REGISTRATION FORM

Name _____

Address _____

_____

_____

Tel. _____

Email _____

☐ I wish to register for the course at a cost of £750 + VAT (UK only) including course material and workshop lunches.

☐ I enclose a cheque for £750 +VAT (UK only)

☐ Please invoice me at the above address

☐ Please send me information on local hotels

Disclaimer

All materials and information supplied during and associated with this course are intended purely for instructional purposes. Whilst every effort is taken to ensure that materials provided are accurate and suitable for training purposes, ASRANet Ltd accepts no responsibility for their accuracy or utility.

I accept the above.

Signature _____

Date _____

The completed form should be sent to:
ASRANet Ltd.
5 St Vincent Place, Glasgow, G1 2DH

Cost

The registration fee of the workshop will be £750+VAT (pound sterling) which includes course notes and lunches. You should make your own arrangements for accommodation.

Payment
ASRANet Ltd. accepts payments by cheque, cash and bank transfer. Please contact for further details.

Venue

TBC

Note
Please do not make your travel arrangements until you receive an Invoice from us.

Contact
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Design of Earthquake Resistant Structures

5-6 October 2017

An ISO 9001:2008 certified company

(A Maritime Company for Courses, Conferences and Research)

Genoa, Italy

ABOUT THE COURSE

Today the global outreach of civil engineering is expanding and throwing new challenges for designers and engineers. Designing safer and resilient infrastructures in earthquake prone areas is increasingly becoming a key skill. It's therefore essential for the personnel to understand the implications of seismic actions. This course aims to highlight the important aspects in seismic design. Risk analysis of structures indicate the point of failure and help in taking steps to mitigate this hazard. Introduction to Eurocode 8, emphasises the considerations for earthquake resistant design that is capable of resisting catastrophic failure. Earthquakes dominate design of many structures, see for example Nuclear Power Plant safety related structures or critical infrastructures (hospital, bridges) in moderately seismic zones.

Different types of earthquake hazards [Linear spatial structures, ground failure induced damages, predominantly structure related damages, case studies of cascading failures such as Fukushima Daiichi NPP] will be studied. Based on best practice and code compliance, the focus will be on the parameters required for design and interpretation of the specialised PHSA analysis. General rules, seismic actions, Different types of analysis, Response Spectra Method will also be dealt with.

WHO SHOULD ATTEND

Engineers and scientists involved in the design, operation and assessment of both onshore and offshore structures and their associated equipment. Personnel from oil companies, consultancy organisations, classification societies and certifying authorities will benefit from attending this course.

PROGRAMME

Thursday 5th October 2017

08.30 - 09.00 Delegate Registration

09.00 - 10.30 Lecture 1: Overview of Earthquake Engineering Analysis & Design
Prof Subhamoy Bhattacharya

10.30 - 10.45 *Break*

10.45 - 12.15 Lecture 2: Seismic Hazard Assessment [PHSA and DHSA]
Dr Barnali Ghosh

12.15 -13.30 *Lunch*

13.30 – 15.00 Lecture 3 Fundamental of Structural dynamics & Seismic analysis of Structures
Dr Barnali Ghosh

15.00 - 15.30 *Break*

15.30 - 17.00 Lecture 4: Selection of input motion for analysis based on codes of practice (ISO code and Eurocode). Example applications

Dr Barnali Ghosh

Friday 6th October 2017

09.00 - 10.30 Lecture 5: Ground Response Analysis
Prof Subhamoy Bhattacharya

10.30 - 10.45 *Break*

10.45 - 12.15 Lecture 6: Liquefaction: Liquefaction Analysis based on Eurocode 8 and Japanese Code of Practice

Prof Subhamoy Bhattacharya

12.15 -13.30 *Lunch*

13.30 - 15.00 Lecture 7: Design of pile foundations in seismic areas (Theory and codes of practice), Example case studies
Prof Subhamoy Bhattacharya

15.00 - 15.30 *Break*

15.30 - 17.00 Lecture 8: Eurocode 8 Design of Bridges for earthquake loading & Soil-Structure Interaction
Prof Subhamoy Bhattacharya

ABOUT THE LECTURERS:

Professor Subhamoy Bhattacharya:

