

Short Course | Physical and Numerical Modeling of Geotechnical Problems (The short course will be in english)

- **Marcio Almeida** Professor at the Federal University of Rio de Janeiro, PhD by the University of Cambridge, England
- **Maria Cascão**, Professor of the Department of Structures, at the Polytechnic School of Federal University of Rio de Janeiro
- **Fernando Saboya** Full Professor at the State University of Northern Rio de Janeiro Darcy Ribeiro

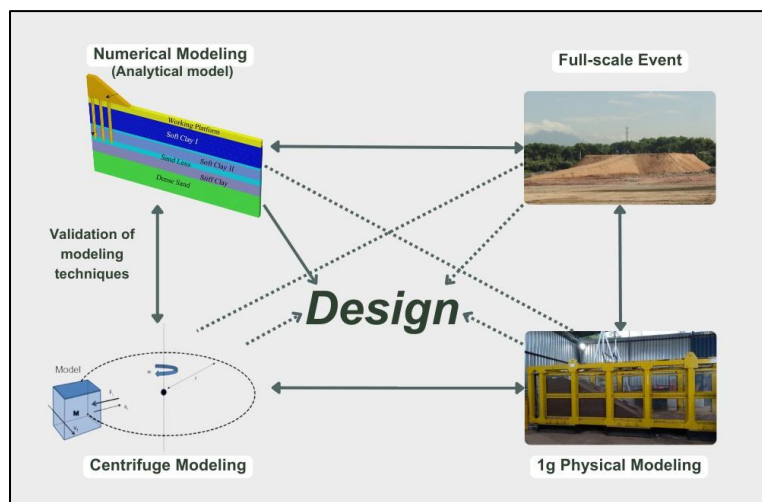
| **DATE:** november 12, 2024 | **DURATION:** Full Day

| **MINIMUM PARTICIPANTS:** 15 | **MAXIMUM PARTICIPANTS:** 30

FEE: USD 350

INTRODUCTION/SUMMARY

Numerical and physical modeling of soils and geotechnical structures and their complementary roles. Physical and Numerical modeling, using Cam-clay and elastoplastic models, of full-size structures on soft soils: cases of vacuum preloading, embankments on stone columns and encased columns, deep soil mixing. Scaling laws and physical modeling under normal gravity (1g) and modified gravity (in geotechnical centrifuge) fields. Preparation of models in sandy, clayey and tailings dam soils. Physical modeling as a benchmark to numerical modeling: piled embankments. Examples of 1g flow problems Applications to onshore and offshore static problems: soils improved with gravel columns, foundations, tunnels, excavations, embankments, pipeline movement. Centrifuge modeling of cyclic, dynamic and seismic problems. Physical modeling of submarine slopes and debris flow problems. Topographic effects in slopes.



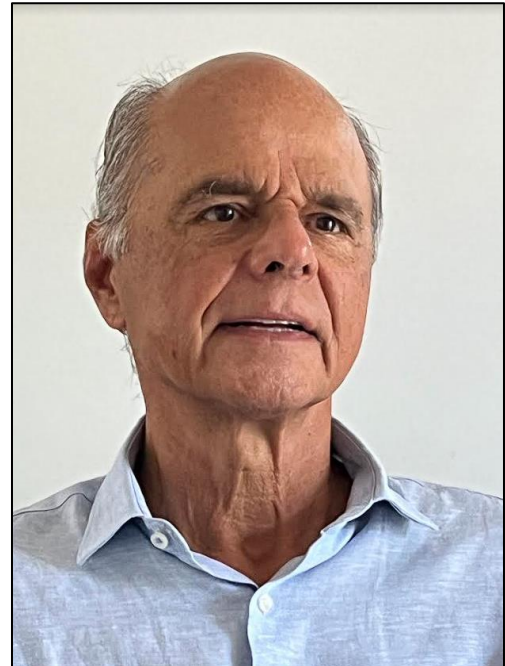
COURSE PROGRAM

Time	Main Topic	Lecturer	Duration
8:00 - 8:30	Registration		
8:30 – 10:30	Introduction. Modeling background, model preparation for 1g and centrifuge tests. General applications.	F. Saboya	2hs
10:30 a 11:00	Coffe Break		
11:00 a 12:30	Applications to onshore and offshore static problems	M. Almeida	1,5 hs
12:30 a 13:30	Lunch		
13:30 a 15:00	Physical and Numerical modeling of full-size structures on soft soils. Case studies.	M. Almeida	1,5 hs
15:00 a 15:30	Coffe Break		
15:30 a 17:30	Centrifuge modeling of cyclic, dynamic and seismic problems.	M. Cascão	2 hs
17:30 a 18:00	Questions, Final Panel		

SPEAKERS

Prof Marcio Almeida

Professor Marcio Almeida graduated in Civil Engineering (1974) from the Federal University of Rio de Janeiro (UFRJ), where he later received his Master's degree. He was awarded an MPhil (1981) and a Ph.D. (1984) by the University of Cambridge, England. Marcio has lectured at the Federal University of Rio de Janeiro since 1977 where he was granted a full professorship in 1997. He supervised 80 Master dissertations and 33 PhD theses. The French Geotechnical Society honored him the Coulomb Lecturer prize in 2015. Throughout his career, he has published over 300 journal and conference articles and has been awarded Telford Prize 2021 and the Mokshagundan Visvesvaraya Award 2017 by the Institution of Civil Engineers - ICE. In Web of Science the Total citations is 2332, H factor is 26. Marcio Almeida is also a recipient of Terzaghi and José Machado Awards from the Brazilian Geotechnical Society, ABMS.



