

**Course offered for the PhD program  
in Civil, Chemical and Environmental Engineering  
Curriculum in Structural and Geotechnical Engineering, Mechanics and Materials  
a.a. 2023/2024 (XXXIX ciclo)**

(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.