

Master in Life Sciences

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

Module title	Ecological Infrastructure in Landscapes							
Code	E4							
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. Claude Fischer Phone: +41 (0)22 558 54 23 Email: claude.fischer@hesge.ch Address: hepia, filière Gestion de la Nature, 150 route de Presinge, 1254 Jussy</p>							
Lecturers	<ul style="list-style-type: none"> • Dr. Claude Fischer, hepia, HES-SO • Mr. Laurent Huber, hepia, HES-SO • Dr. Jeremy Gauthier, Muséum Cantonal des Sciences Naturelles de Lausanne • Member of the cantonal administration and local experts 							
Entry requirements	<p>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</p> <p>Recommended documents (to acquire the entry requirement): Campbell Biology (11th edition), chapters: 23, 53, 55.</p> <p>See also information under “comments”</p>							
Learning outcomes and competences	<p>After completing the module, students will be able to:</p> <ul style="list-style-type: none"> • Assess the ecological infrastructure in a landscape • Identify corridors and gaps in ecological networks (with GIS tools) • Plan and model land-use trends (e.g. development in urban, rural or mountain areas) • Make propositions for the restoration of the landscape (functional infrastructure) 							
Module contents	<ul style="list-style-type: none"> • Landscape and Movement Ecology • The national ecological network (from national to local implementation) • GIS tools for assessing and representing the ecological infrastructure and the dynamics of land-use • Genetic tools for measuring ecological connectivity (spatial genetic structure of populations) • Decision-making support for spatial land-use planning and interconnecting areas of importance 							
Teaching / learning methods	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.							
Assessment of learning outcome	1. An individual written report (with a joined GIS project) to be handed in 2 weeks after the end of the module (100%)							
Format	Winter School							
Timing of the module	Autumn semester, CW 5							
	Day of the block week	<1	1	2	3	4	5	>5
	Contact teaching (lessons)		10	8	8	8	8	
	Self-study (hours)	8						42

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Venue	Geneva (practical parts in the surroundings of Geneva)
Bibliography	<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 & R. H. Gardner (2015). Landscape Ecology in Theory and Practice. Pattern and Processes. Springer.</p> <p><u>National Ecological Network:</u> http://www.sib.admin.ch/</p> <p><u>Landscape genetics:</u> N. Balkenhol, S. Cushman, A. Storfer, and L. Waits (2015) Landscape Genetics: Concepts, Methods, Applications. Wiley-Blackwell, Oxford (http://www.landscapegenetics.info/)</p>
Language	English
Links to other modules	<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>
Comments	<p>There is a participant limit in this module. Registrations will be considered as follows:</p> <ol style="list-style-type: none">1. Students for whom E4 is a compulsory module2. Students from the Environment-Cluster3. Students who need the ECTS for the graduation in the semester concerned4. The remaining places will be drawn by lot <p>Whether participation is possible will be communicated by the end of week 37.</p>
Last Update	06.03.2026