Nutrition
	You can individually choose the topics you study from a wide range of options.
<b>Title</b>	Bachelor of Science ZHAW in Food Technology
<b>Duration</b>	Full time: 6 semesters over 3 years Part time: 8 semesters over 4 years, 3 days a week. Other, longer part-time study options are possible.
<b>Start of studies</b>	Mid-September (week 38); one week earlier for all new 1 <sup>st</sup> semester students (week 37).
<b>Workload</b>	180 (ECTS) credits. 1 credit represents 25 to 30 hours of work.
<b>Preparation</b>	Preliminary courses in mathematics, chemistry, physics. Details: <a href="http://www.zhaw.ch/lsvm/bachelor">www.zhaw.ch/lsvm/bachelor</a>
<b>Academic support services</b>	Laboratory start-up course and laboratory introductory internship. Details: <a href="http://www.zhaw.ch/lsvm/bachelor">www.zhaw.ch/lsvm/bachelor</a>
<b>Campus</b>	Wädenswil on Lake Zurich and online
<b>Tuition fees</b>	Semester fees: CHF 720 (subject to change) plus study materials, membership of the ASVZ sports association and individual living expenses; additional tuition fees of CHF 500 per semester apply to all students who travel to Switzerland for study purposes and do not have permanent Swiss residency when commencing their studies.
<b>Admissions criteria</b>	Individuals with a completed vocational training in the food industry or a related field and a recognized vocational baccalaureate, specialized baccalaureate, or higher professional diploma (HF) can directly enroll in the study program. Individuals with a non-related basic vocational education (EFZ) must acquire 6 months of work experience in the food industry. Individuals with a high school diploma (gymnasial Maturität) or specialized baccalaureate must demonstrate 12 months of work experience in the food industry before starting their studies. General work experience may be taken into account. We are happy to provide guidance and advice!
<b>Important information</b>	The programme is "paperless" and practical, consisting of food industry projects using our state-of-the-art infrastructure.
<b>Information events</b>	4 times a year, in March and October; Details: <a href="http://www.zhaw.ch/lsvm/bachelor/infoveranstaltungen">www.zhaw.ch/lsvm/bachelor/infoveranstaltungen</a> Trial study days are also possible: <a href="http://www.zhaw.ch/ilgi/schnupperstudium">www.zhaw.ch/ilgi/schnupperstudium</a>
<b>Contact</b>	 Study advisor Andreas Kilchör <a href="mailto:studienberater.lm.lsvm@zhaw.ch">studienberater.lm.lsvm@zhaw.ch</a>

# Study and research in Wädenswil: practically-oriented, creative, passionate and reflective

The ZHAW is one of the leading Swiss universities of applied sciences. The School of Life Sciences and Facility Management currently has around 1800 students and employs more than 600 people. The educational programme comprises Bachelor's and Master's degree programmes as well as a broad range of further training and education courses.

Our expertise in life sciences and facility management in the areas of the environment, food and health enables us to make a vital contribution to solving social challenges and improving quality of life. Our success is based on dynamic institutes with extensive competence in research, development and services in the disciplines of applied computational life sciences, biotechnology, chemistry, food and beverage innovation, natural resource sciences and real estate & facility management.



**Environment | Food | Health | Society**  
Unsere Kompetenzen in Life Sciences  
und Facility Management.

ZHAW Campus Reibbach / Einsiedlerstrasse

ZHAW Campus Reibbach / Seestrasse

Wohnhaus für Studierende

ZHAW Campus Grüental

## Contact

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Student guidance:  
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www.zhaw.ch/lgi/bachelor

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