

REGISTRATION FORM: Characterization of Rock Masses..... Undertakings

Name:

Mailing address:

Postal Code:

Country:

Telephone number:

E-mail address:

Fax number:

Company / Institution:

Registration category: Professional participant Student

I have read and agree to the conditions of registration as stipulated in this brochure.

Signature

Registration Conditions:

The course fee must be paid in full by the registration deadline of October 15, 2023. The course fee includes course notes, lunch, and refreshments for morning and afternoon tea/coffee breaks. The number of applicants for each course is limited and acceptance will be on a first-come, first-served basis. If the course is canceled, then the full short course fee will be refunded. **No refund will be given after October 15, 2023. Non-arrivals at the course will be liable to pay the full course fee and no refund will be given. However, substitutions will be allowed.**

One-day Short Course on
**CHARACTERIZATION OF ROCK
MASSES IN LARGE UNDERTAKINGS**

**Will be taught by
Luís Ribeiro e Sousa
CONSTRUCT, University of Porto, Portugal
E-mail: sousa-scu@hotmail.com**



December 3, 2023

The course will be taught in a hotel in Colombo, Sri Lanka
Information on the exact venue will be provided around the end of October 2023.

OBJECTIVES AND SCOPE

The evaluation of the geomechanical parameters of rock masses in large projects is a topic of great importance given the geological complexity of the rock masses and the difficulties in their evaluation. The difficulties are related to the uncertainties associated with the rock mass, whose characterization is normally carried out through in situ and laboratory tests, complemented by using empirical systems.

This is an Intensive Course on Characterization of Rock Masses in Large Undertakings, with a particular focus on geometric characterization, testing and the use of empirical systems and Data Mining techniques.

The course will be taught by Luís Ribeiro e Sousa from University of Porto, School of Engineering, Portugal. He is a specialist in the field of underground works, in large projects. A narrative biography of his is given on the last page of the brochure.

SUPPORT FOR THE SHORT COURSE

The Course is taught as a pre-conference short course under the 1st SLRMES Conference on Rock Mechanics for Infrastructures and Geo-Resources Development, Colombo, Sri Lanka.

REGISTRATION COST

Professional Participant: 150 USD

Post-graduate student: 75 USD

METHODS OF PAYMENT

Option 1: Wire transfer: The name of the bank, swift code, routing number & account number will be provided later upon receiving the completed Registration form.

Option 2: Through Western Union—needed information will be provided later upon receiving the completed Registration form.

Option 3: Through MoneyGram—needed information will be provided later upon receiving the completed Registration form.

Registration for the Workshop on Characterization of Rock Masses of Large Undertakings also can be done by visiting the website: www.SLRMES.org

MEDIUM OF INSTRUCTION

The medium of instruction will be English.

WHO SHOULD ATTEND

Civil, Mining, and Geo-engineers and geologists who are involved in surface and underground excavations analysis, design, and construction activities associated with jointed rock masses will benefit from the short course.

COURSE CONTENT AND TIME SCHEDULE

December 3, 2023

08:00-08:30	Registration of participants and delivery of registration material and documentation.
08:30-10:30	<i>Site Investigation for Rock Masses</i> General Considerations. Borehole inspection system. Televiewers, Equipment developed at CUMTB. Field sampling technology. Equipment for soft rock sample. Weathering of rocks – tests. Conclusion.
10:30-11:00	Break
11:00-12:30	<i>Evaluation of Geomechanical Properties. Deformability of Rock Masses</i> Introduction. Methodology for assessing the deformability of rock masses. Tests in Boreholes. Plate Tests. LFJ tests. Triaxial tests. Rock investigation in Japan.
12:30-13:30	Lunch
13:30-15:30	<i>Evaluation of Strength and of In Situ State of Stress</i> Strength assessment methodology. Sliding and shear test in situ. Cutting tests in drillholes. Laboratory tests on discontinuities. Characterization of the state of stress in situ. Hydraulic fracture. Small Flat Jack.
15:30-16:00	Break
16:00-18:00	<i>Empirical Systems and the Use of Artificial Intelligence (AI) Techniques</i> Classifications by empirical Systems. RMR system. Q System. GSI System. Empirical System for Volcanic Rocks. Hierarchical characterization processes. Data Mining techniques. Applications to hydroelectric schemes and to an underground laboratory in the USA.

Narrative Biography of Prof. Ribeiro e Sousa:

Prof. L. Ribeiro e Sousa has more than 50 years of engineering experience. He has extensive international experience on a range of projects including dams, foundations, tunnels, and other underground structures. His technical areas of expertise include concrete dams; rock foundations of dams and other structures; tunneling for subways, roads, railways and hydraulic projects; underground storage; mining; petroleum engineering; rock mechanics; tests; and numerical modeling. He is conducting research on risk management for geotechnical systems. Prof. Sousa is multilingual, and he has authored or co-authored over 20 books and hundreds of journal articles, presentations and reports. He was very active in a number of professional societies and has served as President of the Portuguese Geotechnical Society and Vice-President at Large for the International Society for Rock Mechanics (ISRM) from 2003 to 2007. He was Chairman of the 2007 ISRM Congress in Lisbon, Portugal and he was President of SKEC Engineering Consulting. He is professor at the University of Porto, Portugal, and member of the Council of IULEE (International United Laboratory for Energy and Environment).

