

SYLLABUS ¹

1. Information about the program

1.1 Higher education institution	POLITEHNICA UNIVERSITY TIMISOARA
1.2 Faculty ² / Department ³	FACULTY OF CIVIL ENGINEERING / DEPARTMENT OF CIVIL ENGINEERING AND BUILDING SERVICES ENGINEERING
1.3 Chair	—
1.4 Field of study (name/code ⁴)	CIVIL ENGINEERING / 80
1.5 Study cycle	BACHELOR
1.6 Study program (name/code/qualification)	CIVIL ENGINEERING IN ENGLISH / 10 / ENGINEER

2. Information about the discipline

2.1 Name of discipline/ formative category ⁵	Reinforced and and Prestressed Concrete Structures / DS						
2.2 Coordinator (holder) of course activities	Assoc.Prof. Sorin DAN						
2.3 Coordinator (holder) of applied activities ⁶	Assoc.Prof. Sorin DAN						
2.4 Year of study ⁷	4	2.5 Semester	7	2.6 Type of evaluation	E	2.7 Type of discipline ⁸	DI

3. Total estimated time – hours / semester: direct teaching activities (fully assisted or partly assisted) and individual training activities (unassisted) ⁹

3.1 Number of fully assisted hours / week	5,0 of which:	3.2 course	2,5	3.3 seminar / laboratory / project	2,5
3.1* Total number of fully assisted hours / semester	70 of which:	3.2* course	35	3.3* seminar / laboratory / project	35
3.4 Number of hours partially assisted / week	of which:	3.5 training		3.6 hours for diploma project elaboration	
3.4* Total number of hours partially assisted / semester	of which:	3.5* training		3.6* hours for diploma project elaboration	
3.7 Number of hours of unassisted activities / week	2,5 of which:	additional documentary hours in the library, on the specialized electronic platforms and on the field			0,5
		hours of individual study after manual, course support, bibliography and notes			1,0
		training seminars / laboratories, homework and papers, portfolios and essays			1,0
3.7* Number of hours of unassisted activities / semester	35 of which:	additional documentary hours in the library, on the specialized electronic platforms and on the field			7
		hours of individual study after manual, course support, bibliography and notes			14
		training seminars / laboratories, homework and papers, portfolios and essays			14
3.8 Total hours / week ¹⁰	7,5				
3.8* Total hours /semester	105				
3.9 Number of credits	5				

4. Prerequisites (where applicable)

4.1 Curriculum	• Mechanics of Materials 1, 2; Structural Analysis 1, 2; Concrete 1, 2
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¹ The form corresponds to the Discipline File promoted by OMECTS 5703 / 18.12.2011 and to the requirements of the ARACIS Specific Standards valid from 01.10.2017.

² The name of the faculty which manages the educational curriculum to which the discipline belongs

³ The name of the department entrusted with the discipline, and to which the course coordinator/holder belongs.

⁴ The code provided in HG no.140 / 16.03.2017 or similar HGs updated annually shall be entered.

⁵ Discipline falls under the educational curriculum in one of the following formative disciplines: Basic Discipline (DF), Domain Discipline (DD), Specialist Discipline (DS) or Complementary Discipline (DC).

⁶ Application activities refer to: seminar (S) / laboratory (L) / project (P) / practice/training (Pr).

⁷ Year of studies in which the discipline is provided in the curriculum.

⁸ Discipline may have one of the following regimes: imposed discipline (DI), optional discipline (DO) or optional discipline (Df).

⁹ The number of hours in the headings 3.1 *, 3.2 *, ..., 3.8 * is obtained by multiplying by 14 (weeks) the number of hours in headings 3.1, 3.2, ..., 3.8. The information in sections 3.1, 3.4 and 3.7 is the verification keys used by ARACIS as: (3.1) + (3.4) ≥ 28 hours / wk. and (3.8) ≤ 40 hours / wk.

¹⁰ The total number of hours / week is obtained by summing up the number of hours in points 3.1, 3.4 and 3.7.

4.2 Competencies	<ul style="list-style-type: none"> Documentation in Romanian and English technical language, Knowledge of mechanics of materials, structural analysis, concrete
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5. Conditions (where applicable)

5.1 of the course	<ul style="list-style-type: none"> Classroom of medium capacity, Laptop, Projector, Blackboard, Models
5.2 to conduct practical activities	<ul style="list-style-type: none"> Classroom of medium capacity, Laptop, Projector, Blackboard, Models, Drawings

6. Specific competencies acquired through this discipline

Specific competencies	<ul style="list-style-type: none"> Understanding the behaviour and design of reinforced and prestressed concrete structures
Professional competencies ascribed to the specific competencies	<ul style="list-style-type: none"> Recognizing typical structures and structural elements, specific to the graduated study programme Design of structural elements in civil engineering, specific to graduated study programme
Transversal competencies ascribed to the specific competencies	<ul style="list-style-type: none"> Documentation in Romanian and foreign language, in view of professional and personal development, via continuous learning and efficient adaptation to the new technical specifications

7. Objectives of the discipline (based on the grid of specific competencies acquired - pct.6)

7.1 The general objective of the discipline	<ul style="list-style-type: none"> The course objectives are to present to the students the behaviour and design of reinforced and prestressed concrete structures. It aims at providing an overview of reinforced concrete structures, an understanding of the behaviour and structural response at different actions, a presentation of different reinforced concrete elements and structures.
7.2 Specific objectives	<ul style="list-style-type: none"> After completion of the course students should be able to choose the most suitable reinforced concrete structure and elements for a given building, understand the general and specific behaviour of a reinforced concrete structure, design a structure at different actions and do the general and specific detailing of a reinforced or prestressed concrete structure and the component elements. Based on actual codes, students will be able to design and detail the concrete structures.

