



Master in Life Sciences

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

Module Title	GIS and the Management of Spatial Data
Module Code	MCLs195
Module	AF-53
ECTS Credits	5
Workload	150 h: Lectures 45 h; Exercises 55 h; Self-study 50 h
Module Coordinator	<p>Name Christoph Schaller</p> <p>Phone +41 031 910 29 78</p> <p>Email christoph.schaller@bfh.ch</p> <p>Address Bern University of Applied Sciences, School of Agricultural, Forest and Food Sciences, Länggasse 85, 3052 Zollikofen</p>
Lecturers	<ul style="list-style-type: none"> • Christoph Schaller • Hannes Horneber • Meret Weh
Entry Requirements	<ul style="list-style-type: none"> • Install QGIS Long-Term Release (LTR) on your laptop (see www.qgis.org)
Learning Outcomes and Competencies	<p>After completing the module, students will be able to:</p> <ul style="list-style-type: none"> • understand how Geographical Information Systems (GIS) can make a significant contribution to challenging projects in a spatial context; • organise and name spatial data in a meaningful way; • feel comfortable working with QGIS as a powerful GIS tool; • understand the significance of spatial reference; • edit/digitise spatial data; • perform vector and raster analyses; • understand the Model Builder to facilitate GIS workflows; • present project results in meaningful maps.
Module Content	<ul style="list-style-type: none"> • Introduction to GIS • Geodata organization • Introduction to QGIS • Mapping and editing data • Spatial reference of geodata • Vector Analysis and Graphical Modeler in QGIS • Working with rasters • Editing features and Digitising in QGIS • QField for Outdoor GIS projects

Teaching and Learning Methods	Lectures, guided exercises, attestation exercises, self-studies, individual project work
Assessment of Learning Outcomes	The attestation exercises need to be completed and passed to qualify for the final projects. QGIS Project: 100% of final grade
Bibliography	Chang KT, 2016. Introduction to geographic information systems. Fox, L., 2015, Essential earth imaging for GIS. Clemmer G, 2010. The GIS 20: essential skills. Gabathuler E, 2012. Mapping and geoprocessing tools in support of rural advisory systems: virtual globes, global positioning system, and geographic information systems: simple applications, case studies, and guidelines. Universität Bern, CDE. Wade T, 2006. A to Z GIS: an illustrated dictionary of geographic information systems. Cutts, A. 2019, QGIS Quick Start Guide: A Beginner's Guide to Getting Started with QGIS 3.4 Cutts, A., Graser, A. 2018, Learn QGIS (4 th Edition) Menke, K. 2022, Discover QGIS 3.x (2 nd Edition)
Language	English
Comments	Some sequences, such as the attestation exercises and final project, are compulsory for students. For more information on compulsory sequences, please refer to the detailed schedule of the module, which will be uploaded on Moodle before the start of the module.
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