LENNE Tempus Curriculum Development Project

Teaching Package

Version: 31. V. 2008




Working Group: Infrastructural Projects

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  Slovak University of Technology, Bratislava

- **Department of Landscape Architecture**
  Faculty of Biotechnology, University of Ljubljana

- **Department of Landscape Architecture**
  Faculty of Forestry, University of Belgrade

- **Department of Spatial Planning**
  Faculty of Geography, University of Belgrade

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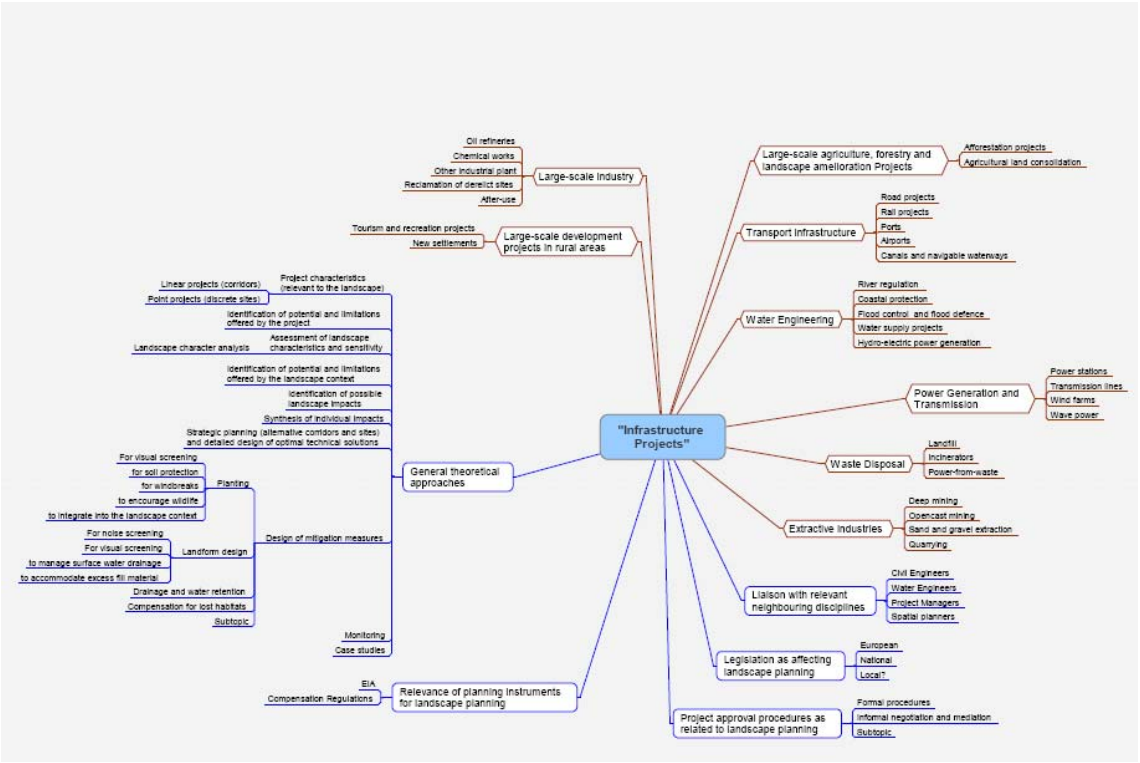
1. Course Philosophy - Infrastructural Project Module