8. Content ¹¹

8.1 Course	Number of hours	Teaching methods ¹²
Introduction: Types of structures, general behaviour and principles of design.	1,0	lecturing, conversation, demonstration
Reinforced concrete slabs and floors: Floors with beams; Floors without beams; Precast floors; Special floors.	7,5	

¹¹ It details all the didactic activities foreseen in the curriculum (lectures and seminar themes, the list of laboratory works, the content of the stages of project preparation, the theme of each practice stage). The titles of the laboratory work carried out on the stands shall be accompanied by the notation "(*)".

¹² Presentation of the teaching methods will include the use of new technologies (e-mail, personalized web page, electronic resources etc.).

Vertical structures: Analysis at different actions and detailing; Multi-storey frames; Single-storey frames; Shear walls structures; Composite frame-wall structures; Rigid reinforcement structures; Deep beams.	15,0	
Precast structures: Precast elements; Single-storey frames; Multi-storey frames; Detailing.	5,0	
Prestressed concrete structures: Prestressed concrete elements; Prestressed concrete floors; Prestressed concrete frames.	2,5	
Strengthening of concrete structures: Classical and modern technologies of strengthening; Methods of strengthening for concrete slabs, beams, columns etc.; Examples of strengthening.	4,0	
Bibliography ¹³		
1. Dan S., Bob C. (2014). "Reinforced and Prestressed Concrete Structures". Ed. Eurostampa, Timisoara		
2. Cod P 100-1/2013. Cod de proiectare seismică – Partea I – Prevederi de proiectare pentru clădiri		
3. SR EN 1992-1-1 (2004). "Eurocode 2: Design of concrete structures - Part 1-1: General rules and rules for buildings"		
8.2 Applied activities ¹⁴	Number of hours	Teaching methods
Project: Design of a reinforced concrete multi-storey frame structure: structural analysis at different actions; design of beams and columns; general and specific detailing; drawings.	35	practical examples, lecturing, conversation, demonstration, drawings
Bibliography ¹⁵		
1. Dan S. (2014). "Structuri in cadre din beton armat. Indrumator de proiectare", Ed. Eurostampa, Timisoara		
2. Cod P 100-1/2013. Cod de proiectare seismică – Partea I – Prevederi de proiectare pentru clădiri.		
3. SR EN 1992-1-1 (2004). "Eurocode 2: Design of concrete structures - Part 1-1: General rules and rules for buildings"		

9. Corroboration of the content of the discipline with the expectations of the main representatives of the epistemic community, professional associations and employers in the field afferent to the program

<ul style="list-style-type: none"> University of Liege, Belgium Technical University Munich, Germany
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10. Evaluation

Type of activity	10.1 Evaluation criteria ¹⁶	10.2 Evaluation methods	10.3 Share of the final grade
10.4 Course	Theoretical subjects and a design problem	Written exam	60%
10.5 Applied activities	S:		40%

¹³ At least one title must belong to the discipline team and at least one title should refer to a reference work for discipline, national and international circulation, existing in the UPT library.

¹⁴ Types of application activities are those specified in footnote 5. If the discipline contains several types of applicative activities then they are sequentially in the lines of the table below. The type of activity will be in a distinct line as: "Seminar:", "Laboratory:", "Project:" and / or "Practice/training".

¹⁵ At least one title must belong to the discipline team.

¹⁶ Syllabus must contain the procedure for assessing the discipline, specifying the criteria, methods and forms of assessment, as well as specifying the weightings assigned to them in the final grade. The evaluation criteria shall be formulated separately for each activity foreseen in the curriculum (course, seminar, laboratory, project). They will also refer to the forms of verification (homework, papers, etc.)

	L:		
	P¹⁷: Structural design project	Project evaluation and in-class activity during the semester	
	Pr: Students are expected to attend and participate in every class session.	The attendance is monitored.	
10.6 Minimum performance standard (minimum amount of knowledge necessary to pass the discipline and the way in which this knowledge is verified ¹⁸)			
<ul style="list-style-type: none"> The answers to the exam subjects must accumulate a minimum score of 5 points out of 10 possible. 			

Date of completion

Jan. 23, 2018

**Head of Department
(signature)**

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**Course coordinator
(signature)**

**Date of approval in the Faculty
Council ¹⁹**

12.02.2018

**Coordinator of applied activities
(signature)**

**Dean
(signature)**

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¹⁷ In the case where the project is not a distinct discipline, this section also specifies how the outcome of the project evaluation makes the admission of the student conditional on the final assessment within the discipline.

¹⁸ It will not explain how the promotion mark is awarded.

¹⁹ The endorsement is preceded by the discussion of the board's view of the study program on the discipline record.