PhD DISG

Director
Patrizia Trovalusci

Sapienza Università di Roma
PhD Program in
Structural and Geotechnical Engineering

June 10, 2024 - 3:00pm-7:00pm
June 11 and 12, 2024 - 10:00am-2:00pm

Prof. Giuseppe Buscarnera

Professor, Department of Civil and Environmental Engineering, Northwestern University

Failure and Instability in Geomaterials and Geosystems

This 3-day course introduces, at the post-graduate level, the basic principles of material stability analysis, with specific reference to geomaterials such as soil and rock. First, an introduction to the definition and use of different metrics of material instability is given, including second-order work and controllability indices. Analytical techniques to differentiate localized and diffuse failure are then discussed, along with an examination of the implications of shear banding for the numerical analysis of geotechnical problems and examples of possible computational remedies. Afterwards, diffuse instabilities of the liquefaction type and the role of the pore fluids on their initiation are addressed, stressing the role of transitions from unsaturated to saturated conditions. Finally, the relevance of geomaterial instability in the context of landslide geomechanics is addressed. Examples of application spanning from rapid shallow landslides of the flow type to deep-seated creeping landslides are shown, with the goal to highlight the feedback between material instability, inelastic deformation, and the temporal dynamics of landslide motion.

Program:
https://phd.uniroma1.it/web/course---failure-and-instability-in-geomaterials-and-geosystems_nS6194EN_EN.aspx

Registration form:
https://forms.gle/HiwjCZGjgbzPUYnF8

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