Latvia University of Life Sciences and Technologies
FACULTY OF ENVIRONMENT AND CIVIL ENGINEERING

APPROVED
by the academic staff meeting of
Department of Landscape Architecture and Planning
January 30, 2018

Natural Landscape Design
Jelgava

Programme

Code of the study course at LLU IS Register Arhi2067
4 CP (64 h): lectures. 12 h, lab.w. 52 h
The author: Kristīne Vugule, Lecturer of Department of Landscape Architecture and Planning.
Compulsory course of the full-time Bachelor's degree level study programme "Landscape Architecture and Planning" of the Faculty of Environment and Civil Engineering. The language of instruction is English.

Abstract:
The aim of the study course is to provide students with the main principles of designing natural areas. The course includes: theme analysis, introduction to values of natural landscape, inventory, legislation, planning principles, symbols, elements, roads, squares, management, architecture and environmental availability.

The aim of the study course*:*
The aim of the study course is to acquire the basic principles of natural landscape design.

Learning Outcomes (knowledge, skills and competence):
After completing the course students will have:

- **knowledge:** on specific design principles of the respective areas and examples of good practice.
- **skills:** students will be able to design an area according to its functions and specific aims for sustainable development.
- **competence:** students have the competence to identify the most suitable designing principles for various natural landscapes, as well as plan expected management techniques.

Relation of the study course with other subjects:
The study course is related to the following courses: Landscape Studies, Landscape Ecology and Environmental protection, Material studies of outdoor spaces, Digital tools in landscape projects, Geographic Information Systems.

Requirements for individual work:
Studying online materials from different resources. Individual practical assignments using *GIS*, AutoCad and Photoshop programmes have been developed and submitted by students.

Assessment of knowledge:
Formal test: Individual practical assignments have been completed and submitted for evaluation.

Requirements for the admission to the examination/ test:
Attendance of classes at least 75%. An individual practical assignment completed and submitted in the scheduled time. The grade for individual practical assignments submitted after the scheduled time (if there is no valid reason) shall be reduced by 1 point. The individual practical assignments have received a positive evaluation (a pass). An accumulative assessment is possible, in that case a lecturer determines the criteria.

***Procedure and requirements for settling missed lectures*:**
If a student has attended less than 75% of classes, the topic of each missed class should be studied individually by himself/herself. An individually worked out practical assignment on the missed subject should be submitted. If a student has attended less than 50% of classes, the study course cannot be passed and the student has to study it repeatedly. If the student has missed classes due to illness or other valid reason, a doctor's sickness certificate or other certificate for a specific period of time should be submitted; in that case essays from missed classes are not required.

Extended content of the programme

Introduction. Natural territories in Latvia, their status, diversity, division, values in natural territories. Available GIS databases.
Natural area projects. The structure of projects. Project management of natural areas. Rules and regulations of the planning of natural territories related to their protection and opportunities for landscape design. Principles of planning of natural territories and examples of implemented projects.
Research and analysis of natural areas. Types of site analysis depending on the scale, structure, function, aims, spatial analysis, visibility analysis. Methods of analysis: cartographic method, cross-sectional method, photography method, subjective perception approach, architectural spatial composition approach. Examples of analysis of different territories and the application of methods. GIS tools, functions and methods to use for site analysis.
Survey of natural areas. The inventory of natural areas. Elements of the survey: natural objects, cultural and historical heritage values, ecological values, landscape structure, anthropogenic load, infrastructure. Examples of inventory and examples of data collection and compilation using GIS.
Examples of good practice in Europe and Latvia. Improvement of natural territories, provision the accessibility to the site. The trees in the natural territories, their preservation, possible types of greenery and plants.
Tourism development opportunities in nature territories. Latvian tourism products, types of tourism, distribution of tourists by interests and age. Tourism-related infrastructure and tourism-related services in natural areas. Environmental capacity,

erosion reduction in natural areas. Planning of tourism routes using ArcGIS online card stories.
2 study tours to tourism objects in nature territories with the aim of getting acquainted with established infrastructure and territory management.
Management and monitoring of natural areas. Nature elements and resource management activities during the year, examples of management plans.

