



Czech University of Life Sciences Prague

**Faculty of Environmental  
Sciences**

Final State Examinations for Master Programmes – Thematic Areas

2020

**Landscape Planning**

The Final State Examination consists of 4 examinations of different fields. There are two compulsory examinations – **Land Management** and **Landscape Architecture**. The other two can be chosen from **Soil Erosion Control**, **Aquatic Ecosystem Restoration**, **Spatial Planning**, and **Land Register and GIS**.

#### LAND MANAGEMENT

1. Management of agricultural land - definition, types of land degradation, types of instruments to improve condition of agricultural land.
2. The history of the European landscape, historical landscape conservation within land management projects.
3. The history and design of land reform approach, the objectives to dismantle the large-scale corporate farms without creating excessive land fragmentation
4. Landscape, farmland and ownership fragmentation - main causes and consequences. Examples how to mitigate the fragmentation.
5. Farmland rental market, land sales market and land consolidation in Europe in the connection with land management of agricultural land.
6. Common Agricultural Policy in EU, Land management approaches applied by different types of farms. Farmland structure in the Czech Republic and in Europe.
7. Types of data used to create the analyses for improvement of the conditions of landscape pattern (historical and current data and maps, documents used in land management).
8. The plan of common facilities (measures) in the project of land consolidation in the Czech Republic and in Europe (field road network, erosion control, water features, and ecological networks). The challenges in the implementation of this plan.
9. Ecological terrestrial networks in European and national contexts, integrating ecological networks in land management projects around Europe.
10. Protecting and enhancing visual quality of the landscape within land management projects
11. Erosion control within land management projects.
12. The role of land management in ensuring sustainable development, sustainable agriculture and soil protection.

## LANDSCAPE ARCHITECTURE

1. Explain the Czech definition of landscape vs western world understanding of landscape architecture.
2. Define the European Landscape Convention and how this differs from the American Society of Landscape Architects definition.
3. Explain the evolution and history of landscape architecture as a profession – from where it evolved.
4. Describe the context in which the designer created a built work, considering the physical, economic, social, and cultural background.
5. What does it mean, the spatial organization and arrangement of gathering nodes, corridors, gateways, and edges?
6. Define how media or materials are used in design and how these elements impact the human experience of a place.
7. What is the process of effective site analysis and the understanding of a project location?
8. Explain the different types of business organization for a design firm.

## SOIL EROSION CONTROL

### 1. Physical, social and economic significance of erosion

- Why is soil conservation needed?
- Soil function and Soil quality, Soil quality management
- Consequences of soil degradation/erosion: off-site and on-site effects of erosion
  - Physical – changes in soil properties, changes in landform....
  - Economic consequences of erosion – link with social impact and physical, food security...
  - Social significance of erosion - changes in LU, shifting cultivation, food security...

### 2. Soil degradation

- What is soil degradation and soil erosion?
- Geological versus accelerated erosion
- Primary factors influencing soil degradation, drivers agents,
- Erosion induced soil degradation process and vice versa?
  - Biological degradation
  - Chemical degradation (excess of salt, chemical pollution, acidification...)
  - Physical degradation (compaction)

### 3. Soil erosion/sedimentation

- What is it? Provide simple description of the process (detachment-transport-sedimentation)
- Type of erosion according to erosive agent – wind, water, anthropogenic erosion
- Basic principles of:
  - Wind erosion (process, factors to be considered)
  - Water erosion (process, factors to be considered, types and where can be detected in the landscape– splash, sheet, interrill, rill, gully, subsurface erosion, mass movement, bank erosion)
  - Anthropogenic erosion (process, factors to be considered, types – tillage, land levelling, quarrying, crop harvesting, cattle trampling)

#### 4. Prediction of soil loss

- Why we need models?
- Factors which have to be considered for choosing the model
- Classification – temporal scale, spatial scale, causality (physical-based, empirical, etc.), data availability?
- USLE calculation
  - Why is USLE so widely used?
  - basic information – what provides, how can we read results, what cannot simulate
  - how to calculate potential long-term average annual soil loss – equation and description of each factor (R, K, L, S, C, P factor)

#### 5. Strategies for erosion control, principles of erosion and sediment control

- What is erosion and sediment control, soil loss tolerance
- Strategies for erosion control – drivers and constraints in the strategy
- Principles of planning soil conservation strategy (what has to be considered – climate, economical issue, effectivity...).
- think about different scenarios, landscape as a complex, examples:
  - Land use change: conversion of grassland to cropland in the loess loam area, conversion of forest to cropland along water course or on steep slope ....
  - Forest fire – what happen after forest fire? Is soil prone to erosion and degradation?
  - Urban sprawl...

#### 6. Tools for conservation planning

- Biological technique,
- Soil management technique for erosion control,
- Engineering and technical construction technique for erosion control.

## SPATIAL PLANNING

1. Describe the different settlement patterns here in the Czech Republic and the driving factors behind why the landscape looks the way that it does today, based on social, historical, environmental and regulatory influences.
2. What characterizes the historic development of Prague?
3. Describe the typology and morphology of urban spaces in Prague.
4. Describe the morphology of the city, of the town, and the village.
5. How to design a land use and zoning master plan for a Czech town?
6. What qualities should an urban space have? Similarly, what qualities should suburban residential and live/work places have?