Professor Subhamoy Bhattacharya currently holds the Chair in Geomechanics at the University of Surrey where he leads the Geomechanics Research Group. He is also the Programme Director for the MSc course in "Advanced Ground Engineering/Advanced Geotechnical Engineering" and the Director of Undergraduate Studies in Civil Engineering. Previously, he held the post of Senior Lecturer at the University of Bristol, Departmental Lecturer at the University of Oxford and Academic fellowship at Tokyo Institute of Technology as well as industrial positions with Fugro Limited (UK) and Consulting Engineering Services (India) Ltd - now Jacobs. He obtained his PhD from the University of Cambridge, investigating failure mechanisms of pile-supported structures in liquefiable soils. He proposed a new theory on pile failure which received the 2005 T.K.Hseih award for the best paper in civil engineering dynamics from the Institution of Civil Engineers. His further work on piles includes design principles for the foundation design of new generation Floating Production Storage and Offloading platforms, built from his experience designing piles for more conventional offshore structures. His work on p-y curves for clay appears in the latest API/ANSI/ISO code of practice. His current research interest are foundations for offshore wind turbines, seismic behaviour of piles.

Dr Barnali Ghosh

Dr Barnali Ghosh is a Senior Principal Engineer at Mott MacDonald (London). She has experience of civil, geotechnical and earthquake engineering. She is a chartered civil engineer having 17 years' experience of designing foundations in seismic areas all over the world She is responsible for all aspects of geotechnical earthquake engineering and soil dynamics in Mott Macdonald's London office. She has carried out both regional and site-specific geotechnical and seismic hazard assessments for a range of structures in the energy, infrastructure and manufacturing sectors. She has extensive experience of determining dynamic soil properties for seismic design, seismic hazard assessment, non-linear site response analyses, the latest liquefaction assessment methodologies and dynamic soil structure interaction. She has acted as a reviewer for numerous projects all around the world. She has worked extensively in projects based in UK and oversees and understands the code requirements for seismic design.

Dr Ghosh has also published her work extensively and associated with several committees and actively lectures about earthquake geotechnical engineering. She is a committee member for SECED (Society for Earthquake and Civil Engineering Dynamics) and is an honorary lecturer at University College London where she teaches earthquake engineering**.** Her motivation is to build resilient infrastructure.

Lecture Content

Lecture 1: Overview of Earthquake Engineering
Different types of earthquake hazards, Damages to linear spatial structures, ground failure induced damages and structure related damages, Multi-Hazard, Case studies of cascading failures [e.g. Fukushima Daiichi NPP].

First fundamental concepts of earthquake engineering are introduced i.e. the way earthquakes are generated and how forces are experienced by the structure i.e. seismic wave propagation. Although this is the subject of an entire different discipline, the description is kept brief and is used to provide the necessary link between the earthquake cause and the effects and how to consider this in earthquake resistant design

Lecture 2: Seismic Hazard Assessment [PHSA and DHSA]
Based on best practice and code complaint. The focus will be on the parameters required for design and interpretation of the specialised PHSA analysis.

Introduces the hazard assessment i.e. quantification of the hazard. This will mainly constitute PSHA (Probabilistic Seismic Hazard Assessment) and the outputs of the analysis are the necessary input to the structural and Geotechnical Engineers. One of the aspects is interpretation if the PSHA results which will be covered in this lecture. Example problems will be taken.

Lecture 3: Fundamental of Structural dynamics & Seismic analysis of Structures
General rules, seismic actions, Different types of analysis, Response Spectra Method

Fundamental structural dynamics will be discussed in a generic way, with earthquake loading forming a special case of loading. Modal analysis will be covered (Single degree of freedom systems to multi-degree of freedom structures).

Lecture 4: Selection of input motion for analysis based on codes of practice (ISO code and Eurocode). Example applications
This lecture will cover the methods of selecting input motion for seismic design. Special emphasis will be focussed on areas where ground motions may not be available. Additional criteria for selection of ground motion will be discussed

Lecture 5: Ground Response Analysis
Ground response analysis i.e. how the ground alters the ground motion characteristics will be studied. Case study of Mexico City earthquake

Lecture 6: Liquefaction & Liquefaction Analysis based on Eurocode 8 and Japanese Code of Practice

This lecture will cover the fundamentals of liquefaction, Laboratory Testing

Lecture 7: Design of pile foundations in seismic areas (Theory and codes of practice), Example case studies
Different mechanisms of pile failure, design of foundations in seismic areas based on Eurocode 8 (Part 1 and Part 5).

Lecture 8: Soil-Structure Interaction & Seismic Analysis of bridges

This lecture deals with methods to analyse bridge