Infrastructural Projects Mind Map – draft

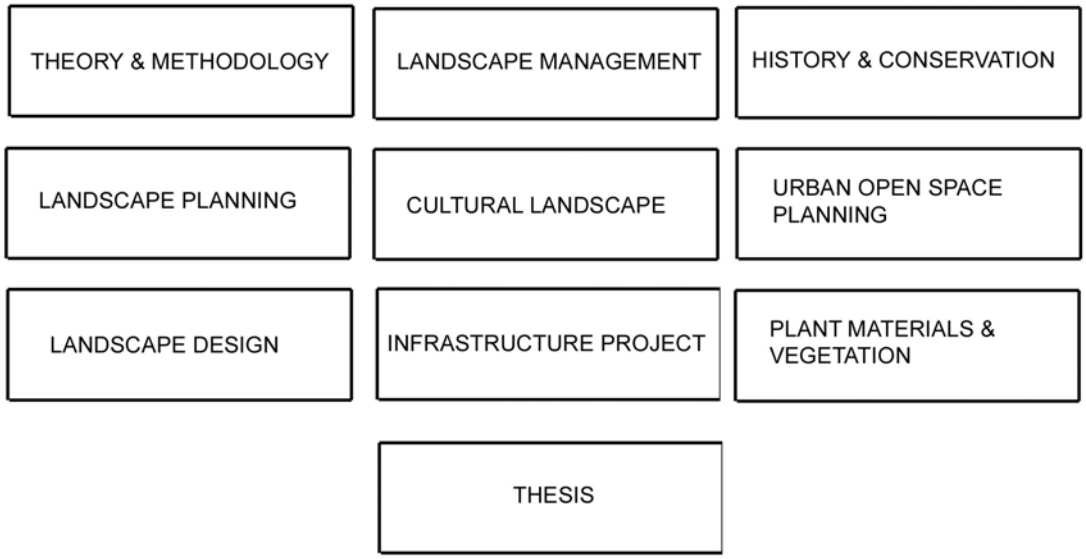
The field covered by the infrastructural projects working group focuses mainly on the strategic considerations relating to the planning and assessment of infrastructural projects with special focus on landscape sustainable development safeguarding. Infrastructural projects represent the whole scale of projects starting with the large-scale developments in rural areas, large scale industrial projects, large scale agriculture, forestry and landscape amelioration projects, continuing with the transport infrastructure projects, water engineering, power generations and transmission, waste disposals, and finishing with the extractive industries. This broad range of topics comprises the matrix of different problems in the field of general theoretical approaches, of planning methodology and instruments, institutional and juristic aspects in two basic dimensions – dimension of planning and projecting and dimension of assessment and decision making.

In the context of the Working Group Infrastructural Projects, does not include the whole range of individual specific problems of certain infrastructural systems but it rather concerned with strategic landscape planning issues within the planning and assessment of basic types of infrastructural projects.

Developments in production techniques in agriculture, forestry and industry and changes in town planning, transport, other types of infrastructure, tourism and leisure time behaviour are accelerating the transformation of European landscapes and can also have a negative impact on their quality and use (CEMAT). Therefore the implementation of policies integrating the different dimensions of landscape

development sustainability into the infrastructure development aimed at simultaneously protecting, managing and planning landscapes became one of the important topics for landscape planner profession and important part of principles defined in different official EU documents (see "Guiding Principles for Sustainable Spatial Development of the European Continent" adopted by the European Conference of Ministers responsible for Regional Planning - CEMAT in 2000.)

The planning and development of infrastructure in open as well as urban landscape has to be understood as cross-cutting problem of spatial relevant management activities under which dominate integrative planning systems of land-use planning, socio-economic development planning and landscape planning supported by broad scale of scientific disciplines, tackling with the different components of spatial/landscape systems. The landscape is not only a complex system but its components create a specific quality determined by the synergy of interactions between them. So the only possibility to support efficiently sustainability of the landscape development by the planning interventions is to create an integrative system of relevant planning activities and include this system into the system of integrative landscape development management.



The specific role of landscape architects and planners in the infrastructure development and planning results form the their specific role representing the system of integrative and in the same time specific planning activities integrated into the spatial development planning and management system based on landscape-ecological and human-ecological assessment of the landscape; orientated towards ecological optimisation of landscape use based on the co-ordination of present and proposed activities with landscape relevance following the goals of sustainable development and safeguarding the landscape ecological stability, efficient use of natural resources, preservation of cultural and natural heritage including the landscape character.

The role of landscape architects and planners in the infrastructure planning and development results from the integrative dimension of landscape planning and architecture in the comprehensive care of the landscape, by means of the goal oriented management of changes inducted by economic, social and environmental development of society integrating the system of principles, activities, and measures oriented towards following fields of tasks:

- strengthening the ecological stability within the framework of the territorial system of ecological stability via planning and development of environmental infrastructure
- prevention of destructions and restoration of the landscape character in the planning, construction and operation of infrastructural systems and their elements
- creation of the conditions for sustainable maintenance and efficient use of natural resources via development and optimisation of the infrastructural systems
- preservation of natural and cultural heritage
- prevention and elimination of environmental risks' connecting with the construction and operation of infrastructural systems
- elimination of negative impacts of construction and operation of infrastructural systems on the landscape and
- preservation of historic-cultural and natural values of the landscape in the development and operation of infrastructural systems and their elements.

