

## 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	Constructii civile si management
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	58.0

### 2. Data about the subject

2.1	Subject name				Tehnologia lucrarilor de constructii II						
2.2	Course responsible/lecturer				Conf. dr.ing. dr.ec. Dorin MAIER -dorin.maier@ccm.utcluj.ro						
2.3	Teachers in charge of seminars				Conf. dr.ing. dr.ec. Dorin MAIER -dorin.maier@ccm.utcluj.ro						
2.4	Year of study	4	2.5	Semester	1	2.6	Assessment	E	2.7	Subject category	DS/DI

### 3. Estimated total time

3.1	Number of hours per week	5	3.2	of which, course:	3	3.3	applications:	
3.4	Total hours in the curriculum	70	3.5	of which, course:	42	3.6	applications:	
Individual study								hours
Manual, lecture material and notes, bibliography								28
Supplementary study in the library, online and in the field								7
Preparation for seminars/laboratory works, homework, reports, portfolios, essays								15
Tutoring								2
Exams and tests								3
Other activities								0
3.7	Total hours of individual study	55						
3.8	Total hours per semester	125						
3.9	Number of credit points	5						

### 4. Pre-requisites (where appropriate)

4.1	Curriculum	Promoting discipline: Building Technology (I)
4.2	Competence	Not applicable

### 5. Requirements (where appropriate)

5.1	For the course	<p>The room is equipped with a video projector.</p> <p>Students will not attend lectures with open mobile phones. Also, telephone conversations will not be tolerated during the course, nor will students leave the classroom for personal phone calls.</p> <p>In special situations, the activities can be carried out online.</p> <p>Some activities within the courses can also be carried out through site visits.</p>
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5.2	For the applications	<p>The teacher will set the deadline for the project submission in agreement with the students. For late project delivery, the mark will be down 1 point / day of delay.</p> <p>In special situations, the activities can be carried out online.</p> <p>Some activities within the applications can also be carried out through site visits.</p>
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## 6. Specific competences

Professional competences	<p>C3.1 Description of technological processes for civil, industrial and agricultural construction. After passing the discipline the students will know: the execution technology of forming, reinforcing, concreting of reinforcing concrete elements or monolith reinforced concrete; method of construction by sliding; special procedures for concreting: vacuuming, centrifuging, vibropressing, torque casting, casting of concrete under water; assembly technology for prefabricated elements; machinery, technological equipment and means of transport for making monolithic and prefabricated reinforced concrete structures.</p> <p>C3.3 Designing the technological processes specific to the various phases of realization of the civil, industrial and agricultural construction elements for execution. After passing the discipline the students will be able to: prepare the excavation plan as well as the motion and the balancing plan of the embankments; choose the technological process for the construction of monolithic and prefabricated buildings; elaborate the technological process for constructions by sliding method; elaborates the technological process for building elements by vacuuming, centrifuging, vibropressing, torcreating etc.; choose the technical means (machines, equipment-technological installations, means of transport) for the construction; calculate and dimensioning the technological equipment (formwork); draw up the technological project for a construction (written pieces and drawings) using the technological processes.</p> <p>C3.5 Transposition of selected technologies into the technological project for civil, industrial and agricultural construction. After passing the discipline students will be able to: design the technological processes specific to the phases of realization of monolithic and prefabricated reinforced concrete elements; selects the execution technologies, the machinery, the means of transport and the technological equipment for building construction; transposes the technology of execution and the means of work selected in the technological process of building construction; elaborate technological sheets for the forming, reinforcement, concreting, decoking, prefabrication.</p>
Cross competences	<p>CT1 Apply effective responsive, punctuality, seriousness and personal responsibility strategies based on the principles, norms and values of professional ethics. Drafting and presenting a technical report in accordance with specific technical regulations;</p> <p>CT2 Applying efficient teamwork techniques on different hierarchical levels. Achieving a technological project in team with respect to the technical - scientific content.</p>

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

7.1	General objective	Developing skills on how to build a building (technological processes and technical means).
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7.2	Specific objectives	Assimilation of knowledge on specific technologies for realization of monolithic and prefabricated reinforced concrete constructions and dimensioning of technological equipment
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## 8. Contents

8.1. Lecture (syllabus)	Teaching methods	Notes
1. Designing the digging plan. The embankments movement and balance scheme	-	-
2. Formwork execution technology: definitions, classifications, technical conditions and technological rules of the formwork		
3. Formwork assembly and its component parts: table, local stiffening elements, supports, bracings, supports, elements of assembly, alignment and security Vertical formwork for the construction of walls and pillars		
4. Horizontal formwork for the construction of beams and slabs; formwork for elevations and foundations. Formwork systems of industrial type		
5. Formwork calculus. Control and reception of the formwork, demoulding		
6. The execution technology of the constructions through sliding: sliding method; the composition of the sliding formwork		
7. Reinforcement technology: technical conditions and technological rules concerning reinforcement, processing, assembling and fitting of reinforcements.		
8. Concreting execution technology: concrete properties and factors that influence them, technological process of preparation and transport of concrete.		
9. Concrete casting (preparatory works, concreting technology rules, technological joints.		
10. Concrete compaction by vibration.		
11. Special procedures for concreting: vacuuming, centrifuging, vibropressing, casting, injection, casting concrete under water.		
12. Mounting technology of prefabricated elements: Transport and storage, hanging and handling / assembly of prefabricated elements. Types of equipment used to mount prefabricated elements.		
13. Operations and mounting methods. Mounting precast reinforced concrete elements to industrial halls		
14. Mounting of buildings from large prefabricated panels Technological design in construction: content and presentation of technological documentation		
Bibliography		
Bibliography		
1. Lecture notes		
2. NE-012 - Normativ pentru producerea betonului și executarea lucrărilor de construcții din beton, beton armat și beton precomprimat , partea 1/2022 - producerea betonului și partea 2/2022 - executarea lucrărilor din beton		
3. NE-013 – Cod de practică pentru execuția elementelor prefabricate din beton, beton armat și beton precomprimat		
4. Blankenbaker K. - Construction & Building Technology, Goodheart-Willcox, 2012		
5. Peurifoy R., Oberlender G. - Formwork for Concrete Structures, McGraw-Hill, 2011		
6. Zongjin Li - Advanced Concrete Technology, John Wiley & Sons, Inc., Hoboken, New Jersey, 2011		

