

## COURSE DESCRIPTION

<b>Name of the Course:</b>		<b>Soil – Structure Interaction</b>						
<b>Specialization Code:</b>		<b>U02.07.ICV.IZ.M24.</b>		<b>Course Code:</b>		<b>3.DD.OB10</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>Co</b>	<b>ECTS credits granted (CR):</b>	<b>Co</b>	<b>5</b>
<b>Course Category:</b> (DF- Fundamental; DD- General engineering; DS-Specialty engineering; DC-Complementary; PR-Practical stage)								<b>DD</b>
<b>Course Type:</b> (OB-Compulsory; OP-Elective; FC-Facultative)								<b>OB</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)				Nicoleta Radulescu, Professor, Geotechnical and Foundation Department				
<b>Faculty</b>	<b>Engineering in foreign languages Master study programme</b>			<b>Number of contact hours per semester</b>				
<b>Field</b>	<b>Civil Engineering</b>			<b>Total</b>	Course	Seminar	Laboratory	Project
<b>Specialization</b>	<b>Structural Engineering</b>			56	28			28
<b>Course objectives - Description of the main competences:</b>								
<ul style="list-style-type: none"> <li>(i) Thoroughgoing study on practical phenomena theoretical analysis</li> <li>(ii) Competences improvement on Civil engineering analytical methods</li> <li>(iii) Skills improvement of design numerical models</li> <li>(iv) Challenge on Civil engineering profession attitude</li> </ul>								
<b>Content description:</b>								
<b>1. COURSE</b>		<ul style="list-style-type: none"> <li>1. General notions on Soil – Structure Interaction phenomena <ul style="list-style-type: none"> <li>- study cases</li> <li>- specific structural displacements and deformations due to Soil – Structure Interaction phenomena</li> <li>- design iterative methods</li> </ul> </li> <li>2. Constitutive laws for soils: Mohr –Coulomb; Tresca ; Von Mises ; Granta Gravel ; Cam Clay.</li> <li>3. Models used on Soil – Structure Interaction analysis: Winkler ; Boussinesc ; Hybrid.</li> <li>4. Analytical and numerical design methods for surface foundation systems.</li> <li>5. Analytical and numerical design methods for deep foundation systems.</li> <li>6. Design methods for deep excavations retaining systems.</li> </ul>						
<b>2. Seminar / Laboratory / Project / Practical stage</b>		<ul style="list-style-type: none"> <li>1. Design of a flexible direct raft interacting with the soil.</li> <li>2. Design of a deep foundation on piles interacting with the soil.</li> </ul>						

<b>3. Bibliography</b>	<ol style="list-style-type: none"> <li>1. Soil – Structure Interaction course (CD), N. Radulescu</li> <li>2. Interaction characteristic parameters, N. Radulescu, Conspress, 1998</li> <li>3. Soil – Structure Interaction analytical approach, N. Radulescu, Matrix, 2001</li> <li>4. Deep excavations retaining systems design (CD), R. Kastner, 2005</li> <li>5. Jawad Arefi, M. (2008). Effects of Soil-Structure Interaction on the Seismic Response of Existing R.C. Frame Buildings. 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-2008.html/2">http://www.roseschool.it/downloads/masters-dissertations-individual-studies-2008.html/2</a></li> <li>6. Borja, R.I., Smith, H.A. (1992). A methodology for nonlinear soil-structure interaction effects using time-domain analysis techniques. John Blume Earthquake Engineering Center, Report no. 101. <a href="https://blume.stanford.edu/sites/default/files/TR101_Borja.pdf">https://blume.stanford.edu/sites/default/files/TR101_Borja.pdf</a></li> </ol>
------------------------	--

Criteria to be considered for the final mark	Weight of each criterion in the final mark (%)
1. Exam defense (final examination)	50
2. Appreciation during the entire semester	
2.1 Seminar activity	
2.1 Laboratory activity	
2.2 Project activity (the project has not a distinct final mark)	40
3. Periodical examinations	
3.1 Written / oral examination	
3.2 Home works, reports, essays etc.	
4. Other criteria : Presence and Active participation	10
Short description of the final evaluation procedure: written and oral defense	

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	12	8. Preparation of the final examination	16
2. Study of the compulsory bibliography	12	9. Advisory class participation	
3. Study of the supplementary bibliography		10. Practical documentation on site	
4. Preparation of specific activities		11. Additional documentation on library	
5. Preparation of home works		12. Internet network documentation	16
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:**  
March, 18<sup>th</sup>, 2013

**Signature of the Academic Staff member in charge:**  
**Professor Nicoleta Radulescu**