



# Master in Life Sciences

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

<b>Module title</b>	<b>Ecological Infrastructure in Landscapes</b>							
<b>Code</b>	E4							
<b>Degree Programme</b>	Master of Science in Life Sciences							
<b>Group</b>	Environment							
<b>Workload</b>	3 ECTS (90 student working hours: 42 lessons contact = 32 h; 58 h self-study)							
<b>Module Coordinator</b>	<b>Name:</b> Dr. Claude Fischer <b>Phone:</b> +41 (0)22 546 68 75 <b>Email:</b> claude.fischer@hesge.ch <b>Address:</b> hepia, filière Gestion de la Nature, 150 route de Presinge, 1254 Jussy							
<b>Lecturers</b>	<ul style="list-style-type: none"> <li>• Dr. Claude Fischer, hepia, HES-SO</li> <li>• Dr. Beat Oertli, hepia, HES-SO</li> <li>• Dr. François Lefort, hepia, HES-SO</li> <li>• Member of the cantonal administration and local experts</li> </ul>							
<b>Entry requirements</b>	Knowledge of following concepts: Biodiversity, Ecosystem, Populations and Communities, Spatial behavior (home range, dispersion, migration), Spatio-temporal space use of populations (seasonality, activity), Theory of island biogeography, Basics in population genetics, Basic GIS Recommended documents (to acquire the entry requirement): Campbell Biology (11 <sup>th</sup> edition), chapters: 23, 53, 55.							
<b>Learning outcomes and competences</b>	After completing the module, students will be able to: <ul style="list-style-type: none"> <li>• Assess the ecological infrastructure in a landscape</li> <li>• Identify corridors and gaps in ecological networks (with GIS tools)</li> <li>• Plan and model land-use trends (e.g. development in urban, rural or mountain areas)</li> <li>• Make propositions for the restoration of the landscape (functional infrastructure)</li> </ul>							
<b>Module contents</b>	<ul style="list-style-type: none"> <li>• Landscape and Movement Ecology</li> <li>• The national ecological network (from national to local implementation)</li> <li>• GIS tools for assessing and representing the ecological infrastructure and the dynamics of land-use</li> <li>• Genetic tools for measuring ecological connectivity (spatial genetic structure of populations)</li> <li>• Decision-making support for spatial land-use planning and interconnecting areas of importance</li> </ul>							
<b>Teaching / learning methods</b>	The module is organized in three complementary parts: 1. Theoretical introduction, 2. A real case-study (in interaction with professionals), 3. An introduction to landscape genetics. These different aspects will be integrated in a practical project.							
<b>Assessment of learning outcome</b>	1. An individual written report (with a joined GIS project) to be handed in 3 weeks after the end of the module (100%)							
<b>Format</b>	Winter School							
<b>Timing of the module</b>	Autumn semester, CW 6							
	<b>Day of the block week</b>	<1	1	2	3	4	5	>5
	<b>Contact teaching (lessons)</b>		10	8	8	8	8	
	<b>Self-study (hours)</b>	8						42



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<b>Venue</b>	Geneva (practical parts in the surroundings of Geneva) and/or online
<b>Bibliography</b>	<p><u>Landscape ecology:</u> J. A. Hilty J., W. Z. Lidicker Jr., and A. M. Merenlener (2006). Corridor Ecology. The science and practice of linking landscapes for biodiversity conservation. Island press</p> <p>M. G. Turner &amp; R. H. Gardner (2015). Landscape Ecology in Theory and Practice. Pattern and Processes. Springer.</p> <p><u>National Ecological Network:</u> <a href="http://www.sib.admin.ch/">http://www.sib.admin.ch/</a></p> <p><u>Landscape genetics:</u> N. Balkenhol, S. Cushman, A. Storfer, and L. Waits (2015) Landscape Genetics: Concepts, Methods, Applications. Wiley-Blackwell, Oxford (<a href="http://www.landscapegenetics.info/">http://www.landscapegenetics.info/</a>)</p>
<b>Language</b>	English
<b>Links to other modules</b>	<p>There will be close coordination with the CS-module E5 "Biodiversity". Both modules are designed to be complementary.</p> <p>Links with E3 "Sustainable Natural Resource Management", GIS modules at HES-SO and BFH.</p>
<b>Comments</b>	
<b>Last Update</b>	09.04.2021