

Insegnamento: FOUNDATION ENGINEERING	
Module: Unique	
ECTS: 9	SSD: ICAR/07
Lectures (hrs): 55	Tutorials (hrs): 20
LAUREA MAGISTRALE IN INGEGNERIA STRUTTURALE E GEOTECNICA - Anno di corso: I	
<p>Course objectives: the course aims to provide the students with the knowledge needed to correctly design, monitor and reuse foundations. Foundations usually interact with both superstructures and subsoil and any approach to their design cannot neglect such interactions. The study of theoretical aspects with their applications, calculations procedures and design methods to satisfy the needs imposed by performance requirements and codes/regulations are the bases of the course.</p>	
<p>Course content: <u>Introductions on foundation types:</u> Deep and shallow foundations. <u>Soil mechanics:</u> Drained and Undrained conditions, total and effective stress analyses applied to the design of deep and shallow foundations. <u>Shallow foundations:</u> Types – Limit state design: ULS and SLS definitions – Bearing capacity and absolute and differential settlement – Plasticity theory applications to the bearing capacity problem (Upper bound and lower bound theorems) – Settlements calculations and time effects (Theory of layered elastic halfspace and theory of the consolidation) - Analysis and methods to solve superstructure–foundation–soil interaction – Allowable settlement and performance based design. <u>Pile foundations:</u> Types and technology – Limit state design: ULS and SLS definitions – Static and dynamic load tests – Bearing capacity, settlement and stress for piled raft under vertical and horizontal loading – Conventional capacity based design and new trends in performance based design. <u>Re-use of existing foundations:</u> checks and design.</p>	
<p>Tutorials: Site investigations for the design of shallow and deep foundations – Soil characterisation – Presentation of different types of structures and various site investigations – Optimum foundation selection: general criteria – Design calculation report - Design and management of routine monitoring systems: monitoring during construction and long term monitoring.</p>	
Docente: GIANPIERO RUSSO	
Code: 23393	Semester: II
Pre-requisites: None	
Teaching method: Lectures, Tutorials, Application seminars	
<p>Teaching material :</p> <ul style="list-style-type: none"> • Presentations- slideshows and videos • <i>Piles and Pile Foundation. G. Russo , A. Mandolini & C. Viggiani-Spoon Press imprint of Taylor & Francis – London 2012 – ISBN 978-0-41549066-5</i> 	
Course Assessment : Examination and courseworks	