

SYLLABUS

1. Data about the program of study

1.1	Institution	The Technical University of Cluj-Napoca
1.2	Faculty	Faculty of Civil Engineering
1.3	Department	Civil Engineering and Management
1.4	Field of study	Civil Engineering
1.5	Cycle of study	Bachelor of Science
1.6	Program of study/Qualification	Civil Engineering/ Engineer
1.7	Form of education	Full time
1.8	Subject code	39.00

2. Data about the subject

2.1	Subject name				Basics of Buildings Design						
2.2	Subject area				Civil Engineering						
2.3	Course responsible/lecturer				Lecturer Ph.D.Eng. Tamas-Gavrea Daniela-Roxana Roxana.Tibrea@cif.utcluj.ro						
2.4	Teachers in charge of seminars				Lecturer Ph.D.Eng. Tamas-Gavrea Daniela-Roxana Roxana.Tibrea@cif.utcluj.ro						
2.5	Year of study	III	2.6	Semester	1	2.7	Assessment	Exam	2.8	Subject category	DS/DI

3. Estimated total time

3.1	Number of hours per week	4	3.2	of which, course:	2	3.3	applications:	2
3.4	Total hours in the curriculum	56	3.5	of which, course:	28	3.6	applications:	28
Individual study								hours
Manual, lecture material and notes, bibliography								30
Supplementary study in the library, online and in the field								10
Preparation for seminars/laboratory works, homework, reports, portfolios, essays								20
Tutoring								5
Exams and tests								2
Other activities								2
3.7	Total hours of individual study	69						
3.8	Total hours per semester	125						
3.9	Number of credit points	5						

4. Pre-requisites (where appropriate)

4.1	Curriculum	N/A
4.2	Competence	N/A

5. Requirements (where appropriate)

5.1	For the course	N/A
5.2	For the applications	N/A

6. Specific competences

Professional competences	<p>After completing the discipline, students will have knowledge about:</p> <ul style="list-style-type: none"> - principles of functional and constructive design of buildings; - knowledge of structural and non-structural building elements; - hygrothermal, acoustical and daylighting design principles of buildings; - assessment of actions on structures. <p>After completing the discipline, the students will be able to:</p> <ul style="list-style-type: none"> - apply the standards in the functional and constructive design of a building; - design functionally and constructively buildings; - to perform hygrothermal calculations of buildings; - to calculate and verify the degree of natural lighting of buildings.
Cross competences	Residential building permit procedures. Knowledge in technical calculation.

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

7.1	General objective	Development of skills and competencies needed for a civil engineer in the construction industry.
7.2	Specific objectives	<p>Correct implementation of building design principles. Assimilation of theoretical knowledge in terms of hygrothermal and acoustical conformation of building components and buildings.</p> <p>Application of norms concerning actions in constructions.</p>

8. Contents

8.1. Lecture (syllabus)	Teaching methods	Notes
<p>1. General conformation and classification of constructions. Technical conditions. Technical prescriptions. The concept of performance.</p> <p>2. Building design. Structures for civil constructions. Modular coordination in constructions. Tolerances.</p> <p>3. Building Elements – Walls.</p> <p>4. Building Elements – Walls (continuation).</p> <p>5. Building Elements – Floors.</p> <p>6. Building Elements – Floors (continuation). Stairs.</p> <p>7. Building Elements – Roofs.</p> <p>8. Building Elements – Foundations. Basements. Waterproofings.</p> <p>9. Building Physics. Thermal comfort. Hygrothermics. Thermal transfer through the building envelope. Performance exigencies specific to the hygrothermal design of the buildings.</p> <p>10. Performance exigencies specific to the hygrothermal design of the buildings (continuation). Humidity transfer through the building envelope. Building air quality. Natural ventilation.</p>	Power Point presentation	Video – projector

