

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	22.00

2. Data about the subject

2.1	Subject name	Professional practice 4			
2.2	Course responsible/lecturer	-			
2.3	Teachers in charge with professional practice	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	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) Manual, lecture material and notes, bibliography										28
(b) Supplementary study in the library, online and in the field										20
(c) Preparation for seminars/laboratory works, homework, reports, portfolios, essays										16
(d) Tutoring										-
(e) Exams and tests										2
(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	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 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; ✓ To design programs and perform application activities to evaluate the functional energy performance of different categories of installations.
7.2	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 the 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.

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	24		
Calculation methodology used nationally and internationally	24		
Carrying out measurements, evaluations, technical analyzes, etc. using field-specific equipment and devices	70		
Preparation of the professional practice report based on the results obtained and the calculation methodology used	72		
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); Supporting the practice report (note C).	Verification consists of assessing theoretical and practical knowledge (2 hours)	50% project 50% verification

10.6 Minimum standard of performance
Grade components: $G = 0.3 \cdot A + 0.5 \cdot B + 0.2 \cdot C$; Condition for obtaining credits: $G > 5$; $A > 5$; $B > 5$; $C > 5$.

Date of filling in:		Title Surname Name	Signature
24.06.2026	Lecturer		
	Teachers in charge of application	Prof. PhD. Eng. Dorin Beu	
Date of approval in the Department of Building Services Engineering		Head of department Assoc.Prof.PhD.Eng. Ciprian BACOȚIU	
09.06.2026			
Date of approval in the Council of the Faculty of Building Services Engineering		Dean Assoc.Prof.PhD.Eng. Florin DOMNIȚA	
09.06.2026			