

Master in Life Sciences

A cooperation between
BFH, FHNW, HES-SO, ZHAW

Module title	Water Management for Households, Industry and Agriculture
Code	E6
Degree Programme	Master of Science in Life Sciences
Group	Environment
Workload	3 ECTS (90 student working hours: 42 lessons contact = 32 h; 58 h self-study)
Module Coordinator	<p>Name: Christoph Hugi Phone: +41 61 228 55 84 Email: christoph.hugi@fhnw.ch Address: FHNW Campus MuttENZ, Hofackerstrasse 30, CH-4132 MuttENZ</p>
Lecturers	<ul style="list-style-type: none"> • Dirk Hengevoss, FHNW-HLS • Christoph Hugi, FHNW-HLS • Maryna Peter, FHNW-HLS • Thomas Gross, FHNW-HLS
Entry requirements	<p>Basic knowledge of environmental technologies and management. Basic knowledge about water resources and environmental quality aspects (Blanc 2014). Documents covering these aspects will be made available on Moodle.</p>
Learning outcomes and competences	<p>After completing the module, students will be able to:</p> <ul style="list-style-type: none"> • explain the relationships between water quality aspects and human health as well as environmental quality. • apply basic methods to describe and assess water resources and their utilization for main sectors (household/industry/agriculture) and environmental needs. • apply methods in the different phases of managing the water cycle to enable efficient and effective utilization and conservation of water resources.
Module contents	<ul style="list-style-type: none"> • Characteristics of water resources: precipitation, surface water, and groundwater • Status and exploitation of water resources (quantitative and qualitative aspects) • Water abstraction, treatment, and distribution systems for the different sectors (household/industry/agriculture) • Water use/reuse/discharge and challenges in different sectors (household/industry/agriculture) • Water demand and supply management • Water distribution and water loss reduction • Monitoring and pricing of water use • Water resources protection • Water quality health and environmental impacts • Total water cycle management / integrated water resources management • Student seminar
Teaching / learning methods	The module will be a mix of project-/problem-based lectures, tutorials and group work leading to a seminar presentation, and several practical exercises on the water topics covered in the course (quantity and quality).
Assessment of learning outcome	<ol style="list-style-type: none"> 1. Group writing assignment and seminar presentation during the course (40%) 2. Individual assignments during the course (60%)
Format	7-weeks

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Timing of the module	Spring semester, CW 16-22
Venue	Mix of online and on-site lectures (in Olten)
Bibliography	<ul style="list-style-type: none">• BAFU about water resources management: Water resource management (admin.ch)• Blanc P (2014) Water in Switzerland – an overview. Swiss Academies of Arts and Sciences• Holden JA (2013) Water Resources: An Integrated Approach. Taylor & Francis. ISBN-139780415602822• The United Nations World Water Development Report 2025, Mountains and glaciers: water towers - UNESCO Digital Library• The United Nations world water development report 2020: water and climate change - UNESCO Digital Library• Federal Office of Public Health and Federal Office for the Environment: Reporting for Switzerland under the Protocol on Water and Health• UNECE: The Protocol on Water and Health
Language	English
Links to other modules	Links with E3 “Sustainable Natural Resource Management”, GIS modules at HES-SO and BFH.
Comments	-
Last Update	25.09.2025