SYLLABUS [1]

1. Information about the program

1.1 Higher education institution	Politehnica University of Timisoara
1.2 Faculty[2]/ Department [3]	Faculty of Civil Engineering / Department of Steel Structures and Structural Mechanics
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]	Basis of Structural Design / Specialist Discipline (DS)						
2.2 Coordinator (holder) of course activities	Conf.dr.ing. Aurel Stratan						
2.3 Coordinator (holder) of applied activities[6]	Ș.l.dr.ing. Ioan Both						
2.4 Year of study[7]	2	**2.5** Semester	4	**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	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	4				

4. Prerequisites (where applicable)

4.1 Curriculum	• Material Science 2 • Mechanics of Materials 2

[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	• -

5. Conditions (where applicable)

5.1 of the course	• Engaging in phone calls or personal discussions that may distract the attention of other participants are not allowed.
5.2 to conduct practical activities	• Engaging in phone calls or personal discussions that may distract the attention of other participants are not allowed. Deadlines for submitting homework are strict.

6. Specific competencies acquired through this discipline

Specific competencies	• Understanding structural design by learning about possible structural forms suitable for a given building and understanding the load paths through a structure
Professional competencies ascribed to the specific competencies	• 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	• 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	• To initiate the student in the process of structural design. • Provide an overview of different structural materials and their properties • Provide understanding of the different forms of structural action, load paths, the process of structural design, types of loads, as well as code-based design of structures using the principle of limit states.
7.2 Specific objectives	• Identification of possible structural forms suitable for a given building and its correlation with the structural material used. • Understanding the load paths through a structure. • Evaluation of design values of most common actions on structures (permanent, imposed, snow and wind loads). • Design simple structures using the partial factor method using the principles of limit state design.

8. Content [11]

8.1 Course	Number of hours	Teaching methods [12]
Structures and principles of design; Structural materials.	2	Lecturing, conversation,
Structural action (Cables and arches; Trusses and beams; Prestressing; Plates and shells; Cable structures; Multi-storey	10	

[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.).

buildings; Foundations; General remarks on structural action).		explication, demonstration
The process of structural design and load paths.	2	
Design codes (Structural Eurocodes; Romanian codes)	2	
Actions (Permanent loads; Live loads; Snow loads; Wind loads; Earthquake action; Other loads).	4	
Principles of limit states (Design requirements; Limit states; Basic variables; The partial factor method).	6	
Building design, construction and maintenance	2	

Bibliography [13]

1. Stratan A. (2015). "Basis of Structural Design". http://www.ct.upt.ro/users/AurelStratan/bsd.htm, 229 p.
2. Francis, A.J. (1989). "Introducing Structures". Ed. Ellis Horwood, ISBN: 978-0745807591.
3. Philip Garrison (2005). “Basic Structures for Engineers and Architects”. Ed. Blackwell Publishing. ISBN 13 978-14051-2053-1
4. EN 1990 (2002). "Eurocode - Basis of structural design". CEN - European Committee for Standardization.

8.2 Applied activities [14]	Number of hours	Teaching methods
Structural action: - Introduction to structural actions. - Redundancy of structures. Basic properties of structural materials. - Computer simulation of cable action and arch action. - Computer simulation of truss action. - Collaborative contest of a structure realised from paper. - Collaborative contest of a structure realised from wooden sticks. - Computer simulation of typical structures for multistorey buildings: moment-resisting and braced frames.	14	Explication, example, experiment, simulation, problematization
Load paths in typical structures: a multistorey building and an industrial hall	2	
Evaluation of loads: - Evaluation of permanent and imposed loads on structures - Evaluation of snow loads on structures - Evaluation of wind loads on structures	6	
The limit state design of structures: design of simple structures using the partial factor method and the principle of limit states	6	

Bibliography [15]

1. Stratan A. (2015). "Basis of Structural Design". http://www.ct.upt.ro/users/AurelStratan/bsd.htm, 229 p.
2. EN 1990 (2002). "Eurocode - Basis of structural design". CEN - European Committee for Standardization.
3. EN 1991-1-1 (2002). "Eurocode 1: Actions on structures - Part 1-1: General actions - Densities, self-weight, imposed loads for buildings". CEN - European Committee for Standardization.
4. CR 0/2012: Cod de proiectare. Bazele proiectării construcţiilor.
5. CR 1-1-3/2012: Cod de proiectare. Evaluarea acţiunii zăpezii asupra construcţiilor.
6. CR 1-1-4/2012: Cod de proiectare. Evaluarea acţiunii vântului asupra construcţiilor.

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

[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.

- Course content provides essential knowledge for training of structural engineers: understanding of structural action, and ability to apply design codes for evaluation of actions and design of structures. The course ensures acquisition of knowledge and skills that are in line with expectations of representatives of epistemic community, professional associations and representatives of employers.

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 and complete answer to theoretical subjects and correct problem solving	Written exam, composed of theoretical subjects and a problem	60%
10.5 Applied activities	**S:**		
	L:		
	P[17]**:** Solutions of problems and elaboration of several project assignments	Project, homework and in-class assignments during the term	40%
	Pr:		
10.6 Minimum performance standard (minimum amount of knowledge necessary to pass the discipline and the way in which this knowledge is verified [18])			
• Accumulating a score of 50%			

Date of completion	**Course coordinator (signature)**	**Coordinator of applied activities (signature)**
26.01.2018	……	……
Head of Department (signature)	**Date of approval in the Faculty Council** [19]	**Dean (signature)**
……	12.02.2018	……

[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.

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