For each from these fields of tasks the landscape planning and architectrure has got own specific instruments, often applied relatively autonomously in accordance with specific problem situation.

2. Generic Competences in Infrastructural Projects Teaching

Generic competences is the term used by the European Union's 'Tuning Project' to describe the abilities which should be taught or learned in the context of degree programmes of all types irrespective of the particular formal discipline which is being taught.

	Generic Competences in subject area: Infrastructural Projects
	Instrumental Competences
1	Capacity for analysis and synthesis
2	Capacity for organisation and planning
3	Basic general knowledge
4	Grounding in basic knowledge of the profession
5	Oral and written communication
6	Basic overview about the technical aspects of infrastructure construction and functioning
7	Elementary computing skills
8	Information management skills
9	Problem solving
10	Decision-making
11	Spatial (3 dimensional) thinking
12	Ability to present ideas and plans graphically
13	Knowledge of legal and administrative context
14	Knowledge of social, economic and environmental contexts
	Interpersonal competences
15	Critical and self-critical abilities
16	Teamwork
17	Interpersonal skills
18	Ability to work in an interdisciplinary team
19	Ability to communicate with experts in other fields
20	Appreciation of diversity and multi-culturality
21	Ability to work in an international context
22	Ethical commitment
23	Ability to accept criticism and to take it into account
24	Ability to negotiate and to manage conflicts
25	Ability to manage public participation
	Systemic competences
26	Capacity for applying knowledge in practice
27	Research skills
28	Capacity to learn
29	Capacity to adapt to new situations
30	Capacity for generating new ideas (creativity)
31	Leadership
32	Understanding of cultures and customs of other countries
33	Ability to work autonomously
34	Project design and management
35	Initiative and entrepreneurial spirit
36	Concern for quality
37	Will to succeed

38	Capacity for abstraction
39	Ability to think and act in an integrated and holistic way
40	Ability to understand complex and dynamic systems
41	Capacity for refined perception and observation
42	Capacity for critical interpretation and appreciation
43	Ability to link theory and practice
44	Ability to take the dimension of time into account
45	Instrumental Competences
46	Capacity for analysis and synthesis

Italics = Additional generic competences defined through the LE:NOTRE Thematic Network Project

3. Subject Specific Competences for Infrastructural Projects

Subject specific competences provide descriptions of the individual learning outcomes of a degree programme, an area of study or of a course unit. They are expressed in terms of the knowledge, skills and understanding students should have acquired following its successful completion.

The courses develop and strengthen the ability to understand the landscape aspects of infrastructural project design and implementation, ability to propose solution for harmonisation of infrastructural projects and landscape and ability to use infrastructural systems as technical solutions in landscape quality improvement.

Knowledge:
Students, absolving the courses on infrastructural projects, gather basic knowledge on:

- different types of infrastructural projects and their positive and negative interactions within the landscape and on possibilities for the minimisation of their negative impacts
- impact assessment methods, tools, procedures, legal and institutional framework in the context of different types of infrastructural projects

Skills:
Students, absolving the courses on infrastructural projects, learn

- to collaborate as the team members in infrastructural projects and to implement different methods of harmonisation of infrastructural projects and landscape
- to manage the process and use different methods, tools of impact assessment, to collaborate as the team members in different phases and roles in the assessment process
- to use their knowledge from different study subjects in the process of manage the process of optimisation of interplay between infrastructural projects and landscape and minimisation of negative impacts of infrastructural works on landscape

Understanding:
In relation to infrastructural projects, students, absolving the courses on infrastructural projects, understand

- specific role and importance of landscape aspects and of profession of landscape architects in the optimisation of infrastructural projects

- understand specific role and importance of infrastructural projects and plans assessment
- specific role and importance of work of landscape architects as a member of the team in designing the infrastructural projects and plans

