

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	19.1

2. Data about the subject

2.1	Subject name	Urban Electric Infrastructure				
2.2	Course responsible/lecturer	Assoc. Prof. PhD Eng. Calin CIUGUDEANU, <i>calin.ciugudeanu@insta.utcluj.ro</i>				
2.3	Teachers in charge of seminars	Assoc. Prof. PhD Eng. Calin CIUGUDEANU, <i>calin.ciugudeanu@insta.utcluj.ro</i>				
2.4 Year of study	2	2.5 Semester	1	2.6 Assessment	Colloquy	
2.8 Subject category	Formative category					DA
	Optional					DO

3. Estimated total time

3.1 Number of hours per week	2	of which	3.2 Course	1	3.3 Seminar		3.3 Laboratory	1	3.3 Project	
3.4 Total hours in the curriculum	28	of which	3.5 Course	14	3.6 Seminar		3.6 Laboratory	14	3.6 Project	
3.7 Individual study:										
(a) Manual, lecture material and notes, bibliography										15
(b) Supplementary study in the library, online and in the field										15
(c) Preparation for seminars/laboratory works, homework, reports, portfolios, essays										12
(d) Tutoring										2
(e) Exams and tests										3
(f) Other activities										
3.8 Total hours of individual study (sum (3.7(a)...3.7(f)))					47					
3.9 Total hours per semester (3.4+3.8)					75					
3.10 Number of credit points					3					

4. Pre-requisites (where appropriate)

4.1	Curriculum	Physics and Electrotechnical elements
4.2	Competence	Electrical engineering, Use of computer (MS-Office; Autocad)

5. Requirements (where appropriate)

5.1	For the course	Classroom equipped with Video Projector - 21 December 1989 Blvd., no. 205
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5.2	For the laboratory	Classroom equipped with Video Projector - 21 December 1989 Blvd., no. 108, 109
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6. Specific competences

Professional competences	Electrical design: - Identify the maximum absorbed active power for different buildings - electrical power distribution equipment – medium and low voltage gears - street lighting and power distribution - knowledge of European standards in the field of electrical design After graduating this subject, students will be able to: - to evaluate the current state of an electrical distribution installation - to compare different electrical architecture diagrams - to analyze and propose the best technical and economical solutions - to use electrical measurement equipment
Cross competences	1. Use of efficient and responsible work strategies, on-time, honest and personal engagement, based on principles, norms, and ethical professional values. 2. Knowledge of team efficient work, on different hierarchy stages. 3. Use of references in a foreign language, for professional and personal development, through continuous formation and efficient adaptation to new technical specifications.

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

7.1	General objective	Acquiring competences in urban electrical infrastructure design
7.2	Specific objectives	- Finding the most appropriate power supply architecture diagrams. - Finding the best available techniques to decrease of the electro technological consumption. - Knowledge of National and European norms: I7/2011, PE132/2003, NTE 007/08/00, EN 13201. - Use of software for low voltage electrical design Ecodial.

8. Contents

8.1. Lecture (syllabus)	Number of hours	Teaching methods	Notes
1. Electrical design fundamentals	2	Video-Projector Teaching style based on the interactive teacher-student partnership; Presentation of case studies.	
2. The Romanian and European electro-energetic system	2		
3. Low voltage power distribution installations	2		
4. Medium voltage power distribution installations	2		
5. Urban infrastructure electrical architecture design	2		
6. Basic electrical calculation – Ecodial software	2		
7. Decrease of the electro technological consumption in power distribution installations	2		
Bibliography			
1. Ciugudeanu C. Instalatii Electrice Industriale – Indrumator proiect, U.T. Press, 2015;			
2. Schneider Electric, Manualul instalațiilor electrice, 2007;			
3. Buzdugan Mircea, Compatibilitate electromagnetă; emisii conduse, Ed. Mediamira, 2008;			
4. Buzdugan Mircea, Elemente de mașini electrice; funcționare și utilizare, U.T. Press, 2006;			

5. Virgil Maier, s.a. Instalații electrice industriale, Lucrări practice U.T. Press, Cluj-Napoca, 2003;

6. Albert, H. ș.a., Pierderi de putere și energie în rețelele electrice, E.T. București 1997;

7. Centea O. Prize de pământ Editura Academiei, București, 2008.

8.2. Laboratory	Number of hours	Teaching methods	Notes
1. Understanding the European electrical design norms	2	Site visits, role play during the projects, modeling execution, computer exercises, group project	
2. Choosing an urban power distribution grid example	2		
3. Energy efficiency street lighting assessment	2		
4. Using Ecodial electrical calculation software	4		
5. Decrease of the electro technological consumption in power distribution installations	2		
6. Final optimised and improved power distribution grid example	2		
Bibliography			
1. Norms EN 13201, NTE 007/08/00, PE 132/2003 2. International journal of Sustainable Lighting – open access at www.lightingjournal.org 3. DialuxEvo software free download at www.dial.de 4. Ecodial advance electrical calculation software - https://hto.power.schneider-electric.com/ecodialadvancecalculation/#/homepage			

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

The competences achieved are necessary in the field of electrical design of the future urban electrical infrastructures. The demands of the energetic employees are being satisfied.

10. Evaluation

Activity type	10.1 Assessment criteria	10.2 Assessment methods	10.3 Weight in the final grade
10.4 Course	Technical content, word count, structure and critical analysis;	Final report grade	60%
10.5 Laboratory	Technical content, presentation and communication skills;	class activity, assignments, presentation grade	40%
10.6 Minimum standard of performance			
5 points out of 10 total points (5 min/10 max)			

Date of filling in:		Title Surname Name	Signature
24.06.2026	Lecturer	Assoc. Prof. PhD Eng. Calin CIUGUDEANU	
	Teachers in charge of application	Assoc. Prof. PhD Eng. Calin CIUGUDEANU	

Date of approval in the Department of Building Services
Engineering

09.07.2026

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

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

09.07.2026

Dean
Assoc.Prof.PhD.Eng. Florin DOMNIȚA