PhD DISG

Director
Patrizia Trovalusci

Sapienza Università di Roma
PhD Program in
Structural and Geotechnical Engineering

July 1, 2 and 3, 2025
10:30am-12:30am

Prof. Orestis Adamidis

Department of Engineering Science – University of Oxford, UK

Beyond drained and undrained: implications of drainage for seismic liquefaction and offshore wind turbine foundations

Soil mechanics has been fundamentally shaped by two limiting assumptions regarding pore water response: fully drained and fully undrained conditions. These assumptions underpin most experimental studies, inform the development and calibration of constitutive models, and dominate geotechnical analysis and design. However, they represent idealised extremes. In many practical scenarios, soil response is governed by partial drainage, a regime not reliably accounted for in current modelling and design. This lecture series explores the limitations of the drained–undrained dichotomy and introduces novel insight on soil behaviour under partial drainage. The lectures will examine both the fundamental mechanics and the practical implications of drainage effects, with a focus on two applications: seismic liquefaction and the response of large-diameter offshore wind turbine monopiles. The series will cover core concepts and prevailing design approaches, introduce relevant advanced constitutive models, present novel experimental evidence both at element and system scale, assess implications for model formulation and calibration, and highlight recent findings on the impact of partial drainage for liquefaction triggering and for monopile response.

Program: https://phd.uniroma1.it/web/corso---beyond-drained-and-undrained-implications-of-drainage-for-seismic-liquefaction-and-offshore-wind-turbine-foundations_ns22816IT_IT.aspx

Registration form: https://forms.gle/FMPN656FZSc4UQgE8

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