4.1 Infrastructural projects: 3 ECTS

LENNE Project – Proposed Course Unit Specification

Course Unit Title:*	**Infrastructural projects**
Course Unit Code	Local university code
Level*	Intermediate
ECTS Credits*	3
Language of delivery	Serbian
Study Programmes to which it belongs*	Master of Landscape Architecture
Pre-requisites*	Landscape techniques
Co-requisites	Landscape Design Studio – Infrastructural projects studio
Other relevant course units	Infrastructural project and plan impact assessment
Course unit synopsis*	Basic information on the planning and design aspects of the integration of technical infrastructure works and transport infrastructure works into the landscape and on technical infrastructure elements and systems as tools and parts of landscape designs,
Keywords	Infrastructure, transport, water engineering, energy generation and transmission, waste, landscape design, landscape impact, landscape sensitivity, technical solution, optimisation of landform design
Relevance	Optimisation of interplay between infrastructural projects and landscape is one of basic assignments for landscape architects. In the same time infrastructural systems or elements are often important part of landscape designs or instruments for landscape restoration.
Course Unit Aims*	The aim of the course unit is to provide basic information on the planning and design aspects of the integration of technical infrastructure works and transport infrastructure works into the landscape
Course Unit Status*	Obligatory
Course Unit Leader	
Other Staff involved	
Teaching Mode / Learning strategies*	**Lectures, exercises (seminar)**
Generic Competences*	Capacity for analysis and synthesis, problem solving, decision-making, ability to work in an interdisciplinary team, ability to communicate with experts in other fields and other generic comeptences that are the same for the whole MLA program.
Subject specific competences*	**Ability to understand the landscape aspects of infrastructural project design and implementation, ability to propose solution for harmonisation of infrastructural projects and landscape and ability to use infrastructural**

	systems as technical solutions in landscape quality improvement. Knowledge: Students gather basic knowledge on different types of infrastructural projects and their positive and negative interactions within the landscape and on possibilities for the minimisation of their negative impacts Skills: Students learn to collaborate as the team members in infrastructural projects and to implement different methods of harmonisation of infrastructural projects and landscape Understanding: In relation to infrastructural projects, students understand specific role and importance of landscape aspects and of profession of landscape architects in the optimisation of infrastructural projects .
Course Unit Content*	**Lectures:** Part I. Introduction 1. Introduction to the infrastructure systems – definition, types of infrastructural systems, position of landscape architects in the planning process of the infrastructural works – large (regional) scale and linear projects (corridors) 2. Introduction to the infrastructure systems – definition, types of infrastructural systems, position of landscape architects in the designing process of the infrastructural works – local level, points projects, discrete sites. Part II. Basic information about infrastructural systems and their interactions with landscape structures 3. Project characteristics relevant to the landscape –- transport infrastructure (motorways and roads, railways, pipeline systems, cable railways, airports 4. Project characteristics relevant to the landscape - ports, canals, navigable waterways, 5. Project characteristics relevant to the landscape – water engineering (water in urban and open landscape, river regulations, coastal protection, flood control and flood defence, water supply projects, hydro-electric power generation, sewage systems, water cleaning stations, large-scale amelioration projects 6. Project characteristics relevant to the landscape – energy generation and transmission (power stations, transmissions lines, wind farms, wave power), telecommunications, 7. Project characteristics relevant to the landscape –- waste disposals (landfills, incinerators, power-from-waste) Part II. Infrastructure planning and projecting and the role of landscape architects in the optimisation of infrastructural plans and projects 8. Potentials of landscape architecture in the optimisation of technical infrastructural systems at the level of plans and projects large scale and linear infrastructural work and point projects- identification of limits and potentials, assessment of landscape characteristics and sensitivity, identification of potential impacts and impacted ares,

strategic planning and localisation decision making, projecting – optimisation of principal technical solutions, optimisation of landform design, identification of necessary mitigation and compensation measures

9. Potentials of landscape architecture in the optimisation of technical infrastructural systems at the level of plans and projects - identification of limits and potentials, assessment of landscape characteristics and sensitivity, identification of potential impacts, projecting – optimisation of technical solutions, optimisation of landform design,
10. Potentials of landscape architecture in the optimisation of technical infrastructural systems at the level of plans and projects - design of mitigation measures, planting, designing of compensation measures

Part III. Infrastructure planning and projecting as the part of landscape planning and landscape architectural designing

11. Infrastructural works necessary for the realisation of landscape plans and landscape architectural projects – basic requirements for designing of static and dynamic transport equipment (pedestrian paths, roads, park places…), energy supply and illumination,
12. Infrastructural works necessary for the realisation of landscape plans and landscape architectural projects – basic requirements for designing of water drainage, sewage system and water cleaning,river regulation/bank protection, water retentions and water supply, fire-fighting equipment, ameliorations
13. Infrastructural works necessary for the realisation of landscape plans and landscape architectural projects – basic design requirements of technical works for noise protections, soil protection, underground water protection, windbreaks, geologic stabilisation

Part IV Current problems and conclusions.

