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
1.7	Form of education	Full time

2. Data about the subject

2.1	Subject name			Advanced Architecture	Subject code		4.00
2.2	Course responsible/lecturer			Associate Professor Arch. Șerban Țigănaș PhD			
2.3	Teachers in charge of laboratory			Lecturer Arch. Paul Mihai Moldovan PhD			
2.4 Year of study	1	2.5 Semester	1	2.6 Assessment			E
2.7 Subject category	Formative category						DC
	Optionality						DOB

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) Exams and tests	2
(b) Manual, lecture material and notes, bibliography	24
(c) Supplementary study in the library, online and in the field	7
(d) Preparation for seminars/laboratory works, homework, reports, portfolios, essays	14
(e) Tutoring	-
(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	Bachelor's in civil engineering, or Building Services Engineering, or Architecture, or Urbanism
4.2	Competence	Technical and Humanistic competences

5. Requirements (where appropriate)

5.1	For the course	Amphitheatre B-dul 21 December Nr.128-130, Cluj-Napoca
5.2	For the applications	Amphitheatre B-dul 21 December Nr.128-130, Cluj-Napoca

6. Specific competences

Professional Competences	CP14 – integrate measures in architectural designs CP21 – combine multiple fields of knowledge
Cross competences	CT2 – thinks holistically CT4 – respects the diversity of values and cultural norms

7. Expected Learning Outcomes

Knowledge	CP14 – Has in-depth knowledge of specific fire protection, acoustic protection, building physics measures, and methods for integrating installations into complex architectural projects, including requirements for green and regenerative buildings. 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. Understands the new paradigm in construction and how contemporary architecture integrates advanced technologies and sustainability principles.
Skills	CP14 – Incorporates fire safety, acoustic protection, energy efficiency, and water management measures into architectural projects, respecting specific requirements and coordinating with architects for harmonious and functional integration, using BIM tools and integrated methodologies. CP21 – Integrates perspectives from multiple disciplines in analyzing and solving complex architectural 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. Applies design thinking principles in the advanced design process.
Responsibilities and autonomy	CP14 – Coordinates the integration of special measures into architectural projects, ensuring regulatory compliance and technical performance, assuming responsibility for user safety, comfort, and indoor environmental quality, in line with regenerative urban development principles. CP21 – Approaches advanced architecture 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.

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

8.1	General objective	A comprehensive perspective on the new paradigm in construction, a contemporary understanding of architecture as a holistic integrating discipline, and an alignment of different construction professions into an advanced interdisciplinary

		process. Students will learn to integrate building services engineering knowledge in the conception and development of construction projects, understanding the essential role of building services engineering for the future of construction.
8.2	Specific objectives	• Building a foundation for interdisciplinary advanced design processes, integrating knowledge from architecture, engineering and urban planning (CP21, CT2). • Integration of building services engineering disciplines in the conception and development of construction projects (CP14, CP21). • Understanding the future role of building services engineering and how it can contribute to the sustainable development of cities (CP14, CP21, CT2). • Acquiring design thinking concepts and applying them in the advanced architectural design process (CP21, CT2). • Knowledge and application of sustainable development goals in architectural projects (CP14, CT4). • Development of interdisciplinary collaboration skills and integration of technical solutions in complex architectural projects (CP14, CP21, CT4).

9. Contents

9.1. Lecture (syllabus)		Number of hours	Teaching methods	Notes
1.	Architecture Today – An Introduction	1	Presentation and debate	Video-projector
2.	Form and Function, the Essential Binome	1		
3.	Design Thinking – Design Process	1		
4.	RE-Inventing construction – A Change of Paradigm	1		
5.	Hi-Tech, Low-Tech or a Smart combination?	1		
6.	Advanced Architecture – A Dictionary of Terms	1		
7.	Elements of Architecture – Floor, Ceiling, Wall	1		
8.	Elements of Architecture – Roof, Window, Facade	1		
9.	Elements of Architecture – Stair, Ramp, Escalator, Elevator	1		
10.	Elements of Architecture – Fireplace, Toilet	1		
11.	Permanence, Ephemerity and Life Cycle	1		
12.	Advanced Architectural Programs	1		
13.	The 17 Sustainable Development Goals in Architecture	1		
14.	Case Studies, Recent Experiences	1		
Total:		14		

Bibliography:

- Designing the Profile of the Future Architect – Șerban Țigănaș. Andreea Robu-Movilă, Eusebia

Mindirigiu, 2019
- Re-Inventing Construction – Ilka and Andreas Ruby, 2010
- Ephemeral Urbanism. Does permanence matter? – Rahul Mehrotra and Felipe Vera with Jose Mayoral, 2017
- Smart Cities: Big Data, Civic Hakers, and the Quest for a New Utopia – Anthony Townsend, 2014

9.2. Applications/Laboratory		Number of hours	Teaching methods	Notes
1.	Architecture and Engineering in the History of Construction part 1	1	Presentation and debate	Video-projector
2.	Architecture and Engineering in the History of Construction part 2	1		
3.	Design Process in examples	1		
4.	Digital Shift in Design – Software for Building Design and Architecture	1		
5.	Low – Tech Case studies	1		
6.	Low – Tech Case studies	1		
7.	Elemente of Architecture – Case Studies part 1	1		
8.	Elemente of Architecture – Case Studies part 2	1		
9.	Elemente of Architecture – Case Studies part 3	1		
10.	Advanced Architecture Worldwide part 1	1		
11.	Advanced Architecture Worldwide part 2	1		
12.	Advanced Architecture in Romania part 1	1		
13.	Advanced Architecture in Romania part 2	1		
14.	Evaluation	1		
Total:		14		

Bibliography:
- The Metapolis Dictionary of Advanced Architecture: city, technology and society i the information age – Manuel Gausa, Vicente Guallart, Willy Muller, Federico Soriano, Fernando Porrsa, Jose Morales
- An Architectural Guide to the UN 17 Sustainable Development Goals – Natalie Mossin (chief editor), 2019
- Elements of Architecture, Rem Koolhaas, 2014

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

The competences accumulated are necessary to activate the graduates in design activities, realization of buildings, consultancy and sales to meet the employers' requirements.

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	Knowledge testing from course and bibliography	Oral examination	50%

11.5 Applications	Knowledge testing and skills accumulated by applications	Written test	50%
11.6. Minimum standard of performance Students need to pass the application test to be accepted at the examination. The components of the final grade are Examination (E) and Application lab (L). Therefore, the formula for the final grade calculation is G=0.5xE + 0.5xL. The 3 credits are obtained if both E and L are rewarded with minimum 5			

Date of filling in:		**Title Surname Name**	**Signature**
12.05.2026	Lecturer	Assoc.prof.PhD.arch. Dragos Șerban ȚIGĂNAȘ	
	Teachers in charge of application	Lec.PhD.arch. Paul Mihai MOLDOVAN	

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