

**Course offered for the PhD program
in Civil, Chemical and Environmental Engineering
Curriculum in Structural and Geotechnical Engineering, Mechanics and Materials
A.Y. 2025/2026 (XLI cycle)**

(course is open for participation of students from other PhD cycles or programs)

1. Title

Continuum mechanics

2. Course Description

Continuous bodies. Deformation and motion. Lagrangian and Eulerian description. Deformation gradient, polar decomposition. Effects on lengths, volumes, areas. Nanson formula. Velocity gradient. Transport theorem. Balance equations: mass, linear momentum, angular momentum, energy. Cauchy's theorem. Balance in a control volume. Second law of thermodynamics and consistency of constitutive equations. Viscous fluids. Elastic solids and wave propagation.

3. Course Organization

The course consists of 30 one-hour lectures. The contents are developed directly by the teacher on the blackboard.

4. Teacher

Professor Angelo Morro.

5. Duration and credits

The course is developed during six weeks. The number of credits is 6.

6. Activation mode and teaching period

The course is given each year in the period January-February.

7. Deadline for registration

8. Final exam

The exam is based on a oral examination usually in the period June-September.