11. Building acoustics. Daylight in buildings.		
12. Actions on structures. Definition. Classification. Permanent loads. Imposed loads.		
13. Actions on structures (continuation). Snow actions. Wind actions.		
14. Actions on structures (continuation). Thermal actions. Accidental actions. Seismic actions. Combinations of actions.		
Bibliography		
1. N. Cobirzan, M.Brumaru – BUILDINGS: STRUCTURAL AND NONSTRUCTURAL ELEMENTS, Ed. U.T. PRESS, 2012.		
2. Brumaru M. – HANDBOOK OF CIVIL ENGINEERING. MASONRY BUILDINGS, Ed. Dacia, 1997.		
3. S. S. Bhavikatti – BASIC CIVIL ENGINEERING, New Age International Limited Publishers, 2010.		
4. Chanakya Arya – DESIGN OF STRUCTURAL ELEMENTS: CONCRETE, STEELWORK, MASONRY AND TIMBER DESIGNS TO BRITISH STANDARDS AND EUROCODES, CRC Press, 2009.		
5. Andreica, H.-A., Munteanu, C., Muresanu, I., Moga, L., M., Tamas-Gavrea, R. – CONSTRUCȚII CIVILE, Ed. U.T. PRESS, 2009.		
6. Andreica, H.-A. – CONSTRUCȚII. ALCĂȚUIREA ȘI CALCULUL ELEMENTELOR DE CONSTRUCȚIE, Ed. U.T. PRESS, 2002.		
7. Comșa, E. ș.a. – CONSTRUCȚII CIVILE, vol.I și II, U.T.C.-N., Cluj-Napoca, 1992.		
8. Comșa, E. ș.a. – PROIECTAREA FUNCȚIONALĂ ȘI CONSTRUCTIVĂ A CLĂDIRILOR DE LOCUIT, vol I si II, I.P.C.-N, Cluj-Napoca, 1986-1987.		
9. Standards, norms, technical requirements.		
8.2. Applications/Seminars	Teaching methods	Notes
1. Presentation of the design topic. Functional and constructive design of a building: B.+G.F.+ 1L. Design stages.	Interactive exposure Explanation	Norms presentation
2. Dwelling functions. Rules in dwelling conformation. Functional elements in dwelling buildings. Surfaces and furniture. Technical and economic indices in dwellings. Functional layout for the ground floor and first floor/attic.		
3. Presentation of principles regarding building design according to “The design code for masonry structures”, indicative CR6-2013. Thickness and types of bearing and non-bearing walls.		
4. Plan dimensioning. Modular coordination. Openings for doors and windows. Lighting indices. Ground floor and first floor/attic.		
5. Functional and constructive design of staircases. Cross section.		
6. Solution of the access in the building. Basement plan. Foundation plan. Details.		
7. Roof plan. Facades. Site plan. Plan for location in the environment.		
8. Verification of the project. Partial evaluation.		
9. Presentation of the calculation principles for the global thermal insulation coefficient of the designed dwelling.		
10. Determination of the geometrical features of the building.		
11. Determination of the corrected average thermal resistances as per type of element belonging to building envelope.		
12. Determination of the global thermal insulation coefficient (G).		

13. Comparison of the global thermal insulation coefficient (G) to norm values (GN). Partial notation for the calculation of global thermal insulation coefficient		
14. Verification of the project. Final evaluation.		
Bibliography 1. N. Cobirzan, M.Brumaru – BUILDINGS: STRUCTURAL AND NONSTRUCTURAL ELEMENTS, Ed. U.T. PRESS, 2012. 2. Brumaru M. – HANDBOOK OF CIVIL ENGINEERING. MASONRY BUILDINGS, Ed. Dacia, 1997. 3. Andreica, H.-A., Munteanu, C., Muresanu, I., Moga, L., M., Tamas-Gavrea, R. – CONSTRUCȚII CIVILE, Ed. U.T. PRESS, 2009. 4. Standards, norms, technical requirements.		

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

<p>The discipline meets the current requirements regarding the development and progress of the education in the civil engineering field.</p> <p>The students are provided with adequate competencies associated with the current qualification requirements in order to ensure a fast insertion on the labor market and the possibility to continue studies through Master and PhD Programs after graduation.</p>

10. Evaluation

Activity type	10.1 Assessment criteria	10.2 Assessment methods	10.3 Weight in the final grade
10.4 Course	Civil engineering questions	Written test	75%
10.5 Applications	Verification of the project	Project presentation	25%
10.6 Minimum standard of performance			
The minimum grade required (written test) ≥ 5			
The minimum grade required (project) ≥ 5			

Date of filling in:		Title Surname Name	Signature
10.10.2019	Lecturer	Lecturer Ph.D.Eng. Tamas-Gavrea Daniela-Roxana	
	Teachers in charge of application	Lecturer Ph.D.Eng. Tamas-Gavrea Daniela-Roxana	

Date of approval in the department

Head of department

Associate Prof. Ph.D. Eng. Claudiu ACIU

Date of approval in the faculty

Dean

Associate Prof. Ph.D. Eng. Nicolae CHIRA