

SYLLABUS

1. Data about the program of study

1.1	Institution	The Technical University of Cluj-Napoca
1.2	Faculty	Faculty of Building Services Engineering
1.3	Department	Building Services Engineering
1.4	Field of study	Civil Engineering and Building Services
1.5	Cycle of study	Master
1.6	Program of study/Qualification	Building Services for Regenerative Cities / MS Engineer
1.7	Form of education	Full time

2. Data about the subject

2.1	Subject name				Presentation of Dissertation			Subject code	25.00
2.2	Course responsible/lecturer				-				
2.3	Teachers in charge				Scientific advisor				
2.4	Year of study	II	2.5	Semester	II	2.6 Assessment			Exam
2.7 Subject category		Formative category							DS
		Optional							DOB

3. Estimated total time

3.1 Number of hours per week		of which	3.2 Course		3.3 Seminar		3.3 Laboratory		3.3 Project
3.4 Total hours in the curriculum		of which	3.5 Course		3.6 Seminar		3.6 Laboratory		3.6 Project
3.7 Individual study:									
(a) Exams and tests									-
(b) Manual, lecture material and notes, bibliography									-
(c) Supplementary study in the library, online and in the field									-
(d) Preparation for seminars/laboratory works, homework, reports, portfolios, essays									-
(e) Tutoring									-
(f) Other activities									-
3.8 Total hours of individual study (sum (3.7(a)...3.7(f)))									
3.9 Total hours per semester (3.4+3.8)									
3.10 Number of credit points					10				

4. Pre-requisites (where appropriate)

4.1	Curriculum	Knowledge gained in the subjects of the curriculum
4.2	Competence	Knowledge gained in the subjects of the curriculum

5. Requirements (where appropriate)

5.1	For the course	
5.2	For the development of dissertation thesis presentation	Faculty of Building Services Engineering, 21 December 1989 no 128-130

6. Specific competences

Professional competence	CP2 – synthesizes information CP6 – assess environmental impact CP21 – combine multiple fields of knowledge CP24 – use CAD software
Cross competences	CT1 – collaborating in teams and networks CT2 – thinks holistically CT3 – dealing with problems CT4 – respects the diversity of values and cultural norms

7. Expected Learning Outcomes

Knowledge	CP2 – Knows methods of critical analysis of information sources specific to the urban domain (environmental studies, infrastructure reports, European regulations), synthesis techniques, and how to structure complex data to support decision-making in urban planning. CP6 – Has in-depth knowledge of environmental impact assessment methodologies for urban infrastructure projects, urban sustainability indicators (ecological footprint, air quality, urban biodiversity), and sustainable development principles in the context of regenerative cities. CP21 – Possesses integrated knowledge from diverse fields (building services engineering, architecture, urban planning, environmental sciences, circular economy, public policies, urban sociology), essential for the holistic approach to regenerative cities. CP24 – Has in-depth knowledge of CAD and BIM software used in urban infrastructure design (Revit), advanced functionalities (3D modeling), and representation standards.
Skills	CP2 – Critically analyzes technical reports, impact studies, and geo-spatial data, selects relevant information for urban infrastructure projects, synthesizes and structures knowledge coherently, producing documented summaries for project teams and authorities. CP6 – Monitors and evaluates the environmental impact of urban infrastructure projects (water, sewage, transport networks), identifies environmental and social risks, develops impact assessment studies, proposes mitigation, compensation, and monitoring measures, integrates circular economy and climate resilience principles into proposed solutions. CP21 – Integrates perspectives from multiple disciplines in analyzing and solving complex urban problems, collaborates effectively with specialists from different fields (architects, urban planners, ecologists, sociologists, economists), develops interdisciplinary solutions that simultaneously address technical, social, economic, and environmental requirements. CP24 – Uses CAD/BIM software for designing urban pipeline networks, creates integrated 3D models, develops layout plans, longitudinal profiles, and cross-sections, coordinates projects with other utilities, extracts material and quantity lists, collaborates in common data environments (CDE).
Responsibilities and autonomy	CP2 – Independently evaluates information sources, forms evidence-based opinions, supports conclusions before public authorities and stakeholders, assuming responsibility for the validity of analyses in the context of regenerative urban development. CP6 – Coordinates environmental impact assessment processes for complex urban infrastructure projects, assuming responsibility for the quality of analyses, for compliance with national and European regulations, and for integrating environmental protection measures into technical solutions that shape sustainable urban development. CP21 – Approaches regenerative urban development challenges from a holistic and integrated perspective, assuming responsibility for solutions that harmonize the multiple dimensions of sustainability, in collaboration with all stakeholders and respecting cultural and social diversity. CP24 – Executes complex urban infrastructure projects using advanced CAD/BIM tools, assuming responsibility for model accuracy, coordination with other specialties, and compliance with standards and beneficiary requirements.

8. Discipline objectives (as results from the *key competences gained*)

8.1	General objective	Final evaluation of the competences acquired during the master's program, through the public presentation of the dissertation. The graduate must demonstrate the ability to synthesize and coherently present the results of their own research, to answer critical questions from the evaluation committee, and to defend their proposed solutions in the context of regenerative urban development.
8.2	Specific objectives	• Development of the ability to synthesize complex information and present it in a clear, structured, and convincing manner before the evaluation committee (CP2, CT1, CT3). • Development of skills to answer critical questions, address problems from multiple perspectives, and argue decisions based on logical and well-founded reasoning (CP6, CP21, CP24, CT2, CT3). • Development of holistic and interdisciplinary thinking in evaluating technical solutions for urban infrastructure, integrating technical, social, economic, and environmental aspects (CP21, CT2). • Consolidation of the ability to work autonomously, make responsible decisions, and take ownership of the conclusions and recommendations formulated in the dissertation (CP2, CP6, CT4). • Demonstration of in-depth mastery of the research topic and the ability to communicate results effectively before a committee of specialists, respecting academic norms and diversity of opinions (CP2, CT1, CT4).

9. Contents

9.1. Theme area	Number of hours	Teaching methods	Notes
-			
9.2. Applications	Number of hours	Teaching methods	Notes
-			
Bibliography			
-			

10. Bridging course contents with the expectations of the representatives of the community, professional associations and employers in the field

The content of the discipline is correlated with the needs of the employers in the field of building services engineering, as well as adjacent fields, the graduate of this university module having employment possibilities, according to ESCO:

2142.1.7 - pipeline engineer

11. Evaluation

Activity type	11.1 Assessment criteria	11.2 Assessment methods (and evaluation form: continuous/summative)	11.3 Weight in the final grade
11.4 Course	-		
11.5 Applications	Knowledge of the current stage of the topic Personal contributions to the dissertation Defence of the dissertation thesis	Defence of the dissertation thesis	50% dissertation thesis 50% presentation
11.6 Minimum standard of performance			
Final grade for the dissertation ≥ 6			

Date of filling in:		Title Surname Name	Signature
12.05.2026	Lecturer		
	Teachers in charge of application	Lect.PhD.Eng. Constantin CILIBIU	

Date of approval in the Department of Building Services Engineering	Head of department Assoc.Prof.PhD.Eng. Ciprian BACOȚIU
09.07.2026	
Date of approval in the Council of Faculty of Building Services Engineering	Dean Assoc.Prof.PhD.Eng. Florin DOMNIȚA
09.07.2026	