

Master in Life Sciences

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

Module title	Biodiversity
Code	E5
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: Dr. Alessandra Giuliani (BFH) Phone: +41 (0)31 848 51 45 Email: alessandra.giuliani@bfh.ch Address: Berner Fachhochschule, HAFL, Länggasse 85, 3052 Zollikofen</p>
Lecturers	<ul style="list-style-type: none"> • Dominik Füglistaller, BFH • Dr. Thibault Lachat, BFH • Dr. Heidi Signer-Hasler, BFH • Dr. Silvia Zingg, BFH • Mila Laager • Liv Kellermann Dr. Fabio Mascher • Guest lecturers
Entry requirements	<p>To be able to successfully participate in this module, students need to:</p> <ul style="list-style-type: none"> • know the basic concepts related to biodiversity (diversity within and between species and of ecosystems, options for characterization of diversity, natural versus human-influenced ecosystems) • have down-to-earth experience with measures to preserve biodiversity or to make use of it in production systems • be familiar with the drivers of biodiversity loss and maintenance and identify them in a specific case <p>Documents covering these aspects will be made available on Moodle, along with key questions that the students should be able to answer. Respective skills and knowledge will be assessed in the end-of-module exam.</p>
Learning outcomes and competences	<p>After completing the module, students will be able to:</p> <ul style="list-style-type: none"> • relate issues of biodiversity to their specific fields of expertise • assess the impact of interventions in natural resource management on biodiversity • design effective measures for maintaining and enhancing biodiversity in their specific field of expertise.
Module contents	<p>Starting with concepts and a theoretical ecological framework related to biodiversity, the module will illustrate biodiversity maintenance and ecological applications using selected cases from both human-influenced and natural ecosystems. Students will work on specific cases in problem-solving classes and present these cases in a seminar.</p> <p><u>Introduction</u></p> <ul style="list-style-type: none"> • Global change, species loss, rise of the concept, status and trends of biodiversity • Biodiversity and the functioning of ecosystems • Biodiversity products and ecosystems services • International conventions and policies aiming at sustainable management of biodiversity and their impact

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	<p><u>Management for biodiversity maintenance</u></p> <ul style="list-style-type: none"> • Land use and biological conservation • Examples for biodiversity maintenance in forest, grassland and soil ecosystems • Sustainable management and development of value chains to maintain biodiversity • Genetic resources for food and agriculture, their use and conservation strategies • Molecular techniques for optimizing conservation: The case of local animal breeds <p><u>Ecological applications in natural resources management – agrobiodiversity</u></p> <ul style="list-style-type: none"> • Species diversity in production: intercropping, permaculture • Enhancing productivity and resilience and mitigating climate change by agroforestry and biocontrol • Linking ecological principles and sustainable resource use • Student-led workshop: cases of biodiversity maintenance and use
Teaching / learning methods	<p>Contact teaching:</p> <ul style="list-style-type: none"> • Lectures • Field excursion • Joint development of conceptual framework • Presentation and discussion of case studies • Seminar-style workshop with students presenting cases • Exercises <p>Self-study:</p> <ul style="list-style-type: none"> • Pre-course assignments • Analyzing case studies during the module • Studying documents on conceptual frameworks • Preparing for the workshop
Assessment of learning outcome	<ol style="list-style-type: none"> 1. Preparation and Presentation of a case study during the student-led workshop, in pairs (50%) 2. Final exam (50%)
Format	7-weeks
Timing of the module	Spring semester, CW 8-14
Venue	Blended learning format. Presence sequences take place in Bern. Field visit in Zollikofen.
Bibliography	<p>For preparation of entry requirements and lectures: Mittelbach GG, 2012. Biodiversity and ecosystem functioning. In: Community ecology, pp. 41-62. Sinauer, Sunderland, MA, USA.</p> <p>For preparation of lectures: TEEB, 2010. The Economics of Ecosystems and Biodiversity: mainstreaming the economics of nature: a synthesis of the approach, conclusions and recommendations of TEEB.</p> <p>During the course, more selected references and an extensive list of papers for the workshop and for further reading will be available on Moodle</p>
Language	English



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Links to other modules	There is a link to specialisation modules dealing with production systems (agro-biodiversity, diversity in forests) or with management of natural areas. There will be close coordination with the CS-module E4 “Ecological Infrastructure in Landscapes”. Both modules are designed to be complementary.
Comments	To prepare and present in the student-led workshop, in pairs, students will select a topic of their choice for their case study from a provided list. The proposed topics encompass a wide range of biodiversity studies, allowing students to explore their specific interests and learn from carefully selected scientific papers relevant to their case. During the student-led workshops, students will learn from other groups’ topics and generate a discussion. This will foster research in the field of biodiversity, critical thinking, collaboration and communication skills.
Last Update	03.09.2024