SYLLABUS [1]

1. Information about the program

1.1 Higher education institution	University Politehnica Timisoara
1.2 Faculty[2]/ Department [3]	Civil Engineering / CCI
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]			Materials and technology for sustainable buildings/DS				
2.2 Coordinator (holder) of course activities			S.l. dr. ing. Simon Pescari,				
2.3 Coordinator (holder) of applied activities[6]			S.l. dr. ing. Simon Pescari				
2.4 Year of study[7]	4	**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	3 of which:	**3.2** course	2	**3.3** seminar / laboratory / project	1
3.1* Total number of fully assisted hours / semester	42 of which:	**3.2*** course	28	**3.3*** seminar / laboratory / project	14
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			1
		training seminars / laboratories, homework and papers, portfolios and essays			0,5
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			14
		training seminars / laboratories, homework and papers, portfolios and essays			7
3.8 Total hours / week [10]	5				
3.8* Total hours /semester	70				
3.9 Number of credits	3				

4. Prerequisites (where applicable)

4.1 Curriculum	• Material Science, Mechanics of Materials, Energy Efficiency , Structural Analysis, Concrete, Masonry Structures

[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	• Application of scientific and engineering principles

5. Conditions (where applicable)

5.1 of the course	• classroom with medium capacity, blackboard, beamer
5.2 to conduct practical activities	• classroom with medium capacity, blackboard, beamer

6. Specific competencies acquired through this discipline

Specific competencies	• Design of structural elements in civil engineering according to national cods regarding energy efficiency and structural design
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	• Acquiring theoretical and practical knowledge for students in the field of sustainable buildings
7.2 Specific objectives	• The aim is to acquire the theoretical and practical skills of knowing the construction technology for sustainable buildings

8. Content [11]

8.1 Course	Number of hours	Teaching methods [12]
Sustainability in construction	2	Lecture, conversations, explanations, examples
Sustainable buildings – energy efficient buildings	6	
Sustainable materials – energy efficient buildings	4	
Principles for energy efficient buildings design	8	
Life cycle cost and life cycle assessment in buildings domain	8	

[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] Florut C., Dan D., Tanasa C. - "Building Physics. Experimental work and analytical examples" Ed. Politehnica 2016

Meritt Frederick, Jonathan Ricketts – Building design and construction handbook, New York, Mc Graw Hill, 2000

Jean Pierre Jacobs – Concrete for energy efficient buildings. The benefit of thermal mass, European Concrete Platform, 2007

Steven Szokolay - Introduction to architectural science, the basis of sustainable design, Elsevier 2008

Hugo Hens – Building Physics, Ernst & Sohn, 2008

Carl Eric Hagentoft – Introduction to building Physics, Student literature, 2001

Hugo Hens - Applied Building Physics: Boundary Conditions, Building Performance and Material Properties, Ernst & Sohn, 2010,

SANTAMOURIS, M., PAPANIKOLAOU, N., KORONAKIS, I. ARIGIRIOU,A., ASSIMAKOPOULOS D.N. ,2001, On the impact of urban climat on the energy,Consumption of buildings. Solar energy 70, 3 (2001) 201-216,

Davis Langdom, 2006, Life Cycle Costing (LCC) as a contribution to sustainable construction: a common methodology

8.2 Applied activities [14]	Number of hours	Teaching methods
Project - energy efficient buildings	4	discussions, questions, solving
Project – Life cycle cost	5	
Project – Life cycle assessment	5	

Bibliography [15] SANTAMOURIS, M., PAPANIKOLAOU, N., KORONAKIS, I. ARIGIRIOU,A., ASSIMAKOPOULOS D.N. ,2001, On the impact of urban climate on the energy, Consumption of buildings. Solar energy 70, 3 (2001) 201-216,

Davis Langdom, 2006, Life Cycle Costing (LCC) as a contribution to sustainable construction: a common methodology

Building Performance Institute Europe (BPIE), 2011 "Principale For nearly Zero- Energy Building",

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

- Students have good knowledge of energy efficient buildings.
- Employers appreciate positively the level of knowledge of graduates

10. Evaluation

Type of activity	**10.1** Evaluation criteria [16]	**10.2** Evaluation methods	**10.3** Share of the final grade
10.4 Course	The content of the answer to questions related to the issues addressed in the course	written exam	66%
10.5 Applied activities	**S:**		

[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:		
	P[17]**:** Evaluation of the design activities	Analysis of written and drawn parts	34%
	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])			
• Promotion is done with a minimum mark of 5 for each evaluation			

Date of completion	**Course coordinator (signature)**	**Coordinator of applied activities (signature)**
25.01.2018	……	……
Head of Department (signature)	**Date of approval in the Faculty Council** [19]	**Dean (signature)**
……	12.02.2018	……

[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.