

## 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	Structures
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	57.0

### 2. Data about the subject

2.1	Subject name				Structuri din beton armat II - proiect						
2.2	Course responsible/lecturer				Conf.Dr.Ing. Puskas Attila-Attila.Puskas@dst.utcluj.ro						
2.3	Teachers in charge of seminars				Asist.Dr.Ing. Virag Jacint-Laszlo-Jacint.Virag@dst.utcluj.ro						
2.4	Year of study	4	2.5	Semester	1	2.6	Assessment	C	2.7	Subject category	DS/DI

### 3. Estimated total time

3.1	Number of hours per week	3	3.2	of which, course:	-	3.3	applications:	
3.4	Total hours in the curriculum	42	3.5	of which, course:	-	3.6	applications:	
Individual study								hours
Manual, lecture material and notes, bibliography								3
Supplementary study in the library, online and in the field								4
Preparation for seminars/laboratory works, homework, reports, portfolios, essays								15
Tutoring								3
Exams and tests								3
Other activities								5
3.7	Total hours of individual study	33						
3.8	Total hours per semester	75						
3.9	Number of credit points	3						

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

4.1	Curriculum	Curriculum
4.2	Competence	Competence

### 5. Requirements (where appropriate)

5.1	For the course	For the course
5.2	For the applications	For the applications

## 6. Specific competences

Professional competences	<p>The student shall be familiar with reinforced concrete structural systems for single-story and multi-story building</p> <p>The student shall be able to use the up to date design norms and standards</p> <p>The student shall be familiar with the design tools and software used on the field</p>
Cross competences	<p>Responsible fulfilment of the professional duties, as autonomous entity but under qualified assistance</p> <p>Applying of the efficient and responsible strategies for consequent work, understanding the sense of the personal responsibility for achieving the result</p> <p>Acquaintance with the different roles, tasks and levels in a teamwork, establishing the proper strategies and attitudes</p> <p>Understanding the need for continuous learning, for efficient use of the available resources and techniques</p>

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

7.1	General objective	General objective
7.2	Specific objectives	Specific objectives

## 8. Contents

8.1. Lecture (syllabus)	Teaching methods	Notes
	-	-
Bibliography		
8.2. Applications/Seminars	Teaching methods	Notes
Launching design theme: designing a multi-story reinforced concrete frame building. Presentation of the structure	-	-
Interactive process for establishing and compiling floor, roof and wall subassemblies. Pre-dimensioning of horizontal structural elements.		
Assessing wind and snow loads		
Evaluating the value of the seismic base shear value. Load cases.		

Pre-dimensioning of columns. Setting the design simplifications and axes of the structure		
Presentation method of the FEM calculation model. Static calculation of the structure – example presentation		
Detailing rules for reinforced concrete slabs. Examples		
Detailing rules for reinforced concrete beams. Examples		
Ductility provisions for reinforced concrete frame structures		
Design of longitudinal reinforcements in beams. Ultimate bending moments. Shear design		
Detailing rules for concrete columns.		
Formwork plan and reinforcement plan. Reinforcement drawing details		
Bill of quantities. Project evaluation		
Bibliography Bibliography Agent R., Dumitrescu D., Postelnicu D.: Îndrumător pentru calculul și alcătuirea elementelor de beton armat, Editura Tehnică, București, 1992 Z. Kiss, T. Oneț – Proiectarea structurilor de beton după SR – EN 1992-1, Abel 2008 A. Puskas, V. Jacint, A. Faur, Îndrumător pentru proiectarea structurilor în cadre din beton armat. Clasa de ductilitate medie, Editura U.T. Press, 2015 T. Draycott, P. Bullman, Structural elements design manual: Working with Eurocodes, Elsevier, 2009 J. Calavera, Manual for detailing reinforced concrete structures to EC2, Spoon Press, 2011 NE 012-1: 2022: Normativ pentru producerea betonului și executarea lucrărilor din beton, beton armat și beton precomprimat. Partea 1: producerea betonului NE 012/2 - 2022: Normativ pentru producerea betonului și executarea lucrărilor din beton, beton armat și beton precomprimat. Partea 2: Executarea lucrărilor din beton NE 013: Cod de practică pentru execuția elementelor prefabricate din beton, beton armat și beton precomprimat P100-1/2013: Cod de proiectare seismică — Partea I — Prevederi de proiectare pentru clădiri SR EN 1990-2004: Bazele proiectării structurilor SR EN 1992-1-1. Eurocod 2: Proiectarea structurilor de beton, 2004 SR EN 1991-1-1-2004: Acțiuni asupra structurilor SR EN ISO 3766:2002 ver.eng. (Superseded Standard): Construction drawings - Simplified representation of concrete reinforcement (ISO 3766:1995) Virtual didactic materials FEM software packages MS Office package		

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

The accumulated knowledge consists a necessary package for the civil engineers on the construction market, as designer, consultant, project manager or site engineer, in private or public sector, for residential, public, agricultural or industrial projects

## 10. Evaluation

Activity type	10.1 Assessment criteria	10.2 Assessment methods	10.3 Weight in the final grade
10.4 Course	-	-	-
10.5 Applications	Structural design application / project	Practical testing/interview – evaluation of the design project (1/2 hour) – onsite (or online, via Teams, as it is legally imposed)	Practical testing/interview – evaluation of the design project (1/2 hour) – onsite (or online, via Teams, as it is legally imposed)
10.6 Minimum standard of performance			
For fulfilling the discipline, a successful project submittal (oral) with is mandatory			

Date of filling in:		Title Surname Name	Signature
	Lecturer	Conf.Dr.Ing. Puskas Attila	
	Teachers in charge of application	Asist.Dr.Ing. Virag Jacint-Laszlo	

Date of approval in the department .....	Head of department conf.dr.ing. Attila Puskas
18/06/2025	
Date of approval in the faculty .....	Dean prof.dr.ing Daniela MANEA
25/06/2025	