

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
1.8	Subject code	23.00

2. Data about the subject

2.1	Subject name				Dissertation Project Work			
2.2	Course responsible/lecturer				-			
2.3	Teachers in charge				Prof.PhD.Eng. Dorin Beu - <i>dorin.beu@insta.utcluj.ro</i>			
2.4	Year of study	II	2.5	Semester	II	2.6	Assessment	Verification
2.7 Subject category		Formative category						DS
		Optional						DI

3. Estimated total time

3.1 Number of hours per week	7	of which	3.2 Course		3.3 Seminar		3.3 Laboratory		3.3 Project	7
3.4 Total hours in the curriculum	98	of which	3.5 Course		3.6 Seminar		3.6 Laboratory		3.6 Project	98
3.7 Individual study:										
(a) Manual, lecture material and notes, bibliography										40
(b) Supplementary study in the library, online and in the field										40
(c) Preparation for seminars/laboratory works, homework, reports, portfolios, essays										70
(d) Tutoring										-
(e) Exams and tests										2
(f) Other activities										-
3.8 Total hours of individual study (sum (3.7(a)...3.7(f)))				152						
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	Theoretical knowledge: • Disciplines taught in the first, second and third semester within the master's program. Acquired skills: • To deepen the knowledge taught through design topics specific to the course disciplines. Skills acquired: • Development of skills in the field of design, execution and project management. • Development of skills regarding the preparation of reports specific to the field.
Cross competences	The students will be able to: • make decisions and take responsibility for their own decisions and actions by adapting to new situations; • have leadership skills on complex projects; • demonstrate a creative and enterprising spirit in solving complex problems.

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

7.1	General objective	✓ To design programs and perform practical activities to evaluate the functional energy performance of different categories of installations.
7.2	Specific objectives	• To know the recent technical and scientific achievements and the national and international trends for the development of the field; • To know in depth the role and behavior of equipment and installation systems corresponding to functional requirements; • To use specialized calculation methods and programs for modeling installation systems and simulating their behavior in different functional hypotheses; • To apply techniques for measuring functional parameters, to process and interpret the results of measurements for different categories of installations; • Prepare projects and reports for field-specific programs.

8. Contents

8.1. Theme area	Number of hours	Teaching methods	Notes
Advanced building services - HVAC and water distribution			
nZeB Buildings			
Buildings and cities assessment			
Energy analysis of a building / city			
Urban network management			
Life cycle analysis			
Building services retrofit solutions			
Use of renewable energy sources			
Urban electrical infrastructure			

8.2. Applications	Number of hours	Teaching methods	Notes
Presentation of the topic of professional practice	4	Exposure, applications	
The state of knowledge at national and international level	12		
Calculation methodology used nationally and internationally	12		
Case study based on the calculation methodology used	18		
Own contributions	10		
Final conclusions	10		
Elaboration of the dissertation paper in final form	30		
Deliver and present the elaborated project	2		
Bibliography 1. Course notes related to the disciplines studied in the first, second and third semesters of the master's cycle. 2. Bibliographic sources specific to the project / practice topic. 3. Online and electronic documentation sources; 4. Legislation specific to each topic.			

9. 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, execution, project management and energy assessment of buildings / cities.

10. Evaluation

Activity type	10.1 Assessment criteria	10.2 Assessment methods	10.3 Weight in the final grade
10.4 Course	-		
10.5 Applications	Knowledge of the current stage of the topic (note A); Evaluation of the practical results obtained (note B); Personal contributions to the dissertation (note B); Presentation of the practice report (note C); Supporting the practice report (note D).	Presentation of the dissertation thesis	50% dissertation thesis 50% presentation
10.6 Minimum standard of performance			
Grade components: $G = 0.2 \cdot A + 0.4 \cdot B + 0.2 \cdot C + 0.2 \cdot D$; Condition for obtaining credits: $G > 7$; $A > 5$; $B > 5$; $C > 5$; $D > 5$.			

Date of filling in:		Title Surname Name	Signature
24.06.2026	Lecturer		
	Teachers in charge of application	Prof.Eng.PhD. Dorin Beu	

Date of approval in the Department of Building Services Engineering

09.06.2026

Head of department
Assoc.Prof.PhD.Eng. Ciprian BACOȚIU

Date of approval in the Council of Faculty of Building Services Engineering

09.06.2026

Dean
Assoc.Prof.PhD.Eng. Florin DOMNIȚA