<p>7. Kind-Barkauskas F., Kauhsen B., Polonyi S., Brandt J. - Concrete Construction Manual, Birkhäuser; 1st Edition, 2002</p> <p>8. Domșa, J., Ionescu, A. – Utilaje, echipamente tehnologice și procedee performante de betonare, Editura OID.ICM, București, ISBN 973-9187-11-0, 1994</p> <p>9. Domșa, J., Vescan, V., Moga, A. – Tehnologia lucrărilor de construcții și tehnologii speciale, vol.I, Institutul Politehnic Cluj-Napoca, 1987</p>		
8.2. Applications/Seminars	Teaching methods	Notes
Part I: Designing the technological sheet for the execution of a multi-level building - Project theme presentation and bibliographic material. Elaboration of the excavation plan;	-	-
Establishing infrastructure technology. Recalculating job volumes and corrected antecedents. Drawing up the list of technological flows for the infrastructure		
Selection and calculation of equipment, technological equipment and means of transport, for infrastructure, sectorization, movement scheme and balancing of earthworks;		
Designing the Fact Sheets for Technological Flows to Infrastructure		
Preparation of the list of technological flows and segmentation of the superstructure.		
Choosing and calculating the equipment, technological equipment and means of transport for the superstructure;		
Design of the technological flow sheets for the superstructure;		
Drawing up of technological schemes for superstructure (drawings);		
Formwork design and calculation: compliance, load rating and sizing;		
Formation of dimensioned formwork (drawing). Drawing up the technical memo on infrastructure and superstructure.		
11. Special procedures for concreting: vacuuming, centrifuging, vibropressing, casting, injection, casting concrete under water.		
Choosing the optimal equipment necessary for the manipulation and assembly of the prefabricated elements. Drawing up the sheet with the mounting characteristics of the chosen machines;		
Design of technological schemes for two prefabricated elements (drawings); Design of overall technological schemes (drawings)		
<p>Bibliography</p> <p>1. NE-012 - Normativ pentru producerea betonului și executarea lucrărilor de construcții din beton, beton armat și beton precomprimat , partea 1/2022 - producerea betonului și partea 2/2022 - executarea lucrărilor din beton</p> <p>2. NE-013 – Cod de practică pentru execuția elementelor prefabricate din beton, beton armat și beton precomprimat</p> <p>3. Domșa, J., Vescan, V., Moga, A. – Tehnologia lucrărilor de construcții și tehnologii speciale, vol.I, Institutul Politehnic Cluj-Napoca, 1987</p> <p>4. Blankenbaker K. - Construction &amp; Building Technology, Goodheart-Willcox, 2012</p>		

## Bibliography

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

The contents cover fundamental themes of the discipline which ensure the familiarization of the students with the subject specific to the discipline.

The content of the discipline is addressed in an interdisciplinary way so as to stimulate the initiative, independence in thinking, critical analysis and creative thinking. This is the basis of students training for the necessary competences in the scientific research and the necessary professional and cross competencies of the graduates to efficient and creative solve the new work problems and situations;

### 10. Evaluation

Activity type	10.1 Assessment criteria	10.2 Assessment methods	10.3 Weight in the final grade
10.4 Course	Written test	Written part – 2 hours	70 %
10.5 Applications	Submitting a project	Oral presentation	30 %
Obs: The written test can be followed by an oral assessment (assessment of the papers in the presence of students). In special situations the assessment activities can be carried out online.			
10.6 Minimum performance standard			
a) Eligibility for attendance at the exam: attendance at min. 12 (twelve) laboratory sessions and on-time delivery of the works.			
The project mark (will be written in the electronic catalogue): (P) min. 5 (five)			
(b) Theory mark (T): min. 5(five)			
The mark formula: $E = 0.7(T) + 0.3(P)$			
The condition of promoting / obtaining credits: $E \geq 5$ , if $T \geq 5$ , $P \geq 5$ .			
OBS: For the final grade, the student's presence and activity during the semester will also be taken into account			

Date of filling in:		Title Surname Name	Signature
17.06.2025	Lecturer	Conf. dr.ing. dr.ec. Dorin MAIER	
	Teachers in charge of application	Conf. dr.ing. dr.ec. Dorin MAIER	

Date of approval in the department .....	Head of department conf.dr.ing. Caludiu ACIU
20/06/2025	
Date of approval in the faculty .....	Dean prof.dr.ing Daniela MANEA
25/06/2025	