

## COURSE DESCRIPTION

<b>Name of the Course:</b>		<b>LARGE SPAN BRIDGES AND VIADUCTS</b>						
<b>Specialization Code:</b>		<b>U02.07.ICV.IZ.M26</b>		<b>Course Code:</b>		<b>3.DS.OP12</b>		
<b>Year of study:</b>	<b>2</b>	<b>Semester:</b>	<b>3</b>	<b>Examination form:</b> (E-Exam; Co- Colloquy; P-Project; P/F-Passed/Failed)	<b>E</b>	<b>ECTS credits granted (CR):</b>	<b>E (Co)</b>	<b>6</b>
								<b>P (P/F)</b>
<b>Course Category:</b> (DF- Fundamental; DD- General engineering; DS-Specialty engineering; DC-Complementary; PR-Practical stage)								<b>DS</b>
<b>Course Type:</b> (OB-Compulsory; OP-Elective; FC-Facultative)								<b>OP</b>
<b>Number of hours per semester:</b> Total of hours per week (TH) x Number of weeks per semester								
<b>TOTAL :</b>	112	<b>Individual study (IS):</b>		56	<b>Contact hours (C + S;L;P):</b>			56
<b>Academic staff member in charge:</b> (Full name, Academic position and Department)				Prof. dr. eng. Florin Burtescu				

Faculty	Engineering in foreign languages Master study programme	Number of contact hours per semester				
		Total	Course	Seminar	Laboratory	Project
Field	Civil Engineering	56	28	-	28	
Specialization	Structural Engineering					

**Course objectives - Description of the main competences:** Conceiving, design and build fundamental principles for the large span bridges, cable stayed or suspension.

**Content description:**

**1. COURSE**

**1. Course (28 hours)**

**Chapter 1. (16 hours)**

**1. Cable stayed bridges**

- 1.1. Cable stayed bridges evolution;
- 1.2. Stay cables arrangement;
- 1.3. Pylons structure;
- 1.4. Deck structure;
- 1.5. Stay cables structure and build;
- 1.6. Stay connection;
- 1.7. Static analysis
  - Loads
  - Structure modelling:
    - Cables
    - Pylons
    - Deck
- 1.8. Dynamic analysis
  - Modal analysis:
    - Aerodynamic behaviour
    - Seismic behaviour
- 1.9. Multiple spans cable stayed bridge;
- 1.10. Mixed cable bridges, suspended and cable stayed.

**Chapter 2. (12 ore)**

**2. Suspension Bridge**

- 2.1. Introduction, suspension bridge evolution;
- 2.2. Structure :
  - Cable arrangement
  - Static and dynamic cables behaviour as independent structural elements
  - Pylons structure
  - Deck structure
  - Cable connection
- 2.3. Suspension bridge static analysis;
- 2.4. Suspension bridge dynamic analysis;
- 2.5. Suspension bridge build

<b>2. Seminar / Laboratory / Project / Practical stage</b>	<b>APPLICATIONS (28 hours)</b> Cable stayed pedestrian bridge with one prestressed concrete deck.
<b>3. Bibliography</b>	<p>1. Angelopoulou, D. (2009). Seismic response analysis of multi-span isolated bridges: a case study. Master Degree Dissertation, European School for Advanced Studies in Reduction of Seismic Risk, Rose School, Pavia, Italia. <a href="http://www.roseschool.it/downloads/masters-dissertations-individual-studies-2009.html">http://www.roseschool.it/downloads/masters-dissertations-individual-studies-2009.html</a></p> <p>2. Anagnostopoulou, M. (2009). Seismic design and analysis of precast segmental concrete bridge superstructure. Master Degree Dissertation, European School for Advanced Studies in Reduction of Seismic Risk, Rose School, Pavia, Italia. <a href="http://www.roseschool.it/downloads/masters-dissertations-individual-studies-2009.html">http://www.roseschool.it/downloads/masters-dissertations-individual-studies-2009.html</a></p>

Criteria to be considered for the final mark	Weight of each criterion in the final mark (%)
1. Exam defence (final examination)	50
2. Appreciation during the entirely semester	
2.1 Seminar activity	
2.1 Laboratory activity	
2.2 Project activity (the project has not a distinct final mark)	
3. Periodical examinations	
3.1 Written / oral examination	
3.2 Home works, reports, essays etc.	50
4. Other criteria (to be specified)	
Short description of the final evaluation procedure :	
Works will be graded along, in 4 <sup>th</sup> , 8 <sup>th</sup> and 12 <sup>th</sup> week. Grades average will represent 50% of final exam grade.	

Estimation of the total number of hours per semester requested for the individual study (IS)			
Type of individual activity	No. of hours	Type of individual activity	No. of hours
1. Study of the course notes	14	8. Preparation of the final examination	
2. Study of the compulsory bibliography		9. Advisory class participation	4
3. Study of the supplementary bibliography	6	10. Practical documentation on site	
4. Preparation of specific activities	28	11. Additional documentation on library	
5. Preparation of home works		12. Internet network documentation	4
6. Preparation of periodical written examinations		13. Others (to be specified)	
7. Preparation of periodical oral examinations		<b>TOTAL number of hours</b>	<b>56</b>

**Date:**  
septembre 2017

**Signature of the Academic Staff member in charge:**  
*Florin Burtescu*