14. New technology development, technical and transport infrastructure and landscape, new changing position of landscape architect in the infrastructural planning, EU initiatives, projects and legislation on technical infrastructure

Exercises/seminars:

1. Introduction – tasks for the exercises, assessment criteria
   - definition of the task for first seminar work: identification and description of good practice examples from the large (regional) scale, linear projects (corridors)and points projects in the context of landscape impact assessment
2. – consultations on first seminar work
   - definition of the task for second seminar work: Identification of the landscape relevant characteristics of chosen/given infrastructural system and element (motorway and road, railway, pipeline, cable railway and others)based on the analyse of examples of real infrastructural

	works 3. – presentations of first seminar works · consultation of second seminar work 4. – consultation of second seminar work 5. – consultation of second seminar work 6. presentations of second seminar works · definition of the task for third seminar work: optimisation of infrastructural plan/projects from the point of view of landscape architecture, proposals for landscape optimisation of chosen/given simple infrastructural elements 7. - consultation of third seminar work 8. – consultation of third seminar work 9. – presentation of third seminar work · definition of the tasks for the fourth seminar work: Infrastructure planning and projecting as the part of landscape planning and landscape architectural designing- proposal of the small TI work at the local level as a part of landscape architectural project (irrigation, illumination, road communication, pedestrian path etc.) 10.- consultation of fourth seminar work 11.– consultation of fourth seminar work 12.– consultation of fourth seminar work 13.– presentation of fourth seminar work 14.Final evaluation of the seminar works
Course Unit Structure-implementation*	3 hours per week
Obligations of students	Students must attend lectures as they are not formally organised but delivered as supportive texts for seminar work. Most important is their presence at desk critiques, seminar work, pin-ups and final review of the seminar works.
Assessment Methods*	Final review of the seminar work and exam.
Indicative Reading*	Selected chapters: ❑ Жегарац Зоран (1998): Инфраструктура. Географски факултет, Београд. ❑ Жегарац Зоран, Арсић Вукосав (1999): Програми унапређивања јавне инфраструктуре. Урбанистички завод Београд, Београд ❑ Kotas, P.(2002): Dopravní systémy a stavby. Vydavatelství ČVUT Praha, ISBN 80-01-02321-4 ❑ Kolektív VÚVA, URBION(1983): Zásady a pravidla územního plánování, zväzok 2. ❑ Uhliarik, A., Šerek, M., Šrytr, P.: Inžinierske siete, Bratislava 1992 ❑ Kattoš – Rapant(1988): Technická infraštruktúra – urbanistické hľadiská, vyd. SVŠT, ❑ Borovička a kol.(1980.: Technická infrastruktura měst, Praha ❑ Жегарац Зоран (1998): Инфраструктура. Географски факултет, Београд.

	❑ Жегарац Зоран, Арсић Вукосав (1999): Програми унапређивања јавне инфраструктуре. Урбанистички завод Београд, Београд. ❑ Grigg S.N. (1988): Infrastructure engineering and management. Jonn Wiley & Sons, New York, Chichester, Brisbane, Toronto, Singapore. ❑ Ostrom E., Schroeder L., Wynne S. (1993): Institutional Incentives and Sustainable Development; Infrastructure Policies in Perspective. Westview Press, Boulder, San Francisco, Oxford ❑ Diamond D., Spence N. (1984): Infrastructure and Regional Development: Theories. Built Environment Vol 10, No 4, Infrastructure: Decline and Fall. ❑ Meadows W.J.; Jackson P.M. (1984): Infrastructure and Regional Development: Empirical Findings.
Additional literature	
Links	
Notes	

