

# Sapienza Università di Roma

## PhD Program in Structural and Geotechnical Engineering

May 13 – 2:30pm-4:30pm, May 14 – 9:00am-12:00pm, May 15 – 11:00am-1:00pm, May 16 – 9:00am-12:00pm

May 19 – 11:00pm-1:00pm, May 21 – 9:00am-12:00pm, May 22 – 11:00am-1:00pm, May 23 – 9:00am-12:00pm

### Prof. Antonino Favata

*Associate Professor, Department of Structural and Geotechnical Engineering, Sapienza University of Rome*

## Continuum Mechanics and Thermodynamics

This course offers a reasonably self-contained introduction to continuum mechanics and thermodynamics, that emphasizes the foundational role of the balance laws and the entropy inequality. These principles—along with the requirement that physical theories be frame-indifferent—serve as the essential building blocks for the formulation of theories of material behavior. The general discussion of constitutive equations will be based on the use of thermodynamics to restrict constitutive equations via a paradigm generally referred to as the Coleman-Noll procedure. As applications of this general framework, I will present the following topics: rigid heat conductors, elastic solids under isothermal and nonisothermal conditions. If time permits, the course will also touch upon basic aspects of rate-independent plasticity. Prerequisites are basic notions on calculus and mechanics. Few nonstandard mathematical tools will be introduced with care, if necessary.

Program:

[https://phd.uniroma1.it/web/course---continuum-mechanics-and-thermodynamics\\_nS22245EN\\_EN.aspx](https://phd.uniroma1.it/web/course---continuum-mechanics-and-thermodynamics_nS22245EN_EN.aspx)

Registration form:

<https://forms.gle/hksewn6Q5RqmeYr88>

