

SYLLABUS ¹

1. Information about the program

1.1 Higher education institution	Politehnica University Timisoara
1.2 Faculty ² / Department ³	Civil Engineering Faculty / Civil constructions and Installations Department
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 / Civil Engineer

2. Information about the discipline

2.1 Name of discipline/ formative category ⁵	Special R.C. Structures / DS						
2.2 Coordinator (holder) of course activities	Ș.I. Dr. Ing. FLORUȚ Sorin-Codruț						
2.3 Coordinator (holder) of applied activities ⁶	Ș.I. Dr. Ing. FLORUȚ Sorin-Codruț						
2.4 Year of study ⁷	IV	2.5 Semester	7	2.6 Type of evaluation	D	2.7 Type of discipline ⁸	DO

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	4 of which:	3.2 course	2	3.3 seminar / laboratory / project	2
3.1* Total number of fully assisted hours / semester	56 of which:	3.2* course	28	3.3* seminar / laboratory / project	28
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 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			0,5
		training seminars / laboratories, homework and papers, portfolios and essays			1
3.7* Number of hours of unassisted activities / semester	28 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			7
		training seminars / laboratories, homework and papers, portfolios and essays			14
3.8 Total hours / week ¹⁰	6				
3.8* Total hours /semester	84				
3.9 Number of credits	5				

4. Prerequisites (where applicable)

4.1 Curriculum	• Structural analysis, Concrete 1, Concrete 2
4.2 Competencies	•

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.

5. Conditions (where applicable)

5.1 of the course	<ul style="list-style-type: none"> Average capacity classroom. Support: laptop, projector, whiteboard
5.2 to conduct practical activities	<ul style="list-style-type: none"> Computer room. Whiteboard

6. Specific competencies acquired through this discipline

Specific competencies	<ul style="list-style-type: none"> Acquire knowledge about the main data concerning calculation and detailing of some special 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 emphasizes on important approach of conformation and structural design of special structures. Provide students with the general knowledges that is necessary for the structural engineer when designing and executing construction works, also providing them with a skillful approach of detailing structural elements..
7.2 Specific objectives	<ul style="list-style-type: none"> Provide students with knowledge about the main data concerning calculation and detailing of some special concrete structures.

8. Content ¹¹

8.1 Course	Number of hours	Teaching methods ¹²
Liquid storage structures - ground tanks	4	Whiteboard and PPT Presentations
Water storage structures - elevated tanks	2	
Seismic design of large water tanks	2	
Granular material storage constructions: bunkers and silos	4	
Tower-type constructions: water tower; chimneys	4	
R-TV towers	2	
Hydro-technical structures: dams; spillways; locks; headrace; gates; intakes; hydropower plant; surge tank	3	
Special structures foundations	7	

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.).

Bibliography ¹³ O. Mârşu, R. Friedrich - Structuri speciale din beton armat P73/1978
Portland Cement Association - Rectangular Concrete Tanks - 1998
Portland Cement Association - Circular concrete tanks without prestressing - 1992
ACI 350.4R-04 - Design Considerations for Environmental Engineering Concrete Structures
ACI 350.3-06 - Seismic Design of Liquid-Containing Concrete Structures and Commentary

8.2 Applied activities ¹⁴	Number of hours	Teaching methods
Design a ground or underground reinforced concrete water tank	10	Whiteboard presentations, computer software presentations and discussions
Design of a reinforced concrete bunker	8	
Seismic design of a large water tank	3	
Design of special foundation systems	7	

Bibliography ¹⁵ O. Mârşu, R. Friedrich - Structuri speciale din beton armat
ACI 350.3-06 - Seismic Design of Liquid-Containing Concrete Structures and Commentary
Structural Design Software Documentation

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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

- The employers appreciate the computational skills the students develop as well as the general knowledge concerning special reinforced concrete structures.

10. Evaluation

Type of activity	10.1 Evaluation criteria ¹⁶	10.2 Evaluation methods	10.3 Share of the final grade
10.4 Course	Correct answers to the questions related to the topic	Oral examination	67%
10.5 Applied activities	S:		
	L:		
	P¹⁷: Written calculations and drawings	Q/A on the project	28%
	Pr: Attendance	Attendance list	5%
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"> Answers in the oral exam must cumulate minimum 5 points out of maximum 10 			

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.)

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.

Date of completion

January 22th, 2018

**Course coordinator
(signature)**

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**Coordinator of applied activities
(signature)**

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**Head of Department
(signature)**

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

12.02.2018

**Dean
(signature)**

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