

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	CCM
1.4	Field of study	Civil Engineering
1.5	Cycle of study	Bachelor of Science
1.6	Program of study/Qualification	Civil, Industrial and Agricultural Buildings /Engineer (English language)
1.7	Form of education	Full time
1.8	Subject code	43.0

2. Data about the subject

2.1	Subject name				Constructii civile I						
2.2	Course responsible/lecturer				Conf.Dr.Ing. Cobirzan Nicoleta Nicoleta.Cobarzan@ccm.utcluj.ro						
2.3	Teachers in charge of seminars				Conf.Dr.Ing. Cobirzan Nicoleta Nicoleta.Cobarzan@ccm.utcluj.ro						
2.4	Year of study	3	2.5	Semester	2	2.6	Assessment	E	2.7	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								20
Supplementary study in the library, online and in the field								5
Preparation for seminars/laboratory works, homework, reports, portfolios, essays								14
Tutoring								2
Exams and tests								3
Other activities								0
3.7	Total hours of individual study	44						
3.8	Total hours per semester	100						
3.9	Number of credit points	4						

4. Pre-requisites (where appropriate)

4.1	Curriculum	knowledge of statics, reinforced concrete and basis of structural design.
4.2	Competence	N/A

5. Requirements (where appropriate)

5.1	For the course	Study hall with blackboard and multimedia facilities (video projector, laptop)
5.2	For the applications	Study hall with blackboard and multimedia facilities (videoprojector, laptop)

6. Specific competences

Professional competences	<p>C1.1 Identification of structural and functional role of the elements of a civil, industrial and agricultural construction.</p> <p>C2.1 Identification of construction materials and of structural types in constructions.</p> <p>C2.3 Use of calculation methods specific to the types of structures and of the methods for dimensioning the components of civil, industrial and agricultural constructions for the purpose of drawing up specific technical documentation.</p> <p>C2.4 Evaluation, selection and optimal use of the various materials that make up the construction elements.</p>
Cross competences	<p>CT1. Applying efficient and responsible strategies for work, punctuality, seriousness and personal responsibility, based on the principles, norms and values of professional ethics.</p> <p>CT2. Applying efficient teamwork techniques, at different hierarchical levels.</p> <p>CT3. Documentation in English, for professional and personal development, through continuous training and efficient adaptation to new technical specifications.</p>

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

7.1	General objective	Development of skills in compliance with safety requirements and sustainability.
7.2	Specific objectives	Assimilation of theoretical knowledge concerning the dimensioning and verification of masonry walls.

8. Contents

8.1. Lecture (syllabus)	Teaching methods	Notes
Masonry definition. Building materials for masonry works. History and state of the art. Advantages and disadvantages in designing masonry structures. Mechanical and physical properties of masonry units and mortars (2hours).	Presentation, Video-projector	Video-projector
Classification of masonry works. Mechanical and physical properties of masonry work. The complex state of stress in the case of masonry subjected to centric compression. The working stages of the masonry members subjected to centric compression (4hours).		
Types of structures for masonry buildings. General conformation. Preliminary design of masonry buildings. Preliminary design of superstructure and infrastructure. Details for structural and non-structural elements (2hours).		
Masonry structures subjected to vertical and lateral loads. Verification of masonry walls subjected to vertical and lateral loadings (6hours).		
Methods for structural analysis in wall plane (6hours).		
Verification of masonry walls to shear and eccentric compression. Calculation of masonry walls subjected to compression and bending in their plane(6hours).		
Specific details. Reinforcement details for confined elements. Specific and reinforcement details for infrastructures. Design principles for non-structural elements (2hours).		

