COURSE DESCRIPTION

Name of the Course:	**SPECIAL REINFORCED CONCRETE AND STEEL STRUCTURES**			Course Code:	**2.DS.OP07**	
Year of study:	**1**	Semester:	**2**	Examination form: (E-Exam; Co-Colloquy; P-Project; P/F-Passed/Failed)		**E**
Course Type: (OB-Compulsory; OP-Elective; FC-Facultative)				**OP**	Credits:	**3**
Contact hours (C):	**28**	Individual study (IS):		**14**	Number of hours per semester (TH):	**42**
Course Category:	(**DF**-Fundamental; **DD**-General engineering; **DS**-Specialty engineering; **DC**-Complementary; **PR**-Practical stage)					**DS**
Course holder (s)	**VOICULESCU DRAGOS (Special Steel Structures) / DIETLINDE KOBER (Special Reinforced Concrete Structures)**					

Faculty	**Engineering in foreign languages**
Field	**Civil Engineering**
Study programme	**Master**
Specialization	**Structural Engineering**

Total of hours per week				
Total	**C**	**S**	**L**	**P**
2	2			

Curriculum prerequisites	None
Description of the main competences:	Particularities of design, general concept and engineering details for special Reinforced Concrete and Steel Structures

Content description:

Course	**Teaching method**	**Nr. of course hours**
1. Reinforced concrete structures – Silos (classification, geometry, historical background in Romania, load categories)	*Classical with digital support*	2
2. Reinforced concrete structures – Silos (stored material properties, vertical silo walls loading, funnel loads, crack control)	*Classical with digital support*	2
3. Reinforced concrete structures – Silos (seismic input, seismic design)	*Classical with digital support*	2
4. Reinforced concrete structures – Silos (Janssens equations, specific requirements, practical calculation, damage to silos)	*Classical with digital support*	2
5. Reinforced concrete structures – Chimneys (classification, components, annex elements, thermal caharcteristics)	*Classical with digital support*	2

6. Reinforced concrete structures – Chimneys (design for vertical and horizontal loads)	*Classical with digital support*	2
7. Reinforced concrete structures – Particularities of the seismic design for special civil engineering structures	*Classical with digital support*	2
8. Steel plate structures – Tanks (Part 1 - particularities of design, general concept)	*Classical with digital support*	2
9. Steel plate structures – Tanks (Part 2 - Engineering details)	*Classical with digital support*	2
10. Steel plate structures – Silos and bunkers (Part 1 - General concept)	*Classical with digital support*	2
11. Steel plate structures – Silos and bunkers (Part 2 - Particularities of design)	*Classical with digital support*	2
12. Steel plate structures – Silos and bunkers (Part 3 - Engineering details)	*Classical with digital support*	2
13. Steel plate structures – Large diameter pipes (Part 1 - Particularities of design, general concept)	*Classical with digital support*	2
13. Steel plate structures – Large diameter pipes (Part 2 - Engineering details)	*Classical with digital support*	2
	TOTAL	**28**

Bibliography**:**

1. Eurocode 1 - Actions on structures - Part 4: Silos and tanks
2. Eurocode 2 – Design of concrete structures – Part 3: Liquid retaining and containment structures
3. Eurocode 8 – Design of structures for earthquake resistance–Part 4: Silos, tanks and pipelines
4. Eurocode 8 – Design of structures for earthquake resistance–Part 6: Towers, masts and chimneys
5. Eurocode 13084 – Free-standing chimneys – Part 1: General requirements
6. Eurocode 13084 – Free-standing chimneys – Part 2: Concrete chimneys
7. M. Hangan – Betonul Armat. Constructii Industriale
8. Eurocode 3 - Design of steel structures - Part 4-2: Tanks
9. Eurocode 3 - Design of steel structures - Part 4-1: Silos

Criteria to be considered for the final mark	**Weight of each criterion in the final mark (%)**
Exam defence (final examination)	90%
Appreciation during the entirely semester	10%
Project activity (the project has not a distinct final mark)	
Periodical examinations during the semester	
Continuous examinations during the semester	
Home works, reports, essays etc.	
Participation at course and aplications	
Other criteria (to be specified)……	
Short description of the final evaluation procedure Written paper with 2…3 subjects, mark as a mean of the subject marks	

Estimation of the total number of hours per semester requested for the individual study (IS)				
Study of the course notes	**7**		Preparation of the final examination	**2**
Study of the compulsory bibliography	**2**		Advisory class participation	
Study of the supplementary bibliography			Practical documentation on site	
Preparation of specific activities			Additional documentation on library	
Preparation of home works			Internet network documentation	
Preparation of periodical written examinations	**3**		Others (to be specified)……	
Preparation of periodical oral examinations			……...…….	
			TOTAL number of hours	**14**

Signatures:

Date:

Academic Staff member in charge

1.10.2017

Dietlinde Kober / Voiculescu Dragos

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