4.2 Infrastructural project and plan impact assessment: 3 ECTS:

LENNE Project – Proposed Course Unit Specification

Course Unit Title:*	Infrastructural project and plan impact assessment
Course Unit Code	Local university code
Level*	Intermediate
ECTS Credits*	2
Language of delivery	Serbian
Study Programmes to which it belongs*	Master of Landscape Architecture
Pre-requisites*	Landscape techniques
Co-requisites	Landscape Design Studio – Infrastructural projects studio
Other relevant course units	Infrastructural projects
Course unit synopsis*	Basic information on the infrastructural projects and plan impact assessment with special focus on integration of technical infrastructure works and transport infrastructure works into the landscape
Keywords	Infrastructure, transport, impact assessment, landscape impact, landscape sensitivity, technical solution, optimisation of landform design
Relevance	Infrastructural projects and plans assessment is important tool for optimisation of interplay between infrastructural projects and landscape and for the minimisation of negative impacts of infrastructural works on landscape.
Course Unit Aims*	The aim of the course unit is to provide basic information on methods, procedures, instruments, legal and institutional framework for impact assessment of infrastructural projects with the stress on landscape aspects..
Course Unit Status*	Obligatory
Course Unit Leader	
Other Staff involved	
Teaching Mode / Learning strategies*	**Lectures, exercises (seminar)**
Generic Competences*	Capacity for analysis and synthesis, problem solving, decision-making, ability to work in an interdisciplinary team, ability to communicate with experts in other fields and other generic comeptences that are the same for the whole MLA program.
Subject specific competences*	**Ability to understand the landscape aspects of infrastructural project design and implementation, ability to propose solution for harmonisation of infrastructural projects and landscape and ability to use infrastructural systems as technical solutions in landscape quality improvement.** Knowledge: Students gather basic knowledge on impact

	assessment methods, tools, procedures, legal and institutional framework in the context of different types of infrastructural projects Skills: Students learn to manage the process and use different methods, tools of impact assessment, to collaborate as the team members in different phases and roles in the assessment process Understanding: In relation to infrastructural projects, students understand specific role and importance of infrastructural projects and plans assessment
Course Unit Content*	**Lectures:** Part I. Introduction 15. Introduction to the technical infrastructure project impact assessment – the role of assessment, tasks, types of infrastructural projects and assessment, position of landscape planning in the assessment processes, scales and purposes of assessment 16. Assessment processes and project development and project approval procedures as related to landscape planning, legislation on TI plans and projects assessment as affecting landscape planning 17. SEA, EIA principles and procedures, The European Union Environmental Assessment Directive and the EU Directive on Strategic environmental Assessment, the difference of the assessment approaches for plans and for projects, The role/position of landscape assessment in the EIA, SEA and other assessment procedures 18. Assessment phases, logic of assessment processes, content of assessment phases, techniques of impact assessment 19. Landscape character analyses 20. Assessment of landscape characteristic and sensitivity-defining of limits 21. Assessment aspects, indicators, assessment criteria / landscape limits, landscape potentials as the reference basis for assessment – part I. 22. Assessment aspects, indicators, assessment criteria / landscape limits, landscape potentials as the reference basis for assessment – part II. 23. Synthesis of the quality " landscape" 24. Identification of project characteristics relevant for landscape assessment – linear projects (corridors), point project (discrete sites), different types of infrastructural systems, identification of possible landscape impacts 25. Visual landscape analysis and presentation 26. GIS in the landscape impact assessment 27. Proposals for the optimisation of technical infrastructural systems at the level of plans and projects as the result of landscape impact assessment - design of mitigation measures, planting, designing of compensation measures 28. New trends in the landscape assessment of TI plans and projects

Course Unit Structure-implementation*	2 hours per week
Obligations of students	Students must attend lectures and pass exam
Assessment Methods*	exam
Indicative Reading*	Selected chapters: ❑ Жегарац Зоран (1998): Инфраструктура. Географски факултет, Београд. ❑ Жегарац Зоран, Арсић Вукосав (1999): Програми унапређивања јавне инфраструктуре. Урбанистички завод Београд, Београд ❑ Kotas, P.(2002): Dopravní systémy a stavby. Vydavatelství ČVUT Praha, ISBN 80-01-02321-4 ❑ Kolektív VÚVA, URBION(1983): Zásady a pravidla územního plánování, zväzok 2. ❑ Uhliarik, A., Šerek, M., Šrytr, P.: Inžinierske siete, Bratislava 1992 ❑ Kattoš – Rapant(1988): Technická infraštruktúra – urbanistické hľadiská, vyd. SVŠT, ❑ Borovička a kol.(1980.: Technická infrastruktura měst, Praha ❑ Grigg S.N. (1988): Infrastructure engineering and management. Jonn Wiley & Sons, New York, Chichester, Brisbane, Toronto, Singapore. ❑ Ostrom E., Schroeder L., Wynne S. (1993): Institutional Incentives and Sustainable Development; Infrastructure Policies in Perspective. Westview Press, Boulder, San Francisco, Oxford ❑ Diamond D., Spence N. (1984): Infrastructure and Regional Development: Theories. Built Environment Vol 10, No 4, Infrastructure: Decline and Fall. ❑ Meadows W.J.; Jackson P.M. (1984): Infrastructure and Regional Development: Empirical Findings.
Additional literature	
Links	
Notes	

