European Master in Advanced Solid Mechanics

STRAINS

UNIVERSITÀ DELLA CALABRIA

The University of Calabria

Module handbook for Semester 3

4 COMPULSORY MODULES		
1	Foundations Engineering	9 ECTS
2	Theory of Structures	9 ECTS
3	Structural Dynamics	6 ECTS
4	Structural Analysis and Design	6 ECTS

Module #1	**FOUNDATIONS ENGINEERING**			
Information	Credit Points : 9 ECTS	Workload : 75h	Mode : compulsory	Offered : 3rd semester
Institution in charge	The University of Calabria at Cosenza			
Instructors	Prof. Enrico Conte			
Contents	The course provides the tools required for the analysis and design of the most common foundation structures, such as shallow (footings, beams and mats) and deep foundations (piled foundations). The main topics dealt with in the course concern the subsurface investigation programming, bearing capacity of foundations, settlement prediction and soil-structure interaction to calculate the internal forces in the structural members.			
Examination	Written final exam			
Requirement for examination	No specific requirements			
Learning outcomes	The course aims to provide students with the skills needed for the design of both shallow and piled foundations			

Module #2	**THEORY OF STRUCTURES**			
Informations	Credit Points : 9 ECTS	Workload : 75h	Mode : Compulsory	Offered : 3rd semester
Institution in charge	The University of Calabria at Cosenza			
Instructors	Prof. Paolo Lonetti			
Contents	The course aims to provide the student methods and modeling tools to analyze several class of structures. The topics of the course are essentially the numerical methods typically utilized to analyze the structural behavior in the framework of linear and nonlinear fields.			
Examination	Written final exam			
Requirement for examination	No specific requirements			
Learning outcomes	The course is able to provide tools for modeling and analysis the behavior of typical structures utilized in the framework of civil and building engineering. **Specific skills**: • Utilize numerical methods to solve structural problems. • Ability to evaluate and simulate the behavior of several structural typologies. • Evaluate the behavior of elastic-plastic structures specifically of framed structures. **Transversal skills**: • Develop and utilize EF commercial software for structural analyses.			

Module #3	**STRUCTURAL DYNAMICS**			
Information	Credit Points : 6 ECTS	Workload : 50h	Mode : Compulsory	Offered : 3rd semester
Institution in charge	University of Calabria at Cosenza			
Instructors	Prof. Salvatore Lopez			
Contents	This course is designed to provide students with a systematic knowledge and understanding of structural dynamics; enabling the analysis of vibration response of multi-degree-of-freedom and FEM modelled continuum systems; enabling the application of structural dynamics theories to solve practical problems in vibration engineering.			
Examination	Written final exam			
Requirement for examination	No specific requirements			
Learning outcomes	Specific skills: the course introduces the basic concepts of structural dynamics and it presents the necessary tools for numerical simulation of the structural behavior under dynamic forces. Transversal skills: the course introduces to the finite element modeling.			

Module #4	**STRUCTURAL ANALYSIS AND DESIGN**			
Information	Credit Points : 6 ECTS	Workload : 50h	Mode : Compulsory	Offered : 3rd semester
Institution in charge	University of Calabria at Cosenza			
Instructors	Prof. Francesco Bencardino			
Contents	The course provides to the students the necessary tools for the modeling and design of structures in the framework of civil and industrial engineering through the use of traditional and innovative materials, deepening the study of the main techniques of structural analysis and the use of current regulations.			
Examination	Written final exam			
Requirement for examination	No specific requirements			
Learning outcomes	The course aims to initiate students to the analysis and design of complex civil reinforced concrete, wood or steel structures, summarizing the knowledge gained in previous computational and design courses. Students are organized into groups and are guided in defining the assigned project, with both lectures and laboratory work in which each group is followed individually.			