

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	Professional practice 3	Subject code	21.00
2.2	Course responsible/lecturer	-		
2.3	Teachers in charge with professional practice	Scientific advisor		
2.4	Year of study	II	2.5 Semester	I
2.6	Assessment	Verification		
2.7	Subject category	Formative category	DS	
		Optional	DOB	

3. Estimated total time

3.1	Number of hours per week	14	of which	3.2 Course		3.3 Seminar		3.3 Laboratory		3.3 Project	14
3.4	Total hours in the curriculum	196	of which	3.5 Course		3.6 Seminar		3.6 Laboratory		3.6 Project	196
3.7	Individual study:										
	(a) Exams and tests										2
	(b) Manual, lecture material and notes, bibliography										24
	(c) Supplementary study in the library, online and in the field										24
	(d) Preparation for seminars/laboratory works, homework, reports, portfolios, essays										16
	(e) Tutoring										-
	(f) Other activities										-
3.8	Total hours of individual study (sum (3.7(a)...3.7(f)))					54					
3.9	Total hours per semester (3.4+3.8)					250					
3.10	Number of credit points					10					

4. Pre-requisites (where appropriate)

4.1	Curriculum	Bachelor's degree in one of the following fields: - building services engineering; - civil engineering; - architecture; - other related specializations.
4.2	Competence	

5. Requirements (where appropriate)

5.1	For the course	
5.2	For the development of professional practice	

6. Specific competences

Professional competences	· CP1 - perform project management · CP2 - synthesize information · CP5 - execute feasibility study · CP24 - use CAD software
Cross competences	· CT1 - collaborate in teams and networks · CT3 - deal with problems

7. Expected Learning Outcomes

Knowledge	· Project management methodologies applicable to urban infrastructure projects, planning tools, resource allocation techniques and cost control principles. · Critical analysis and synthesis methods for technical documentation, infrastructure reports, regulations and project data. · Methodology for preparing feasibility studies, including technical-economic indicators, multi-criteria evaluation and legal, environmental and social aspects. · CAD/BIM software used in urban infrastructure design, including representation standards and coordination requirements.
Skills	· Develop project plans, define stages and deliverables, allocate resources and monitor project progress through performance indicators. · Analyze technical data and project documentation, select relevant information and prepare coherent documented syntheses. · Collect and analyze technical, economic, social and environmental data, develop alternatives, calculate indicators and draft feasibility documentation. · Use CAD/BIM tools to prepare drawings, layouts, models and quantity lists, coordinating the design with other specialties.
Responsibilities and autonomy	· Coordinate professional practice tasks autonomously and responsibly, respecting deadlines, quality requirements and applicable regulations. · Assume responsibility for the validity of analysis, conclusions and technical documentation prepared within the project/practice activity. · Work responsibly in interdisciplinary teams and communicate technical solutions clearly to advisors, colleagues and professional partners.

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

8.1	General objective	✓ To evaluate the functional and energy efficiency of the installation systems and to design solutions for their rehabilitation and technological modernization; ✓ To synthesize, explain and transmit information on the composition and operation of installation systems
8.2	Specific objectives	• To compile programs for investigating the operating conditions and evaluating the efficiency of different categories of installations • To analyze and evaluate the functional parameters and performance indicators of equipment and installation systems in the given operating conditions • To identify the technical non-conformities and the needs of functional and energetic rehabilitation / modernization • To select and propose intervention measures for the energy efficiency of the different categories of installations • To draw up technical-economic documentation specific to the functional and energetic evaluation • Analyze and synthesize existing information on installation systems; • To elaborate documentary and formative materials regarding the composition and calculation of the installation systems; • To know the recent technical-scientific achievements and the national and international tendencies for the development of the field.

9. Contents

9.1. Theme area	Number of hours	Teaching methods	Notes
Urban Network Management			
Energy Management Tools and Programs for Regenerative Cities			
Renewable Energy Sources			
Urban Electric Infrastructure			
Control Systems for Smart Homes and Cities			
Project Management			
Local, National and European Policies			
Obs: Students will be divided into groups and will address a topic of their choice from those proposed by teachers or companies with which there are internship agreements. The themes will be focused on the realization of projects and on the analysis of the chosen solutions.			
9.2. Applications	Number of hours	Teaching methods	Notes
Presentation of the design / practice theme for each student	42	Exposure, applications	
Calculation method used at national level	42		
Implementation of the calculation methodology	42		

Case study based on calculation methods used at national level	68		
Deliver and present the elaborated project	2		
Bibliography 1. Course notes related to the disciplines studied in the first and second semesters of the master's cycle. 2. Bibliographic sources specific to the project / practice topic. 3. Legislation specific to each topic.			

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

The gained knowledge will be necessary for employees that will work in building services engineering design and execution.

11. Evaluation

Activity type	11.1 Assessment criteria	11.2 Assessment methods	11.3 Weight in the final grade
11.4 Course	-		
11.5 Applications	Verification (grade C); Knowledge in the calculation methodology when carrying out the project (grade A).	The verification consists in evaluating the knowledge resulting from the design (2 hours).	80% project 20% verification
11.6 Minimum standard of performance			
Grade components: Verification (C); Knowledge in the calculation methodology (A). $G = 0.2 C + 0.8 A$ Condition for obtaining the credits: $G \geq 5$; $C \geq 5$; $A \geq 5$			

Date of filling in:		Title Surname Name	Signature
16.05.2026	Lecturer		
	Teachers in charge of application	Assoc.Prof.PhD.Eng Calin Ciugudeanu	
Date of approval in the Department of Building Services Engineering		Head of department	
09.07.2026		Assoc.Prof.PhD.Eng. Ciprian BACOȚIU	
Date of approval in the Council of the Faculty of Building Services Engineering		Dean	
09.07.2026		Assoc.Prof.PhD.Eng. Florin DOMNIȚA	