4.3 Infrastructural projects studio: 3 ECTS:

LENNE Project – Proposed Course Unit Specification

Course Unit Title:*	Infrastructural projects studio
Course Unit Code	Local university code
Level*	Intermediate
ECTS Credits*	5
Language of delivery	Serbian
Study Programmes to which it belongs*	Master of Landscape Architecture
Pre-requisites*	Landscape techniques
Co-requisites	Landscape Design Studio – Infrastructural projects studio
Other relevant course units	Infrastructural projects, Infrastructural projects and plans assessment
Course unit synopsis*	Basic basic skills development of planning/designing of mitigation and compensation (landscape oriented) measures in the frame of planning and designing of the infrastructure works and transport infrastructure works
Keywords	Infrastructure, transport, impact assessment, landscape impact, landscape sensitivity, transport, water engineering, energy generation and transmission, waste, landscape design, technical solution, optimisation of landform design
Relevance	Optimisation of interplay between infrastructural projects and landscape and minimisation of negative impacts of infrastructural works on landscape belong to the most frequent tasks for landscape architects.
Course Unit Aims*	The aim of the course unit is to initiate basic skills development of planning/designing of mitigation and compensation (landscape oriented) measures in the frame of planning and designing of the infrastructure works and transport infrastructure works
Course Unit Status*	Obligatory
Course Unit Leader	
Other Staff involved	
Teaching Mode / Learning strategies*	**Lectures, exercises (seminar)**
Generic Competences*	To develop the crative and professional capacity for analysis and synthesis, problem solving, decision-making, ability to work in an interdisciplinary team, ability to communicate with experts in other fields and other generic comeptences that are the same for the whole MLA program.
Subject specific competences*	**Ability to use actively the knowledge on infrastructural project design and implementation, possible solution for harmonisation of infrastructural projects and landscape and to use infrastructural systems as technical solutions in landscape quality improvement.** Skills: Students learn to use their knowledge from different

	study subjects in the process of manage the process of optimisation of interplay between infrastructural projects and landscape and minimisation of negative impacts of infrastructural works on landscape Understanding: In relation to infrastructural projects, students understand specific role and importance of work of landscape architects as a member of the team in designing the infrastructural projects and plans
Course Unit Content*	1. Definition of studio tasks, Introduction to the methodology of studio work, work-schedule, evaluation criteria 2. Phase I. (3 weeks) ■ Collection of data, inventarisation ■ Landscape-ecological analyses, landscape evaluation, definition of values and limits ■ Technological analyses focused on planed/designed infrastructural system technologies – possibilities, limits, potentials 3. Phase II. (2 weeks) ■ Interpretations, comparison of landscape based values, limits and potentials and infrastructural based values, ■ Evaluation based on the definition of priorities 4. Phase III. (7 weeks) ■ Proposition, proposal for optimising of technological and location solutions / decisions ■ Proposition, proposal for mitigation measures ■ Proposition, proposal for compensational measures 5. Phase IV.(2 weeks) ■ Formal completing of studio work final documentation ■ Presentation, exhibition, defending of studio work documentation ■ Final evaluation of studio work documentation
Course Unit Structure-implementation*	5 hours per week
Obligations of students	Students must take part in "studio discussion" following a development of the studio project. Most important is their presence at desk critiques, studio work, pin-ups and final review of the project.
Assessment Methods*	inal review of the studio project. Final product that is graded is an elaborated design project (project report and drawings).
Indicative Reading*	Selected chapters: ❑ Жегарац Зоран (1998): Инфраструктура. Географски факултет, Београд. ❑ Жегарац Зоран, Арсић Вукосав (1999): Програми унапређивања јавне инфраструктуре. Урбанистички завод Београд, Београд ❑ Kotas, P.(2002): Dopravní systémy a stavby. Vydavatelství ČVUT Praha, ISBN 80-01-02321-4