The primary focus of his research includes soft clay engineering, tailings dams, offshore geotechnics, and physical modeling. He has also participated in the editorial staff of a number of international journals, presently he is Associated Editor of the Ground Improvement Journal ICE. Marcio authored two books by Taylor & Francis, on soft clay construction (2013), and on geosynthetic-encased columns (2018).

The main topics of his consulting activities in the last 49 years of continuing practice with major companies are Earthworks, with emphasis on soft soils; Tailing storage facilities; Coastal and dredging, Harbor and airport works, road and rail works; Site investigation and field monitoring; Slopes and excavations; Environmental geotechnics; Marine and Offshore geotechnics.

Prof Maria Cascão

Full Professor of the Department of Structures, at the Polytechnic School of Federal University of Rio de Janeiro since 2002, acting at undergraduate and graduate levels. Professor at PEC COPPE/UFRJ being Academic Director of the Multiuser Centrifuge Modeling Laboratory since 2013 (<https://lm2c.coc.ufrj.br/en/>). Coordinator of the Structural Projects Program (POLI/UFRJ) from 2016 to 2021. Previously taught at the Technological Institute of Aeronautics/ITA (1977) and at the Federal University of Juiz de Fora (1994-2002). Post-Doctorate at the Laboratoire Central de Ponts e Chaussées (LCPC), France (2011). She was Academic Visitor in 2012 at ETH-ZURICH (Switzerland), at the University of Western Australia / UWA (2002) and at the Laboratoire 3SR de l'Université Joseph Fourier, Grenoble, France (2015). She participated in the GROUP OF EXCELLENCE-PRONEX/MCT and is currently a member of the Institute of Rehabilitation of the System Slopes-Plain (REAGEO) within the National Program in Strategic Areas of the National Institute of Science and Technology (INCT/BRAZIL - <http://inct.cnpq.br/web/inct-reageo>). She is also a member of the Technical Committee of the ABNT (Brazilian Association of Technical Codes) for the elaboration of the Brazilian Code for Concrete Structures



(NBR6118). Author of the book ESTRUTURAS ISOSTÁTICAS (Oficina de Texto). Graduated "cum laude" in Civil Engineering from the Federal University of Rio de Janeiro (1975), MPhil at The Polytechnic of Central London, England (1984) and DSc at COPPE/UFRJ (1997). She developed important engineering projects, in Brazil, at Promon and Antônio Alves de Noronha, where she was head of the Computing Department and Quality Assurance Manager for several years, and in Italy, at ISMES - "Intituto Sperimentalle di Modelli e Strutture". She has actively collaborated with PEC-COPPE since 2003 in research projects, where she supervised 25 MSc and DSc works. Her main areas of expertise are: static and dynamic analysis of structures and soils, soil-structure interaction, seismic and seismic hazard analysis with Brazilian data, static and dynamic liquefaction and soil dynamics and reinforced concrete and concrete cracking.



Prof Fernando Saboya

Has experience in Civil Engineering focusing on rockfill dams, buried pipelines, energy piles, numerical modeling, fuzzy analysis and physical modeling using geotechnical centrifuge. Has received five distinguished awards and honors, including two for the best papers published in Geotecnia - Portuguese Geotechnical Society Journal. Was also recently honored as one of distinguished scientist of Rio de Janeiro State (awarded by Research Foundation of Rio de Janeiro State - FAPERJ). Has supervised 25 Master students, 6 Ph.D. Thesis and 5 Pos-Doc researches. During 2003-2007 was vice-rector of research and graduate program of the UENF. Has published 45 scientific papers in well-credited journals and more than 120 technical articles in Conferences.

- Head of the Physical Modeling Laboratory at State University of Norte Fluminense (UENF), supervising researches on offshore anchoring, pipelines, thermal effects in soils and stability of submarine slope. Is responsible for the development and commissioning of the 100g x ton geotechnical centrifuge installed at UENF in 2009.
- Coordinator of the Civil Engineering Graduation Program at UENF.
- Reviewer of some important geotechnical journals.
- Full Professor of several soil and sock mechanics disciplines at UENF.
- Member of American Society of Civil Engineering, International Society for Soil Mechanical and Geotechnical Engineering, Brazilian Geotechnical Society, International Society of Rock Mechanic, International Commission of Large Dams.
- Member of advisory board for evaluation of graduate programs of Brazilian Federal Education Ministry - CAPES