## AQUATIC ECOSYSTEM RESTORATION

1. Structure, function and communities of standing water ecosystems
2. Structure, function and communities of running water ecosystems, physical principles of water flowing
3. Wetlands and macrophytes
4. Important threats to aquatic ecosystems
5. Technical principles of torrent control, principles of nature-close stream restoration
6. River floodplain - characteristic, function and restoration
7. Mountain lakes - characteristic, function and restoration
8. Artificial lakes and fishponds – characteristic, function and restoration
9. Urban waters - characteristic, function and restoration
10. Important species of aquatic organisms – alien and invasive species, endangered native species in the world

## LAND REGISTER AND GIS

1. Real estates in evidence of Land Register.
2. Rights registered in Land Register?
3. What are differences between the Deed system and the Title system? (Give examples of countries that use the Deed system or the Title system of recording.)
4. Cadastral map, what is typical for it, what is its type, scale, accuracy and what does it content?
5. Systems for parcel numbers, other numbers in database (house number, area, owner sheet number).
6. Coordinate Systems (Geographic coordinate systems; Projected coordinate systems; Height measurements; Map projections)
7. Geographic data representations (Discrete object conceptualization; Continuous field conceptualization; Vector data model; Raster data model; Scale issues)
8. Geographic data display (Nominal, ordinal and numerical attributes; Classification methods; Display techniques)
9. Map design (Types of maps; Map design process; Visual hierarchy; Map elements)
10. Geographic data acquisition and sources (Data acquisition methods; Data sources; Open data)
11. Geo-databases (What is database?; Relational databases; SQL; Databases in ArcGIS)
12. Spatial Analysis – vector (attribute operations; overlay analyses)
13. Spatial Analysis – raster (Spatial interpolation; Digital terrain analysis; Map algebra, Logical operations)

## Suggested Study Materials:

**Bürgi, M., Hersperger, A.M., Schneeberger, N., 2004.** Driving forces of landscape change – current and new directions. *Landscape Ecology*. 19 (8), 857–868. doi: 10.1007/s10980-005-0245-3.

**Forman, R.T.T., Godron, M. 1986.** *Landscape Ecology*. John Wiley & Sons, New York.

**Laurie, M. 1986.** *An Introduction to Landscape Architecture*. Elsevier, New York.

**Hartvigsen, M., 2014.** Land reform and land fragmentation in Central and Eastern Europe. *Land Use Policy*, 36, 330–341. doi:10.1016/j.landusepol.2013.08.016

**Jongman, R. H. G., 2002.** Homogenisation and fragmentation of the European landscape: Ecological consequences and solutions. *Landscape and Urban Planning* 58 (2-4), 211-221. doi: 10.1016/S0169-2046(01)00222-5

**Primdahl, J., Kristensen, L. S., & Busck, A. G., 2013.** The Farmer and Landscape Management: Different Roles, Different Policy Approaches. *Geography Compass*, 7(4), 300–314. doi:10.1111/gec3.12040

**Sklenicka, P., Janovska, V., Salek, M., Vlasak, J., & Molnarova, K., 2014.** The Farmland Rental Paradox: Extreme land ownership fragmentation as a new form of land degradation. *Land Use Policy*, 38, 587–593. doi:10.1016/j.landusepol.2014.01.006

**Sklenička, P., Pixova, K., eds. 2003.** Landscape planning in the Czech Republic. Czech University of Agriculture in Prague, Praha.

**Sklenicka, P., Molnarova, K., Pixova, K. C., & Salek, M. E., 2013.** Factors affecting farmland prices in the Czech Republic. *Land Use Policy*, 30(1), 130–136. doi:10.1016/j.landusepol.2012.03.005

**Van Dijk, T., 2003.** Scenarios of Central European land fragmentation. *Land Use Policy*, 20(2), 149–158. doi:10.1016/S0264-8377(02)00082-0

**Rogers, W., 2011.** The Professional Practice of Landscape Architecture. 2 nd Edition. New Jersey: John Wiley & Sons.

**Cantor, S. L., 1996.** Contemporary Trends in Landscape Architecture. New York: Van Nostrand Reinhold.

**Orr, D., 2002.** The Nature of Design: Ecology, Culture and Human Intention. Chapter 2: Human Ecology as a Problem of Ecological Design, pp. 13-32. Oxford University Press, Oxford.

**ACT of 14th March 2006**, on town and country planning and building code (Building Act) passed by the Parliament of the Czech Republic

***Spatial Development Policy of the Czech Republic 2008***

**SPEN:** Interactions between Policy Concerning Spatial Planning and Ecological Networks in Europe



***Spatial planning in the Czech Republic and international cooperation.*** By Martin Tunka, Director of Spatial Planning Department, Ministry for Regional Development for the Czech Republic

***Town and Country Planning in the Czech Republic:*** Ministry for Regional Development, Institute of Spatial Development.

***Cohesion Policy:*** Settlement in the Czech Republic urban-rural partnership

***Allen, S., 1999.*** Infrastructural Urbanism.

***Berkowitz, A., Charles N., and Hollweg, K., (eds). 2001.*** Understanding Urban Ecosystems. Springer.

***Hill, K.*** Urban ecological design and urban ecology: An assessment of the state of current knowledge and a suggested research agenda.

***Newman, P., Jennings, I., 2008.*** Cities as Sustainable Ecosystems: Principles and Practices. Chapter 5. Modeling Cities as Ecosystems, pp. 92-142.

***Ellin, N., 2007.*** “Themes of Postmodernism” in: The Urban Design Reader. M. Larice and E. MacDonald, Eds. Routledge, NY. pp. 204-214.

***Frampton, K., 2007.*** “Toward an Urban Landscape”, in: Center 14: On Landscape Urbanism, Dean Almy, Ed. University of Texas Austin, School of Architecture. pp. 114-121.

***Koolhaas, R., 2007.*** The Generic City. in: The Urban Design Reader. M. Larice and E. MacDonald, Eds. Routledge, NY. pp. 215-226.