Specialized experience:

- *Underground Hydroelectric Power-schemes*: Jinping II Hydropower Station II, China; Alto Lindoso Hydroelectric Scheme, Portugal; Cahora-Bassa Hydroelectric Scheme, Mozambique; Repowering of Miranda Hydroelectric Scheme, Portugal; Venda Nova II Hydroelectric Scheme, Portugal; Alvito Hydroelectric Scheme, Portugal; and Hydroelectric Scheme of Socorridos, Madeira Island, Portugal.
- *Mining*: DUSEL Laboratory, USA; Neves-Corvo Mine and Ajustrel mines, Portugal; and the Exploration of Rockburst Mechanism, China.
- *Underground Storage*: Risk Analysis Assessment of CO₂ Injection Process in Carboniferous Formations, China, Brazil & Portugal; Storage of Natural Gas in Salt Formations, Portugal; and Effect of an Earthquake on a Lined Rock Cavern (LRC) for Storage of Natural Gas, France & Sweden.
- *Petroleum Engineering*: Kuqa Foreland Basin, China; 3rd Annual World Congress of Well Stimulation and EOR 2012, Xian, China; Euro-Asia Economic Forum 2013, Xian, China; and Comprehensive Reservoir Characterization and Modelling, Abu Dhabi, UAE.
- *Tunnels*: Railway Tunnels, Portugal; High Speed Railway Tunnels, Portugal; Road Tunnels, Portugal & USA; Hydraulic Tunnels, Portugal; Sewer Tunnels, USA; Malamchi Water Supply Project, Nepal; and Software for Tunnels, Brazil.
- *Metro/Subway Systems*: Accident at Olivais-Sul Station, Lisbon Metro, Portugal; Expansion of Yellow Line, Lisbon Metro, Portugal; Metro of Porto, Portugal; and Metro of Rio de Janeiro, Brazil.
- *Dams*: Rock Mass Foundation Deterioration of Portuguese Concrete Dams, USA; Agueira Dam Foundation, Portugal; Água Vermelha Dam, Brazil; Deformability Evaluation of Rock Foundations of a dam, Japan; and Other Dams in Portugal (Fratel, Torrão, Pracana), USA (Auburn), Spain (Almendra, Atazar) & Greece (Sfikia).
- *Slopes and Faults*: Slopes of Rio de Janeiro State, Brazil; Warning Prediction System for Failure of Faults, China; Gibalta Slopes and Ribeira de Sela Slopes, Portugal; and Landslides during Wenchuan Earthquake, China.

Other activities:

- Engineering consulting activities in Azores Island, Portugal; in East Timor for airports; docks in Portugal and Spain; rock foundations of skyscrapers in USA; and Historic forts in Oman and Portugal.
- Research projects in Portugal, China, Brazil, France, Sweden, Russia, Japan, and USA.
- Organization of courses in China, Brazil and Portugal.
- Conferences in USA, Brazil, Russia, China, France, Vietnam, Mozambique, Switzerland, South Korea, Netherlands, UAE and Portugal.
- Cooperation with several organizations in meetings from USA, Brazil, ISRM, China and Portugal.
- Member of the Editorial Board of several journals and reviewer of international Journals.

Awards:

- ISRM fellowship in 2021.
- Awarded by Chinese Ministry of Education & State Administration of Foreign Experts Affairs in the research program Foreign Famous Teacher, 2014-2019, at China University of Mining and Technology, Beijing; Awarded by Sichuan University for high-talented foreign teacher in the years 2014 and 2015.
- Awarded from the Chinese Government for the years 2013 and 2014, in association with China University of Mining and Technology, Beijing, and SKL for Geomechanics and Deep Underground Engineering.
- Brazilian Government, CNPq, 2013.
- Award for Foreign Specialists, PWRI, Ministry of Construction, Japan, 1995.
- António de Almeida Foundation Award, Best student in Civil Engineering, University of Porto, Portugal, 1973.
- STET Award, Best student in Geotechnical courses, University of Porto, Portugal, 1969.
- 7th London Int. Youth Science Fortnight, 1965, best science students in Portuguese Universities, Award of Calouste Gulbenkian Foundation.
- Infante D. Henrique award, best students at high schools in Portugal, 1962.

Lecturer and Researcher:

- China University of Mining and Technology, Beijing, China.
- Sichuan University, Chengdu, China.
- Tongji University, Shanghai, China.
- Shandong University of Science and Technology, Qingdao, China.
- Full Professor at University of Porto, Portugal.
- Invited Professor at University of Minho and Coimbra in Portugal; and Assistant at the University of Lisbon.
- Visiting Professor at the Moscow State University for Civil Engineering, Russia; Catholic University of Rio de Janeiro; and Federal University of Viçosa, Brazil.
- PhD and MSc thesis supervision, some of them awarded with ISRM Manuel Rocha Medal, Ingeokring Thesis Award from The Netherlands and SPG (Portuguese Geotechnical Society) Award, Portugal.