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	**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
Lecturers	• 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	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 (11th edition), chapters: 23, 53, **55**. **See also information under "comments"**
Learning outcomes and competences	After completing the module, students will be able to: • 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	• 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 6

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	

Venue	Geneva (practical parts in the surroundings of Geneva)
Bibliography	Landscape ecology: 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 M. G. Turner & R. H. Gardner (2015). Landscape Ecology in Theory and Practice. Pattern and Processes. Springer. National Ecological Network: http://www.sib.admin.ch/ Landscape genetics: N. Balkenhol, S. Cushman, A. Storfer, and L. Waits (2015) Landscape Genetics: Concepts, Methods, Applications. Wiley-Blackwell, Oxford (http://www.landscapegenetics.info/)
Language	English
Links to other modules	There will be close coordination with the CS-module E5 "Biodiversity". Both modules are designed to be complementary. Links with E3 "Sustainable Natural Resource Management", GIS modules at HES-SO and BFH.
Comments	There is a participant limit in this module. Registrations will be considered as follows: 1. Students for whom E4 is a compulsory module 2. Students from the Environment-Cluster 3. Students who need the ECTS for the graduation in the semester concerned 4. The remaining places will be drawn by lot Whether participation is possible will be communicated by the end of week 37.
Last Update	16.04.2025