



ANNEX 2.1

DEGREE PROGRAM DIDACTIC REGULATIONS

INGEGNERIA STRUTTURALE E GEOTECNICA (STRUCTURAL AND GEOTECHNICAL ENGINEERING)

CLASS LM-23

School: Polytechnic and Basic Sciences

Department: Structures for Engineering and Architecture

Didactic Regulations in force since the academic year 2026/2027

Course: Modelli e metodi numerici per l'Ingegneria		Teaching Language: Italian	
SSD (Subject Areas): MATH-04/A		CREDITS: 9	
Course year: I/II	Type of Educational Activity: C		
Teaching Methods: In person			
Contents extracted from the SSD declaratory consistent with the training objectives of the course: Skills related to the development of rigorous mathematical models, both deterministic and stochastic, for the description of phenomena in the biomathematical, social, economic and industrial fields as well as the physical-mathematical aspects of artificial intelligence and data analysis. From the methodological point of view, the sector makes use of rigorous analytical, probabilistic, algebraic, geometric and computational mathematical techniques.			
Objectives: The aim of the course is to introduce the fundamental principles of mathematical modelling for formalizing and solving engineering problems. The course will provide basic knowledge of partial differential equations in Mathematical Physics and their applications, and will discuss computational methods (i.e., finite difference and finite element) for parabolic, hyperbolic, and elliptic problems. The numerical discussion of each type of equation will be always preceded by the introduction/derivation of the models. Moreover, the role of initial and boundary conditions will be pointed out with reference to physical situations. The numerical investigation will concern the development of special applications on MATLAB platform.			
Propaedeuticities: Is a propaedeuticity for:			
Types of examinations and other tests: Oral examination, project discussion.			