	❑ Kolektív VÚVA, URBION(1983): Zásady a pravidla územního plánování, zväzok 2. ❑ Uhliarik, A., Šerek, M., Šrytr, P.: Inžinierske siete, Bratislava 1992 ❑ Kattoš – Rapant(1988): Technická infraštruktúra – urbanistické hľadiská, vyd. SVŠT, ❑ Borovička a kol.(1980.: Technická infrastruktura měst, Praha ❑ Жегарац Зоран (1998): Инфраструктура. Географски факултет, Београд. ❑ Жегарац Зоран, Арсић Вукосав (1999): Програми унапређивања јавне инфраструктуре. Урбанистички завод Београд, Београд. ❑ Grigg S.N. (1988): Infrastructure engineering and management. Jonn Wiley & Sons, New York, Chichester, Brisbane, Toronto, Singapore. ❑ Ostrom E., Schroeder L., Wynne S. (1993): Institutional Incentives and Sustainable Development; Infrastructure Policies in Perspective. Westview Press, Boulder, San Francisco, Oxford ❑ Diamond D., Spence N. (1984): Infrastructure and Regional Development: Theories. Built Environment Vol 10, No 4, Infrastructure: Decline and Fall. ❑ Meadows W.J.; Jackson P.M. (1984): Infrastructure and Regional Development: Empirical Findings.
Additional literature	
Links	
Notes	

5. Overview of Main Course Literature for Infrastructural Projects

LENNE Infrastructural Projects Working Group
Version : 31st May 2008

Жегарац Зоран (1998): **Инфраструктура.** Географски факултет, Београд.

Жегарац Зоран, Арсић Вукосав (1999): **Програми унапређивања јавне инфраструктуре.** Урбанистички завод Београд, Београд

Built Environment Vol 10, No 4, Infrastructure: Decline and Fall.

Diamond D., Spence N. (1984): **Infrastructure and Regional Development: Theories.** Built Environment Vol 10, No 4, Infrastructure: Decline and Fall.

Directive 2001/42/EC on the asssessment of the effects of certain plans and programmes on the environment

Dohnány, B.:, Vodrážka, P.- editors: **Tools, Methods and Procedures in Areas with Specific Regime**, Central Euroepan Training Centre in Spatial Planning, Bratislava/ Hannover/ Newcastle/Grenoble 2000

FINKA, Maroš, PETRÍKOVÁ, Dagmar, JAMEČNÝ, Ľubomír**: Surveys, Analyses and Evaluation of Large Uurban Distressed Areas** – Experiences from the Slovak Republic, In: LUDA E-NEWS, IoeR Dresden, Roč.1.(2003), No. 3, p. 7

FINKA, Maroš: **Systematic connections of landscape planning in the system of spatial relevant activities in the Slovak Republic**. In: ALFA SPECTRA - Vol.11 , No.2a (2005)

FINKA, Maroš, KOZOVÁ, Mária: **Landscape planning in the enlarged European Union.** In: ALFA SPECTRA - Vol.9 , No.2 (2005), pp.42-46

Glasson J. et al., 1994**, Introduction to Environmental Impact Assessment**, UCL Press

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6. Relationship to other subject areas previous studies

Course units within the 5th and 6th Semester of the current Bachelor Programme at the University of Belgrade, Faculty of Forestry.

7. Timing and organisation of teaching within the context of the masters degree programmes

The set of competencies, skills and knowledge complexes as described above will be developed in mutual interactions with other modules within the curricula in the temporal and thematic logic as follows:

	LENNE Subject Areas Courses	1st sem.	2nd sem.	3rd sem.	4th sem.
1	**Cultural Landscape**			**x**	
2	**Infrastructure Projects**		**x**		
3	**Landscape Management**			**x**	
4	**Theory and Methodology**	**x**	**x**	**x**	
5	**Landscape Design**	**x**	**x**	**x**	
6	**History and Conservation**			**x**	
7	**Landscape Planning**	**x**	**x**	**x**	
8	**Urban Open Space Planning**	**x**			
9	**Plant Materials and Vegetation**		**x**		
10	**Thesis**				**x**