

Master in Life Sciences

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

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: Emmanuel Oertlé Phone: +41 61 228 56 26 Email: emmanuel.oertle@fhnw.ch Address: FHNW Campus Muttenz, Hofackerstrasse 30, CH-4132 Muttenz</p>
Lecturers	<ul style="list-style-type: none"> • Christoph Studer, BFH • Rita Hochstrat, FHNW-HLS • Christoph Hugi, FHNW-HLS • Maryna Peter, FHNW-HLS • Emmanuel Oertlé, 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, along with key questions that the students should be able to answer before the start of the module. Respective competences will be assessed in a self-test.</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, surface 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 management • Water distribution and water loss reduction • Monitoring and pricing of water use • Water resources protection incl. Habitat management • Water quality health and environmental impacts • Total water cycle management • Student seminar
Teaching / learning methods	<p>The module will be a mix of project/problem based lectures, tutorials and group work leading to a seminar presentation, practical exercises for water measurements (quantity and quality). Excursions will complement the programme.</p>

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Assessment of learning outcome	<ol style="list-style-type: none">1. Student seminar presentation (individual) (30%)2. Writing Assignment (individual), to be handed in 2 weeks after the end of the module (30%)3. Written final exam (Closed book), final (40%)
Format	7-weeks
Timing of the module	Spring semester, CW 15-21
Venue	Olten
Bibliography	<ul style="list-style-type: none">• 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• United Nations World Water Assessment Reports: http://www.unesco.org/new/en/natural-sciences/environment/water/wwap• Federal Office of Public Health and Federal Office for the Environment (2010) Reporting for Switzerland under 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	14.08.2019