Bibliography <ol style="list-style-type: none"> 1. Dumitras M., Cobirzan N., Dumitras D., Constructii Civile II, Editura UTPRES, Cluj-Napoca, 2011. 2. Cobirzan N., Brumaru M., Buildings- Structural and Nonstructural Elements, Ed. U.T. PRES, 2012. 3. Brumaru M., Handbook of civil engineering. Masonry buildings, Ed. Dacia, 1997 4. Agent R., Postelnicu T., Calculul structurilor cu diafragme din beton armat, Vol I, 1982, Vol II, Editura Tehnică, 1983 5. SR EN 1991-1-1:2004/AC:2009, Eurocode 1: Actions on structures – Part 1-1: General actions, - densities, self-weight, imposed loads for buildings. 6. SR EN 1998-1:2004/A1:2014, Eurocode 8: Design of structures for earthquake resistance - Part 1: General rules, seismic actions and rules for buildings. 7. SR EN 1991-1-3:2005/A1: 2016, Eurocode 1 – Actions on structures – Part 1-3: General actions- snow loads. 8. SR EN 1996-1-2:2005 Eurocode 6: Design of masonry structures – Part 1-2 General rules – Structural fire design 9. SR EN 1996-2:2006 Eurocode 6: Design of masonry structures. Part 2: Design considerations, selection of materials and execution of masonry. 10. SR EN 1996-3:2006. Design of masonry structures. Part 3: Simplified calculation methods for unreinforced masonry structures. 11. SR EN 1052-1:2001. Methods of test for masonry- Part 1: Determination of compressive strength 12. SR EN 1052-2:2001 Methods of test for masonry- Part 2: Determination of flexural strength 13. SR EN 1052-3:2003. Methods of test for masonry- Part 2: Determination of initial shear strength. 14. SR EN 998-2: 2011. Specification for mortar for masonry- Part2: Masonry mortar. 15. Indicativ CR6-2013. Cod de proiectare pentru structuri din zidărie. 16. Indicativ P 100-1/2013. Cod de proiectare seismică — Partea I — Prevederi de proiectare pentru clădiri. 17. Indicativ NE 036-2014. Cod de practica privind executarea si urmarirea executiei lucrarilor de zidarie. 		
8.2. Applications/Seminars		
Project theme: Block of flats having masonry wall structure with 4 or 5 stories.		
Current floor and ground floor plan. Cross section. Details (walls, floors, terrace roof, basement walls).		
Preliminary design of buildings. Selection of materials and number of floors above ground. Evaluation of vertical and horizontal loads.		
Calculation of active cross section areas of masonry walls. Finding the axial loads derived from vertical loading. Verification of masonry walls subjected to vertical loading.		
The geometrical characteristics of masonry walls. The stiffness characteristics of structural walls. Equivalent moment of inertia. Distribution of total horizontal load among the transversal shear walls.		
Calculation of MED, NEd, VEd coming from horizontal loads using the equivalent frame method.		
Statical analysis of masonry building using different software.		
Verification of structural masonry walls during compression and bending in the wall plane.		
Verification of masonry walls to shear.	Presentation, Video-projector	Video-projector

Reinforcement plans for confined elements (lintel beams, tie-beams, and tie-columns).		
Final verification.		
Bibliography 1) Marusciac D., Dumitraș M., Andreica H.-A., Bogdanovits P., Munteanu C., Proiectarea structurilor etajate pentru construcții civile, Ed. Tehnică, 2000. 2) SR EN 1991-1-1:2004/AC:2009, Eurocode 1: Actions on structures – Part 1-1: General actions, - densities, self-weight, imposed loads for buildings. 3) SR EN 1991-1-3:2005/A1:2016, Eurocode 1 – Actions on structures – Part 1-3: General actions- snow loads. 4) SR EN 1998-1:2004/A1:2014, Eurocode 8: Design of structures for earthquake resistance - Part 1: General rules, seismic actions and rules for buildings. 5) SR EN 1996-2:2006 Eurocode 6: Design of masonry structures. Part 2: Design considerations, selection of materials and execution of masonry. 6) Indicativ CR6-2013. Cod de proiectare pentru structuri din zidărie. 7) Indicativ P 100-1/2013. Cod de proiectare seismică — Partea I — Prevederi de proiectare pentru clădiri. 8) Indicativ CR0-2012. Cod de proiectare. Bazele proiectării construcțiilor. 9) Indicativ CR 1-1-3/2012. Cod de proiectare. Evaluarea acțiunii zăpezii asupra construcțiilor.		

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

10. Evaluation

Activity type	10.1 Assessment criteria	10.2 Assessment methods	10.3 Weight in the final grade
10.4 Course	The exam consists of the verification of the acquired knowledge through a quiz (T).	Quiz (T), 45 min.	70%
10.5 Applications	Verification of the project (P).	Microsoft Power Point presentation, 15 min.	30%
10.6 Minimum standard of performance Condition for admission to the exam: attendance at min project meeting in acc. to the Regulation on the professional activity of students using the ECTS system; delivery of the project in time.			
G= 0,70 T + 0,30 P if T ≥ 5 and P ≥ 5			

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Date of filling in: 20.06.2025		Name	Signature
	Lecturer	Assoc. Prof. Nicoleta Cobîrzan, eng., PhD	
	Teachers in charge of application	Assoc. Prof. Nicoleta Cobîrzan, eng., PhD	

Date of approval in the department of CCM

20/06/2025

Head of department

Assoc. Professor Claudiu Aciu, Eng., PhD

Date of approval in the faculty

25/06/2025

Dean

Professor Daniela Lucia MANEA, Eng., PhD