List of laboratory works (52 h):

1. The territory survey and inventory using GIS mobile applications. Processing of the survey results, their interpretation. (14h)
2. Acquiring the main planning principles for nature territories. Development of the first sketch. (6h)
3. Presentation of the idea of a sketch using a variety of visual materials (paper, digital presentation via ArcGis online card stories). (2h)
4. Selection and / or design of elements suitable for the character and function of the site. (4h)
5. Explaining the justification for the choice of elements using different presentation materials. (2h)
6. Detailed design of the concept of the basic plan. (16h)
7. Element detailing (relief, elements of improvement, plant groups, etc.). (6h)
8. Development of a management plan. (2h)

Lectures (12 h)

1. Natural territories in Latvia, their status, diversity.
2. The structure of a project for natural areas. Project management of natural territories, planning rules and regulations.
3. Research and analysis of natural territories. Main principles.
4. Analysis of natural areas using GIS software and applications.
5. Survey of natural areas, their inventory using GIS software and applications.
6. Main principles of spatial planning of natural territories.
7. Improvement of natural territories, accessibility of the environment.
8. Good practice examples in Europe and Latvia.
9. Tourism development opportunities in natural territories. Environmental capacity, erosion reduction in natural areas. Territory monitoring. GIS database creation.
10. Management of elements, natural values and objects in natural territories.

Bibliography:

Compulsory reading:

1. Bells S., Nikodemus O. (2000) Rokasgrāmata meža ainavas plānošanai un dizainam. Rīga: Valsts meža dienests, LTS International Ltd. 75 lpp
2. Buivids K. (1988) Dzīves vides kvalitāte. Apdzīvotu vietu meži un dārzi. Rīga: Zinātne, 12. -15. lpp.
3. Dramstad W.E., Olson J.D., Forman R.T.T. (1996) Landscape Ecology Principles in Landscape Architecture and Land-Use Planning. Washington. 80 p.
4. Rottle N., Yocom K. (2011) Basics Landscape Architecture 02: Ecological Design.

Further reading:

1. Beer A.R., Higgins C. (2000) Environmental Planning for Site Development. A manual for sustainable local planning and design. London: E&FN Spon. 352 p.
2. Community Participation and Geographic Information Systems (2002) (eds. W.J.Craig, Harris T.M.Trevor and D.Weiner). London & NY: Taylor & Francis Group. 410 p.
3. Fenby-Taylor H. (2016) BIM Landscape. NY: Landscape Institute, Taylor & Francis Group. 175 p.
4. Geographical Information Systems. Trends and Technologies (2014). (eds. E.Pourabbas). Broken Sound Parkway NW, Suite: CRC Press, Taylor & Francis Group. 359 p.
5. Geographical Information Systemsm Trends and Technologies) (2014) (eds. Pourabbas E.). Broken Sound Parkway NW, Suite: CRC Press, Taylor & Francis Group. 359 p.
6. Introductory readings in Geographic Information Systems (1990) (eds, D.J.Peuquet, D.F.Marble). London, New York, Philadelphia: Taylor & Francis. 442 p.
7. Latvijas biotopi. Klasifikators. Rīga: Latvijas Dabas fonds, 2001. 96 lpp
8. Panigrahi N. (2014) Computing in Geographic Information Systems. Broken Sound Parkway NW, Suite: CRC Press, Taylor & Francis Group. 299 p.
9. Representing Landscapes: Digital (2015) (eds. N. Amoroso). London & NY: Taylor & Francis Group. 293 p.
10. Walliss J., Rahmann H. (2016) Landscape Architecture and Digital Technologies. Re-conceptualising design and making. London & NY: Taylor & Francis Group. 296 p.
11. Wang F.(2015) Quantitative Methods and Socio-Economic Applications in GIS. Broken Sound Parkway NW, Suite: CRC Press, Taylor & Francis Group. 334 p.
12. Wang. F., Raton B. (2006) GIS and Basic Spatial Analysis. In: Tasks Quantitative Methods and Applications in GIS, FL: CRC Press, Taylor & Francis Group, p. 1-18.

Internet resources:

1. Aktuālā savvaļas sugu un biotopu apsaimniekošanas problemātika Latvijā http://www.ldf.lv/ upload_file/28934/LDF_rokasgramata_ekrana-vers.pdf
2. ArchGis Online. Pieejams https://www.arcgis.com/home/index.html Vides Vēstis. Pieejams: http:// www.videsvestis.lv
3. Zhou Jin, Shi Sen (2004) Review of mining area ecological restoration theory. China mining, Vol 3, p. 10-12