TIME TABLE

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ADMISSION AND ACCOMMODATION

Applicants must apply at least one month before the beginning of the course. Application forms can be sent by post or on-line through our web site: [http://www.cism.it](http://www.cism.it). A letter of confirmation will be sent to accepted participants.

The registration fee is 500,00 €.

A limited number of participants from universities and research centres who are not supported by their own institutions can be offered board and/or lodging in a reasonably priced hotel. Requests should be sent to CISM Secretariat by May 10, 2006 together with the applicant’s curriculum and a letter of recommendation by the head of the department or supervisor confirming that the institute cannot provide funding. Preference will be given to applicants from countries which sponsor CISM.

The Deutsche Forschungsgemeinschaft offers scholarships to German students (please contact Mr Höfeld, DFG, Kennedyallee 40, 53175 Bonn, +49 (0) 228 885 2321, [http://www.dfg.de/](http://www.dfg.de/)).

Information about travel and accommodation are available at [http://www.cism.it/cism/travel_reach.htm](http://www.cism.it/cism/travel_reach.htm), or can be mailed upon request.

For further information please contact:

CISM
Palazzo del Torso - Piazza Garibaldi 18
33100 Udine (Italy)
tel. +39 0432 248511 (6 lines)
fax +39 0432 248550
E-mail: cism@cism.it
http://www.cism.it
PROBABILISTIC METHODS IN GEOTECHNICAL ENGINEERING

Soils and rocks are among the most variable of all engineering materials, and as such are highly amenable to a probabilistic treatment. The application of statistical and probabilistic concepts to geotechnical analysis is a rapidly growing area of interest for both academics and practitioners. The course is therefore aimed at students, researchers, and practitioners of geotechnical engineering who wish to keep abreast of developments in this evolving field of study. The course content and delivery will assume no more that an introductory understanding of probability and statistics on the part of the course participants. The main objective of the course is to present a state-of-the-art training on probabilistic techniques applied to geotechnical engineering in relation to both theory and practice. The course will include: (a) discussion of potential benefits of probabilistic approaches as opposed to the classical “Factor of Safety” methods, to review sources of uncertainty in geotechnical analysis and to introduce methods of LRFD and reliability concepts in Eurocode 7, (b) review of relevant statistical theories needed to develop the methodologies and interpret the results of probabilistic analysis, (c) examples of established probabilistic methods of analysis in geotechnical engineering, such as the First Order Second Moment (FOSM) method, the Point Estimate Method (PEM), the First and Second Order Reliability Methods (FORM SORM) and Random Set (RS) theory, (d) description of numerical methods of probabilistic analysis based on the finite element method, such as the Stochastic Finite Element Method (SFEM) and recent developments on the Random Finite Element Method (RFEM), (e) practical examples and case histories of probabilistic applications in geotechnical engineering.

Primarily, the course is aimed at academics and practitioners in Europe and abroad who wish to obtain an up to date training in probabilistic methods and their application to geotechnical engineering. The course should also be attractive to postgraduate students wishing to pursue research work in this field. Some of the SFEM and RFEM software described in the course will be made available to course participants.

Papers:

Textbooks:

INVITED LECTURERS

D.V. Griffiths - Colorado School of Mines, Golden, U.S.A.
8 lectures on: Introductions; Motivation and preview of the course; General comments on uncertainty in geotechnical analysis. Basic probability theory; Properties of functions of multiple random variables (e.g. Expected values, variance, covariance/correlation). Common discrete and continuous distributions. Normal and lognormal distributions; Central limit theorem. FOSM methods in classical problems leading to the SFEM. Local averaging over finite elements. - Finite element analysis in geotechnical engineering. Background to deterministic FE codes. RFEM application to nonlinear geotechnical analyses (e.g. earth pressure, slope stability).

G.A. Fenton - Dalhousie University, Halifax, Canada

F. Nadim - NGI/International Centre for Geohazards, Oslo, Norway
6 lectures on: Sources and types of uncertainty in geomechanical properties. Strategies and tools for dealing with uncertainties. Geotechnical systems and system reliability analysis. Advantages and shortcomings of probabilistic analysis tools, such as Monte Carlo Simulation, FOSM and FORM/SORM. - Example applications of FORM to classical geotechnical problems like bearing capacity and settlement analysis. Application of FORM to slope stability evaluation.

W. Pula - Wroclaw University of Technology, Poland

H.F. Schweiger - Graz University of Technology, Austria
5 lectures on: Reliability-based design approaches in Eurocode 7. Basics of the point estimation method. Applications of the point estimation method to practical problems such as deep excavations and tunnelling. Basics of random sets (RS-FEM). Applications of random sets to practical problems such as deep excavations and tunnelling.

LECTURES

All lectures will be given in English. Lecture notes can be downloaded from CISM web site, instructions will be sent to accepted participants.
Surname_________________________________________
Name___________________________________________
Affiliation __________________________________________
Address ____________________________________________
E-mail _____________________________________________
Phone___________________Fax______________________

Method of payment upon receipt of confirmation
(Please check appropriate box)

❏ I shall send a check of Euro 500,00 VAT (IVA) included and bank charges excluded

❏ Payment will be made to CISM - Bank Account N° 094570210900, VENETO BANCA - Udine (CAB 12100 - ABI 05418 - SHIFT AMBPI21M - IBAN CODE IT83 Z05418 12300 09457 0210900).
Copy of the receipt should be sent to the secretariat

❏ I shall pay at the registration counter with check, cash or VISA Credit Card (Mastercard/Eurocard, Visa, CartaSi)

IMPORTANT: CISM is obliged to present an invoice for the above sum. Please indicate to whom the invoice should be addressed.

Name ______________________________________________________________________________________________________
Address __________________________________________________________________________________________________
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C.F.* ______________________________________________________________________________________________________
VAT/IVA* No. ________________________________________________________________________________________________
(*) Only for EU residents or foreigners with a permanent business activity in Italy.

Only for Italian Public Companies
❏ I ask for IVA exemption (ex law n. 537/1993 - art. 14 comma 10).

Privacy policy: I understand that data received via this form will be used only to provide information about CISM and its activities, within the limits set by the Italian legislative decree no.196/2003 and subsequent amendments. Complete information on CISM's privacy policy is available at www.cism.it.

I have read the "Admission and Accommodation" terms and conditions and agree.

Date ______________________ Signature ______________________