Mathematical Theory of Elasticity

Professor	Email	Institution
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General Information

Description

The course is designed to introduce engineering students to essential mathematical tools for proving the existence of the solution to the three-dimensional linear elasticity problem. The lectures will highlight the need for these tools, gradually introducing them, and illustrating their application with various examples to aid understanding. Although the focus is on linear elasticity, the tools provided will also be useful for addressing nonlinear problems.

The main topics covered include Banach spaces, Lebesgue integration, L^p spaces, weak convergence, and Sobolev spaces. While these subjects could be explored in greater depth individually, we will limit the discussion to what is necessary for our specific goals. References and a set of notes will be provided to deepen understanding.

If time permits, in addition to proving the existence of the solution for the linear elasticity problem, we will also rigorously derive the plate problem from the three-dimensional theory of elasticity.

The lectures will be held in person (Aula Piero Villaggio in the Structural Engineering Division of the DICI Department - University of Pisa, Largo Lucio Lazzarino 1, Pisa) and also online (please send email to roberto.paroni@unipi.it).

Materials

Notes and references will be provided during the course.

Schedule

The course will include six lectures, each lasting three hours. The first lecture will take place on January 22, 27 and 29, 2025 from 3pm to 6pm.

For any information www.indicee.unifi.it - dott-dicea@unifi.it

International Doctorate in Civil and Environmental Engineering